



Full wwPDB EM Validation Report ⓘ

Jul 8, 2025 – 03:24 PM JST

PDB ID : 9J7B / pdb_00009j7b
EMDB ID : EMD-61200
Title : local refinement of FEM1B bound with TOM20(tetramer)
Authors : Zhao, S.; Xu, C.
Deposited on : 2024-08-18
Resolution : 4.12 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

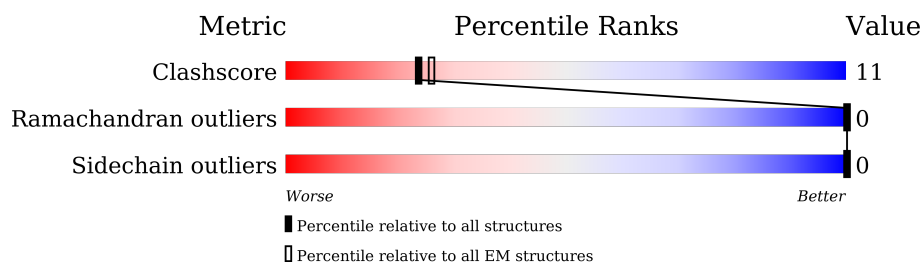
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.12 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	627	70% 29%
1	J	627	77% 23%
1	O	627	68% 26% 6%
1	P	627	66% 24% 10%
2	B	121	43% 17% 40%
2	C	121	50% 50%
2	G	121	8% 91%
2	Q	121	41% 14% 45%
2	S	121	48% 50%

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Mol	Chain	Length	Quality of chain
3	D	12	 100%
4	R	9	 89%  11%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 20578 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 Protein fem-1 homolog B.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	J	627	Total	C	N	O	S	0	0
			4932	3092	882	929	29		
1	A	627	Total	C	N	O	S	0	0
			4932	3092	882	929	29		
1	O	592	Total	C	N	O	S	0	0
			4562	2858	820	859	25		
1	P	562	Total	C	N	O	S	0	0
			4308	2698	775	810	25		

- Molecule 2 is a protein called Mitochondrial import receptor subunit TOM20 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	72	Total	C	N	O	S	0	0
			564	365	89	108	2		
2	G	11	Total	C	N	O		0	0
			54	32	11	11			
2	Q	67	Total	C	N	O	S	0	0
			524	338	83	101	2		
2	S	60	Total	C	N	O		0	0
			296	176	60	60			
2	C	61	Total	C	N	O		0	0
			301	179	61	61			

- Molecule 3 is a protein called Poly-UNK.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	D	12	Total	C	N	O	0	0
			60	36	12	12		

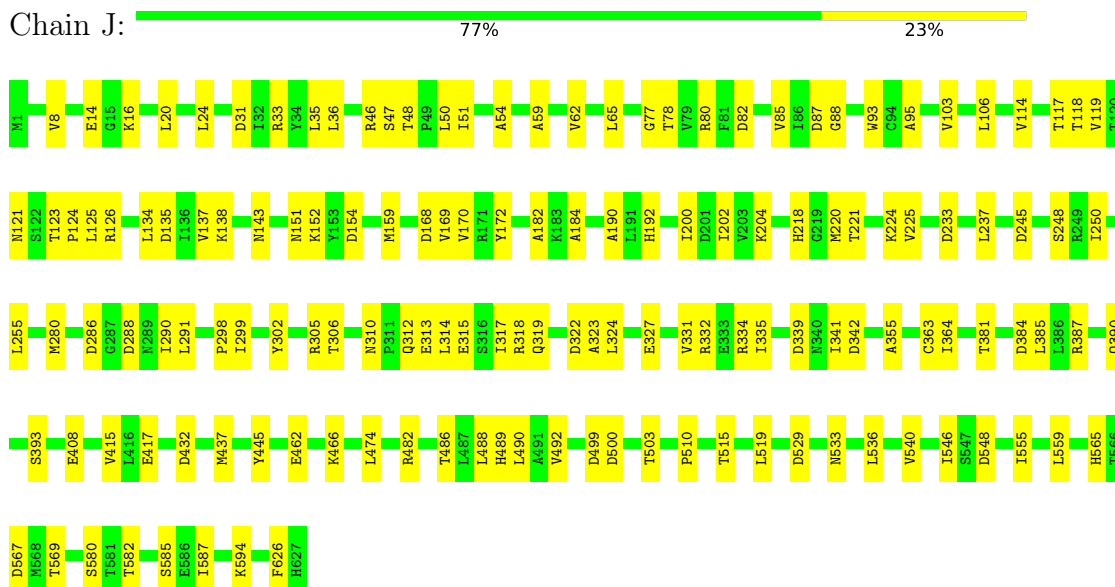
- Molecule 4 is a protein called Poly-UNK.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	R	9	Total	C	N	O	0	0
			45	27	9	9		

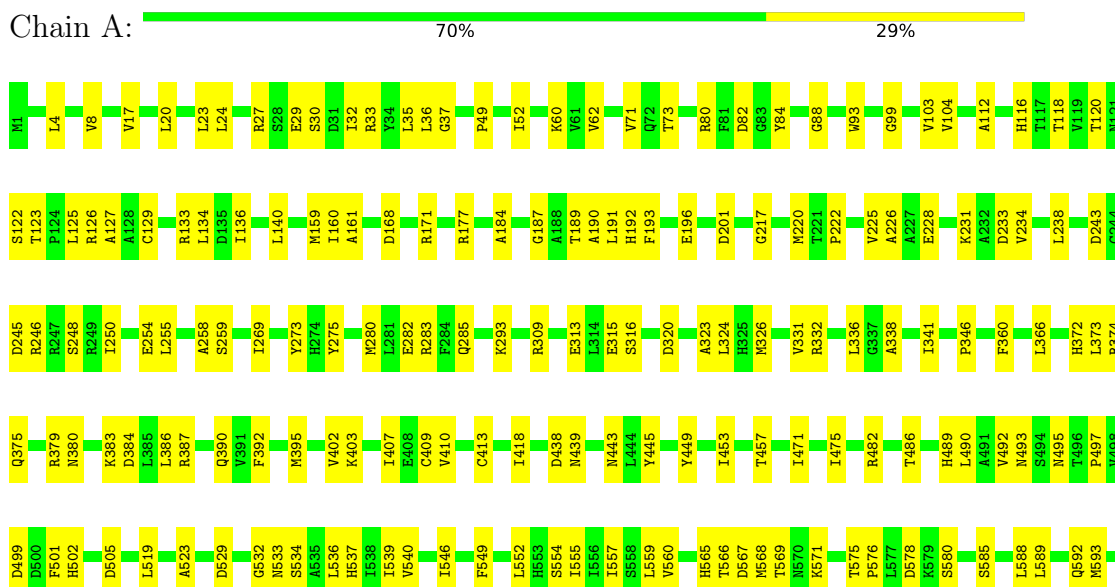
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Protein fem-1 homolog B



