



Full wwPDB/EMDatabank EM Map/Model Validation Report ⓘ

Mar 2, 2017 – 11:48 am GMT

PDB ID : 3LU0
EMDB ID: : EMD-5169
Title : Molecular model of Escherichia coli core RNA polymerase
Authors : Darst, S.A.
Deposited on : 2010-02-16
Resolution : 11.20 Å(reported)

This is a Full wwPDB/EMDatabank EM Map/Model Validation Report
for a publicly released PDB/EMDB entry.

We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

MolProbity : 4.02b-467
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : recalc29047

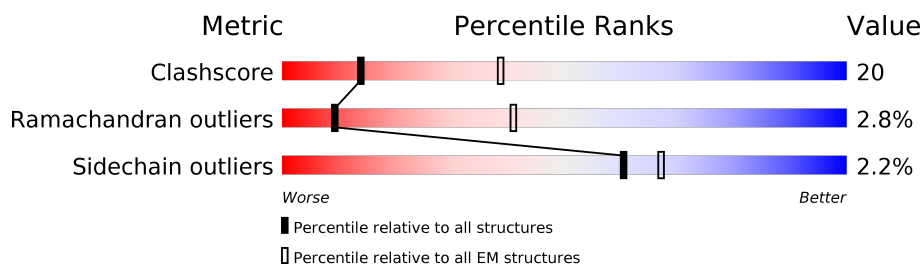
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 11.20 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	125131	1336
Ramachandran outliers	121729	1120
Sidechain outliers	121581	1026

The table below summarises the geometric issues observed across the polymeric chains. The red, orange, yellow and green segments on the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	329	
1	B	329	
2	C	1342	
3	D	1407	
4	E	91	

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 25410 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 alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	235	Total	C	N	O	S	0	0
			1820	1132	323	358	7		
1	B	235	Total	C	N	O	S	0	0
			1820	1132	323	358	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	1335	Total	C	N	O	S	0	0
			10523	6602	1836	2042	43		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	516	VAL	ASP	CONFLICT	UNP P0A8V2

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	1364	Total	C	N	O	S	0	0
			10547	6624	1879	1994	50		

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	89	Total	C	N	O	S	0	0
			697	424	132	140	1		

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
5	D	1	Total	Mg	0
			1	1	

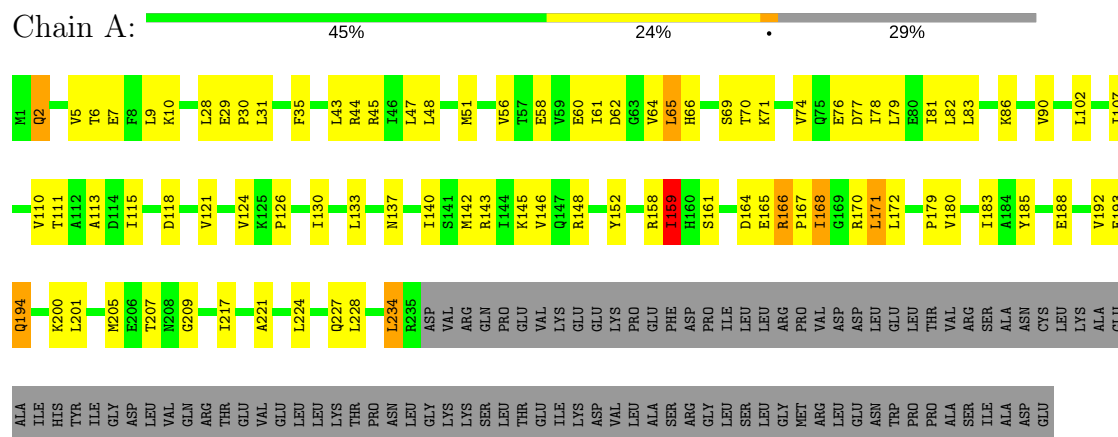
- Molecule 6 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
6	D	2	Total	Zn	0
			2	2	

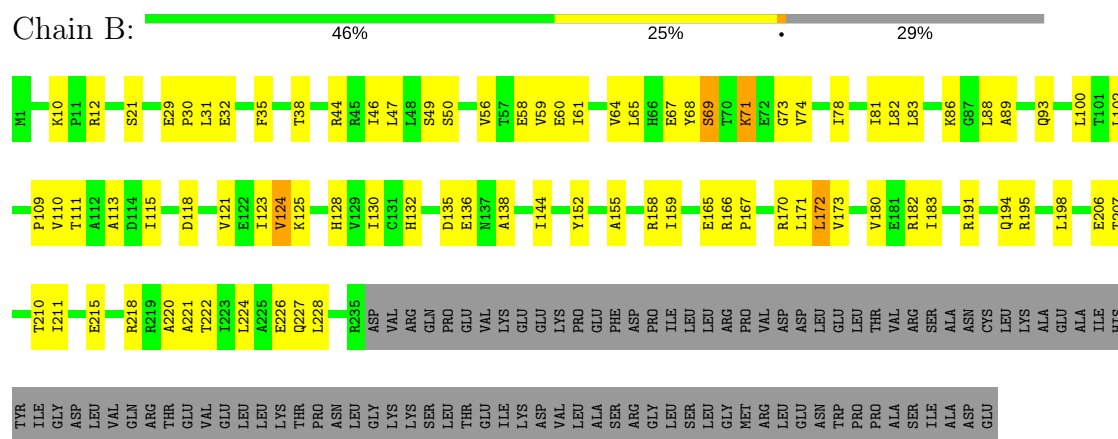
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA 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.

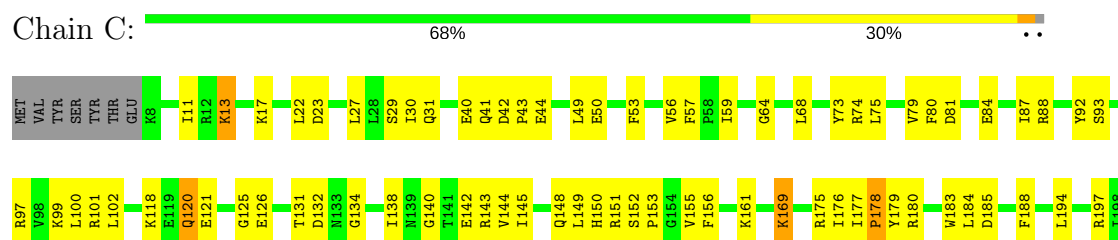
• Molecule 1: DNA-directed RNA polymerase subunit alpha



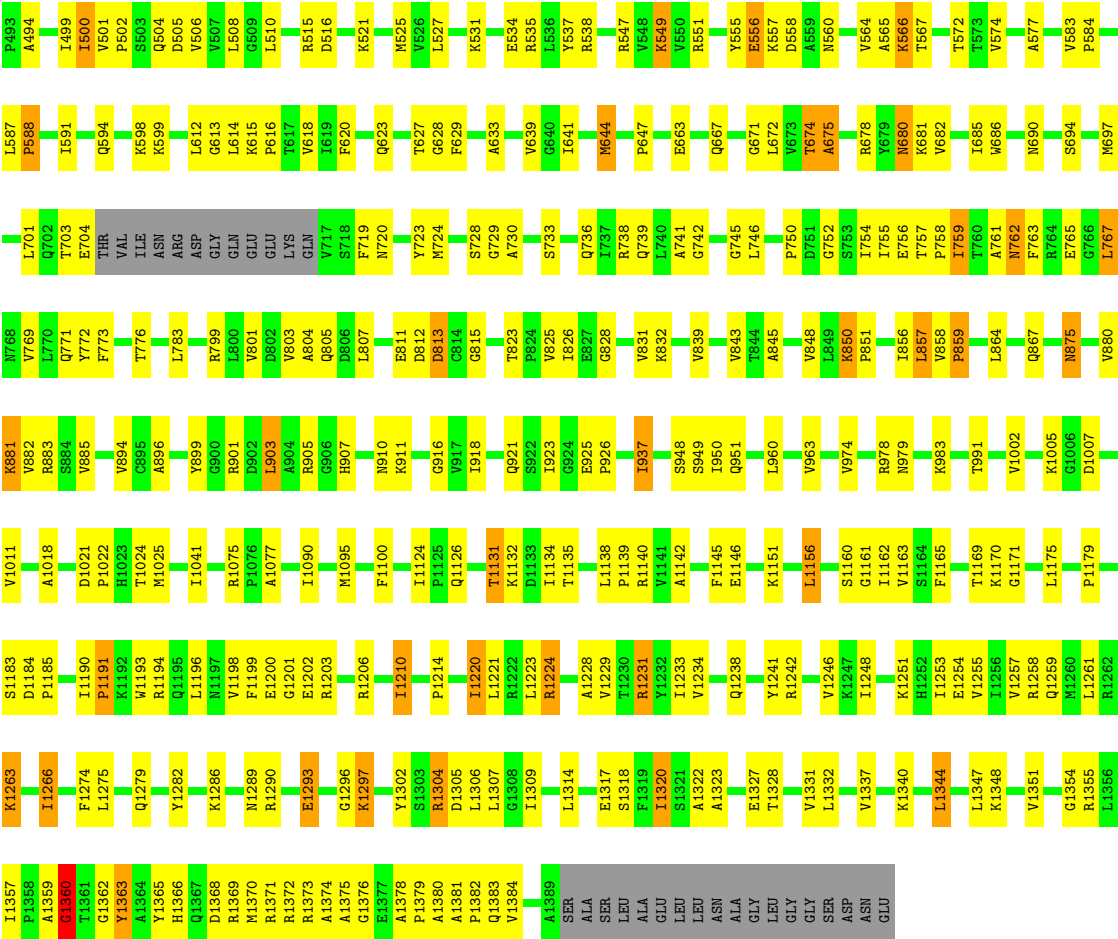
• Molecule 1: DNA-directed RNA polymerase subunit alpha



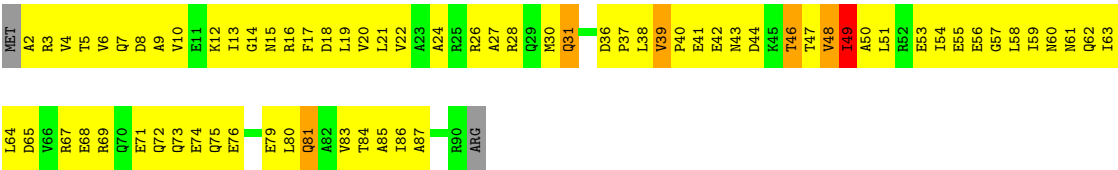
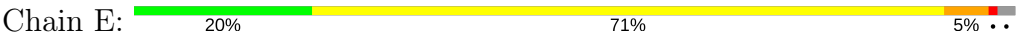
• Molecule 2: DNA-directed RNA polymerase subunit beta







● Molecule 4: DNA-directed RNA polymerase subunit omega



4 Experimental information

Property	Value	Source
Reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	Depositor
Number of particles used	Not provided	Depositor
Resolution determination method	Not provided	Depositor
CTF correction method	Not provided	Depositor
Microscope	FEI TECNAI F20	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	10	Depositor
Minimum defocus (nm)	1800	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	50000	Depositor
Image detector	Kodak SO163 film	Depositor

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: ZN, 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	$\# Z > 2$	RMSZ	$\# Z > 2$
1	A	0.19	0/1842	0.37	0/2495
1	B	0.19	0/1842	0.36	0/2495
2	C	0.21	1/10690 (0.0%)	0.34	0/14422
3	D	0.26	0/10710	0.63	3/14470 (0.0%)
4	E	1.09	2/699 (0.3%)	1.79	4/942 (0.4%)
All	All	0.29	3/25783 (0.0%)	0.56	7/34824 (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
3	D	0	1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	49	ILE	C-N	5.62	1.47	1.34
2	C	951	MET	CG-SD	5.51	1.95	1.81
4	E	49	ILE	CA-C	5.30	1.66	1.52

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	1360	GLY	CA-C-N	-50.05	7.09	117.20
4	E	81	GLN	CG-CD-OE1	-38.65	44.30	121.60
3	D	1360	GLY	C-N-CA	-31.89	41.97	121.70
4	E	81	GLN	CG-CD-NE2	-9.65	93.55	116.70
4	E	49	ILE	C-N-CA	8.22	142.25	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	E	81	GLN	OE1-CD-NE2	6.93	137.85	121.90
3	D	1363	TYR	CA-CB-CG	-6.59	100.88	113.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	D	1360	GLY	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	1820	0	1850	78	0
1	B	1820	0	1850	59	0
2	C	10523	0	10551	327	0
3	D	10547	0	10751	495	0
4	E	697	0	706	209	0
5	D	1	0	0	0	0
6	D	2	0	0	0	0
All	All	25410	0	25708	1011	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 20.

