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PDB ID) :	8HY0
EMDB ID) :	EMD-35084
Title	e :	Composite cryo-EM structure of the histone deacetylase complex Rpd3S in
		complex with nucleosome
Authors	3 :	Cui, H.; Wang, H.
Deposited or	ı :	2023-01-05
Resolution	ı :	3.10 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 (i) 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 (1)) were used in the production of this report:

EMDB validation analysis	:	FAILED
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure: $ELECTRON\ MICROSCOPY$

The reported resolution of this entry is 3.10 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	$egin{array}{c} { m Whole \ archive} \ (\#{ m Entries}) \end{array}$	${f EM} {f structures} \ (\#{f Entries})$
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 <=5%

Mol	Chain	Length	G	Quality of chain	
1	А	135	36%	40%	24%
1	Е	135	36%	50%	14%
2	В	102	29%	49%	22%
2	F	102	47%	30%	23%
3	С	129	50%	35%	16%
3	G	129	48%	34%	18%
4	D	122	42%	37%	21%
4	Н	122	52%	25%	23%
5	Ι	352	40%	9% 52%	



Conti	nueu fron	i previous	page					
Mol	Chain	Length		G	Quality of c	hain		
6	J	352	38%	, 2	11%	5	52%	
7	K	1536	29%	7%		64%		
8	L	433		73%			16%	11%
9	М	401		56%		17%	27%	
9	О	401	25%	14%		61%		
10	Ν	684	4	4%	11%		45%	
10	Р	684	18% 59	%		78%		



2 Entry composition (i)

There are 11 unique types of molecules in this entry. The entry contains 28821 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.

Mol	Chain	Residues		At	oms	AltConf	Trace		
1	А	102	Total 837	C 529	N 162	0 143	${ m S} { m 3}$	0	0
1	Е	116	Total 945	C 591	N 189	0 163	${ m S} { m 2}$	0	0

• Molecule 1 is a protein called Histone H3.

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
А	110	ALA	CYS	engineered mutation	UNP A0A310TTQ1
Е	110	ALA	CYS	engineered mutation	UNP A0A310TTQ1

• Molecule 2 is a protein called Histone H4.

Mol	Chain	Residues		At	oms		AltConf	Trace	
2 B	80	Total	С	Ν	0	S	0	0	
	D	00	641	405	125	110	1	0	0
2 F	Б	70	Total	С	Ν	0	S	0	0
	Г	19	627	395	121	110	1	0	0

• Molecule 3 is a protein called Histone H2A.

Mol	Chain	Residues		Ato	ms		AltConf	Trace
3	С	109	Total 843	C 531	N 167	O 145	0	0
3	G	106	Total 818	C 516	N 160	O 142	0	0

• Molecule 4 is a protein called Histone H2B.

Mol	Chain	Residues		At	oms	AltConf	Trace		
4	D	96	Total 757	C 475	N 140	0 140	$\frac{\mathrm{S}}{2}$	0	0



Mol	Chain	Residues		At	oms	AltConf	Trace		
4	Н	94	Total 736	C 463	N 132	O 139	${ m S} { m 2}$	0	0

• Molecule 5 is a DNA chain called DNA (352-MER).

Mol	Chain	Residues		A	AltConf	Trace			
5	Ι	170	Total 3466	C 1648	N 623	O 1025	Р 170	0	0

• Molecule 6 is a DNA chain called DNA (352-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J	170	Total 3504	C 1659	N 660	O 1015	Р 170	0	0

• Molecule 7 is a protein called Transcriptional regulatory protein SIN3.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	K	549	Total 4597	C 2954	N 774	0 854	S 15	0	0

• Molecule 8 is a protein called Histone deacetylase RPD3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L	384	Total 3048	C 1941	N 512	O 569	S 26	0	0

• Molecule 9 is a protein called Chromatin modification-related protein EAF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
Q	М	204	Total	С	Ν	0	\mathbf{S}	0	0
3	111	234	2398	1541	394	449	14	0	0
0	0	156	Total	\mathbf{C}	Ν	0	\mathbf{S}	0	0
9	U	150	1275	823	204	240	8	0	0

• Molecule 10 is a protein called RCO1 isoform 1.

Mol	Chain	Residues	Atoms				AltConf	Trace	
10	Ν	375	Total 3073	C 1953	N 529	O 573	S 18	0	0



Mol	Chain	Residues	Atoms					AltConf	Trace
10	Р	151	Total 1249	C 802	N 206	0 231	S 10	0	0

• Molecule 11 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
11	L	1	Total Zn 1 1	0
11	Ν	4	Total Zn 4 4	0
11	Р	2	Total Zn 2 2	0



3 Residue-property plots (i)

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.