- Molecule 1: Protein fem-1 homolog B



S596
L597
K598
C599
L600
A601
I616
L620
F623
F626
H627

• Molecule 1: Protein fem-1 homolog B

Chain O: 68% 26% 6%

H1 Y9 G15 L20 L24 D31 I32 R33 Y34 L35 L36 G37 Q42 Q45 R46 S47 T48 P49 L50 H51 R55 H58 V61 L65 V71 Q72 T73 Q75 T76 G77 G88 A89 T90 A91 L92 L93 G97 A98 F101 E102 V103 V104 K105 H113 V114 H115 H116 T117 T118 V119 T123 R126 D135 I136 Y137 L138 V141 A145 T167 Y172 D179 P180 M181 A195 T200 D201 T202 V203 K204 E205 L206 W209 R210 A211 R216 R220 T221 P222 V225 A226 C230 D233 E236 L237 L238 L239 S240 A241 D242 D243 C244 D245 R246 R249 L250 E251 E254 L255 L256 F260 A261 N262 Y267 D268 T269 L270 K271 T272 Y273 H274 A279 V280 L281 E282 R283 D286 T290 L296 P297 T299 R300 A301 Y302 R305 N310 E313 L314 E315 D316 I317 R321 L322 L323 L324 L329 L330 Y331 R332 T335 P346 I347 Y354 E359 L366 R369 H372 L373 R374 R379 N380 T381 D384 T396 K403 D406 T418 D432 N435 R436 R437 D438 N439 E441 L444 T453 N468 K469 Q470 T471 T472 N473 L474 R480 T481 R482 T486 L487 L488 H489 T503 V506 A512 L518 L519 A523 N526 A527 Y528 D529 G532 N533 Y542 N543 R544 P545 I546 T551 G563 Q592 MET LYS SER LEU LYS CYS LEU ALA ALA ARG VAL ARG ALA ASP ILE TYR GLN ASP GLN ILE PRO ARG THR LEU GLU GLU PHE VAL GLY PHE HIS

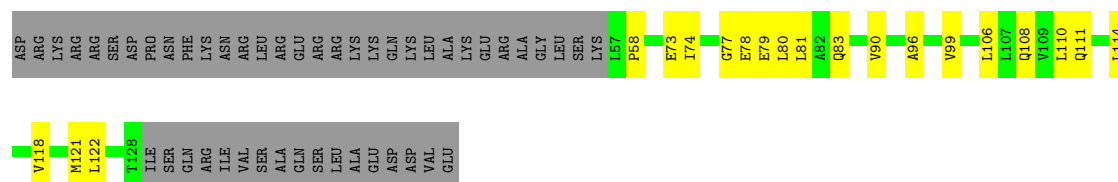
• Molecule 1: Protein fem-1 homolog B

Chain P: 66% 24% 10%

H1 V8 A12 S13 E14 G15 K16 V17 L18 T19 L20 A21 A22 L23 L35 S40 Q41 Q42 R46 S47 T48 P49 L50 Y51 I52 R56 G57 H58 A59 R60 V61 V62 R63 L64 L65 L66 T78 F81 I86 D87 A96 G99 H100 F101 E102 V103 V104 K105 L106 L107 M115 T118 T123 R126 A127 A128 G132 R133 L134 V137 K138 Y139 L140 M143 M146 T156 C157 L158 M159 H166 V169 V170 L173 L174 E175 Q176 A184 G187 A188 T189 A190 L191 H192 F193 H199 H200 D201 T202 I207 K208 W209 R210 N216 W220 S229 C230 R231 A232 D233 D243 R246 R247 S248 T250 E251 E254 F260 A261 N262 D268 E282 R283 R305 T317 L329 R332 L336 N340 L341 D342 R345 P346 I347 Q348 Y349 R350 G351 A352 F360 T364 L368 H372 L373 R374 Q375 K376 R379 R387 Q390 H391 F392 N395 L398 K403 A404 P405 D406 L407 E408 C409 V410 L411 R412 E417 L418 F419 Q420 N439 Y440 N443 L444 Y445 Y449 L450 L453 C459 Q464 L467 L487 L490 P497 N511 A512 L513 V514 T515 K516 L517 L518 L536 A562 GLY ALA HIS THR ASP MET THR ASN GLN ASN LYS LYS THR PRO LEU ASP LYS SER THR THR GLY VAL SER THR ILE LEU LYS MET LYS CYS LEU ALA ARG VAL ARG ALA ASP TLE TYR GLN ASP GLN

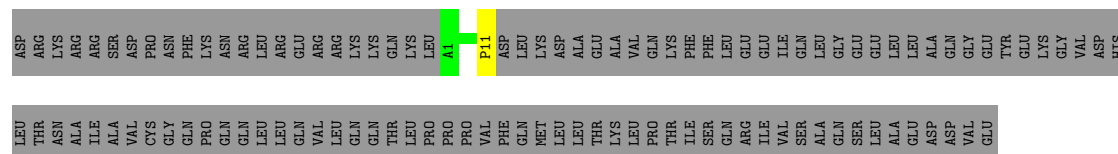
• Molecule 2: Mitochondrial import receptor subunit TOM20 homolog

Chain B: 43% 17% 40%



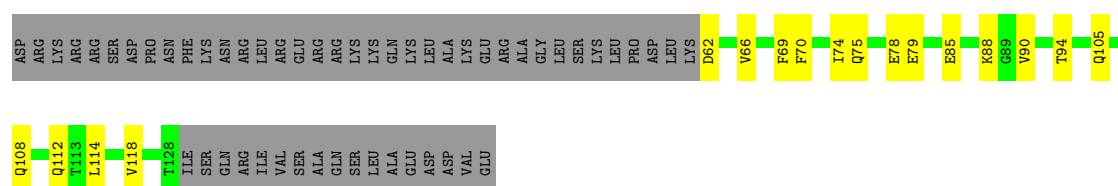
- Molecule 2: Mitochondrial import receptor subunit TOM20 homolog

Chain G: 8% . 91%



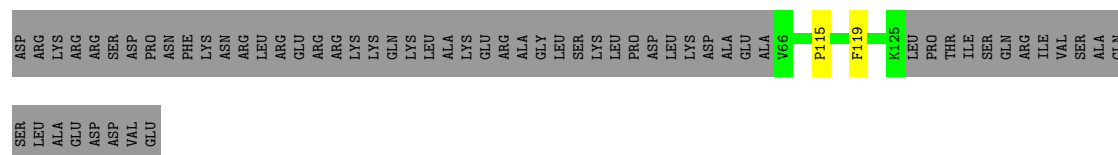
- Molecule 2: Mitochondrial import receptor subunit TOM20 homolog

Chain Q: 41% 14% 45%



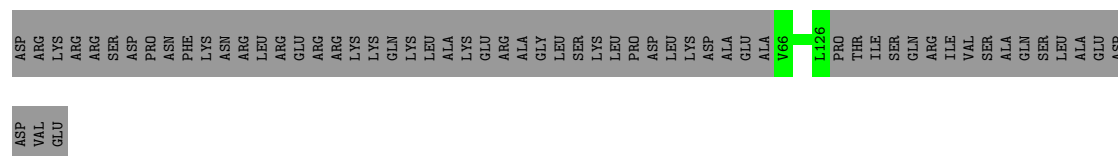
- Molecule 2: Mitochondrial import receptor subunit TOM20 homolog

Chain S: 48% . 50%



- Molecule 2: Mitochondrial import receptor subunit TOM20 homolog

Chain C: 50% 50%



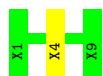
- Molecule 3: Poly-UNK

Chain D: 100%

There are no outlier residues recorded for this chain.