All (1011) 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:D:615:LYS:CD	4:E:5:THR:CA	1.80	1.59
3:D:615:LYS:CE	4:E:5:THR:HA	1.37	1.53
3:D:615:LYS:CD	4:E:5:THR:HA	1.34	1.46
3:D:615:LYS:HD3	4:E:5:THR:C	1.31	1.46
3:D:615:LYS:HD3	4:E:5:THR:CA	1.34	1.45
3:D:618:VAL:HG21	4:E:2:ALA:CB	1.50	1.39
3:D:615:LYS:NZ	4:E:5:THR:HA	1.39	1.37

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:615:LYS:HD3	4:E:6:VAL:N	1.46	1.28
3:D:614:LEU:N	4:E:7:GLN:OE1	1.65	1.27
3:D:615:LYS:HD2	4:E:5:THR:N	1.48	1.26
3:D:614:LEU:H	4:E:7:GLN:CG	1.53	1.20
3:D:614:LEU:H	4:E:7:GLN:CD	1.45	1.19
2:C:1282:GLY:HA3	4:E:17:PHE:HE2	1.04	1.19
3:D:618:VAL:CG2	4:E:2:ALA:HB2	1.72	1.17
3:D:618:VAL:CG2	4:E:2:ALA:CB	2.22	1.16
3:D:615:LYS:CD	4:E:5:THR:N	2.08	1.11
3:D:615:LYS:NZ	4:E:5:THR:CA	2.12	1.11
4:E:73:GLN:HB3	4:E:75:GLN:HG2	1.30	1.09
2:C:1282:GLY:HA3	4:E:17:PHE:CE2	1.88	1.07
2:C:1282:GLY:CA	4:E:17:PHE:HE2	1.68	1.06
3:D:618:VAL:HG21	4:E:2:ALA:HB3	1.05	1.02
4:E:13:ILE:HD13	4:E:19:LEU:HG	1.38	1.02
3:D:615:LYS:CD	4:E:6:VAL:N	2.25	0.98
3:D:481:ARG:O	4:E:3:ARG:HD3	1.67	0.94
3:D:615:LYS:HD2	4:E:5:THR:H	1.14	0.92
3:D:615:LYS:NZ	4:E:5:THR:CB	2.32	0.91
4:E:44:ASP:CB	4:E:48:VAL:HG21	2.01	0.90
3:D:425:ARG:HG2	3:D:427:PRO:HD2	1.52	0.90
1:A:166:ARG:HB2	1:A:167:PRO:HD3	1.52	0.89
3:D:614:LEU:N	4:E:7:GLN:CG	2.35	0.89
3:D:615:LYS:HD2	4:E:5:THR:CA	1.83	0.88
3:D:1375:ALA:O	3:D:1379:PRO:HD3	1.75	0.86
3:D:1370:MET:SD	4:E:22:VAL:HG13	2.15	0.86
3:D:614:LEU:N	4:E:7:GLN:CD	2.18	0.86
3:D:478:LEU:HD12	4:E:24:ALA:HA	1.56	0.86
4:E:13:ILE:HB	4:E:19:LEU:HD11	1.58	0.86
4:E:13:ILE:CD1	4:E:19:LEU:HG	2.05	0.85
3:D:615:LYS:HZ2	4:E:5:THR:CA	1.88	0.85
4:E:63:ILE:HG12	4:E:64:LEU:CD1	2.06	0.85
2:C:1180:MET:HB3	2:C:1181:PRO:HD3	1.59	0.85
4:E:63:ILE:HG12	4:E:64:LEU:HD12	1.58	0.84
3:D:618:VAL:HG22	4:E:2:ALA:HB2	1.58	0.84
1:B:58:GLU:HG3	1:B:170:ARG:HH21	1.43	0.84
1:B:89:ALA:HB1	1:B:210:THR:HG23	1.57	0.84
3:D:615:LYS:CG	4:E:6:VAL:H	1.91	0.83
4:E:17:PHE:O	4:E:20:VAL:HG12	1.78	0.83
4:E:10:VAL:HA	4:E:19:LEU:HD21	1.59	0.82
1:B:195:ARG:HG3	1:B:198:LEU:HD21	1.60	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:13:ILE:HB	4:E:19:LEU:CD1	2.10	0.82
3:D:1370:MET:CE	4:E:61:ASN:HB3	2.10	0.81
4:E:3:ARG:NH2	4:E:51:LEU:HD22	1.96	0.81
3:D:1378:ALA:O	3:D:1382:PRO:HD2	1.81	0.81
1:A:234:LEU:HD13	1:A:234:LEU:H	1.46	0.80
3:D:1366:HIS:CE1	4:E:17:PHE:HB2	2.16	0.80
3:D:614:LEU:HB3	4:E:7:GLN:HG2	1.62	0.80
1:B:172:LEU:HD13	1:B:172:LEU:H	1.46	0.80
3:D:615:LYS:HZ2	4:E:5:THR:HA	1.41	0.80
3:D:615:LYS:CD	4:E:6:VAL:H	1.92	0.80
2:C:1330:ILE:HG23	2:C:1335:ILE:HG13	1.65	0.79
4:E:10:VAL:HA	4:E:19:LEU:CD2	2.12	0.79
2:C:403:MET:HG3	2:C:414:ILE:HB	1.64	0.79
3:D:618:VAL:CG2	4:E:2:ALA:HB3	1.96	0.79
3:D:615:LYS:HD3	4:E:6:VAL:H	1.46	0.78
4:E:63:ILE:C	4:E:64:LEU:HD12	2.03	0.78
2:C:56:VAL:HG11	2:C:468:LEU:HB3	1.65	0.78
3:D:1263:LYS:HD2	3:D:1263:LYS:H	1.47	0.78
4:E:6:VAL:O	4:E:10:VAL:HG23	1.82	0.78
2:C:1101:LEU:HD13	3:D:504:GLN:HB2	1.65	0.78
3:D:132:LEU:HD13	3:D:132:LEU:H	1.49	0.78
2:C:241:LEU:HD11	2:C:246:LEU:HD11	1.64	0.77
4:E:13:ILE:HG22	4:E:15:ASN:H	1.47	0.77
2:C:765:ILE:HG13	2:C:787:PRO:HG3	1.66	0.77
3:D:1156:LEU:H	3:D:1156:LEU:HD13	1.49	0.77
3:D:1373:ARG:HB3	4:E:58:LEU:HD11	1.66	0.77
4:E:31:GLN:HA	4:E:31:GLN:HE21	1.50	0.77
3:D:426:ALA:HB3	3:D:427:PRO:HD3	1.67	0.77
4:E:44:ASP:HB2	4:E:48:VAL:HG21	1.66	0.77
3:D:500:ILE:H	3:D:500:ILE:HD13	1.51	0.76
2:C:1123:GLY:HA2	2:C:1127:LYS:HD2	1.66	0.76
4:E:13:ILE:HD13	4:E:19:LEU:CG	2.16	0.75
3:D:288:PRO:HG2	3:D:291:ILE:HD12	1.68	0.75
3:D:1382:PRO:HG2	4:E:80:LEU:HD11	1.69	0.75
3:D:1371:ARG:O	4:E:59:ILE:HD12	1.86	0.75
2:C:487:LEU:HD23	2:C:487:LEU:H	1.51	0.75
2:C:1181:PRO:O	2:C:1182:ILE:HG13	1.86	0.74
3:D:615:LYS:HZ2	4:E:5:THR:CB	1.94	0.74
2:C:1065:LYS:HD3	2:C:1065:LYS:H	1.53	0.74
2:C:342:ASP:HA	2:C:437:ASN:HB3	1.68	0.74
1:A:124:VAL:HG11	1:A:209:GLY:HA3	1.70	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:549:LYS:HD2	3:D:549:LYS:H	1.52	0.74
4:E:5:THR:OG1	4:E:8:ASP:HB2	1.87	0.73
3:D:1370:MET:HE1	4:E:61:ASN:HB3	1.69	0.73
3:D:99:ARG:HE	3:D:248:ASP:HB2	1.53	0.73
3:D:1380:ALA:O	3:D:1383:GLN:HG2	1.88	0.73
2:C:1282:GLY:CA	4:E:17:PHE:CE2	2.61	0.73
3:D:1380:ALA:O	3:D:1384:VAL:HG23	1.89	0.73
3:D:674:THR:HG23	3:D:675:ALA:H	1.52	0.73
3:D:615:LYS:HZ3	4:E:5:THR:CA	2.01	0.73
3:D:615:LYS:NZ	4:E:5:THR:OG1	2.22	0.73
1:A:28:LEU:HG	1:A:31:LEU:HD21	1.69	0.72
1:B:152:TYR:HB3	3:D:567:THR:HG21	1.71	0.72
2:C:223:LEU:HD13	2:C:426:ILE:HD13	1.72	0.72
3:D:615:LYS:CD	4:E:5:THR:C	2.27	0.72
1:B:67:GLU:HG3	1:B:82:LEU:HD12	1.72	0.71
3:D:614:LEU:H	4:E:7:GLN:HG3	1.51	0.71
3:D:120:LEU:HB3	3:D:121:PRO:HD3	1.71	0.71
3:D:492:SER:HB3	3:D:499:ILE:HG13	1.71	0.71
3:D:368:LEU:HD21	3:D:439:PRO:HB3	1.72	0.71
3:D:615:LYS:HD3	4:E:5:THR:N	1.93	0.71
3:D:1320:ILE:H	3:D:1320:ILE:HD13	1.56	0.71
3:D:361:LEU:HD21	3:D:366:CYS:HA	1.73	0.71
3:D:615:LYS:HZ3	4:E:5:THR:CB	1.96	0.71
3:D:1372:ARG:HG3	3:D:1375:ALA:H	1.56	0.70
2:C:633:LEU:H	2:C:633:LEU:HD23	1.55	0.70
3:D:478:LEU:HD11	4:E:27:ALA:CB	2.21	0.70
4:E:62:GLN:HG3	4:E:63:ILE:H	1.55	0.70
3:D:755:ILE:HG22	3:D:757:THR:H	1.56	0.70
3:D:479:GLU:CB	4:E:20:VAL:HG21	2.20	0.70
3:D:831:VAL:HG23	3:D:832:LYS:H	1.55	0.70
3:D:222:LYS:HD3	3:D:223:LEU:HG	1.73	0.70
3:D:949:SER:HB2	3:D:951:GLN:HE22	1.56	0.69
3:D:1368:ASP:OD1	4:E:21:LEU:HD23	1.93	0.69
2:C:317:LEU:HD13	2:C:322:LEU:HD21	1.75	0.69
3:D:1370:MET:CE	4:E:22:VAL:HG13	2.22	0.69
2:C:812:PHE:HD2	2:C:813:GLU:HG2	1.58	0.69
3:D:1221:LEU:HD11	3:D:1304:ARG:HB2	1.74	0.69
2:C:1045:GLY:HA3	2:C:1049:ILE:HD11	1.74	0.69
3:D:420:PRO:HA	3:D:439:PRO:HD3	1.75	0.69
1:B:83:LEU:HG	3:D:556:GLU:HG2	1.75	0.68
3:D:615:LYS:HG2	4:E:6:VAL:H	1.58	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:12:LYS:HB2	4:E:13:ILE:HD12	1.76	0.68
2:C:142:GLU:HB2	2:C:760:ASN:HD21	1.58	0.68
2:C:811:ASN:HA	2:C:815:SER:HB2	1.74	0.68
3:D:701:LEU:HD13	3:D:720:ASN:HD22	1.58	0.68
2:C:1138:VAL:HG12	2:C:1140:LYS:H	1.57	0.68
3:D:948:SER:CB	3:D:1022:PRO:HG3	2.24	0.68
4:E:46:THR:HG22	4:E:47:THR:H	1.58	0.68
3:D:384:LYS:HB3	3:D:411:ILE:HD11	1.76	0.68
3:D:84:ILE:H	3:D:84:ILE:HD13	1.59	0.68
4:E:41:GLU:HG3	4:E:42:GLU:H	1.56	0.68
4:E:37:PRO:HB3	4:E:58:LEU:HD23	1.75	0.68
1:A:61:ILE:HB	1:A:64:VAL:HB	1.75	0.67
3:D:211:GLU:HA	3:D:214:ARG:HG2	1.76	0.67
3:D:615:LYS:CG	4:E:6:VAL:N	2.55	0.67
3:D:482:ALA:HB2	4:E:3:ARG:NH1	2.08	0.67
1:A:6:THR:HG22	1:A:7:GLU:HG3	1.76	0.67
3:D:481:ARG:O	4:E:3:ARG:CD	2.41	0.67
2:C:1046:VAL:HG12	2:C:1047:LEU:HG	1.77	0.67
2:C:1291:LEU:HD12	3:D:345:LYS:HD3	1.76	0.67
3:D:41:PRO:HG3	3:D:273:ILE:HB	1.77	0.67
1:B:182:ARG:H	1:B:206:GLU:HB2	1.60	0.67
3:D:428:THR:HG23	3:D:433:GLY:HA3	1.77	0.67
1:B:100:LEU:HD21	1:B:121:VAL:HG11	1.76	0.67
3:D:482:ALA:HB2	4:E:3:ARG:HH12	1.60	0.66
2:C:616:ILE:HG12	2:C:652:TYR:HB2	1.77	0.66
3:D:93:THR:HG22	3:D:94:GLN:H	1.60	0.66
1:A:228:LEU:HB3	1:B:221:ALA:HB1	1.78	0.66
2:C:22:LEU:HG	2:C:603:ILE:HD13	1.77	0.66
4:E:76:GLU:O	4:E:80:LEU:HD23	1.95	0.66
3:D:1363:TYR:HD2	3:D:1365:TYR:H	1.43	0.65
3:D:746:LEU:HD13	3:D:754:ILE:HD11	1.78	0.65
2:C:1132:LEU:HG	2:C:1161:LEU:HD11	1.78	0.65
3:D:937:ILE:HG23	3:D:1135:THR:HG23	1.79	0.65
4:E:37:PRO:CB	4:E:58:LEU:HD23	2.25	0.65
3:D:613:GLY:C	4:E:7:GLN:OE1	2.33	0.65
2:C:230:PHE:HB2	2:C:333:ILE:HB	1.77	0.65
3:D:159:ILE:HD13	3:D:159:ILE:H	1.62	0.65
1:B:166:ARG:HB2	1:B:167:PRO:HD3	1.77	0.65
2:C:27:LEU:HB3	2:C:528:ARG:HD2	1.77	0.65
3:D:56:LEU:HB3	3:D:250:ARG:HH22	1.62	0.65
3:D:948:SER:HB3	3:D:1022:PRO:HG3	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:3:ARG:O	4:E:6:VAL:HG23	1.97	0.65
4:E:62:GLN:HG3	4:E:63:ILE:N	2.12	0.65
1:A:227:GLN:HE22	1:B:12:ARG:HE	1.45	0.65
4:E:39:VAL:HB	4:E:40:PRO:HD3	1.78	0.64
1:A:183:ILE:HG12	1:A:205:MET:HA	1.78	0.64
3:D:1194:ARG:H	3:D:1194:ARG:HD2	1.61	0.64
3:D:948:SER:OG	3:D:1022:PRO:HG3	1.98	0.64
2:C:120:GLN:HG2	2:C:121:GLU:H	1.63	0.64
3:D:1224:ARG:HD3	3:D:1228:ALA:HB2	1.80	0.64
3:D:504:GLN:HG3	3:D:505:ASP:H	1.62	0.64
4:E:81:GLN:O	4:E:84:THR:HG22	1.98	0.64
4:E:13:ILE:HG21	4:E:18:ASP:HB2	1.80	0.64
3:D:290:ILE:HD12	3:D:291:ILE:HG13	1.80	0.64
3:D:905:ARG:NH1	4:E:10:VAL:HG11	2.13	0.64
3:D:1005:LYS:HD2	3:D:1011:VAL:HG12	1.79	0.63
4:E:5:THR:HG21	4:E:55:GLU:CD	2.18	0.63
4:E:13:ILE:CG1	4:E:19:LEU:HG	2.26	0.63
1:A:111:THR:HG23	1:A:113:ALA:H	1.63	0.63
3:D:475:GLU:OE2	4:E:28:ARG:NH2	2.31	0.63
4:E:38:LEU:HD11	4:E:53:GLU:HG3	1.80	0.63
1:B:68:TYR:HB3	3:D:531:LYS:HB2	1.81	0.63
2:C:143:ARG:HH12	2:C:507:GLY:HA2	1.62	0.63
3:D:365:GLN:HG2	3:D:438:GLU:HB3	1.80	0.63
2:C:1287:LEU:HB3	3:D:1357:ILE:HD11	1.81	0.63
2:C:957:LYS:HA	2:C:1029:LEU:HD11	1.80	0.63
3:D:850:LYS:HB2	3:D:851:PRO:HD3	1.79	0.63
1:A:28:LEU:HD23	1:A:201:LEU:HD23	1.81	0.62
3:D:1266:ILE:HG22	3:D:1302:TYR:HB3	1.79	0.62
3:D:905:ARG:HH12	4:E:10:VAL:HG11	1.64	0.62
3:D:479:GLU:HB3	4:E:20:VAL:HG21	1.80	0.62
3:D:978:ARG:HB2	3:D:1199:PHE:HB3	1.81	0.62
3:D:925:GLU:HB3	3:D:926:PRO:HD3	1.81	0.62
4:E:38:LEU:N	4:E:38:LEU:HD12	2.14	0.62
4:E:41:GLU:HG3	4:E:42:GLU:N	2.15	0.62