Chain A:	36%	40%	24%
ALA ARG THR LLYS CLN GLN ALA ALA ALA ARG LYS SER THR CLY GLY	LYS ALA PRO PRO CLYS CLN CLY CLYS CLYS ALA ALA ALA ALA ALA ALA ALA ALA ALA	11HR 11HR 136 133 136 133 133 133 133 143 143 144 144 144 144	454 453 158 158 160 160 161 162 163 163 163 165 165
F67 LT0 LT0 LT0 T14 T14 A72 Q76 Q76 C78 C78 C78 C78 C78	L82 182 M90 M90 M90 E94 E94 E97 E97 M100 L100 L100 L100 L100 L100 L100	100 100 100 100 100 100 110 1110 1110	LLZ R128 R128 T130 T130 ALA ALA
• Molecule 1: Hist	tone H3		
Chain E:	36%	50%	14%
A1 R2 A7 A7 A7 810 810 612 612 612 612	A15 P16 R17 R17 R17 A14 A14 A14 A14 A14 A14 A14 A14 A14 A14	0.17 0.17 1.12 0.17 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12	55% 161 161 163 165 165 165 166 166 166 166 166 166 166
V71 R72 E73 F75 A75 A75 P77 F77 F78 C81 L82 L82 L82 L82	F84 W89 M90 M90 A91 E94 E94 E97 E97 E97 E97 E97 E106 T100 M100 M100	A110 1112 1113 1114 1114 1114 1116 1119 1120 1124 1124 1124 1124 1124 1124	A12/ R128 1130 R131 E133 E133 ALA ALA
• Molecule 2: Hist	tone H4		
Chain B:	20%	49%	22%
	2570	1970	
SER GLY GLY GLY GLY CLYS GLY GLY CLY GLY CLY CLY	GLY ARG LYS LYS ARG ARG ARG ARG ARG ARG X2 126 126 126 126 128 123 128 129 128 129 129 129 129 129 129 129 129 129 129	R 234 R 335 R 338 R 338 R 338 R 338 R 338 R 440 R 444 R 444 R 444 R 444 R 444 R 445 R 450 R 445 R 445	Y51 Y51 T54 R55 K59 K59 F61 F61 E63 E63 B63
V65 SER 166 GLY 170 GLY 171 LNS 173 GLY 175 GLY 178 GLY 178 GLY 178 GLY	V81 CV 182 6LY 182 AIA 182 AIA 182 AIA 182 AIA 182 AIA 183 AIA 184 AIA 185 AIA 186 AIA 186 AIA 186 AIA 186 AIA 197 VAL 193 K31 194 A22 197 A23 126 120 197 A33 126 129 127 A33 128 A33 129 A33 120 A33	GLY 134 135 137 137 135 137 135 135 135 140 144 145 145 145 145 145 145 145 145 145	100 154 154 158 158 158 165 162 162 162 163 163
• Molecule 2: Hist	toue H4	G.Y 134 135 137 137 138 138 138 138 146 149 149 149 149 149 149 149 149 149 149	Y 51 Y 51 R 55 R 56 R 60 F 61 F 61 F 61 F 63 F 63 F 63 F 64
• Molecule 2: Hist	tone H4 47%	30%	23%
• Molecule 2: Hist Chain F:	CLY MARG M	R40 R40 R44 R44 R44 R35 R35 R35 R35 R40 R40 R40 R40 R44 R44 R44 R44 R44 R44	1002 1004 100 <td< td=""></td<>

• Molecule 1: Histone H3



• Molecule 3: H	istone H2A			
Chain C:	50%		35%	16%
SER GLY ARG CLY CLY CLN CLN CLY CLY LYS LYS LYS	K15 T16 817 818 818 819 820 821 123 123 822 822 822	V30 V31 H31 H31 H31 L34 L34 L34 L34 R35 R35 R35 R35 R35	L51 V54 V54 158 163 163 163 165 165 165 165 165	176 1776 1778 1778 1778 1778 1778 1778 1
N89 1990 1990 1993 193 193 193 193 194 193 194 197	L115 L116 P117 F117 K119 GLU SER SER SER SER	A LLYS LYS LYS		
• Molecule 3: H	istone H2A			
Chain G:	48%		34%	18%
SER GLY ARG CLY CLY CLY CLY CLY CLY CLY CLY THR ALA	K13 116 817 818 818 819 819 825 725 725	V27 V30 H31 R35 Y39 Y39	V49 V54 L51 V54 V54 L55 E56 L58 L58 L58 L58 A60 B61	264 067 067 067 072 172 176 176 176 176 176
R81 183 183 183 183 188 188 188 199 190 197	V100 T101 T102 T102 L108 P108 N110	K118 LYS GLU GLU GLU SER SER SER SER SER SER SER SER SER SER	SER	
• Molecule 4: H	istone H2B			
Chain D:	42%		37%	21%
ALA LYS SER ALA PRO PRO PRO LYS CLYS SER LYS SER	LYS ALA VAL THR LYS LYS GLN LYS CLN CYS CS CN CS CS CS CS CS CS CS CS CS CS CS CS CS	LYS LYS R26 R27 K28 R27 R27 R34 I36 I36 I36 I36	V38 V38 K40 K41 V41 V41 V43 V43 V43 V43 V43 V43 V43 V43 V43 V43	K54 A55 M55 M55 M59 M59 K74 K76 K76 K76 K76 K76
A78 N81 N81 R83 R83 R83 R83 R89 E90 191 191	T93 A94 R96 L97 L98 L99 L99 E102 L103	K105 V108 T112 Y118 A121 LYS		
• Molecule 4: H	istone H2B			
Chain H:	52%		25%	23%
ALA LYS SER SER ALA ALA ALA PRO PRO CLYS CLYS SER SER	LYS ALA ALA ALA THR THR LYS GLN LYS LYS CSLY CSLY	LYS LYS LYS ARG ARG LYS LYS T29 T36 Y37 Y38	Y39 Y41 Y41 L42 Y43 F47 P47 D48 T49 M56 S57 S57	M59 F62 IT0 T70 M74 S75 R76 R76 L77 V80
922 193 193 194 197 197 198 198 198 198 198 1103 1103	V108 S109 V118 K122			
• Molecule 5: D	NA (352-MER)		
Chain I:	40%	9%	52%	
DG DA D1 D1 D1 D1 D1 D1 D1 D1 D1	DG DG DG DC DC DC DC DC DC	DC DC DC DC DC DC DC DC DC	DG D7 D7 D7 D7 D7 D7 D7 D7 D7 D7 D7 D7	01 04 05 05 05 05 07 07 07 07 07 07
DA DC DC DC DC DC DC DC DC DC DC	DA DA DA DA DA DA DA DA DA DA DA DA DA D	3 E 2 E 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	00 10 10 10 10 10 10 10 10 10 10 10 10 1	DA DA DA DA DA DA DA DA DA DA DA DA DA D