- Molecule 4: Poly-UNK

Chain R:  89% 11%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	92948	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 ($e^-/\text{\AA}^2$)	55.8	Depositor
Minimum defocus (nm)	1800	Depositor
Maximum defocus (nm)	2900	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.15	0/5018	0.40	1/6803 (0.0%)
1	J	0.15	0/5018	0.36	0/6803
1	O	0.11	0/4641	0.32	0/6302
1	P	0.12	0/4382	0.33	0/5950
2	B	0.15	0/574	0.37	0/781
2	C	0.07	0/300	0.21	0/416
2	G	0.25	0/53	0.97	1/72 (1.4%)
2	Q	0.15	0/533	0.37	0/725
2	S	0.06	0/295	0.19	0/409
All	All	0.13	0/20814	0.36	2/28261 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
2	G	11	PRO	N-CA-CB	6.63	110.30	103.00
1	A	616	ILE	N-CA-C	-5.39	104.77	109.19

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4932	0	4912	112	0
1	J	4932	0	4912	98	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	O	4562	0	4438	105	0
1	P	4308	0	4169	101	0
2	B	564	0	576	13	0
2	C	301	0	130	0	0
2	G	54	0	30	0	0
2	Q	524	0	530	14	0
2	S	296	0	128	1	0
3	D	60	0	14	0	0
4	R	45	0	11	1	0
All	All	20578	0	19850	434	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 11.