2:C:42:ASP:HB3	2:C:43:PRO:HD3	1.82	0.62
3:D:1371:ARG:HE	3:D:1376:GLY:HA3	1.65	0.62
3:D:1261:LEU:HD11	3:D:1304:ARG:HD3	1.81	0.62
4:E:37:PRO:HB3	4:E:58:LEU:CD2	2.29	0.62
3:D:1372:ARG:HH21	4:E:84:THR:HG21	1.65	0.62
4:E:12:LYS:C	4:E:13:ILE:HD12	2.20	0.61
2:C:496:LYS:HB3	2:C:497:PRO:HD3	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:10:VAL:CA	4:E:19:LEU:HD21	2.30	0.61
3:D:1314:LEU:HD11	3:D:1327:GLU:HB2	1.82	0.61
3:D:615:LYS:HG3	4:E:7:GLN:H	1.65	0.61
3:D:1370:MET:SD	4:E:61:ASN:HB3	2.40	0.61
3:D:587:LEU:HD12	3:D:588:PRO:HD2	1.83	0.61
2:C:579:ALA:HB1	2:C:587:LEU:HD21	1.82	0.61
3:D:478:LEU:CD1	4:E:24:ALA:HA	2.28	0.61
3:D:960:LEU:HD12	3:D:1007:ASP:HB2	1.82	0.61
3:D:483:LEU:HG	4:E:16:ARG:HD3	1.83	0.61
2:C:635:THR:HB	2:C:637:ARG:HH12	1.65	0.61
3:D:245:LEU:HD22	3:D:246:PRO:HD2	1.83	0.61
3:D:587:LEU:HD11	3:D:616:PRO:HB3	1.82	0.61
2:C:1290:MET:HB3	2:C:1291:LEU:HD22	1.82	0.60
3:D:131:PRO:HB2	3:D:135:ILE:H	1.65	0.60
3:D:482:ALA:CB	4:E:3:ARG:HH12	2.14	0.60
4:E:3:ARG:HH21	4:E:51:LEU:HD22	1.66	0.60
3:D:1160:SER:HB2	3:D:1206:ARG:HB3	1.83	0.60
3:D:74:LYS:HE2	3:D:87:LYS:HD3	1.82	0.60
1:A:107:ILE:HD12	2:C:773:LEU:HD13	1.84	0.60
2:C:630:VAL:HG13	2:C:631:GLU:H	1.66	0.60
2:C:1067:ALA:HB2	2:C:1073:LYS:HA	1.83	0.60
3:D:1371:ARG:NE	3:D:1376:GLY:HA3	2.16	0.60
1:B:71:LYS:HE2	1:B:71:LYS:HA	1.84	0.60
2:C:1246:ARG:HH21	2:C:1258:PRO:HB3	1.67	0.60
4:E:8:ASP:O	4:E:12:LYS:HG2	2.02	0.60
2:C:185:ASP:HB2	2:C:197:ARG:HB2	1.83	0.59
4:E:13:ILE:HD12	4:E:13:ILE:N	2.16	0.59
4:E:44:ASP:HB3	4:E:48:VAL:HG21	1.84	0.59
2:C:241:LEU:HD22	2:C:285:ILE:HD13	1.83	0.59
3:D:1373:ARG:CB	4:E:58:LEU:HD11	2.32	0.59
3:D:515:ARG:HA	3:D:515:ARG:HE	1.65	0.59
4:E:38:LEU:CD1	4:E:53:GLU:HG3	2.32	0.59
1:A:64:VAL:HG23	1:A:71:LYS:HD3	1.84	0.59
2:C:1155:VAL:HG12	2:C:1157:GLN:H	1.67	0.59
1:A:83:LEU:HD13	2:C:826:ASP:HB2	1.82	0.59
2:C:560:PRO:HB2	3:D:776:THR:HG21	1.85	0.59
3:D:1370:MET:HB3	4:E:59:ILE:HD11	1.84	0.59
1:B:44:ARG:HA	1:B:183:ILE:HD12	1.84	0.59
4:E:86:ILE:HG23	4:E:87:ALA:N	2.17	0.59
3:D:1376:GLY:O	3:D:1379:PRO:HD2	2.03	0.59
2:C:862:LEU:HD23	2:C:865:LEU:HD12	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:694:SER:HB2	3:D:738:ARG:HG3	1.86	0.58
3:D:431:ARG:HB3	3:D:921:GLN:HE22	1.67	0.58
4:E:49:ILE:N	4:E:49:ILE:HD13	2.18	0.58
1:B:155:ALA:HB1	1:B:172:LEU:HB2	1.84	0.58
2:C:1276:TRP:HE1	3:D:1348:LYS:HE3	1.67	0.58
1:A:158:ARG:HH21	1:A:172:LEU:HD11	1.68	0.58
4:E:19:LEU:HD12	4:E:19:LEU:H	1.68	0.58
3:D:478:LEU:HD11	4:E:27:ALA:HB2	1.84	0.58
2:C:176:ILE:HD12	2:C:184:LEU:HD23	1.85	0.58
3:D:363:LEU:H	3:D:363:LEU:HD12	1.69	0.58
3:D:384:LYS:HD2	3:D:387:LEU:HD12	1.86	0.58
2:C:225:PHE:HE2	2:C:347:ILE:HB	1.69	0.58
2:C:79:VAL:HG12	2:C:80:PHE:CD1	2.39	0.58
3:D:1371:ARG:HH21	3:D:1376:GLY:HA3	1.68	0.58
3:D:430:HIS:HA	3:D:921:GLN:HB2	1.86	0.58
2:C:1339:LEU:H	2:C:1339:LEU:HD23	1.68	0.58
2:C:322:LEU:HD23	2:C:325:LEU:HD12	1.85	0.58
2:C:131:THR:HG22	2:C:132:ASP:H	1.69	0.58
2:C:406:ASN:HD22	2:C:414:ILE:HA	1.69	0.58
1:A:118:ASP:HB3	1:A:121:VAL:HB	1.86	0.57
1:A:2:GLN:H	1:A:2:GLN:NE2	2.02	0.57
3:D:803:VAL:HG21	3:D:1309:ILE:HB	1.86	0.57
4:E:63:ILE:HG23	4:E:64:LEU:N	2.18	0.57
3:D:1274:PHE:CD2	3:D:1275:LEU:HG	2.39	0.57
3:D:504:GLN:HA	3:D:730:ALA:HA	1.86	0.57
3:D:110:PRO:HG2	3:D:186:GLN:HE22	1.69	0.57
4:E:15:ASN:HB3	4:E:18:ASP:OD2	2.04	0.57
2:C:705:GLU:HB2	2:C:794:LEU:H	1.68	0.57
3:D:1169:THR:HG22	3:D:1171:GLY:H	1.70	0.57
3:D:201:LEU:HD12	3:D:221:ILE:HD12	1.86	0.57
1:A:35:PHE:HE2	1:B:227:GLN:HG3	1.69	0.57
2:C:1120:ALA:O	2:C:1124:ILE:HG13	2.05	0.57
3:D:1261:LEU:HD21	3:D:1304:ARG:NH1	2.20	0.57
3:D:128:LEU:HD22	3:D:130:MET:HG3	1.86	0.57
3:D:1371:ARG:NH2	3:D:1376:GLY:HA3	2.19	0.57
2:C:1123:GLY:HA3	2:C:1202:GLY:HA3	1.85	0.57
3:D:1363:TYR:HD2	3:D:1365:TYR:CB	2.18	0.57
4:E:12:LYS:CB	4:E:13:ILE:HD12	2.35	0.57
2:C:1282:GLY:HA2	4:E:17:PHE:HE2	1.67	0.57
4:E:49:ILE:H	4:E:49:ILE:HD13	1.69	0.57
3:D:1297:LYS:H	3:D:1297:LYS:HD3	1.70	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1122:LYS:HE3	2:C:1203:ASP:HB2	1.86	0.56
2:C:363:LEU:HD13	2:C:382:GLU:HG2	1.87	0.56
3:D:145:VAL:HA	3:D:180:MET:HB3	1.87	0.56
2:C:979:LEU:HD21	2:C:1000:LEU:HD23	1.86	0.56
3:D:974:VAL:HG22	3:D:1002:VAL:HG22	1.85	0.56
2:C:1223:ARG:HB2	2:C:1223:ARG:HH11	1.70	0.56
2:C:406:ASN:HB3	2:C:411:ARG:HB2	1.88	0.56
2:C:890:LYS:HG2	2:C:914:LYS:HD3	1.87	0.56
3:D:222:LYS:HB2	3:D:222:LYS:NZ	2.20	0.56
2:C:813:GLU:HB2	3:D:461:PHE:HD1	1.71	0.56
2:C:1047:LEU:O	2:C:1048:LYS:HG2	2.05	0.56
3:D:614:LEU:CA	4:E:7:GLN:OE1	2.51	0.56
1:A:44:ARG:HH22	2:C:1093:PRO:HG3	1.71	0.56
3:D:1347:LEU:HD21	3:D:1359:ALA:HB2	1.88	0.56
3:D:64:PRO:HG2	3:D:92:VAL:HA	1.87	0.56
2:C:102:LEU:HD21	2:C:488:MET:HG3	1.87	0.56
2:C:561:ILE:HD11	2:C:680:LEU:HB2	1.87	0.56
3:D:1371:ARG:HE	3:D:1376:GLY:CA	2.18	0.56
3:D:420:PRO:HG2	3:D:481:ARG:HG2	1.88	0.56
3:D:547:ARG:HH11	3:D:547:ARG:HA	1.71	0.56
2:C:68:LEU:HD13	2:C:102:LEU:HD23	1.87	0.55
1:A:207:THR:HG22	1:A:209:GLY:H	1.71	0.55
2:C:1124:ILE:HG23	2:C:1198:LEU:HD13	1.88	0.55
2:C:41:GLN:HG3	2:C:75:LEU:HB3	1.88	0.55
2:C:120:GLN:H	2:C:120:GLN:NE2	2.04	0.55
1:B:118:ASP:HB3	1:B:121:VAL:HB	1.88	0.55
2:C:101:ARG:HG2	2:C:118:LYS:HG3	1.89	0.55
2:C:1204:LEU:H	2:C:1205:PRO:CD	2.20	0.55
2:C:550:VAL:HG11	2:C:560:PRO:HB3	1.89	0.55
3:D:121:PRO:HB2	3:D:123:ARG:HH12	1.70	0.55
1:A:221:ALA:HB1	1:B:228:LEU:HB3	1.88	0.55
2:C:1128:ILE:HA	2:C:1132:LEU:HD13	1.89	0.55
3:D:614:LEU:N	4:E:7:GLN:HG3	2.16	0.55
1:B:47:LEU:HB3	1:B:180:VAL:HG21	1.89	0.55
2:C:1002:LEU:HD23	2:C:1003:THR:N	2.21	0.55
2:C:552:PRO:HA	3:D:773:PHE:CE1	2.41	0.55
2:C:836:LEU:HB3	2:C:918:LEU:HD21	1.88	0.55
3:D:1090:ILE:HG13	3:D:1162:ILE:HD12	1.89	0.55
4:E:36:ASP:HB2	4:E:37:PRO:HD2	1.88	0.55
4:E:54:ILE:N	4:E:54:ILE:HD12	2.22	0.55
3:D:807:LEU:HD21	3:D:1259:GLN:HE21	1.71	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1109:ILE:HD12	2:C:1112:ILE:HD12	1.89	0.54
2:C:1276:TRP:CZ2	3:D:801:VAL:HG21	2.43	0.54
3:D:1381:ALA:HB3	3:D:1382:PRO:CD	2.37	0.54
2:C:179:TYR:CD2	2:C:180:ARG:HG3	2.42	0.54
3:D:759:ILE:H	3:D:759:ILE:HD13	1.72	0.54
1:A:192:VAL:HG13	1:A:194:GLN:H	1.73	0.54
1:A:5:VAL:HG22	1:A:9:LEU:HD22	1.89	0.54
2:C:1203:ASP:HB3	2:C:1204:LEU:HB2	1.89	0.54
2:C:810:TYR:HB2	2:C:817:LEU:HD11	1.89	0.54
3:D:739:GLN:HB3	3:D:763:PHE:HE2	1.72	0.54
2:C:68:LEU:HD11	2:C:100:LEU:HB3	1.88	0.54
2:C:257:ALA:HB3	2:C:262:TYR:HE2	1.72	0.54
3:D:485:MET:HG2	3:D:487:THR:HG22	1.89	0.54
1:A:65:LEU:HD22	1:A:65:LEU:H	1.70	0.54
4:E:59:ILE:HG13	4:E:60:ASN:N	2.22	0.54
1:A:165:GLU:O	1:A:166:ARG:HB2	2.08	0.54
2:C:698:PRO:HG3	2:C:1231:TYR:CZ	2.43	0.54
3:D:857:LEU:HG	3:D:858:VAL:H	1.72	0.54
3:D:905:ARG:HG3	4:E:16:ARG:HH21	1.73	0.54
3:D:614:LEU:CB	4:E:7:GLN:HG2	2.37	0.54
2:C:1269:ARG:HB3	3:D:344:GLY:HA3	1.90	0.53
1:A:166:ARG:CB	1:A:167:PRO:HD3	2.31	0.53
4:E:5:THR:HG21	4:E:55:GLU:CG	2.39	0.53
3:D:370:LYS:HG2	3:D:441:LEU:HB3	1.90	0.53
3:D:903:LEU:HD22	3:D:910:ASN:H	1.73	0.53
4:E:5:THR:HG23	4:E:5:THR:O	2.08	0.53
2:C:724:VAL:HG21	2:C:771:VAL:HG11	1.89	0.53
3:D:1263:LYS:HD3	3:D:1307:LEU:HD13	1.90	0.53
3:D:1381:ALA:HB3	3:D:1382:PRO:HD3	1.89	0.53
3:D:767:LEU:HD12	3:D:772:TYR:HB2	1.90	0.53
2:C:183:TRP:H	2:C:199:ASP:HA	1.72	0.53
2:C:575:LEU:HD13	2:C:576:SER:N	2.23	0.53
3:D:1263:LYS:NZ	3:D:1263:LYS:HB3	2.23	0.53
3:D:1279:GLN:HE22	3:D:1317:GLU:HB2	1.73	0.53
3:D:1360:GLY:O	3:D:1366:HIS:CD2	2.61	0.53
3:D:615:LYS:HZ2	4:E:5:THR:HB	1.71	0.53
3:D:1380:ALA:HA	3:D:1383:GLN:HG2	1.90	0.53
3:D:377:PHE:O	3:D:381:ILE:HG13	2.08	0.53
2:C:1313:HIS:CE1	4:E:28:ARG:NH1	2.76	0.53
4:E:46:THR:HG22	4:E:47:THR:N	2.22	0.53
1:B:60:GLU:HB3	1:B:170:ARG:HD2	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1256:GLN:HB3	2:C:1301:ARG:HH22	1.74	0.53
3:D:1140:ARG:HH12	3:D:1214:PRO:HG3	1.74	0.53
3:D:275:ARG:HH11	3:D:298:MET:HB3	1.74	0.53
4:E:56:GLU:HG2	4:E:57:GLY:N	2.23	0.53
2:C:49:LEU:HB3	2:C:53:PHE:CZ	2.44	0.53
3:D:110:PRO:HB3	3:D:240:THR:HA	1.91	0.53
3:D:1317:GLU:HG3	3:D:1340:LYS:HD3	1.91	0.53
2:C:148:GLN:HB3	2:C:454:ARG:HD3	1.91	0.52
3:D:217:LEU:HA	3:D:220:ARG:HG2	1.90	0.52
3:D:432:LEU:HD22	3:D:435:GLN:HE21	1.73	0.52
2:C:681:MET:O	2:C:685:MET:HG2	2.10	0.52
2:C:518:ASN:HD21	2:C:688:GLN:HA	1.73	0.52
3:D:1371:ARG:HB3	4:E:60:ASN:HB3	1.91	0.52
3:D:108:ALA:HB1	3:D:283:LEU:HD11	1.91	0.52
3:D:369:PRO:HD3	3:D:447:ILE:HG22	1.92	0.52
2:C:338:THR:HB	2:C:345:PRO:HG3	1.91	0.52
2:C:591:TYR:HB2	2:C:606:LEU:HD23	1.91	0.52
2:C:896:THR:O	2:C:900:LYS:HG3	2.10	0.52
3:D:113:HIS:CD2	3:D:307:LEU:HD22	2.44	0.52
3:D:527:LEU:HD23	3:D:534:GLU:HA	1.91	0.52
4:E:13:ILE:HD13	4:E:19:LEU:CD2	2.39	0.52
3:D:482:ALA:CB	4:E:3:ARG:NH1	2.72	0.52
1:B:68:TYR:CE1	3:D:535:ARG:HB2	2.45	0.52
2:C:1101:LEU:HD21	3:D:508:LEU:HD22	1.90	0.52
2:C:74:ARG:HE	2:C:99:LYS:HE3	1.74	0.52
3:D:516:ASP:HA	3:D:572:THR:HG21	1.90	0.52
3:D:690:ASN:HB2	3:D:738:ARG:HD3	1.92	0.52
4:E:46:THR:CG2	4:E:47:THR:H	2.19	0.52
3:D:703:THR:HG23	3:D:704:GLU:HG2	1.91	0.52
3:D:825:VAL:HG13	3:D:826:ILE:HG13	1.92	0.52
1:A:161:SER:HB2	1:A:164:ASP:HB2	1.91	0.52