DT DA DG DT	2 1 2 2	D D D D D	D D D D D	DG DC DA	DG DA DA DT	DA DT DA DA			DA DT DA DA DA	DA DG DT C164	T174 A175 T179 G180
C194 C195 G214	T215 A216 G217	C219 A220 G221	A237 C251	1252 G260 C269	T281 T282 C287	C295 G299	C302 C303 T304 G305 A308	A314 T315 C321	T333 DG DA DA DC DC	DG DG DA DT	
• Mo	lecule	e 6: D	NA ((352-M	ER)						
Chair	1 J: 🗖		3	8%		11%			52%		_
DA DT DC DG	DT DT DT	DT DC A11	T36 G37	649 A50 G51 G60	T69 T70 G75	176 177 878 880	481 C82 C83 C84 C84 C85	689 A90 C100 G101	T106 A110 G111 G131	C142 G143 G148 G149	C151 C151 C163 T169
A170 C178 A179	G180 DT DA	TO TO TO	DA DA DT	DC DT DG DG	DC DA DC DG	DG DA DG TG	AU TU TU TU TU	DT DD DC DC		TO D D D D D D D D D D D D D D D D D D D	DC DA DG DG
DA DG DT	DA DC	22255	5 0 0 0 0	DG DT DA	DA DA DC DC	DC DC DC	DC DC DC DC	DG DG DA DA	20 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	DT DA DG DC	DG DT DG DC DT
DA DG DA	DC DG	DT DA	DG DC	DC DA DT DT	DG DG DC	DC DC DC	DC DC DC	DG DG DG TG	DD DC DC	DA DC DA DA	DT
• Mo	lecule	e 7: T	ransc	riptior	nal regu	latory	protein	SIN3			
Chair	1 K: '		29%		7%			64%			-
MET SER GLN VAL	TRP HIS ASN SEP	ASN SER GLN GLN	ASN ASP VAL	ALA THR SER ASN ASP	ALA THR GLY SER ASN	GLU ARG ASN GLU LYS	GLU PRO SER LEU GLN GLY	ASN LYS PRO GLY PHE VAT	GLN GLN GLN GLN ARG IILE	THR LEU PRO SER LEU SER	ALA LEU SER THR LYS GLU
GLU MET ASP SER ARG GLN ARG VAI	ASP TRP SER HIS ASN ASN ASN	GLN ASN GLN ASN ALA GLN ALA GLN	THR ASN SER ASP HIS VAL	ALA ALA ALA THR HIS SER ILE ASN LEU ASP	GLY ALA TYR THR PRO GLY PRO SER PRO ASN	HIS GLU SER ARG ASN ASN ALA GLU MET LYS	PRO GLU SER PRO ILE SER ALA LEU THR GLN ASP GLY	SER ASN ALA LYS LEU PRO LYS GLY GLN PHE PRO	HIS GLN GLU GLN TYR GLN HIS GLN PRO ARG ARG	PRO THR LYS LEU SER PRO SER SER SER LEU SER SER	SER ALA PRO LEU SER THR ILE THR ASN LYS ALA GLU
SER GLU MET LEU ASP SER MET ARG GLN ASN ARG VAL	ALA ASP TRP GLY SER HIS PRO ASN ASN AIA CIV SEP	PRO GLN ASN LEU GLN SER PRO ALA GLN SER TUD ALA GLN	VAL THR JSN VAL THR JSN GLY SER ASP ALA HIS VAL	ALA ALA THA SER ALA THR PHE HLS SER SER ILE ASN LEU LEU ASP	SER GLY ALA ARG TYR THR PHE PRO GLY ASP PRO SER ASN PRO ASN	PRO HIS CLU LEU SER ARC PRO ASN ASN ILE ALA CLU LYS MET LYS	ALA PRO GLU PRO SER PRO VIL ILE SER HIS ALA LEU THR CLN GLU ASP GLY	GLU SER ASN PRO ALA LYS LYS LEU PRO SER LYS GLY TYR GLN PHE ASN PRO VAI	GLY HIS GLN LEU GLU GLN GLN TYR GLN GLU PIS GLN GLU PRO ARG GLU ARG ILE	LYS PRO THR ALA LYS LEU THR SER PRO GLN SER SER ARG SER LEU PRO SER SER	GLN SER ALA ASP PRO LEU CYS SER SER LYS ILLE THR GLU ASN LYS VAL ALA GLU