All (434) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:20:LEU:O	1:J:24:LEU:HB2	1.86	0.74
1:J:305:ARG:HH22	1:J:327:GLU:HB2	1.55	0.72
1:P:48:THR:HG22	1:P:51:ILE:HG12	1.74	0.69
1:A:374:ARG:HA	1:A:379:ARG:HH21	1.57	0.69
1:J:519:LEU:HD11	1:J:559:LEU:HD23	1.76	0.67
1:A:565:HIS:NE2	1:A:599:CYS:SG	2.66	0.66
1:J:305:ARG:NH1	1:J:306:THR:O	2.28	0.65
1:J:47:SER:HA	1:J:77:GLY:HA3	1.77	0.65
1:P:261:ALA:O	1:P:350:ARG:NH2	2.30	0.65
1:P:81:PHE:HB3	1:P:86:ILE:HG13	1.78	0.64
1:P:200:ILE:HD13	1:P:233:ASP:HB2	1.80	0.64
1:O:486:THR:H	1:O:489:HIS:HB2	1.61	0.64
1:A:623:PHE:O	1:A:627:HIS:ND1	2.31	0.64
1:O:102:GLU:HA	1:O:105:LYS:HE3	1.79	0.64
1:O:262:ASN:HB3	1:O:346:PRO:HB3	1.79	0.63
1:P:374:ARG:HH12	1:P:379:ARG:HB2	1.63	0.63
1:O:89:ALA:HB1	1:O:116:HIS:HD2	1.64	0.63
1:O:32:ILE:HG22	1:O:36:LEU:HD23	1.80	0.63
1:O:195:ALA:HB1	1:O:226:ALA:HB2	1.79	0.63
2:Q:66:VAL:HA	2:Q:69:PHE:HB3	1.80	0.63
1:P:123:THR:HG23	1:P:126:ARG:H	1.63	0.62
1:O:441:GLU:HG3	1:O:482:ARG:HH12	1.63	0.62
1:P:332:ARG:NH2	1:P:342:ASP:O	2.32	0.62
1:P:360:PHE:HB3	1:P:395:MET:HE2	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:85:GLU:HB3	2:Q:88:LYS:HB2	1.81	0.61
1:A:123:THR:HG23	1:A:126:ARG:H	1.65	0.61
1:P:156:THR:HG22	1:P:158:LEU:H	1.64	0.61
1:J:123:THR:HG22	1:J:125:LEU:H	1.66	0.61
1:A:129:CYS:HB3	1:A:161:ALA:HB2	1.83	0.61
1:P:246:ARG:NH2	1:P:282:GLU:O	2.34	0.61
1:J:54:ALA:HB1	1:J:95:ALA:HB2	1.83	0.61
1:O:48:THR:HG22	1:O:50:LEU:H	1.66	0.61
1:P:229:SER:O	1:P:231:LYS:NZ	2.31	0.61
1:P:305:ARG:HH22	1:P:317:ILE:HD13	1.66	0.60
1:A:492:VAL:HG12	1:A:555:ILE:HD11	1.82	0.60
1:P:170:VAL:HG11	1:P:202:ILE:HG23	1.83	0.60
1:A:99:GLY:O	1:A:133:ARG:NH1	2.34	0.60
1:O:354:TYR:HE2	1:O:366:LEU:HD22	1.65	0.60
1:A:159:MET:HE1	1:A:184:ALA:HB2	1.84	0.60
1:A:360:PHE:HB3	1:A:395:MET:HE2	1.84	0.60
1:P:216:ASN:HD21	1:P:220:MET:HE3	1.66	0.59
1:A:598:LYS:HA	1:A:601:ALA:HB3	1.84	0.59
1:P:12:ALA:O	1:P:56:ASN:ND2	2.35	0.59
1:O:73:THR:O	1:O:90:THR:OG1	2.20	0.58
1:P:332:ARG:HE	1:P:346:PRO:HG2	1.68	0.58
1:A:596:SER:H	1:A:600:LEU:HD21	1.67	0.58
1:O:380:ASN:ND2	1:O:439:ASN:OD1	2.37	0.58
1:J:78:THR:HA	1:J:87:ASP:HA	1.84	0.58
1:J:331:VAL:HA	1:J:334:ARG:HG2	1.86	0.58
1:J:50:LEU:HD22	1:J:62:VAL:HG23	1.85	0.58
1:J:159:MET:HE3	1:J:182:ALA:HB3	1.86	0.58
1:J:134:LEU:HD22	1:J:168:ASP:HB2	1.85	0.57
1:A:532:GLY:HA3	1:A:571:LYS:HG2	1.86	0.57
1:J:492:VAL:HG22	1:J:555:ILE:HD11	1.87	0.57
1:O:216:ASN:HD21	1:O:220:MET:HB2	1.69	0.57
1:O:468:ASN:HA	1:O:471:ILE:HD12	1.86	0.57
1:O:200:ILE:HD12	1:O:233:ASP:HB2	1.85	0.57
1:J:170:VAL:HG11	1:J:202:ILE:HG23	1.85	0.57
1:A:259:SER:OG	1:A:332:ARG:NH1	2.38	0.57
1:J:305:ARG:NH2	1:J:323:ALA:O	2.37	0.57
1:A:17:VAL:HG21	1:A:60:LYS:HZ2	1.69	0.57
1:A:293:LYS:HB2	1:A:309:ARG:HG2	1.86	0.57
1:A:475:ILE:HG21	1:A:523:ALA:HA	1.87	0.57
1:A:118:THR:HG23	1:A:120:THR:H	1.70	0.57
1:A:159:MET:HG2	1:A:190:ALA:HA	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:261:ALA:HA	1:O:267:TYR:HA	1.87	0.57
1:O:480:ARG:NH2	1:O:528:VAL:O	2.37	0.57
1:O:299:ILE:HG22	1:O:301:ALA:H	1.69	0.56
1:J:80:ARG:HG3	1:J:85:VAL:HG22	1.88	0.56
1:A:537:HIS:HE2	1:A:568:MET:HB3	1.71	0.56
1:O:396:ILE:HG13	1:O:453:ILE:HD11	1.88	0.56
1:O:437:MET:HG3	1:O:482:ARG:HH11	1.71	0.56
1:A:254:GLU:OE2	1:A:283:ARG:NH2	2.39	0.56
1:P:536:LEU:H	1:P:562:ALA:HB2	1.69	0.56
1:O:305:ARG:NH2	1:O:313:GLU:OE2	2.39	0.56
1:J:48:THR:H	1:J:51:ILE:HD12	1.70	0.55
1:J:118:THR:HG22	1:J:119:VAL:H	1.70	0.55
1:A:438:ASP:OD1	1:A:482:ARG:NH2	2.40	0.55
1:P:345:HIS:HA	1:P:348:ILE:HD12	1.88	0.55
1:J:204:LYS:HE3	1:J:237:LEU:HD11	1.89	0.55
1:O:42:GLN:O	1:O:45:GLN:NE2	2.40	0.55
1:O:24:LEU:HA	1:O:32:ILE:HG21	1.88	0.55
1:P:134:LEU:HD13	1:P:169:VAL:HG22	1.87	0.55
1:J:408:GLU:HG3	1:J:466:LYS:HB3	1.89	0.55
1:P:372:HIS:NE2	1:P:409:CYS:SG	2.75	0.55
1:J:332:ARG:NH2	1:J:342:ASP:OD2	2.40	0.54
1:A:374:ARG:NH2	1:A:380:ASN:O	2.38	0.54
1:P:336:LEU:HB3	1:P:340:ASN:HD21	1.72	0.54
1:A:552:LEU:HA	1:A:555:ILE:HG22	1.89	0.54
1:O:51:ILE:HG12	1:O:91:ALA:HB2	1.90	0.54
1:P:418:ILE:HG12	1:P:443:ASN:HB3	1.89	0.54
1:O:381:THR:HB	1:O:384:ASP:HB3	1.88	0.54
1:P:260:PHE:O	1:P:268:ASP:N	2.32	0.54