2:C:689:ALA:HB2	2:C:1233:LEU:HD21	1.90	0.52
2:C:151:ARG:HE	2:C:177:ILE:HD12	1.75	0.52
2:C:589:THR:HG23	2:C:591:TYR:CE2	2.44	0.52
2:C:732:ILE:HG13	2:C:753:LEU:HD21	1.91	0.52
3:D:534:GLU:O	3:D:538:ARG:HB2	2.10	0.52
3:D:762:ASN:HD22	3:D:762:ASN:H	1.57	0.52
3:D:937:ILE:HD12	3:D:1151:LYS:H	1.76	0.51
3:D:960:LEU:HB3	3:D:963:VAL:HG11	1.92	0.51
2:C:40:GLU:HB3	2:C:43:PRO:HB2	1.92	0.51
3:D:1348:LYS:NZ	3:D:1348:LYS:HB2	2.25	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:733:SER:HB3	3:D:736:GLN:HG2	1.90	0.51
4:E:39:VAL:HB	4:E:40:PRO:CD	2.40	0.51
2:C:53:PHE:CD1	2:C:57:PHE:HE2	2.28	0.51
3:D:381:ILE:O	3:D:385:LEU:HG	2.11	0.51
3:D:393:THR:HG23	3:D:396:ALA:H	1.76	0.51
2:C:149:LEU:HD21	2:C:451:ARG:HB3	1.91	0.51
3:D:515:ARG:HA	3:D:515:ARG:NE	2.26	0.51
1:B:32:GLU:HB2	1:B:35:PHE:CD1	2.45	0.51
2:C:31:GLN:HE22	2:C:456:VAL:HG21	1.75	0.51
1:A:66:HIS:HB3	2:C:874:GLY:HA2	1.93	0.51
1:A:65:LEU:HD23	2:C:874:GLY:HA3	1.92	0.51
3:D:1191:PRO:HD2	3:D:1194:ARG:HD3	1.91	0.51
2:C:237:LEU:HD13	2:C:292:ILE:HD12	1.93	0.51
2:C:79:VAL:HG21	2:C:93:SER:H	1.76	0.51
3:D:1369:ARG:NE	4:E:74:GLU:HB3	2.25	0.51
3:D:140:TYR:HA	3:D:181:GLY:HA2	1.91	0.51
3:D:647:PRO:HG3	3:D:697:MET:HB2	1.92	0.51
2:C:488:MET:HB2	2:C:489:PRO:HD3	1.93	0.51
2:C:1127:LYS:HE2	2:C:1149:TYR:CD1	2.46	0.51
2:C:840:SER:HB2	2:C:848:GLU:HB2	1.93	0.51
3:D:380:PHE:HB3	3:D:415:VAL:HG11	1.93	0.51
3:D:521:LYS:HB3	3:D:521:LYS:NZ	2.26	0.51
2:C:1065:LYS:HB3	2:C:1075:VAL:HG22	1.93	0.51
3:D:1165:PHE:HD1	3:D:1200:GLU:HG2	1.76	0.51
3:D:1190:ILE:HG21	3:D:1196:LEU:HD11	1.93	0.51
2:C:177:ILE:HG12	2:C:183:TRP:CZ3	2.46	0.51
3:D:1145:PHE:HB3	3:D:1309:ILE:HD13	1.93	0.51
2:C:50:GLU:HB2	2:C:73:TYR:HE1	1.76	0.50
3:D:425:ARG:CG	3:D:427:PRO:HD2	2.35	0.50
2:C:236:LYS:HE3	2:C:238:GLN:HE21	1.75	0.50
1:A:47:LEU:HD23	1:A:51:MET:HG3	1.93	0.50
1:B:69:SER:H	1:B:78:ILE:HD11	1.77	0.50
2:C:1185:PRO:HD2	2:C:1189:GLY:HA3	1.93	0.50
3:D:614:LEU:HD12	4:E:6:VAL:HB	1.92	0.50
3:D:615:LYS:HB2	3:D:616:PRO:HD3	1.93	0.50
1:A:234:LEU:CD1	1:A:234:LEU:H	2.21	0.50
2:C:1204:LEU:H	2:C:1205:PRO:HD2	1.77	0.50
2:C:694:ARG:HB2	2:C:798:GLN:NE2	2.27	0.50
3:D:1344:LEU:HD12	3:D:1355:ARG:HH11	1.76	0.50
3:D:1372:ARG:NH2	4:E:84:THR:HG21	2.25	0.50
2:C:451:ARG:HH21	2:C:554:HIS:CE1	2.30	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:718:ALA:HB2	2:C:783:LEU:HD21	1.93	0.50
3:D:1366:HIS:O	4:E:21:LEU:HD22	2.11	0.50
3:D:1373:ARG:HG3	3:D:1374:ALA:N	2.27	0.50
2:C:520:PRO:HG3	2:C:787:PRO:HG2	1.93	0.50
3:D:1193:TRP:HB2	3:D:1194:ARG:HH11	1.77	0.50
3:D:516:ASP:OD2	3:D:551:ARG:HG2	2.12	0.50
3:D:680:ASN:C	3:D:680:ASN:HD22	2.15	0.50
2:C:972:PHE:HB3	2:C:994:ARG:HH21	1.77	0.50
3:D:332:LYS:HB2	3:D:332:LYS:NZ	2.27	0.50
2:C:1100:PRO:HB3	3:D:639:VAL:HG12	1.93	0.50
3:D:682:VAL:O	3:D:686:TRP:HD1	1.95	0.50
2:C:478:ARG:HA	2:C:481:LEU:HD23	1.93	0.50
2:C:572:ILE:HD12	2:C:572:ILE:N	2.27	0.50
3:D:296:LYS:NZ	3:D:296:LYS:HB2	2.27	0.50
3:D:481:ARG:HB3	4:E:3:ARG:HD2	1.94	0.50
1:B:83:LEU:HD12	1:B:86:LYS:HD2	1.94	0.50
2:C:551:HIS:CG	2:C:552:PRO:HD2	2.46	0.50
2:C:557:ARG:HA	2:C:579:ALA:HB2	1.93	0.50
2:C:1336:ASN:HB2	3:D:25:ALA:HB2	1.92	0.50
1:B:56:VAL:HG22	1:B:144:ILE:HD11	1.93	0.49
2:C:1324:ASN:O	2:C:1328:LYS:HG2	2.12	0.49
2:C:297:VAL:HB	2:C:317:LEU:HD21	1.93	0.49
2:C:31:GLN:NE2	2:C:456:VAL:HG21	2.26	0.49
3:D:1156:LEU:HD23	3:D:1223:LEU:HD11	1.93	0.49
3:D:521:LYS:HE3	3:D:551:ARG:NH2	2.27	0.49
2:C:680:LEU:HD13	3:D:783:LEU:HD22	1.94	0.49
2:C:821:ARG:HB2	2:C:1082:ILE:HD11	1.93	0.49
2:C:827:ARG:HG3	2:C:828:PHE:CD2	2.47	0.49
3:D:480:ALA:HA	3:D:484:MET:HB3	1.93	0.49
4:E:13:ILE:HG22	4:E:14:GLY:N	2.27	0.49
1:B:111:THR:HG23	1:B:113:ALA:H	1.76	0.49
2:C:169:LYS:NZ	2:C:169:LYS:HB2	2.27	0.49
3:D:233:LYS:HB3	3:D:235:GLU:OE1	2.13	0.49
3:D:378:LYS:N	3:D:379:PRO:CD	2.76	0.49
3:D:500:ILE:O	3:D:500:ILE:HG12	2.12	0.49
3:D:843:VAL:O	3:D:882:VAL:HG23	2.11	0.49
4:E:12:LYS:HB2	4:E:13:ILE:CD1	2.42	0.49
3:D:485:MET:HE1	4:E:3:ARG:HG3	1.94	0.49
3:D:430:HIS:HD2	3:D:432:LEU:H	1.61	0.49
2:C:1141:LEU:O	2:C:1145:ILE:HG12	2.13	0.49
1:B:173:VAL:HA	3:D:538:ARG:HH22	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:555:TYR:HE2	3:D:560:ASN:HB3	1.77	0.49
1:B:158:ARG:HA	1:B:158:ARG:HE	1.78	0.49
2:C:131:THR:HG22	2:C:132:ASP:N	2.26	0.49
3:D:1304:ARG:HA	3:D:1304:ARG:HE	1.77	0.49
3:D:558:ASP:HB3	3:D:577:ALA:HB1	1.94	0.49
2:C:1195:ILE:O	2:C:1199:LEU:HD13	2.12	0.49
3:D:1221:LEU:HD23	3:D:1229:VAL:HG11	1.94	0.49
2:C:891:GLY:O	2:C:895:LEU:HG	2.12	0.49
2:C:932:GLN:HG3	2:C:934:PHE:CE1	2.48	0.49
3:D:139:LEU:HD12	3:D:140:TYR:N	2.28	0.49
4:E:79:GLU:O	4:E:83:VAL:HG23	2.13	0.49
4:E:84:THR:HG23	4:E:85:ALA:N	2.28	0.49
3:D:1024:THR:HA	3:D:1124:ILE:O	2.12	0.49
2:C:735:LYS:HB3	2:C:735:LYS:NZ	2.27	0.48
3:D:1224:ARG:HH11	3:D:1228:ALA:HB2	1.77	0.48
3:D:864:LEU:O	3:D:867:GLN:HG2	2.13	0.48
1:A:71:LYS:NZ	1:A:71:LYS:HB3	2.28	0.48
2:C:598:VAL:HG13	2:C:627:GLY:HA2	1.94	0.48
3:D:114:ILE:HD13	3:D:311:ARG:HD3	1.96	0.48
3:D:138:VAL:O	3:D:142:GLU:HB2	2.13	0.48
2:C:518:ASN:HD22	2:C:1236:ASN:ND2	2.11	0.48
2:C:404:LYS:NZ	2:C:452:ARG:HE	2.10	0.48
3:D:858:VAL:HB	3:D:859:PRO:HD2	1.95	0.48
1:B:110:VAL:HG13	1:B:130:ILE:HG23	1.95	0.48
2:C:1034:ARG:O	2:C:1038:GLN:HB2	2.13	0.48
2:C:1204:LEU:HB3	2:C:1205:PRO:HD3	1.96	0.48
3:D:1206:ARG:HG3	3:D:1224:ARG:HA	1.95	0.48
3:D:811:GLU:HG3	3:D:896:ALA:H	1.78	0.48
1:A:159:ILE:O	1:A:159:ILE:HG23	2.12	0.48
2:C:519:ASN:HD21	2:C:796:LEU:HD22	1.79	0.48
3:D:325:LYS:HB3	3:D:325:LYS:NZ	2.28	0.48
3:D:385:LEU:HB3	3:D:391:ALA:HB3	1.95	0.48
3:D:881:LYS:N	3:D:881:LYS:HD2	2.28	0.48
3:D:926:PRO:HB3	3:D:1246:VAL:HG11	1.95	0.48
2:C:1103:VAL:HB	2:C:1104:PRO:HD3	1.95	0.48
3:D:1231:ARG:CZ	3:D:1231:ARG:HA	2.43	0.48
3:D:378:LYS:HG3	3:D:379:PRO:HD3	1.95	0.48
4:E:19:LEU:HD12	4:E:19:LEU:N	2.29	0.48
3:D:1142:ALA:O	3:D:1146:GLU:HB2	2.13	0.48
3:D:1210:ILE:HD13	3:D:1210:ILE:O	2.13	0.48
3:D:132:LEU:HD23	3:D:133:ARG:HG3	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:314:ARG:HD2	3:D:323:PRO:HG3	1.95	0.48
3:D:479:GLU:HB3	4:E:20:VAL:CG2	2.44	0.48
3:D:804:ALA:O	3:D:916:GLY:HA3	2.14	0.48
2:C:688:GLN:HB2	2:C:1235:LEU:HD22	1.95	0.48
4:E:4:VAL:C	4:E:5:THR:HG22	2.33	0.48
2:C:1273:MET:HA	2:C:1276:TRP:CE3	2.48	0.48
3:D:184:ALA:O	3:D:188:LEU:HD13	2.14	0.48
1:A:102:LEU:HD12	1:A:142:MET:HG2	1.96	0.48
3:D:1263:LYS:HD2	3:D:1263:LYS:N	2.24	0.48
3:D:131:PRO:HB3	3:D:134:ASP:HB2	1.95	0.48
3:D:1360:GLY:N	3:D:1362:GLY:H	2.10	0.48
3:D:905:ARG:HD3	3:D:907:HIS:NE2	2.29	0.48
4:E:26:ARG:HH21	4:E:37:PRO:CD	2.27	0.48
4:E:63:ILE:CG1	4:E:64:LEU:HD12	2.38	0.48
1:A:86:LYS:HE3	2:C:826:ASP:OD2	2.14	0.47
2:C:1205:PRO:HG3	2:C:1210:ILE:HG13	1.96	0.47
3:D:1344:LEU:HD12	3:D:1355:ARG:NH1	2.28	0.47
3:D:275:ARG:NH1	3:D:298:MET:HB3	2.29	0.47
3:D:370:LYS:HB3	3:D:409:TRP:CZ3	2.49	0.47
3:D:421:VAL:HG22	3:D:439:PRO:HG3	1.95	0.47
1:A:102:LEU:HD23	1:A:115:ILE:HA	1.96	0.47
3:D:926:PRO:HG2	3:D:1248:ILE:HD11	1.96	0.47
1:A:43:LEU:HD13	1:A:217:ILE:HD11	1.96	0.47
3:D:1373:ARG:HB3	4:E:58:LEU:CD1	2.42	0.47
3:D:381:ILE:HG21	3:D:401:VAL:HG21	1.97	0.47
3:D:525:MET:HG2	3:D:537:TYR:CE1	2.49	0.47
2:C:150:HIS:CD2	2:C:454:ARG:HD2	2.49	0.47
2:C:975:ILE:HD11	2:C:997:TRP:HE3	1.78	0.47
3:D:1266:ILE:H	3:D:1266:ILE:HD13	1.79	0.47
3:D:1371:ARG:CZ	3:D:1376:GLY:HA3	2.44	0.47
2:C:333:ILE:N	2:C:333:ILE:HD12	2.30	0.47
2:C:867:GLU:HB2	2:C:947:GLU:OE1	2.13	0.47
3:D:38:VAL:HG13	3:D:55:GLY:HA2	1.96	0.47
4:E:10:VAL:HA	4:E:19:LEU:HD22	1.94	0.47
3:D:1369:ARG:HE	4:E:74:GLU:HB3	1.78	0.47
2:C:1190:ALA:HB1	2:C:1195:ILE:HD11	1.97	0.47
2:C:88:ARG:HA	2:C:932:GLN:HE22	1.80	0.47
3:D:1163:VAL:HG21	3:D:1198:VAL:HG21	1.95	0.47
2:C:1320:PRO:HG2	3:D:1354:GLY:HA3	1.97	0.47
3:D:423:LEU:HD13	3:D:437:PHE:HD2	1.78	0.47
3:D:801:VAL:O	3:D:805:GLN:HB3	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:43:ASN:CG	4:E:44:ASP:H	2.18	0.47
4:E:54:ILE:H	4:E:54:ILE:HD12	1.78	0.47
4:E:63:ILE:HG12	4:E:64:LEU:HD11	1.93	0.47
1:A:224:LEU:HD23	1:B:228:LEU:HD21	1.96	0.47
1:B:123:ILE:HG22	1:B:125:LYS:H	1.80	0.47
2:C:1108:ASN:O	2:C:1111:GLN:HG2	2.15	0.47
2:C:1135:GLN:HB2	2:C:1142:ARG:HA	1.95	0.47
2:C:153:PRO:HB3	2:C:397:LEU:HD22	1.97	0.47
3:D:118:LYS:HG2	3:D:311:ARG:HH21	1.80	0.47
2:C:144:VAL:HB	2:C:526:HIS:CE1	2.50	0.47
2:C:145:ILE:HD12	2:C:145:ILE:N	2.29	0.47
2:C:30:ILE:N	2:C:30:ILE:HD12	2.30	0.47
2:C:551:HIS:CD2	2:C:553:THR:H	2.33	0.47
2:C:559:CYS:SG	2:C:562:GLU:HG2	2.55	0.47
2:C:870:ILE:N	2:C:870:ILE:HD12	2.30	0.47
3:D:598:LYS:HG3	3:D:599:LYS:HD3	1.96	0.47
3:D:848:VAL:HB	3:D:856:ILE:HD11	1.95	0.47
3:D:885:VAL:HG11	3:D:1255:VAL:HG12	1.96	0.47
4:E:64:LEU:N	4:E:64:LEU:HD12	2.29	0.47
2:C:22:LEU:HD13	2:C:23:ASP:O	2.13	0.47
4:E:36:ASP:HB2	4:E:37:PRO:CD	2.45	0.47
1:A:47:LEU:HB3	1:A:180:VAL:HG21	1.97	0.47
1:B:69:SER:N	1:B:78:ILE:HD11	2.30	0.47
3:D:1274:PHE:HD2	3:D:1275:LEU:HG	1.80	0.47
1:B:102:LEU:HD12	1:B:115:ILE:HG12	1.97	0.47
2:C:1216:ARG:HH22	3:D:633:ALA:HB3	1.79	0.47
2:C:161:LYS:HE3	2:C:175:ARG:HH21	1.80	0.47