PRO SER GLU MET ALA LEU ASP SER GLY MET ARG GLA VAL ASN ARG VAL	GLN ALA ASP TRP PRO GLY SER HIS ALA PRO ASN SEN ASN ASN SEN ASN SEN	ALA PRO GLN ASIN PRO LEU GLN SER ASP PRO ALA GLN DAN TUN ITTI	SER VAL THR JOIN SER VAL THR ASP ASV ALA HIS VAL	HIS ALA ALA ALA ALA SER ALA THR ALP SER HIS SER ALA SER ILE ASN ASN LEU LEU ASP	ASP SER GLY ALA ASP ARG TYR THR ASN PRO GLY ASN ASP PRO SER ASN ASN PRO ASN	ASN PRO HIS CLU GLU LEU SER ARG SER ILE ALA GLU HIS LYS MET LYS	ASP ALA PRO GLU ASP ALA PRO GLU ASP VAL ILE SER ALA THE ALA LEU ASP THE ALA LEU TYR GLU ASP GLY	ARG GLU SER ASN PRO PRO ALA LYS LEU LYS LEU PRO ASN SER LYS GLY VAL TYR GLM PHE LYS ASN PRO VAI	ASP GLY HTS GLN ALA LEU GLU GLN LEU GLU TYR GLN TYR GLU PRO ARG LEU GLU ARG LLE	GLU LYS PRU THR CLIN LYS PRU THR VAL THR SER LEU LYS GLN SER SER PRU SER LEU DRU SER LEU	PHE GLM SER ALA SER ASP PRO LEU SER CYS SER SER PRO LYS ILE THR PRO GLU ASN LYS ASP VAL ALA GLU
TLE PRO SER GLU MET TYR ALA LEU ASP SER ASN GLY MET ARG GLA LEU VAL ASN AGG VALA	PHE GLN ALA ASP TRP LEU PRO GLY SER HIS ATA ASP ALA ASP TRP TEP ALA ASP TRP ASP ALA ASP ASP ASP	MET ALA PRO GLI ASIN LYS PRO LEU GLN SER ASP PRO LLA GLN SER ASP PRO ALA GLN SER ASP PRO ALA GLN SER	TTTL FRU TILL THE STATE OF STA	ALA HLS ALA ALA ALA ILE ALA SER ALA THR THR ALA SER HLS SER THR ALA SER ILE ASN PRO ASN LEU LEU ASP	GLY ASP SER CLY ALA VAL ASP ARG TYR THR ULL ASN ARG TYR THR ULL ASN ASP PRO GLY ASN ASN PRD SER GLY ASN ASN ASN PRO ASN	VAL ASN PRO HIS GLU SER GLU LEU SER ARG THR ASN PRO ASN ASN LEU SER ILE ALA GLU PHE HIS LYS MET LYS	AKG GLV ALLA PRU GLU ATK GLV PRO SER PRO TYR ASP VAL ILE SER PRO ALA THS ALA LU ILE ASP THR ALA LEU ILEU TYR GLU ASP GLY	LLE ARG GLU SER ASN GLN PRO PRO ALA LYS GLY LEU LYS LEU PRO PHE ASN SER LYS GLY ASN VAL TYR GLN PHE TYR OLN PHE	PHE ASP GLN HIS GLN LEU ALA LEU GLN TR GLN PRO LEU GLN TR GLN GLN PRO LEU GLN TR GLN GLN TYR LEU GLU PRO ARG TYR LEU GLU PRO ARG TYR LEU GLU ARG ILE	AKG GLU LYS PRU THR LLE GLU LYS PRU THR GLU VAL THR SER LEU CYS LYS GLN SER PRO SER PRO SER LEU SER PRO SER LEU SER CIN SER SER SER	ASN PHE GLN SER ALA PRO SER ASP PRO LEU ASP SER CYS SER RER ASP THE CYS SER ALA THR THR PRO PRO GLU ASN LYS ILE ASP VAL ALA GLU
ARG ILE PRO SER GLU MET VAL TYR ALA LEU ASP SER THR ASN GLY MET ARG GLAG THR LEU VAL ASN ARG VALA	PRO PHE GLN ALA ASP TRP MET LEU PRO GLY SER HIS GLY ASP ALA AN AN ASN TRP TUP TE ASD AN ASN SER HIS OLY ASP ALA AN AN ASN SER	THR MET ALA PRO GLA ASIA THR LYS PRO LEU GLA SER VAL ASP PRO LLA GLA SER VAL ASP PRO ALA GLA SER PRO ALA GLA SER	ANN I'TE FIN UIL THE SAN ASN SER SER VAL THR ASN ASN SER SER GLY SER ASP ILE GLN ASN AI.A HIS VAL	SEK ALA HIS ALA ALA ALA PRO ILE ALA SER ALA THR SER ASP PHE HIS SER ARG PRO ASN LEU LEU ASP ARG PRO ASN LEU LEU ASP	GLY GLY ASP SER CLY AIA THR VAL ASP ARG TYR THR THR UAL ASP ARG TYR THR THR ULL ASN PHE PRO GLY ALA ASN ASN PHE PRO GLY ALA ASN ASN ASN PRO ASN	GLN VAL ASN PRO HIS GLU GLU SER GLU LEU SER ARG GLU SER GLU LEU SER ARG GLEU THR ASN PRO ASN ASN GLY LEU SER ILE ALA GLU SER PHE HIS LYS MET LYS	PHE AX CU CU CRU AX GLU PRO GLU CRU TYR GLU PRO PRO GLU SER TYR ASP VAL TLE PRO GLU SER TR ASP THR ALA PRO GLU SER TR ASP THR ALA PRO GLU SER TEU ASP THR GLU ASP GLY GLY LLU THR GLU ASP GLY GLY	ASN TLE ARG GLU SER ASN ALL CLN PRO PRO ALA LYS VAL GLN LEU LYS LEU PRO GLN PHE ASN SER LYS GLN PHE ASN VAL TYR GLN PHE PHE