1:O:432:ASP:HB2	1:O:435:ASN:HB3	1.89	0.54
1:P:19:THR:HG22	2:Q:75:GLN:HA	1.90	0.54
1:P:174:LEU:HD12	1:P:175:GLU:HG3	1.89	0.54
1:O:542:TYR:OH	1:O:544:ARG:NH1	2.40	0.54
1:A:93:TRP:HE1	1:A:127:ALA:HB2	1.73	0.54
1:A:168:ASP:OD1	1:A:171:ARG:NH2	2.41	0.54
1:O:118:THR:HG22	1:O:119:VAL:H	1.72	0.54
1:O:529:ASP:OD1	1:O:533:ASN:N	2.40	0.54
1:A:575:THR:HG23	1:A:578:ASP:H	1.73	0.54
1:P:87:ASP:O	1:P:118:THR:OG1	2.26	0.54
1:P:250:ILE:HG21	1:P:283:ARG:HE	1.73	0.53
1:J:314:LEU:HA	1:J:317:ILE:HG12	1.90	0.53
1:O:76:THR:OG1	1:O:88:GLY:O	2.26	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:66:VAL:O	2:Q:70:PHE:N	2.33	0.53
1:O:230:CYS:HB3	1:O:260:PHE:HD1	1.72	0.53
2:B:58:PRO:HD2	2:B:99:VAL:HG11	1.88	0.53
1:P:188:ALA:HA	1:P:192:HIS:HB2	1.90	0.53
2:Q:114:LEU:HD13	2:Q:118:VAL:HG12	1.90	0.53
1:O:503:THR:HA	1:O:506:VAL:HG22	1.91	0.53
1:J:221:THR:HG23	1:J:224:LYS:H	1.74	0.53
1:A:445:TYR:HE1	1:A:490:LEU:HD11	1.74	0.53
1:O:123:THR:HG23	1:O:126:ARG:H	1.73	0.53
1:O:90:THR:HG23	1:O:93:TRP:H	1.74	0.52
1:P:139:TYR:O	1:P:143:ASN:ND2	2.42	0.52
1:A:255:LEU:HD11	1:A:336:LEU:HG	1.90	0.52
1:A:372:HIS:NE2	1:A:409:CYS:SG	2.80	0.52
1:J:168:ASP:N	1:J:168:ASP:OD1	2.42	0.52
1:A:118:THR:HG22	1:A:122:SER:H	1.75	0.52
1:P:99:GLY:O	1:P:133:ARG:NH1	2.42	0.52
1:P:233:ASP:OD1	1:P:233:ASP:N	2.42	0.52
1:P:115:ASN:HB2	1:P:146:ASN:HD22	1.74	0.52
1:O:15:GLY:HA2	1:O:61:VAL:HG21	1.90	0.52
1:O:488:LEU:HA	1:O:518:LEU:HD13	1.92	0.52
1:A:24:LEU:HD22	1:A:32:ILE:HG12	1.91	0.52
1:A:407:ILE:HA	1:A:410:VAL:HG12	1.92	0.52
1:J:462:GLU:OE1	1:J:466:LYS:NZ	2.42	0.51
1:A:589:LEU:O	1:A:593:MET:N	2.43	0.51
1:O:113:ASN:HB3	1:O:116:HIS:HB2	1.92	0.51
1:P:40:SER:O	1:P:46:ARG:NE	2.43	0.51
2:Q:105:GLN:O	2:Q:108:GLN:NE2	2.44	0.51
1:J:62:VAL:HG11	1:J:103:VAL:HG13	1.92	0.51
1:A:36:LEU:HD23	1:A:71:VAL:HB	1.92	0.51
1:P:410:VAL:HG22	1:P:450:LEU:HD11	1.92	0.51
1:J:318:ARG:NH1	1:J:319:GLN:OE1	2.44	0.51
1:J:565:HIS:HD2	1:J:567:ASP:H	1.57	0.51
1:O:270:ILE:O	1:O:274:HIS:ND1	2.43	0.51
1:A:280:MET:HE1	1:A:293:LYS:HE3	1.93	0.51
1:O:55:ARG:HD2	1:O:98:ALA:HB2	1.93	0.51
1:O:241:HIS:ND1	1:O:243:ASP:OD2	2.43	0.51
1:O:354:TYR:HB3	1:O:359:GLU:HB2	1.92	0.51
1:J:46:ARG:H	1:J:78:THR:HB	1.76	0.51
1:J:286:ASP:HB3	1:J:290:ILE:HA	1.92	0.50
1:J:298:PRO:HG3	1:J:306:THR:HB	1.93	0.50
1:A:246:ARG:NH2	1:A:282:GLU:O	2.43	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:209:TRP:HD1	1:O:211:ALA:HB2	1.76	0.50
1:P:40:SER:H	1:P:42:GLN:HE22	1.59	0.50
1:J:48:THR:HG22	1:J:50:LEU:H	1.75	0.50
1:J:546:ILE:O	1:A:275:TYR:OH	2.19	0.50
2:B:78:GLU:HA	2:B:81:LEU:HD12	1.91	0.50
1:J:220:MET:HB2	1:J:224:LYS:HD2	1.93	0.50
1:P:403:LYS:HG3	1:P:405:PRO:HD2	1.93	0.50
2:B:108:GLN:OE1	2:B:111:GLN:NE2	2.45	0.50
1:A:62:VAL:HG21	1:A:103:VAL:HG13	1.93	0.50
1:J:36:LEU:HD13	1:J:65:LEU:HD21	1.93	0.50
1:J:582:THR:HG22	1:J:585:SER:H	1.77	0.50
1:P:360:PHE:HE2	1:P:398:LEU:HD22	1.77	0.50
1:A:566:THR:HB	1:A:589:LEU:HD11	1.94	0.49
1:O:329:LEU:HD11	1:O:347:ILE:HD13	1.93	0.49
1:P:373:LEU:HA	1:P:376:LYS:HD2	1.94	0.49
1:A:20:LEU:HA	1:A:23:LEU:HB2	1.93	0.49
1:P:254:GLU:OE2	1:P:283:ARG:NH2	2.45	0.49
1:P:22:ALA:HB3	2:Q:74:ILE:HG21	1.94	0.49
1:J:299:ILE:HD13	1:J:302:TYR:HD2	1.77	0.49
1:A:104:VAL:HG11	1:A:136:ILE:HG23	1.92	0.49
1:A:228:GLU:OE2	1:A:332:ARG:NH2	2.32	0.49
1:A:30:SER:HA	1:A:33:ARG:HH21	1.78	0.49
1:A:449:TYR:OH	1:A:497:PRO:O	2.25	0.49
1:O:296:LEU:HD12	1:O:297:PRO:HD2	1.94	0.49
1:J:390:GLN:O	1:J:393:SER:OG	2.27	0.48
1:J:218:HIS:HE1	1:J:341:ILE:HG13	1.77	0.48
1:A:233:ASP:OD1	1:A:233:ASP:N	2.45	0.48
1:A:320:ASP:HB3	1:A:323:ALA:HB3	1.96	0.48
1:A:384:ASP:OD1	1:A:387:ARG:NH1	2.46	0.48
1:A:569:THR:OG1	1:A:626:PHE:O	2.31	0.48
1:O:47:SER:HA	1:O:77:GLY:HA3	1.94	0.48
1:A:201:ASP:OD1	1:A:201:ASP:N	2.46	0.48
1:O:93:TRP:O	1:O:97:GLY:N	2.37	0.48
1:A:8:VAL:HG21	1:A:35:LEU:HB3	1.95	0.48
1:J:192:HIS:HD2	1:J:225:VAL:HG21	1.79	0.48
1:A:375:GLN:NE2	1:A:413:CYS:O	2.37	0.48
1:A:529:ASP:OD1	1:A:533:ASN:N	2.46	0.48
2:B:118:VAL:HG13	2:B:121:MET:HE2	1.95	0.48
1:P:17:VAL:HG22	1:P:61:VAL:HA	1.96	0.48
1:O:32:ILE:HD13	1:O:35:LEU:HD12	1.95	0.48