2:C:810:TYR:CD2	3:D:359:PRO:HG2	2.50	0.47
2:C:99:LYS:HA	2:C:120:GLN:O	2.14	0.47
2:C:552:PRO:HA	3:D:773:PHE:HE1	1.79	0.47
2:C:1182:ILE:HD12	2:C:1183:ALA:N	2.30	0.46
2:C:403:MET:HG2	2:C:407:ARG:HH12	1.80	0.46
2:C:562:GLU:HG3	2:C:662:SER:HB2	1.97	0.46
3:D:1234:VAL:HG11	3:D:1254:GLU:HG2	1.97	0.46
2:C:672:GLU:HB2	3:D:767:LEU:HB3	1.98	0.46
3:D:614:LEU:HB2	4:E:7:GLN:OE1	2.16	0.46
1:B:88:LEU:HB2	1:B:128:HIS:CE1	2.49	0.46
3:D:378:LYS:CG	3:D:379:PRO:HD3	2.44	0.46
3:D:41:PRO:HG2	3:D:274:ASN:ND2	2.29	0.46
3:D:430:HIS:CD2	3:D:432:LEU:H	2.33	0.46
2:C:176:ILE:O	2:C:178:PRO:HD3	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1234:VAL:HG12	3:D:1253:ILE:HG22	1.98	0.46
3:D:1322:ALA:HB3	3:D:1331:VAL:HG11	1.96	0.46
3:D:201:LEU:HD22	3:D:217:LEU:HD23	1.97	0.46
2:C:1128:ILE:O	2:C:1132:LEU:HB2	2.15	0.46
3:D:160:LEU:N	3:D:160:LEU:HD13	2.31	0.46
3:D:30:ILE:HA	3:D:33:TRP:CZ3	2.49	0.46
1:A:74:VAL:HG22	1:A:76:GLU:H	1.80	0.46
2:C:142:GLU:HG3	2:C:517:GLN:OE1	2.15	0.46
2:C:29:SER:HB2	2:C:580:GLN:NE2	2.31	0.46
2:C:453:ILE:HD11	2:C:587:LEU:HD12	1.98	0.46
4:E:53:GLU:O	4:E:56:GLU:HB3	2.15	0.46
3:D:614:LEU:CB	4:E:7:GLN:OE1	2.64	0.46
2:C:932:GLN:CB	2:C:1051:LYS:H	2.28	0.46
2:C:434:ASP:HB3	2:C:439:LYS:HG3	1.98	0.46
2:C:630:VAL:HG13	2:C:631:GLU:N	2.29	0.46
2:C:932:GLN:HG3	2:C:934:PHE:HE1	1.81	0.46
3:D:557:LYS:HG3	3:D:560:ASN:H	1.80	0.46
4:E:31:GLN:HA	4:E:31:GLN:NE2	2.26	0.46
2:C:472:GLU:HG2	2:C:476:LYS:NZ	2.31	0.46
2:C:810:TYR:HB3	2:C:817:LEU:HD21	1.97	0.46
3:D:500:ILE:H	3:D:500:ILE:CD1	2.26	0.46
3:D:51:PRO:HD2	3:D:71:LEU:HD11	1.98	0.46
3:D:759:ILE:N	3:D:759:ILE:HD13	2.31	0.46
4:E:31:GLN:CA	4:E:31:GLN:HE21	2.24	0.46
4:E:68:GLU:HG2	4:E:69:ARG:N	2.31	0.46
1:B:207:THR:HG21	1:B:211:ILE:O	2.16	0.46
2:C:1187:PHE:CD1	3:D:769:VAL:HG12	2.51	0.46
2:C:138:ILE:N	2:C:138:ILE:HD12	2.31	0.46
3:D:1138:LEU:N	3:D:1139:PRO:CD	2.79	0.46
3:D:114:ILE:H	3:D:307:LEU:HD13	1.81	0.46
3:D:148:GLU:HB3	3:D:187:ALA:HB3	1.96	0.46
3:D:623:GLN:O	3:D:627:THR:HG22	2.16	0.46
1:A:2:GLN:HB2	1:A:9:LEU:HD11	1.99	0.45
2:C:151:ARG:HB3	2:C:156:PHE:CZ	2.51	0.45
3:D:77:ARG:NE	3:D:77:ARG:HA	2.31	0.45
3:D:804:ALA:HB1	3:D:807:LEU:HD23	1.98	0.45
1:A:29:GLU:OE1	1:A:200:LYS:HE2	2.16	0.45
1:B:10:LYS:HB3	1:B:10:LYS:NZ	2.31	0.45
1:B:222:THR:O	1:B:226:GLU:HG3	2.16	0.45
2:C:519:ASN:HB3	2:C:522:SER:OG	2.16	0.45
2:C:448:LEU:HD11	2:C:554:HIS:CG	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:121:PRO:HB2	3:D:123:ARG:NH1	2.31	0.45
3:D:1380:ALA:CA	3:D:1383:GLN:HG2	2.46	0.45
4:E:39:VAL:HG12	4:E:40:PRO:N	2.30	0.45
1:A:82:LEU:O	1:A:86:LYS:HG3	2.16	0.45
2:C:528:ARG:NH2	2:C:577:VAL:HA	2.31	0.45
3:D:527:LEU:N	3:D:527:LEU:HD12	2.31	0.45
3:D:77:ARG:HE	3:D:77:ARG:HA	1.81	0.45
1:A:113:ALA:HB2	1:A:126:PRO:HB3	1.99	0.45
2:C:212:ALA:HA	2:C:359:ARG:HG3	1.98	0.45
3:D:1041:ILE:N	3:D:1041:ILE:HD12	2.32	0.45
3:D:113:HIS:O	3:D:117:LEU:HD13	2.15	0.45
3:D:232:ASN:N	3:D:232:ASN:HD22	2.13	0.45
3:D:566:LYS:HB2	3:D:566:LYS:NZ	2.31	0.45
3:D:615:LYS:CE	4:E:5:THR:CA	2.33	0.45
3:D:762:ASN:HD21	3:D:765:GLU:H	1.64	0.45
3:D:823:THR:HB	3:D:880:VAL:HB	1.98	0.45
1:A:130:ILE:N	1:A:130:ILE:HD12	2.32	0.45
1:A:166:ARG:HB2	1:A:167:PRO:CD	2.36	0.45
2:C:478:ARG:NH1	2:C:494:ASN:HB2	2.31	0.45
2:C:518:ASN:O	2:C:691:PRO:HD3	2.17	0.45
3:D:1025:MET:HB2	3:D:1124:ILE:HD12	1.99	0.45
3:D:113:HIS:HB3	3:D:116:PHE:HD2	1.81	0.45
3:D:1238:GLN:NE2	3:D:1242:ARG:HH21	2.15	0.45
3:D:1371:ARG:HD2	4:E:65:ASP:OD2	2.16	0.45
1:B:46:ILE:HG23	1:B:50:SER:HB2	1.98	0.45
2:C:68:LEU:HA	2:C:102:LEU:HB3	1.98	0.45
2:C:233:ARG:O	2:C:236:LYS:HG2	2.16	0.45
2:C:551:HIS:HD2	2:C:553:THR:H	1.65	0.45
3:D:1253:ILE:O	3:D:1257:VAL:HG23	2.16	0.45
3:D:94:GLN:O	3:D:97:VAL:HG22	2.16	0.45
2:C:1121:ALA:O	2:C:1126:ASP:HB3	2.17	0.45
2:C:138:ILE:HG12	2:C:506:PHE:HB3	1.99	0.45
2:C:827:ARG:HG3	2:C:828:PHE:HD2	1.82	0.45
2:C:1325:VAL:HG22	3:D:249:LEU:HD11	1.99	0.45
3:D:339:ARG:O	3:D:343:LEU:HB2	2.17	0.45
3:D:850:LYS:H	3:D:851:PRO:CD	2.30	0.45
3:D:87:LYS:N	3:D:87:LYS:HD2	2.32	0.45
1:A:56:VAL:HG11	1:A:86:LYS:HA	1.99	0.45
2:C:1103:VAL:H	2:C:1104:PRO:CD	2.30	0.45
2:C:245:ARG:HB3	2:C:337:PHE:CZ	2.52	0.45
3:D:227:PHE:CZ	3:D:1337:VAL:HB	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:565:ALA:HB2	3:D:574:VAL:HG21	1.99	0.45
1:A:83:LEU:HD22	2:C:693:LEU:HD13	1.99	0.44
3:D:1348:LYS:HZ2	3:D:1348:LYS:HB2	1.81	0.44
3:D:135:ILE:HG13	3:D:139:LEU:HD23	1.99	0.44
1:B:191:ARG:HH21	3:D:417:ARG:HD3	1.82	0.44
4:E:47:THR:C	4:E:48:VAL:HG13	2.37	0.44
2:C:188:PHE:CE1	2:C:194:LEU:HB2	2.52	0.44
2:C:673:HIS:HB3	2:C:1109:ILE:HG23	1.98	0.44
2:C:705:GLU:H	2:C:705:GLU:CD	2.20	0.44
1:A:152:TYR:CZ	2:C:823:VAL:HG22	2.53	0.44
2:C:932:GLN:HB3	2:C:1051:LYS:H	1.82	0.44
3:D:644:MET:HE3	3:D:644:MET:HA	2.00	0.44
3:D:69:GLU:HG2	3:D:76:LYS:HB3	1.99	0.44
3:D:71:LEU:HD22	3:D:71:LEU:H	1.82	0.44
3:D:983:LYS:HD3	3:D:991:THR:HG23	1.98	0.44
1:A:165:GLU:O	1:A:166:ARG:CB	2.65	0.44
1:A:58:GLU:H	1:A:145:LYS:HB3	1.83	0.44
2:C:1327:LEU:HG	2:C:1337:ILE:HG23	2.00	0.44
2:C:517:GLN:HA	2:C:523:GLU:HG2	2.00	0.44
2:C:400:VAL:HG22	2:C:584:TYR:HD1	1.83	0.44
3:D:1263:LYS:HB3	3:D:1263:LYS:HZ2	1.82	0.44
3:D:1373:ARG:NH1	4:E:58:LEU:HD22	2.32	0.44
3:D:525:MET:HG2	3:D:537:TYR:CD1	2.52	0.44
4:E:9:ALA:O	4:E:19:LEU:HD21	2.17	0.44
2:C:1304:MET:HG3	3:D:472:LEU:HD13	1.99	0.44
3:D:799:ARG:NE	3:D:799:ARG:HA	2.32	0.44
4:E:7:GLN:HE21	4:E:7:GLN:HB3	1.44	0.44
1:A:61:ILE:HD12	1:A:61:ILE:N	2.33	0.44
2:C:1128:ILE:HG23	2:C:1132:LEU:HD22	2.00	0.44
2:C:1135:GLN:HB3	2:C:1145:ILE:HG13	1.99	0.44
2:C:1270:PHE:CE1	2:C:1290:MET:HE2	2.53	0.44
2:C:155:VAL:HG11	2:C:428:VAL:HG21	2.00	0.44
2:C:464:PHE:O	2:C:468:LEU:HG	2.17	0.44
2:C:496:LYS:H	2:C:497:PRO:CD	2.30	0.44
2:C:549:ASP:OD2	3:D:750:PRO:HB3	2.16	0.44
2:C:577:VAL:HG11	2:C:658:GLN:OE1	2.18	0.44
2:C:588:GLU:HG2	2:C:607:SER:HA	2.00	0.44
3:D:1297:LYS:N	3:D:1297:LYS:HD3	2.30	0.44
3:D:950:ILE:HB	3:D:1018:ALA:HB3	2.00	0.44
2:C:446:ASP:HB3	2:C:551:HIS:HB2	2.00	0.44
3:D:583:VAL:N	3:D:584:PRO:HD2	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:815:GLY:HA2	3:D:883:ARG:NH1	2.32	0.44
3:D:894:VAL:HG22	3:D:1258:ARG:HH22	1.82	0.44
4:E:67:ARG:HG3	4:E:68:GLU:N	2.32	0.44
2:C:463:GLN:HG3	2:C:505:PHE:CG	2.52	0.44
2:C:557:ARG:HB3	2:C:587:LEU:HD13	2.00	0.44
3:D:1095:MET:HE2	3:D:1162:ILE:H	1.83	0.44
1:A:83:LEU:HD12	1:A:86:LYS:HD2	2.00	0.44
2:C:1325:VAL:O	2:C:1329:GLU:HG3	2.18	0.44
2:C:636:CYS:HB2	2:C:645:PHE:HD1	1.83	0.44
2:C:87:ILE:HG12	2:C:88:ARG:NH2	2.33	0.44
2:C:1073:LYS:HE2	3:D:462:ASP:O	2.17	0.44
3:D:485:MET:HB3	3:D:488:ASN:ND2	2.33	0.44
1:A:192:VAL:HG22	1:A:193:GLU:N	2.33	0.44
1:B:215:GLU:HA	1:B:218:ARG:HG2	2.00	0.44
2:C:1106:ARG:N	2:C:1106:ARG:HD2	2.33	0.44
2:C:1328:LYS:HG3	3:D:246:PRO:HG2	2.00	0.44
2:C:819:SER:O	2:C:822:VAL:HG12	2.18	0.44
3:D:1095:MET:HE2	3:D:1161:GLY:HA3	2.00	0.44
3:D:168:ALA:H	3:D:176:PHE:HZ	1.64	0.44
3:D:416:ILE:HG21	3:D:439:PRO:HB2	1.99	0.44
3:D:479:GLU:HA	4:E:20:VAL:CG2	2.48	0.44
1:A:110:VAL:HG21	1:A:140:ILE:HD11	2.00	0.43
1:A:168:ILE:HD13	1:A:168:ILE:N	2.32	0.43
3:D:1203:ARG:HB3	3:D:1203:ARG:NH1	2.33	0.43
3:D:1220:ILE:O	3:D:1220:ILE:HD13	2.17	0.43
4:E:15:ASN:O	4:E:19:LEU:HD12	2.18	0.43
1:A:168:ILE:H	1:A:168:ILE:HD13	1.83	0.43
1:A:60:GLU:HB3	1:A:143:ARG:HB2	2.00	0.43
2:C:1203:ASP:HA	2:C:1204:LEU:HA	1.59	0.43
2:C:218:GLU:HG2	2:C:299:LYS:HA	2.01	0.43
2:C:517:GLN:HE21	2:C:759:SER:HB3	1.82	0.43
3:D:288:PRO:O	3:D:292:VAL:HG22	2.17	0.43
1:B:30:PRO:C	1:B:31:LEU:HD22	2.39	0.43
2:C:788:SER:HB3	2:C:795:ALA:O	2.18	0.43
3:D:1290:ARG:O	3:D:1297:LYS:HA	2.18	0.43
3:D:1379:PRO:CD	3:D:1380:ALA:H	2.31	0.43
3:D:334:LYS:C	3:D:334:LYS:HD3	2.39	0.43
3:D:845:ALA:HB3	3:D:881:LYS:HB3	2.00	0.43
4:E:13:ILE:CG2	4:E:14:GLY:N	2.81	0.43
1:A:171:LEU:HD13	1:A:171:LEU:N	2.34	0.43
2:C:1309:VAL:HG12	3:D:382:TYR:HB2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:87:ILE:HG23	2:C:88:ARG:HG2	1.99	0.43
2:C:939:VAL:HG12	2:C:939:VAL:O	2.18	0.43
1:B:29:GLU:HB2	1:B:30:PRO:HA	2.01	0.43
2:C:488:MET:H	2:C:489:PRO:CD	2.31	0.43
3:D:1184:ASP:HB2	3:D:1185:PRO:HD3	2.01	0.43
3:D:901:ARG:H	3:D:1251:LYS:NZ	2.17	0.43
3:D:136:GLU:O	3:D:140:TYR:HD1	2.00	0.43
3:D:190:LYS:HG2	3:D:235:GLU:HG2	1.99	0.43
3:D:430:HIS:NE2	3:D:432:LEU:HB2	2.33	0.43
2:C:1274:GLU:HB3	3:D:434:ILE:HD11	1.99	0.43
1:B:47:LEU:HD21	1:B:220:ALA:HB2	2.01	0.43
3:D:137:ARG:HB3	3:D:312:ARG:HH22	1.83	0.43
3:D:506:VAL:HG23	3:D:628:GLY:HA3	1.99	0.43
3:D:68:TYR:HA	3:D:92:VAL:HG21	1.99	0.43
3:D:978:ARG:HG2	3:D:979:ASN:H	1.83	0.43
4:E:63:ILE:HG23	4:E:64:LEU:CD1	2.47	0.43
1:A:192:VAL:HG22	1:A:193:GLU:H	1.84	0.43
1:B:12:ARG:HD2	1:B:12:ARG:N	2.34	0.43
2:C:806:PRO:HD3	2:C:1100:PRO:HG2	2.01	0.43
2:C:1125:GLY:HA3	2:C:1182:ILE:HG22	2.01	0.43
2:C:1280:ALA:HB1	3:D:918:ILE:HG22	2.01	0.43
2:C:155:VAL:HG11	2:C:428:VAL:HG11	2.01	0.43
2:C:489:PRO:HB2	2:C:490:GLN:H	1.57	0.43
2:C:753:LEU:N	2:C:753:LEU:HD22	2.34	0.43
3:D:296:LYS:HD3	3:D:296:LYS:H	1.84	0.43
3:D:406:ALA:HA	3:D:409:TRP:CD1	2.54	0.43
3:D:473:THR:HG23	3:D:476:ALA:H	1.84	0.43