IVS ASN VAL VAL VAL VAL AND	THR ASN THR ASN GLV HTS GLN ASN LEU ALA LEU GLN TR GLN VAL PRO LEU GLN TR GLN GLN VAL PRO LEU GLU GLN GLN GLN WET GLY TYR GLU HTS GLN GLN WAL TYR GLU PRO ARG GLN ARG VAL TYR LEU GLU ARG ILE GLN	PRU AKG GLU LYS PRU THR SER ILE GLU LYS PRU THR SER GLU VAL THR SER PRO VAL CYS LYS GLN SER SER TYR SER PRO GLN SER PRO SER LEU SER PRO SER LEU SER SER SER SER SER SER	SER ASN PHE GLN SER ALA GLU PRO SER ASP PRO LEU GLN ASP SER CYS SER RER ALA THR CYS SER THR THR THR GLN PRO PRO GLU ASN LYS ASP VAL ALA GLU
GLN ARG ILE PRO SER GLU MET GLM VAL TYR ALA LEU ASP SER GLN THR ASN GLY MET ARG GLA SER THR LEU VAL ASN ARG VALA	LEU PRO PHE GLM ALA ASP TRP PRO MET LEU PRO GLY SER HIS LEU GLY ALA PRO ASP TRP ATP PRO AN ASP TRP ASP ATP ASP ASP ASP ASP ASP	ALA THR MET ALA PRO GLN ASIN THR THR LYS PRO LEU GLN SER SER VAL ASP PRO LEU GLN SER THR DAT ASP PRO ALA GLN SER	DATA ANN LTIL FLAU ANN LEU ANN LEU ANN SER VAL THA ANN LEU ANN SER SER VAL THA ANN PRO THE CLN ANN ANN ANN ANN ANN ANN ANN ANN ANN A	SEK SEK ALA HIS ALA ALA ALA ILE PRO ILE ALA SER ALA THR GLN SER ASP PHE HIS SER RIE FIN GLY THR ALA SER ILE ASN PRO ARG PRO ASN LEU LEU ASP	GLU GLY GLY ASP SER GLY ALA MET THR VAL ASP ARG TYR THR PRO THR ILL ASP ARG TYR THR HIZ ALA ARG ASN ASP PRO GLY ASN ASN PRO ASN ASN PRO ASN	ARG GLM VAL ASN PRO HIS GLU GLM GLU JER GLU LEU SER ARG GLU GLU LEU SER GLU ARG PRO GLU THR ASN PRO ASN PRO GLU JEU SER ARG PRO GLU JEU SER ARG GLU SER HIS LVS GLU GLN SER HIS LVS MET LVS	SER PRIE ALC GLU GLU SER PRIE GLU GLU SER PRIE GLU GLU GLU SER CLU TYR ASP VAL ILLE SER LLEU SER PRO GLU TYR ASP VAL ILLE ASP THR ALA LEU TYR GLU ASP THR CLU GLU ASP CLU TYR GLU ASP CLU TYR GLU ASP CLU	GLN A.S.N ILLE ARG GLU SER A.S.N GLU GLN END PRO ALA LYS A.S.P VAL GLN PHE LEU LYS LEU PRO A.LA GLN PHE A.S.N SER LYS GLY I.YS GLN A'SN VAL TYR GLN PHE I.YS GLN A'SN VAL TYR GLN PHE	ASP 512 512 512 512 512 512 512 512 512 512	SER PRO ARG GLU L'S PRU THR GLN SER ILE GLN L'S PRU THR ALA SER GLU VAL THR SER PRO ILE VAL CYS LYS GLN SER SER SER TYR SER PHG SER LEU TYR SER PHG SER LEU SER TYR SER PHG SER LEU	VAL SER ASN PHE GLA SER ALA ASN GLU PRO SER ASP PRO LEU LYS GLM ASP SER CYS SER ALA THR ASP PRO CLU TYS CLA THR ASP PRO GLU ASP PRO LUYS THR ASP TLE ASP VAL ALA GLU
ARG GLN ARG ILE PRO SER GLU MET PHE GLN VAL TYR ALA LEU ASP SER ALA GLN THR ASN GLY MET ARG GLA ASE SER THR LEU VAL ASN ARG VALA	GLN LEU PRO PHE GLN ALA ASP TRP PRO PRO MET LEU PRO FIL FIL	TYR ALA THR MET ALA PRO GLN ANN LYS THR THR LYS PRO LEU GLN SER HYS SER VAL ASP ASP PRO ALA GLN SER DHT ASP ASP PRO ALA GLN SER DHT ASP ASP PRO ALA GLN SER DHT ASP ASP PRO ALA GLN SER	LED CLY ANN LYE FNG LATH LAD CAN CUU LEU ANN SER SER VAL THR ANN CUU LEU ANN SER SER GLY SER ASP THE PRO THE CLN ANN ALA HIS VAL	LEU SEK SEK ALA HIS ALA ALA ALA GLN ILE PRO ILE ALA SER ALA THR THR GLN SER ASP PHE HIS SER TYR GLN GLY THR ALA SER ILE ASN GLN PRO ARG PRO ASN LEU LEU ASP	ARG GLU GLY GLY ASP