1:A:177:ARG:NH2	1:O:135:ASP:OD2	2.45	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:58:HIS:HB3	1:O:61:VAL:HB	1.96	0.48
1:J:8:VAL:HG22	1:J:20:LEU:HD21	1.95	0.48
1:P:220:MET:SD	1:P:340:ASN:ND2	2.83	0.48
1:P:364:ILE:O	1:P:368:LEU:N	2.45	0.48
1:O:20:LEU:HD11	1:O:65:LEU:HD12	1.95	0.47
1:O:299:ILE:HD13	1:O:302:TYR:HB3	1.97	0.47
1:P:87:ASP:OD1	1:P:87:ASP:N	2.45	0.47
1:P:137:VAL:HA	1:P:140:LEU:HD12	1.94	0.47
1:P:173:LEU:HA	1:P:176:GLN:HG2	1.94	0.47
1:A:33:ARG:O	1:A:37:GLY:N	2.48	0.47
1:P:243:ASP:OD1	1:P:243:ASP:N	2.46	0.47
2:S:115:PRO:O	2:S:119:PHE:N	2.48	0.47
1:J:500:ASP:OD1	1:J:500:ASP:N	2.46	0.47
1:O:273:TYR:OH	1:O:315:GLU:OE2	2.31	0.47
1:P:49:PRO:HA	1:P:52:ILE:HG22	1.96	0.47
1:P:199:HIS:HB3	1:P:202:ILE:HB	1.95	0.47
1:P:487:LEU:HD23	1:P:518:LEU:HD11	1.95	0.47
2:B:74:ILE:O	2:B:78:GLU:N	2.34	0.47
2:B:77:GLY:O	2:B:81:LEU:N	2.46	0.47
1:O:204:LYS:HD3	1:O:237:LEU:HD11	1.97	0.47
1:J:82:ASP:N	1:J:82:ASP:OD1	2.47	0.47
1:J:432:ASP:OD1	1:J:432:ASP:N	2.48	0.47
1:A:80:ARG:HB3	1:A:84:TYR:HB2	1.96	0.47
1:J:245:ASP:OD1	1:J:248:SER:OG	2.25	0.47
1:O:314:LEU:HA	1:O:317:ILE:HG12	1.97	0.47
1:P:417:GLU:OE1	1:P:443:ASN:ND2	2.48	0.47
1:J:20:LEU:O	1:J:24:LEU:CB	2.60	0.47
1:J:381:THR:OG1	1:J:417:GLU:HG3	2.14	0.47
1:A:49:PRO:HA	1:A:52:ILE:HG22	1.96	0.47
1:O:519:LEU:HD23	1:O:523:ALA:HB3	1.97	0.47
1:P:404:ALA:HA	1:P:407:ILE:HG22	1.97	0.47
1:P:418:ILE:HG23	1:P:440:TYR:HE1	1.80	0.47
1:J:322:ASP:OD1	1:J:322:ASP:N	2.48	0.46
1:J:445:TYR:HE1	1:J:490:LEU:HD11	1.79	0.46
1:A:273:TYR:OH	1:A:315:GLU:OE1	2.33	0.46
1:J:159:MET:SD	1:J:190:ALA:N	2.89	0.46
1:O:269:ILE:HA	1:O:272:THR:HB	1.97	0.46
1:O:332:ARG:HA	1:O:335:ILE:HG22	1.96	0.46
1:A:191:LEU:HD21	1:A:238:LEU:HD21	1.97	0.46
1:J:126:ARG:HH12	1:J:151:ASN:HB2	1.81	0.46
1:A:258:ALA:HB2	1:A:331:VAL:HG23	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:536:LEU:HA	1:A:539:ILE:HG22	1.98	0.46
1:A:540:VAL:HB	1:A:580:SER:HA	1.98	0.46
1:O:48:THR:OG1	1:O:75:GLN:OE1	2.26	0.46
1:P:138:LYS:HA	1:P:138:LYS:HD3	1.78	0.46
1:A:220:MET:HE3	1:A:225:VAL:HG22	1.98	0.46
1:P:63:ARG:HH11	1:P:64:LEU:HD21	1.81	0.46
1:P:159:MET:HG2	1:P:190:ALA:HA	1.97	0.46
1:O:9:TYR:HA	1:O:49:PRO:HB3	1.97	0.46
1:O:296:LEU:HD23	1:O:330:ILE:HG23	1.97	0.46
1:P:387:ARG:HA	1:P:390:GLN:HG2	1.96	0.46
2:Q:62:ASP:O	2:Q:66:VAL:N	2.49	0.46
1:J:33:ARG:HA	1:J:36:LEU:HG	1.98	0.46
1:A:245:ASP:O	1:A:248:SER:N	2.48	0.46
1:P:64:LEU:HD21	2:Q:112:GLN:HG3	1.97	0.46
1:P:57:GLY:HA3	1:P:100:HIS:CE1	2.51	0.46
1:P:392:PHE:HB3	1:P:453:ILE:HG21	1.97	0.46
1:A:338:ALA:HB1	1:A:373:LEU:HD11	1.97	0.45
1:O:37:GLY:O	1:O:48:THR:OG1	2.34	0.45
1:O:269:ILE:HG21	1:O:321:ARG:HE	1.81	0.45
1:J:59:ALA:HB1	1:J:106:LEU:HD12	1.98	0.45
1:P:159:MET:HE1	1:P:184:ALA:HB2	1.97	0.45
1:J:250:ILE:HD13	1:J:291:LEU:HD11	1.97	0.45
1:O:233:ASP:OD1	1:O:233:ASP:N	2.48	0.45
1:P:15:GLY:HA3	1:P:58:HIS:CG	2.52	0.45
1:P:59:ALA:HA	1:P:103:VAL:HG22	1.98	0.45
1:O:75:GLN:NE2	1:O:76:THR:O	2.49	0.45
1:P:187:GLY:O	1:P:192:HIS:ND1	2.47	0.45
1:P:201:ASP:OD1	1:P:201:ASP:N	2.49	0.45
1:O:469:LYS:O	1:O:473:ASN:N	2.47	0.45
1:P:158:LEU:HB2	1:P:173:LEU:HD22	1.98	0.45
1:J:114:VAL:HG11	1:J:143:ASN:HB3	1.99	0.45
2:B:118:VAL:HA	2:B:121:MET:HB3	1.99	0.45
1:O:246:ARG:HA	1:O:249:ARG:HG2	1.98	0.45
1:J:93:TRP:HB2	1:J:124:PRO:HG3	1.98	0.45
1:A:616:ILE:HG13	1:A:620:LEU:HB3	1.99	0.45
1:A:269:ILE:HD11	1:A:324:LEU:HB3	1.98	0.45
1:P:66:LEU:HD21	1:P:106:LEU:HD12	1.99	0.45
1:J:138:LYS:HG2	1:J:172:TYR:CZ	2.52	0.45
1:A:386:LEU:HG	1:A:390:GLN:HE21	1.82	0.45
1:O:418:ILE:HD13	1:O:444:LEU:HD23	1.99	0.44
2:Q:90:VAL:O	2:Q:94:THR:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:134:LEU:HD12	1:J:137:VAL:HB	1.98	0.44
1:J:134:LEU:HD13	1:J:169:VAL:HA	1.99	0.44
1:J:154:ASP:HB3	1:J:184:ALA:HA	2.00	0.44
1:J:339:ASP:OD1	1:J:339:ASP:N	2.50	0.44
2:B:79:GLU:O	2:B:83:GLN:N	2.43	0.44
1:A:326:MET:HE1	1:A:366:LEU:HD11	2.00	0.44
1:J:233:ASP:N	1:J:233:ASP:OD1	2.50	0.44
1:J:288:ASP:OD1	1:J:288:ASP:N	2.49	0.44
1:A:134:LEU:HD12	1:A:168:ASP:HB3	1.99	0.44
1:O:48:THR:HB	1:O:51:ILE:HG13	2.00	0.44
1:J:318:ARG:HA	1:J:324:LEU:HD11	1.99	0.44
1:A:73:THR:HG21	1:A:112:ALA:HA	2.00	0.44