3:D:501:VAL:HG23	3:D:502:PRO:HD2	2.00	0.43
1:B:68:TYR:HE1	3:D:535:ARG:HB2	1.82	0.43
3:D:66:LYS:HG2	3:D:67:ASP:H	1.82	0.43
4:E:4:VAL:HG13	4:E:5:THR:HG22	1.99	0.43
1:A:133:LEU:HD11	1:A:140:ILE:HD13	2.01	0.43
1:A:77:ASP:O	1:A:81:ILE:HG13	2.19	0.43
2:C:1065:LYS:HG2	2:C:1235:LEU:HB2	2.00	0.43
2:C:1329:GLU:HG2	3:D:327:LEU:HD22	2.00	0.43
2:C:949:GLU:O	2:C:953:LEU:HD23	2.19	0.43
3:D:875:ASN:N	3:D:875:ASN:HD22	2.16	0.43
3:D:1075:ARG:NH1	3:D:1184:ASP:HB3	2.34	0.43
3:D:1163:VAL:HG23	3:D:1175:LEU:HD11	2.01	0.43
1:A:60:GLU:HB2	1:A:170:ARG:NE	2.34	0.43
1:B:158:ARG:NE	1:B:158:ARG:HA	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:73:GLY:HA3	1:B:138:ALA:HA	2.00	0.43
2:C:1080:ASN:HA	2:C:1081:PRO:HD3	1.93	0.43
4:E:37:PRO:HG2	4:E:53:GLU:OE2	2.19	0.43
2:C:820:GLU:HB2	2:C:1081:PRO:HA	2.00	0.42
2:C:540:ARG:N	2:C:540:ARG:HD2	2.34	0.42
3:D:1328:THR:O	3:D:1332:LEU:HD23	2.19	0.42
3:D:222:LYS:CD	3:D:223:LEU:HG	2.46	0.42
3:D:245:LEU:HB3	3:D:250:ARG:HE	1.83	0.42
3:D:373:ALA:HA	3:D:377:PHE:HD2	1.84	0.42
3:D:490:ILE:HA	3:D:500:ILE:HD11	2.00	0.42
3:D:510:LEU:HD21	3:D:627:THR:HG23	2.01	0.42
3:D:667:GLN:HG2	3:D:672:LEU:HD22	2.00	0.42
1:B:74:VAL:HG11	1:B:81:ILE:HD11	2.01	0.42
3:D:587:LEU:HD22	3:D:620:PHE:HB2	2.01	0.42
3:D:99:ARG:HH21	3:D:248:ASP:HB3	1.85	0.42
2:C:448:LEU:HD13	2:C:553:THR:HG22	2.02	0.42
3:D:1370:MET:CE	4:E:22:VAL:CG1	2.95	0.42
3:D:1376:GLY:C	3:D:1379:PRO:HD2	2.40	0.42
3:D:416:ILE:HG22	3:D:416:ILE:O	2.19	0.42
4:E:41:GLU:CG	4:E:42:GLU:N	2.82	0.42
1:B:61:ILE:HB	1:B:64:VAL:HB	2.00	0.42
1:A:65:LEU:N	1:A:65:LEU:HD13	2.34	0.42
1:B:135:ASP:CG	1:B:136:GLU:H	2.21	0.42
1:B:65:LEU:O	1:B:171:LEU:HD21	2.19	0.42
2:C:120:GLN:H	2:C:120:GLN:CD	2.22	0.42
2:C:1270:PHE:CE1	2:C:1274:GLU:HB3	2.54	0.42
2:C:152:SER:HA	2:C:153:PRO:HD3	1.91	0.42
3:D:762:ASN:ND2	3:D:765:GLU:H	2.17	0.42
2:C:143:ARG:NH1	2:C:507:GLY:HA2	2.32	0.42
3:D:1370:MET:SD	4:E:61:ASN:CB	3.07	0.42
3:D:218:THR:OG1	3:D:1275:LEU:HB2	2.20	0.42
3:D:478:LEU:HD11	4:E:27:ALA:HB3	2.01	0.42
3:D:812:ASP:O	3:D:813:ASP:C	2.57	0.42
4:E:50:ALA:O	4:E:54:ILE:HD13	2.20	0.42
2:C:1064:ASP:O	2:C:1076:ILE:HG22	2.20	0.42
2:C:1072:ASN:ND2	2:C:1098:LEU:HD23	2.34	0.42
2:C:1223:ARG:NH1	2:C:1223:ARG:HB2	2.32	0.42
3:D:923:ILE:HD13	3:D:1248:ILE:HD13	2.02	0.42
3:D:1289:ASN:O	3:D:1293:GLU:HB2	2.19	0.42
3:D:227:PHE:CG	3:D:234:PRO:HG3	2.54	0.42
3:D:98:ARG:HG2	3:D:247:PRO:HG2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:485:MET:HE2	4:E:3:ARG:HD3	2.02	0.42
4:E:13:ILE:HG22	4:E:15:ASN:N	2.26	0.42
4:E:13:ILE:N	4:E:13:ILE:CD1	2.82	0.42
2:C:221:LEU:HD22	2:C:336:LEU:HD11	2.00	0.42
2:C:344:GLY:HA2	2:C:345:PRO:HD3	1.85	0.42
1:A:70:THR:HG21	2:C:755:LYS:HE2	2.01	0.42
3:D:1306:LEU:C	3:D:1307:LEU:HD12	2.40	0.42
3:D:1347:LEU:N	3:D:1347:LEU:HD12	2.34	0.42
3:D:482:ALA:HA	4:E:3:ARG:NH1	2.35	0.42
2:C:936:ARG:HA	2:C:1042:LEU:HD11	2.02	0.42
2:C:1164:PHE:HD2	2:C:1168:GLU:HB3	1.83	0.42
2:C:590:PRO:HG3	2:C:605:TYR:CE2	2.55	0.42
2:C:865:LEU:HD23	2:C:871:VAL:HB	2.02	0.42
2:C:97:ARG:HD2	2:C:121:GLU:HB3	2.02	0.42
3:D:1095:MET:HG3	3:D:1162:ILE:H	1.85	0.42
3:D:1282:TYR:O	3:D:1286:LYS:HG3	2.20	0.42
3:D:491:LEU:HD12	3:D:905:ARG:O	2.19	0.42
3:D:680:ASN:HD22	3:D:681:LYS:N	2.18	0.42
2:C:1103:VAL:HG22	2:C:1111:GLN:HE21	1.83	0.42
2:C:384:LEU:O	2:C:388:LEU:HG	2.19	0.42
2:C:496:LYS:HD3	2:C:496:LYS:C	2.40	0.42
2:C:587:LEU:HD23	2:C:588:GLU:N	2.35	0.42
2:C:706:ARG:HA	2:C:793:GLU:HA	2.02	0.42
1:A:79:LEU:HG	2:C:831:ILE:HD11	2.02	0.42
3:D:1131:THR:HG22	3:D:1132:LYS:HG3	2.02	0.42
3:D:587:LEU:HA	3:D:588:PRO:HD3	1.92	0.42
3:D:756:GLU:O	3:D:758:PRO:HD3	2.19	0.42
4:E:13:ILE:HG21	4:E:18:ASP:CB	2.49	0.42
1:A:45:ARG:HG2	1:B:38:THR:HB	2.02	0.41
2:C:409:LEU:HD21	2:C:428:VAL:HG22	2.02	0.41
2:C:992:LEU:H	2:C:992:LEU:HD23	1.84	0.41
3:D:1372:ARG:HG2	3:D:1375:ALA:HB2	2.01	0.41
3:D:271:ARG:O	3:D:275:ARG:HG2	2.20	0.41
3:D:381:ILE:HD13	3:D:408:VAL:HG21	2.02	0.41
3:D:685:ILE:HG13	3:D:686:TRP:CD1	2.55	0.41
3:D:762:ASN:H	3:D:762:ASN:ND2	2.18	0.41
4:E:20:VAL:HG13	4:E:21:LEU:N	2.34	0.41
4:E:56:GLU:CG	4:E:57:GLY:N	2.83	0.41
4:E:86:ILE:CG2	4:E:87:ALA:N	2.83	0.41
1:A:185:TYR:HB2	1:A:201:LEU:HD11	2.02	0.41
2:C:426:ILE:HG22	2:C:430:LYS:HE3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:150:HIS:NE2	2:C:454:ARG:HD2	2.35	0.41
3:D:118:LYS:HA	3:D:118:LYS:HZ1	1.85	0.41
3:D:26:SER:O	3:D:30:ILE:HG13	2.20	0.41
3:D:450:HIS:HA	3:D:451:PRO:HD3	1.95	0.41
3:D:481:ARG:O	3:D:485:MET:HE2	2.20	0.41
1:A:30:PRO:C	1:A:31:LEU:HD22	2.41	0.41
1:B:10:LYS:HD2	1:B:30:PRO:HG2	2.01	0.41
2:C:1246:ARG:HD2	2:C:1265:PHE:O	2.21	0.41
2:C:698:PRO:HG3	2:C:1231:TYR:CE1	2.55	0.41
3:D:118:LYS:HA	3:D:118:LYS:NZ	2.35	0.41
3:D:1263:LYS:O	3:D:1305:ASP:HB3	2.20	0.41
4:E:20:VAL:CG1	4:E:21:LEU:N	2.83	0.41
4:E:71:GLU:HG2	4:E:72:GLN:N	2.35	0.41
2:C:125:GLY:H	2:C:495:ALA:HB1	1.86	0.41
2:C:93:SER:OG	2:C:126:GLU:HB3	2.19	0.41
3:D:506:VAL:HB	3:D:629:PHE:CZ	2.55	0.41
1:A:188:GLU:OE2	1:A:200:LYS:HD2	2.20	0.41
1:A:90:VAL:HG21	1:A:146:VAL:HG21	2.02	0.41
2:C:1339:LEU:H	2:C:1339:LEU:CD2	2.34	0.41
2:C:316:GLU:HG3	2:C:352:ARG:NH2	2.35	0.41
3:D:1126:GLN:OE1	3:D:1170:LYS:HE3	2.21	0.41
3:D:905:ARG:HG3	4:E:16:ARG:NH2	2.34	0.41
4:E:30:MET:HE3	4:E:50:ALA:HB2	2.01	0.41
1:A:168:ILE:HG21	2:C:864:LYS:NZ	2.35	0.41
2:C:820:GLU:O	2:C:823:VAL:HG12	2.21	0.41
3:D:1199:PHE:HE2	3:D:1202:GLU:O	2.02	0.41
3:D:1229:VAL:O	3:D:1233:ILE:HG22	2.21	0.41
3:D:128:LEU:HD11	3:D:188:LEU:HB3	2.02	0.41
3:D:246:PRO:HA	3:D:247:PRO:HD3	1.85	0.41
3:D:292:VAL:HB	3:D:296:LYS:HE3	2.02	0.41
2:C:1205:PRO:HB3	2:C:1210:ILE:HB	2.02	0.41
2:C:1276:TRP:HA	2:C:1279:GLU:HB3	2.01	0.41
2:C:519:ASN:ND2	2:C:796:LEU:HD22	2.36	0.41
2:C:843:THR:HG22	2:C:844:LYS:N	2.36	0.41
3:D:1163:VAL:CG2	3:D:1175:LEU:HD11	2.50	0.41
3:D:978:ARG:HG2	3:D:979:ASN:N	2.35	0.41
1:A:64:VAL:HG13	1:A:69:SER:HB2	2.02	0.41
2:C:161:LYS:HD2	2:C:161:LYS:C	2.41	0.41
2:C:374:GLU:HA	2:C:375:PRO:HD3	1.92	0.41
2:C:519:ASN:O	2:C:523:GLU:HG3	2.21	0.41
2:C:559:CYS:HA	2:C:560:PRO:HD3	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1021:ASP:HA	3:D:1022:PRO:HD3	1.80	0.41
3:D:978:ARG:CB	3:D:1199:PHE:HB3	2.50	0.41
3:D:926:PRO:HB2	3:D:1241:TYR:CE2	2.56	0.41
3:D:374:LEU:HD11	3:D:409:TRP:CH2	2.55	0.41
4:E:38:LEU:N	4:E:38:LEU:CD1	2.83	0.41
1:A:159:ILE:HA	1:A:172:LEU:HD22	2.02	0.41
1:B:172:LEU:CD1	1:B:172:LEU:H	2.23	0.41
2:C:1117:LEU:HD21	2:C:1182:ILE:HD11	2.03	0.41
1:A:71:LYS:HG2	1:A:78:ILE:HD11	2.02	0.41
1:B:198:LEU:N	1:B:198:LEU:HD22	2.36	0.41
2:C:807:TRP:HE1	2:C:1086:PRO:HD3	1.86	0.41
2:C:870:ILE:HD13	2:C:944:ARG:HD3	2.03	0.41
2:C:854:ILE:HD13	2:C:917:SER:HB3	2.03	0.41
3:D:27:PRO:HG3	3:D:240:THR:OG1	2.20	0.41
3:D:279:LEU:HD23	3:D:279:LEU:O	2.21	0.41
3:D:401:VAL:O	3:D:401:VAL:HG22	2.21	0.41
3:D:381:ILE:HG23	3:D:411:ILE:HD12	2.03	0.41
4:E:54:ILE:H	4:E:54:ILE:CD1	2.33	0.41
2:C:11:ILE:O	2:C:13:LYS:HG3	2.21	0.41
2:C:1212:LEU:HB3	2:C:1213:TYR:H	1.77	0.41
2:C:216:THR:O	2:C:220:ILE:HG13	2.21	0.41
2:C:403:MET:HG2	2:C:407:ARG:NH1	2.36	0.41
2:C:447:HIS:CD2	2:C:553:THR:HG21	2.56	0.41
3:D:482:ALA:C	3:D:483:LEU:HD12	2.41	0.41
3:D:555:TYR:CE1	3:D:564:VAL:HG21	2.56	0.41
3:D:663:GLU:O	3:D:667:GLN:HG3	2.21	0.41
1:A:10:LYS:HE2	1:A:30:PRO:HB2	2.03	0.40
1:A:44:ARG:HE	1:A:48:LEU:HD11	1.86	0.40
1:B:59:VAL:HG22	1:B:144:ILE:HG13	2.03	0.40
1:A:228:LEU:HG	1:B:224:LEU:HD23	2.02	0.40
3:D:1318:SER:HB3	3:D:1320:ILE:HD13	2.02	0.40
3:D:1347:LEU:O	3:D:1351:VAL:HG23	2.21	0.40
3:D:362:ARG:HH21	3:D:365:GLN:HE21	1.69	0.40
3:D:719:PHE:HA	3:D:724:MET:SD	2.62	0.40
3:D:761:ALA:H	3:D:771:GLN:HE22	1.68	0.40
4:E:4:VAL:O	4:E:5:THR:HG22	2.21	0.40
4:E:63:ILE:CG2	4:E:64:LEU:N	2.82	0.40
1:B:109:PRO:HG3	1:B:132:HIS:CE1	2.57	0.40
2:C:1103:VAL:H	2:C:1104:PRO:HD2	1.87	0.40
2:C:849:GLU:O	2:C:887:VAL:HG12	2.20	0.40
2:C:967:LEU:O	2:C:971:LEU:HD13	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:119:SER:OG	3:D:121:PRO:HD2	2.21	0.40
3:D:126:LEU:HD22	3:D:223:LEU:HD12	2.03	0.40
3:D:1323:ALA:HA	3:D:1328:THR:HG22	2.03	0.40
4:E:63:ILE:O	4:E:64:LEU:HD12	2.21	0.40
3:D:148:GLU:HB3	3:D:187:ALA:CB	2.51	0.40
3:D:253:VAL:HA	3:D:254:PRO:HD3	1.93	0.40
3:D:720:ASN:HB3	3:D:723:TYR:HB3	2.03	0.40
2:C:84:GLU:O	2:C:88:ARG:HB2	2.22	0.40
3:D:1077:ALA:HB2	3:D:1100:PHE:CD1	2.57	0.40
3:D:1184:ASP:N	3:D:1185:PRO:CD	2.84	0.40
3:D:1320:ILE:H	3:D:1320:ILE:CD1	2.29	0.40
3:D:405:GLU:HG2	3:D:407:VAL:H	1.87	0.40
3:D:697:MET:HE3	3:D:701:LEU:HD11	2.03	0.40
3:D:71:LEU:N	3:D:71:LEU:HD22	2.36	0.40
2:C:1131:MET:HB3	2:C:1145:ILE:HD12	2.02	0.40
2:C:1064:ASP:OD2	2:C:1234:LYS:HE3	2.21	0.40
2:C:511:LEU:HD13	2:C:533:LEU:O	2.22	0.40
2:C:864:LYS:N	2:C:864:LYS:HE2	2.37	0.40
3:D:388:ARG:HB3	3:D:389:GLY:H	1.80	0.40
3:D:429:LEU:HB3	3:D:925:GLU:HB2	2.04	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	A	233/329 (71%)	196 (84%)	31 (13%)	6 (3%)	6	40
1	B	233/329 (71%)	197 (84%)	28 (12%)	8 (3%)	4	35
2	C	1333/1342 (99%)	1109 (83%)	190 (14%)	34 (3%)	6	40
3	D	1362/1407 (97%)	1124 (82%)	198 (14%)	40 (3%)	5	38