SER GLY ALA GLU MET THR VAL ASP ARG TYR THR GLN MET THR VAL ASP ARG TYR THR GLN PRO THR ULU ASN PHE PRO GLY FYS ALA ASP GLY ASN PHE PRO GLY PRO HIS ALA ASN ASN PRO SEN	ILE ARG GLN VAL ASN PRO HIS GLU ASN GLN GLU SER GLU SER ARG QLU ILE SER GLU LEU SER ARG QLU ILE SER GLU SER ARG VAL PRO GLU SER ILE ALA YAL PRO GLY SER ILE ALA TYR GLN SER HIS LYS MET LYS	ALA SER PHE ATG GLU CLU CLU CLU CLU CLU CLU CLU CLU CLU C	PHE GLN ASN LLE ARG GLU SER ASN GLN GLN FNO GLU SER ASN ASN GLU GLN FNO GLU SER ASN ASN GLN GLN FNO LYS GLN FNO LYS GLN FNO ASN GLN GLN EU GLN FNO LYS GLN FNO	LEU ASN SER PHE ASP GLN HIS GLN LEU VAL ASN ER PHE ASP GLN HIS GLN GUU ASP VAL ASN LEU ALA LEU GLN FIF GLN FIF	LYS SER PRU AKG GLU LYS PRU THR PHE GLM SER ILLE GLU LYS PRU THR LEU ALA SER GLU VAL THR SER LEU PRO ILE VAL CYS LYS GLM SER SER SER TYR SER PRO SER LEU SFR TYR SER PRO SER SER LEU SFR TYR SFR GLU PRO SER SER SER	SERVALSERASNPHEGLNSERALAALAASNGLUPROSERASPPROLEUSERLYSGLNASPSERCYSSERSERALAILEASNASPSERCYSSERTHEASNLYSGLNASPPROGLUASNLYSASNLYSGLNPROPROGLUASNLYSGLNTHRASPILEASPVALALAGLU
GLN ARG CLN ARG ILE PRO SER GLU MET VAL PHE GLN VAL TYR ALA LEU ASP SEE GLN THR ASN GLY HET ARG CLN HIS ASP SER THR LEU VAL ASN ARG VALA	ALA GLN LEU PRO PHE GLN ALA ASP TRP GLN PRO PRO MET LEU PRO GLY SER HIS GLN ASP LEU GLY ASP ALA ASP AN ASN UCS TIP TEN TUP TF ASP ALA ANA ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN	ALLA TYR ALA THR MET ALA PRO GLN ASN GLN LYS THR THR LYS PRO LEU GLN SER CLN HYS SER VAL ASP ASP PRO LEU GLN SER CVN DUE DE ASP PRO LEU GLN SER	HIS FILE OLA ANN FILE FILE FILE ANN ANN FILE FILE ANN ANN FILE FILE ANN ANN ANN ANN ANN ANN ANN ANN ANN AN	GLM LEU SER SER ALA HIS ALA ALA ALA MET GLN ILE PRO ILE ALA SER ALA THR HIS THR GLN SER ASP ASP PHE HIS SER ALA TYR GLN GLY THR ALA SER ILE ASN GLN GLN PRO ARG PRO ASN LEU LEU ASP	ALA ARG GLU GLY GLY ASP SER GLY ALA GLN GLU MET THR VAL ASP ARG TYR THR ALA GLN PRO THR VAL ASP ARG TYR THR GLN ILN TLL ASN PHE PRO GLY GLY GLY GLN ILS ALA ASN ASN PHE PRO GLY GLY ALA PRO HIS ALA ASN ASN PRO GLY GLY	GLN ILE ARG GLN VAL ASN PRO HIS GLU ALA ASN GLN GLU SER GLU LEU SER ARG GLN ULU ILE UEU SER GLU LEU SER ARG ALA VAL PRO GLU LEU SER ILE ALA GLU GLN TYR GLN SER PHE HIS LYS MET LYS	VAL A.A S.R. PHE A.Y. G.U. PRO G.U. C.U. C.U. C.U. C.U. C.U. C.U. C.U.	GLN PHE GLN ASN LLE ARG GLU SER ASN GLN GLN GLN GLN FNO GLN SEN ASN GLN GLN GLN FNO GLN FNO LYS GLN FNO LYS GLN FNO LYS GLN FNO FNO	PR0 LE0 XI ZI ZI <thzi< th=""> ZI ZI</thzi<>	dly Lys ser pro and glu Lys pro thr His pre glu ser glu val tyr pro lev Pro lev ala ser glu val thr ser pro ser pro ile val oys lev ser ser ser Asv asp ser tyr ser pro ser lev ser tyr ser pro ser lev ser ser ser ser ser ser ser ser ser arc ser	GLTSERVALSERASNPHEGLNSERALAILEALAASNGLUPROSERASPPROLEUPROSERLYSGLUASPSERCYSSERSERGLNASNLYSGLNASPSERCYSSERTHEGLNASNLYSGLNPROPROGLULYSGLNASNLYSGLNPROPROGLULYSASNGLNTHRASPILEASPVALALAGLNTHRASPILEASPVALALACUV