1:A:187:GLY:HA3	1:A:217:GLY:H	1.82	0.44
1:O:24:LEU:HD21	1:O:65:LEU:HG	2.00	0.44
1:O:374:ARG:HG2	1:O:379:ARG:HD2	2.00	0.44
1:O:528:VAL:HB	1:O:532:GLY:HA2	1.99	0.44
1:J:200:ILE:HD12	1:J:233:ASP:HB2	2.00	0.44
1:J:594:LYS:HD2	1:J:594:LYS:HA	1.75	0.44
2:B:106:LEU:HB3	2:B:110:LEU:HD23	2.00	0.44
1:J:415:VAL:HG22	1:J:474:LEU:HB2	1.98	0.44
1:J:486:THR:HG23	1:J:489:HIS:H	1.83	0.44
1:A:4:LEU:HD13	1:A:27:ARG:HH12	1.83	0.44
1:A:88:GLY:O	1:A:116:HIS:NE2	2.45	0.44
1:A:159:MET:HB3	1:A:193:PHE:HD2	1.83	0.44
1:P:174:LEU:HD13	1:P:209:TRP:CD2	2.52	0.44
1:A:189:THR:HG22	1:A:192:HIS:ND1	2.33	0.43
1:P:105:LYS:HA	1:P:139:TYR:CZ	2.53	0.43
1:J:50:LEU:HD21	1:J:65:LEU:HD22	1.99	0.43
1:P:409:CYS:SG	1:P:412:ARG:NH2	2.91	0.43
1:O:279:ALA:O	1:O:283:ARG:N	2.49	0.43
1:O:403:LYS:HB2	1:O:406:ASP:HB2	2.00	0.43
1:O:542:TYR:CZ	1:O:544:ARG:HB2	2.54	0.43
1:P:132:GLY:HA3	1:P:166:HIS:CE1	2.53	0.43
1:P:248:SER:HA	1:P:251:GLU:HG2	2.00	0.43
1:J:488:LEU:HD11	1:J:515:THR:HG23	2.01	0.43
1:A:226:ALA:HB1	1:A:234:VAL:HG23	2.00	0.43
1:O:104:VAL:HG11	1:O:136:ILE:HG23	2.00	0.43
1:O:512:ALA:HB2	1:O:551:THR:HA	2.01	0.43
1:P:216:ASN:OD1	1:P:220:MET:N	2.47	0.43
1:A:258:ALA:HB1	1:A:332:ARG:HB2	2.00	0.43
1:P:52:ILE:O	1:P:56:ASN:ND2	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:536:LEU:HD12	1:J:536:LEU:HA	1.91	0.43
1:P:210:ARG:HD3	1:P:210:ARG:HA	1.82	0.43
1:P:374:ARG:HD2	1:P:374:ARG:HA	1.88	0.43
1:P:374:ARG:O	1:P:374:ARG:NH1	2.52	0.43
1:O:33:ARG:HH22	1:O:71:VAL:HG23	1.84	0.43
1:A:243:ASP:OD1	1:A:243:ASP:N	2.47	0.43
1:A:502:HIS:O	1:A:505:ASP:HB3	2.19	0.43
1:A:534:SER:OG	1:A:568:MET:HE2	2.19	0.43
2:B:73:GLU:HB3	2:B:96:ALA:HB2	2.01	0.43
1:O:474:LEU:HD23	1:O:474:LEU:HA	1.80	0.43
1:P:19:THR:HG23	2:Q:78:GLU:OE1	2.18	0.43
1:P:329:LEU:HD23	1:P:329:LEU:HA	1.86	0.43
1:A:192:HIS:CE1	1:A:222:PRO:HG3	2.54	0.43
1:O:236:GLU:HA	1:O:239:LEU:HD12	2.00	0.43
1:O:255:LEU:HG	1:O:332:ARG:HB3	1.99	0.43
1:P:411:LEU:HG	1:P:450:LEU:HD13	2.00	0.43
1:J:117:THR:HB	1:J:121:ASN:HA	2.00	0.43
1:A:380:ASN:HD21	1:A:439:ASN:ND2	2.16	0.43
1:O:432:ASP:OD1	1:O:432:ASP:N	2.52	0.43
1:P:159:MET:HB3	1:P:193:PHE:HD2	1.84	0.43
1:J:305:ARG:HH21	1:J:323:ALA:HB1	1.84	0.42
2:B:114:LEU:HD11	2:B:122:LEU:HD13	2.00	0.42
1:P:63:ARG:HA	1:P:106:LEU:HG	2.00	0.42
1:A:341:ILE:HA	1:A:379:ARG:HH12	1.83	0.42
1:P:104:VAL:HA	1:P:107:LEU:HD23	2.00	0.42
1:J:529:ASP:OD1	1:J:533:ASN:N	2.53	0.42
1:A:390:GLN:NE2	1:A:499:ASP:OD2	2.53	0.42
1:A:493:ASN:ND2	1:A:495:ASN:OD1	2.49	0.42
1:A:537:HIS:CE1	1:A:576:PRO:HD3	2.54	0.42
1:O:101:PHE:HD1	1:O:136:ILE:HG12	1.83	0.42
1:P:20:LEU:HA	1:P:23:LEU:HD12	2.02	0.42
1:P:46:ARG:HB2	1:P:78:THR:HG23	2.01	0.42
1:J:31:ASP:O	1:J:35:LEU:HG	2.20	0.42
1:J:310:ASN:N	1:J:313:GLU:OE1	2.53	0.42
1:A:486:THR:HG23	1:A:489:HIS:H	1.84	0.42
1:O:227:ALA:HA	1:O:256:LEU:HG	2.01	0.42
1:P:352:ALA:HB1	4:R:4:UNK:HA	2.01	0.42
1:P:417:GLU:HA	1:P:420:GLN:HG2	2.00	0.42
1:O:179:ASP:OD2	1:O:181:ASN:ND2	2.47	0.42
1:O:526:ASN:ND2	1:O:563:GLY:O	2.51	0.42
1:J:255:LEU:HD11	1:J:335:ILE:HB	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:GLU:O	1:A:316:SER:OG	2.31	0.42
1:O:167:THR:HA	1:O:202:ILE:HG12	2.01	0.42
1:O:269:ILE:HD11	1:O:324:LEU:HD22	2.01	0.42
1:J:569:THR:N	1:J:626:PHE:O	2.49	0.42
1:P:511:ASN:HB3	1:P:514:VAL:HB	2.02	0.42
1:O:310:ASN:HB2	1:O:313:GLU:HB2	2.01	0.42
1:A:560:VAL:HG21	1:A:592:GLN:HB3	2.02	0.42
1:O:180:PRO:HG3	1:O:206:LEU:HD22	2.02	0.42
1:O:546:ILE:HG22	1:P:232:ALA:HB1	2.02	0.42
1:P:439:ASN:O	1:P:443:ASN:N	2.48	0.42
1:P:445:TYR:HE1	1:P:490:LEU:HD11	1.85	0.42
1:J:126:ARG:HH22	1:J:151:ASN:HB2	1.85	0.42
1:A:332:ARG:NE	1:A:346:PRO:HG2	2.35	0.42
1:A:392:PHE:HB3	1:A:453:ILE:HG21	2.01	0.42
1:A:402:VAL:HB	1:A:457:THR:HG21	2.02	0.42
1:O:31:ASP:OD1	1:O:31:ASP:N	2.51	0.42
1:O:286:ASP:HB3	1:O:290:ILE:HD12	2.02	0.42
1:P:96:ALA:HB1	1:P:128:ALA:HB2	2.02	0.42
1:A:549:PHE:HE1	1:A:588:LEU:HD11	1.85	0.41
1:P:207:ILE:HD13	1:P:207:ILE:HA	1.93	0.41
1:A:309:ARG:N	1:A:313:GLU:OE2	2.53	0.41
1:A:383:LYS:HE3	1:A:383:LYS:HB2	1.84	0.41
2:B:90:VAL:HG22	2:B:122:LEU:HD12	2.02	0.41
1:P:16:LYS:NZ	2:Q:79:GLU:OE2	2.54	0.41