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	E	87/91 (96%)	74 (85%)	10 (12%)	3 (3%)	4	35
All	All	3248/3498 (93%)	2700 (83%)	457 (14%)	91 (3%)	9	39

All (91) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	159	ILE
1	A	166	ARG
1	B	124	VAL
2	C	489	PRO
2	C	582	ASN
2	C	1182	ILE
3	D	903	LEU
4	E	39	VAL
4	E	46	THR
4	E	48	VAL
2	C	483	ASP
2	C	807	TRP
3	D	741	ALA
3	D	745	GLY
3	D	839	VAL
3	D	857	LEU
3	D	937	ILE
3	D	1134	ILE
3	D	1179	PRO
3	D	1224	ARG
3	D	1293	GLU
3	D	1296	GLY
1	A	62	ASP
1	A	137	ASN
1	B	49	SER
1	B	93	GLN
1	B	165	GLU
1	B	194	GLN
2	C	64	GLY
2	C	81	ASP
2	C	140	GLY
2	C	544	GLY
2	C	812	PHE
2	C	813	GLU
2	C	1048	LYS
2	C	1204	LEU

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Mol	Chain	Res	Type
3	D	66	LYS
3	D	229	GLN
3	D	285	LEU
3	D	359	PRO
3	D	594	GLN
3	D	612	LEU
3	D	813	ASP
3	D	899	TYR
1	A	194	GLN
2	C	44	GLU
2	C	92	TYR
2	C	134	GLY
2	C	398	SER
2	C	492	MET
2	C	496	LYS
2	C	573	ASN
2	C	940	GLU
2	C	1123	GLY
2	C	1185	PRO
3	D	153	ASN
3	D	494	ALA
3	D	728	SER
3	D	850	LYS
3	D	1131	THR
1	A	179	PRO
1	B	21	SER
1	B	159	ILE
2	C	13	LYS
2	C	746	ALA
2	C	1223	ARG
2	C	1296	ASP
3	D	64	PRO
3	D	463	GLY
3	D	588	PRO
3	D	671	GLY
3	D	675	ALA
3	D	729	GLY
3	D	1183	SER
3	D	1344	LEU
1	B	69	SER
2	C	1103	VAL
2	C	1341	ASP