1:P:101:PHE:CE2	1:P:139:TYR:HB2	2.56	0.41
1:J:312:GLN:HA	1:J:315:GLU:HB2	2.01	0.41
1:A:519:LEU:HD22	1:A:559:LEU:HD23	2.03	0.41
1:J:14:GLU:HG3	1:J:16:LYS:HG2	2.01	0.41
1:J:355:ALA:HB2	1:J:363:CYS:SG	2.60	0.41
1:J:548:ASP:OD1	1:J:548:ASP:N	2.52	0.41
1:A:125:LEU:HD13	1:A:140:LEU:HD22	2.02	0.41
1:O:138:LYS:HG2	1:O:172:TYR:CZ	2.55	0.41
1:J:437:MET:HB3	1:J:482:ARG:HH21	1.86	0.41
1:A:471:ILE:O	1:A:475:ILE:HG12	2.20	0.41
1:O:369:HIS:HA	1:O:372:HIS:HB2	2.01	0.41
1:O:488:LEU:HD22	1:O:523:ALA:HB1	2.02	0.41
1:P:459:CYS:HB2	1:P:464:GLN:HG2	2.03	0.41
1:J:77:GLY:O	1:J:88:GLY:N	2.54	0.41
1:A:403:LYS:HA	1:A:403:LYS:HD2	1.85	0.41
1:A:580:SER:OG	1:A:585:SER:OG	2.24	0.41
1:J:587:ILE:HD12	1:A:285:GLN:HG3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:115:ASN:HD21	1:O:145:ALA:HA	1.86	0.41
1:J:387:ARG:HA	1:J:390:GLN:OE1	2.20	0.41
1:J:437:MET:HB3	1:J:482:ARG:HE	1.85	0.41
1:J:492:VAL:O	1:J:510:PRO:HB3	2.21	0.41
1:J:499:ASP:O	1:J:503:THR:OG1	2.39	0.41
1:A:29:GLU:HG2	1:O:321:ARG:HH22	1.86	0.41
1:A:196:GLU:O	1:A:231:LYS:NZ	2.37	0.41
1:A:250:ILE:HG21	1:A:283:ARG:HE	1.85	0.41
1:A:418:ILE:HG12	1:A:443:ASN:HB3	2.03	0.41
1:A:501:PHE:HB3	1:A:502:HIS:H	1.78	0.41
1:O:222:PRO:HA	1:O:225:VAL:HG12	2.02	0.41
1:P:513:LEU:HD13	1:P:516:LYS:HD3	2.03	0.41
1:A:126:ARG:HE	1:A:160:ILE:HG13	1.85	0.41
1:A:554:SER:O	1:A:557:ILE:HG22	2.21	0.41
1:O:210:ARG:HH12	1:O:241:HIS:CD2	2.39	0.41
1:O:281:LEU:HD23	1:O:281:LEU:HA	1.93	0.41
1:P:8:VAL:HG21	1:P:35:LEU:HB3	2.02	0.41
1:J:280:MET:HE3	1:J:280:MET:HB2	1.99	0.40
1:J:384:ASP:OD1	1:J:384:ASP:N	2.53	0.40
1:J:385:LEU:HD23	1:J:385:LEU:HA	1.93	0.40
1:O:250:ILE:HD13	1:O:283:ARG:HA	2.03	0.40
1:O:322:ASP:OD1	1:O:354:TYR:OH	2.29	0.40
1:J:151:ASN:OD1	1:J:152:LYS:N	2.54	0.40
1:J:218:HIS:CE1	1:J:341:ILE:HG13	2.54	0.40
2:B:80:LEU:HA	2:B:83:GLN:HB2	2.03	0.40
1:O:48:THR:HG22	1:O:50:LEU:N	2.35	0.40
1:O:141:VAL:HG21	1:O:172:TYR:HE2	1.86	0.40
1:O:244:CYS:O	1:O:249:ARG:NH2	2.54	0.40
1:J:135:ASP:OD1	1:J:135:ASP:N	2.53	0.40
1:A:546:ILE:HA	1:A:549:PHE:HB2	2.03	0.40
1:A:567:ASP:HB3	1:A:599:CYS:SG	2.61	0.40
1:O:251:GLU:HA	1:O:254:GLU:HB2	2.04	0.40
1:P:262:ASN:HA	1:P:350:ARG:HH21	1.86	0.40
2:Q:88:LYS:HD2	2:Q:88:LYS:HA	1.93	0.40
1:J:364:ILE:HD13	1:J:364:ILE:HA	1.88	0.40
1:A:82:ASP:OD1	1:A:82:ASP:N	2.48	0.40
1:P:13:SER:HA	1:P:56:ASN:HD21	1.86	0.40
1:P:449:TYR:OH	1:P:497:PRO:O	2.39	0.40
1:J:540:VAL:HG22	1:J:580:SER:HA	2.04	0.40
1:A:597:LEU:C	1:A:599:CYS:H	2.30	0.40
2:Q:108:GLN:H	2:Q:108:GLN:HG3	1.76	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	625/627 (100%)	578 (92%)	47 (8%)	0	100	100
1	J	625/627 (100%)	597 (96%)	28 (4%)	0	100	100
1	O	590/627 (94%)	564 (96%)	26 (4%)	0	100	100
1	P	560/627 (89%)	522 (93%)	38 (7%)	0	100	100
2	B	70/121 (58%)	67 (96%)	3 (4%)	0	100	100
2	C	59/121 (49%)	58 (98%)	1 (2%)	0	100	100
2	G	9/121 (7%)	7 (78%)	2 (22%)	0	100	100
2	Q	65/121 (54%)	65 (100%)	0	0	100	100
2	S	58/121 (48%)	56 (97%)	2 (3%)	0	100	100
All	All	2661/3113 (86%)	2514 (94%)	147 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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	536/536 (100%)	536 (100%)	0	100	100
1	J	536/536 (100%)	536 (100%)	0	100	100
1	O	476/536 (89%)	476 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	P	443/536 (83%)	443 (100%)	0	100	100
2	B	63/107 (59%)	63 (100%)	0	100	100
2	Q	58/107 (54%)	58 (100%)	0	100	100
All	All	2112/2358 (90%)	2112 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	J	75	GLN
1	J	143	ASN
1	J	181	ASN
1	J	310	ASN
1	J	382	HIS
1	J	573	ASN
1	A	42	GLN
1	A	72	GLN
1	A	74	GLN
1	A	75	GLN
1	A	100	HIS
1	A	266	ASN
1	A	362	GLN
1	A	378	ASN
1	A	380	ASN
1	A	390	GLN
1	A	443	ASN
1	A	458	GLN
1	A	470	GLN
1	A	504	ASN
1	A	526	ASN
1	A	613	GLN
2	B	108	GLN
2	B	111	GLN
1	O	100	HIS
1	O	113	ASN
1	O	116	HIS
1	O	262	ASN
1	O	266	ASN
1	O	362	GLN
1	O	380	ASN

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Mol	Chain	Res	Type
1	O	439	ASN
1	P	56	ASN
1	P	266	ASN
1	P	345	HIS
1	P	357	ASN
1	P	378	ASN
1	P	458	GLN
1	P	464	GLN
2	Q	67	GLN
2	Q	95	ASN
2	Q	112	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.