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Mol	Chain	Res	Type
3	D	859	PRO
2	C	577	VAL
3	D	742	GLY
2	C	700	VAL
3	D	247	PRO
3	D	828	GLY
2	C	178	PRO
2	C	488	MET
2	C	1124	ILE
3	D	752	GLY
3	D	1191	PRO
3	D	1201	GLY
3	D	1360	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 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	202/286 (71%)	195 (96%)	7 (4%)	41	69
1	B	202/286 (71%)	199 (98%)	3 (2%)	70	85
2	C	1150/1157 (99%)	1139 (99%)	11 (1%)	80	90
3	D	1129/1168 (97%)	1091 (97%)	38 (3%)	42	69
4	E	73/75 (97%)	71 (97%)	2 (3%)	50	74
All	All	2756/2972 (93%)	2695 (98%)	61 (2%)	60	79

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	GLN
1	A	65	LEU
1	A	148	ARG
1	A	159	ILE
1	A	168	ILE
1	A	171	LEU

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Mol	Chain	Res	Type
1	A	234	LEU
1	B	71	LYS
1	B	124	VAL
1	B	172	LEU
2	C	17	LYS
2	C	59	ILE
2	C	120	GLN
2	C	169	LYS
2	C	647	ARG
2	C	864	LYS
2	C	1065	LYS
2	C	1108	ASN
2	C	1176	LEU
2	C	1210	ILE
2	C	1314	GLN
3	D	33	TRP
3	D	84	ILE
3	D	118	LYS
3	D	132	LEU
3	D	159	ILE
3	D	160	LEU
3	D	201	LEU
3	D	222	LYS
3	D	232	ASN
3	D	255	LEU
3	D	296	LYS
3	D	332	LYS
3	D	411	ILE
3	D	500	ILE
3	D	549	LYS
3	D	556	GLU
3	D	566	LYS
3	D	591	ILE
3	D	641	ILE
3	D	644	MET
3	D	674	THR
3	D	678	ARG
3	D	680	ASN
3	D	759	ILE
3	D	762	ASN
3	D	767	LEU
3	D	875	ASN

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Mol	Chain	Res	Type
3	D	881	LYS
3	D	911	LYS
3	D	1156	LEU
3	D	1210	ILE
3	D	1220	ILE
3	D	1231	ARG
3	D	1263	LYS
3	D	1266	ILE
3	D	1297	LYS
3	D	1304	ARG
3	D	1320	ILE
4	E	31	GLN
4	E	49	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (80) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	2	GLN
1	A	18	GLN
1	A	84	ASN
1	A	93	GLN
1	A	227	GLN
1	B	18	GLN
1	B	93	GLN
1	B	127	GLN
1	B	160	HIS
2	C	31	GLN
2	C	41	GLN
2	C	83	GLN
2	C	120	GLN
2	C	258	ASN
2	C	330	HIS
2	C	343	HIS
2	C	437	ASN
2	C	462	ASN
2	C	463	GLN
2	C	490	GLN
2	C	510	GLN
2	C	517	GLN
2	C	551	HIS
2	C	604	HIS
2	C	613	ASN

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Mol	Chain	Res	Type
2	C	618	GLN
2	C	649	GLN
2	C	688	GLN
2	C	737	ASN
2	C	798	GLN
2	C	799	ASN
2	C	932	GLN
2	C	955	GLN
2	C	1013	GLN
2	C	1023	HIS
2	C	1080	ASN
2	C	1090	ASN
2	C	1108	ASN
2	C	1209	GLN
2	C	1220	GLN
2	C	1236	ASN
2	C	1256	GLN
2	C	1299	ASN
2	C	1313	HIS
3	D	158	GLN
3	D	164	GLN
3	D	186	GLN
3	D	232	ASN
3	D	274	ASN
3	D	294	ASN
3	D	300	GLN
3	D	340	GLN
3	D	430	HIS
3	D	489	ASN
3	D	593	ASN
3	D	594	GLN
3	D	665	GLN
3	D	680	ASN
3	D	720	ASN
3	D	762	ASN
3	D	777	HIS
3	D	792	ASN
3	D	867	GLN
3	D	875	ASN
3	D	910	ASN
3	D	921	GLN
3	D	951	GLN

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Mol	Chain	Res	Type
3	D	954	ASN
3	D	1019	ASN
3	D	1114	GLN
3	D	1197	ASN
3	D	1238	GLN
3	D	1259	GLN
3	D	1295	ASN
3	D	1366	HIS
3	D	1383	GLN
4	E	31	GLN
4	E	62	GLN
4	E	73	GLN
4	E	75	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 carbohydrates 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.