4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	81856	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE	Depositor
	CORRECTION	
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{\AA}^2)$	44	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	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: ML3, ZN

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

Mal	Chain	Bond	lengths	B	ond angles
	Ullalli	RMSZ	# Z > 5	RMSZ	# Z > 5
1	А	0.50	0/836	0.64	0/1120
1	Е	0.48	0/957	0.65	0/1279
2	В	0.61	0/648	0.70	0/868
2	F	0.58	0/634	0.76	0/848
3	С	0.48	0/853	0.61	0/1149
3	G	0.50	0/828	0.63	0/1117
4	D	0.55	0/768	0.66	0/1032
4	Н	0.47	0/747	0.54	0/1004
5	Ι	0.55	0/3882	0.94	0/5985
6	J	0.50	0/3936	0.89	0/6077
7	K	0.34	0/4699	0.54	1/6334~(0.0%)
8	L	0.34	0/3127	0.51	0/4231
9	М	0.31	0/2446	0.57	3/3292~(0.1%)
9	0	0.30	0/1298	0.59	1/1755~(0.1%)
10	N	0.30	0/3144	0.57	6/4234~(0.1%)
10	Р	0.31	0/1278	0.60	2/1716~(0.1%)
All	All	0.43	0/30081	0.69	13/42041~(0.0%)

There are no bond length outliers.

All	(13)	bond	angle	outliers	are	listed	below:
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Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
7	K	1288	LEU	CA-CB-CG	8.38	134.58	115.30
10	Р	300	ASP	CB-CG-OD1	7.97	125.47	118.30
10	N	259	ASN	C-N-CA	-7.90	101.96	121.70
10	N	259	ASN	O-C-N	7.16	134.15	122.70
10	N	259	ASN	CA-C-N	-6.62	102.63	117.20
10	N	374	ASP	CB-CG-OD1	6.61	124.25	118.30
10	N	408	ASP	CB-CG-OD1	6.59	124.23	118.30
9	М	348	ASP	CB-CG-OD1	6.39	124.05	118.30



Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
9	0	234	ASP	CB-CG-OD1	6.34	124.01	118.30
10	Ν	508	PRO	CA-N-CD	-5.86	103.30	111.50
10	Р	319	LEU	CA-CB-CG	5.60	128.17	115.30
9	М	18	HIS	N-CA-C	-5.53	96.06	111.00
9	М	355	LEU	CA-CB-CG	5.46	127.86	115.30

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	А	837	0	885	87	0
1	Е	945	0	1004	96	0
2	В	641	0	684	85	0
2	F	627	0	663	45	0
3	С	843	0	908	56	0
3	G	818	0	877	44	0
4	D	757	0	786	55	0
4	Н	736	0	760	33	0
5	Ι	3466	0	1912	26	0
6	J	3504	0	1907	31	0
7	K	4597	0	4560	90	0
8	L	3048	0	2932	55	0
9	М	2398	0	2429	57	0
9	0	1275	0	1310	54	0
10	Ν	3073	0	3034	74	0
10	Р	1249	0	1215	27	0
11	L	1	0	0	0	0
11	N	4	0	0	0	0
11	Р	2	0	0	0	0
All	All	28821	0	25866	707	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 13.

All (707) close contacts within the same asymmetric unit are listed below, sorted by their clash



magnitude.

Atom 1	Atom 2	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
2:B:91:LYS:HD3	2:B:96:THR:HG22	1.39	1.04
2:B:65:VAL:HG22	2:B:93:GLN:HE22	1.18	1.03
2:B:91:LYS:HD3	2:B:96:THR:CG2	1.90	1.01
7:K:937:GLN:CB	7:K:940:LYS:HE2	1.90	1.00
3:C:79:ILE:HG23	3:C:80:PRO:HD2	1.43	0.98
4:D:78:ALA:HB2	4:D:90:GLU:OE1	1.64	0.97
7:K:937:GLN:HB2	7:K:940:LYS:HE2	1.49	0.93
3:C:15:LYS:HE2	3:C:20:ARG:HD3	1.51	0.93
9:M:255:GLU:HG3	9:M:286:LYS:HE2	1.50	0.93
3:C:62:ILE:HG23	4:D:59:MET:HE3	1.48	0.92
3:G:58:LEU:HD21	4:H:99:LEU:HD21	1.51	0.92
9:M:255:GLU:HB2	9:M:323:ILE:CG2	2.01	0.91
9:M:255:GLU:HB2	9:M:323:ILE:HG23	1.51	0.90
3:G:102:ILE:HG23	4:H:58:ILE:HD12	1.55	0.87
10:N:304:ASN:HD22	10:N:348:PRO:HD3	1.37	0.87
3:C:79:ILE:CG2	3:C:80:PRO:HD2	2.05	0.87
1:A:70:LEU:HD22	2:B:29:ILE:HD11	1.57	0.86
7:K:937:GLN:CA	7:K:940:LYS:HE2	2.06	0.85
3:C:115:LEU:HD11	1:E:108:ASN:HD21	1.40	0.85
3:C:63:LEU:HD22	4:D:59:MET:HE3	1.59	0.84
2:B:26:ILE:HD12	2:B:29:ILE:HD12	1.58	0.84
10:N:466:CYS:SG	10:N:469:HIS:CD2	2.70	0.84
2:B:29:ILE:HD13	2:B:58:LEU:HD23	1.59	0.83
3:C:63:LEU:HD12	4:D:42:LEU:HD13	1.61	0.83
10:P:296:LEU:HD12	10:P:296:LEU:O	1.78	0.81
3:C:111:ILE:CD1	1:E:51:ILE:HG21	2.10	0.81
5:I:217:DG:H2"	5:I:218:DA:C8	2.15	0.81
10:N:304:ASN:ND2	10:N:348:PRO:HD3	1.96	0.81
1:A:46:VAL:HG21	5:I:260:DG:H3'	1.62	0.81
7:K:937:GLN:HA	7:K:940:LYS:HE2	1.62	0.80
3:C:111:ILE:HD11	1:E:51:ILE:HG21	1.63	0.80
1:E:63:ARG:HH21	5:I:237:DA:H5"	1.45	0.79
9:M:18:HIS:HB3	9:M:23:TYR:CE2	2.18	0.78
10:N:122:LYS:HG3	10:N:125:ARG:NH2	1.99	0.78
7:K:937:GLN:O	7:K:940:LYS:HG2	1.84	0.77
4:D:45:VAL:HG23	4:D:46:HIS:H	1.49	0.76
9:O:254:VAL:HA	9:O:257:VAL:HG12	1.67	0.76
10:P:291:ILE:HD11	10:P:296:LEU:HA	1.66	0.76
2:B:65:VAL:HG22	2:B:93:GLN:NE2	1.99	0.75
9:M:17:PHE:HD1	9:M:22:MET:HE1	1.51	0.75
1:E:7:ALA:HB2	10:N:270:GLY:HA2	1.69	0.75



		Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
5:I:215:DT:H2"	5:I:216:DA:N7	2.02	0.75
10:N:443:CYS:SG	10:N:469:HIS:CE1	2.81	0.74
3:C:63:LEU:HD22	4:D:59:MET:CE	2.17	0.74
1:E:124:ILE:HD11	2:F:53:GLU:HG2	1.70	0.73
3:C:111:ILE:HD11	1:E:51:ILE:CG2	2.17	0.73
3:C:40:ALA:HB3	4:D:86:ILE:HD13	1.68	0.73
1:E:68:GLN:HE21	1:E:72:ARG:HH21	1.37	0.72
1:A:79:LYS:HB2	2:B:70:VAL:HG21	1.72	0.72
2:B:35:ARG:NH2	2:B:51:TYR:OH	2.22	0.72
1:A:78:PHE:HB3	2:B:70:VAL:HG11	1.70	0.71
3:C:62:ILE:HG23	4:D:59:MET:CE	2.20	0.71
2:B:43:VAL:HG21	2:B:46:ILE:HD11	1.73	0.71
3:C:31:HIS:CD2	3:C:35:ARG:HE	2.09	0.70
7:K:937:GLN:HA	7:K:940:LYS:HG2	1.72	0.69
1:A:79:LYS:HD3	1:A:82:LEU:HD21	1.72	0.69
2:B:90:LEU:HA	2:B:93:GLN:HE21	1.57	0.69
1:A:103:LEU:HD21	1:A:124:ILE:HG23	1.75	0.69
2:B:84:MET:O	2:B:87:VAL:HG12	1.92	0.69
4:H:36:ILE:HG22	4:H:40:LYS:HE3	1.75	0.69
7:K:925:PHE:HB3	7:K:1229:ARG:HD3	1.75	0.68
1:E:15:ALA:HB3	1:E:16:PRO:HD3	1.75	0.68
10:P:288:ASP:HB2	10:P:289:PRO:HD3	1.73	0.68
10:N:172:THR:HA	10:N:175:MET:HG2	1.75	0.68
2:B:48:GLY:O	2:B:49:LEU:HB2	1.93	0.68
7:K:1148:PHE:CE2	7:K:1312:VAL:HG11	2.29	0.68
1:E:71:VAL:HG13	2:F:66:ILE:HD13	1.75	0.68
3:G:57:TYR:HD2	3:G:58:LEU:HD22	1.60	0.67
1:A:92:LEU:HD21	2:B:66:ILE:CG1	2.24	0.67
9:O:255:GLU:HG2	9:O:259:ASN:ND2	2.10	0.67
1:E:73:GLU:OE1	2:F:25:ASN:HB2	1.95	0.67
1:A:48:LEU:HD21	2:B:44:LYS:HE2	1.77	0.67
1:E:79:LYS:HD3	1:E:82:LEU:HD13	1.77	0.66
7:K:722:ASN:C	7:K:724:VAL:N	2.46	0.66
3:G:79:ILE:HG22	3:G:81:ARG:H	1.60	0.66
10:N:556:TYR:O	10:N:560:MET:HG2	1.96	0.66
2:B:30:THR:HB	2:B:32:PRO:HD2	1.78	0.66
1:A:70:LEU:O	1:A:74:ILE:HG13	1.96	0.65
9:O:255:GLU:HG2	9:O:259:ASN:HD21	1.60	0.65
3:G:49:VAL:HG21	4:H:118:TYR:CD2	2.31	0.64
9:O:290:ASP:OD1	9:O:323:ILE:HG12	1.97	0.64
1:A:125:GLN:HG2	1:A:134:ARG:HH12	1.60	0.64



	the page	Interatomic	Clash
Atom-1	Atom-2	distance (\AA)	overlap (Å)
4:D:36:ILE:HG13	4:D:37:TYR:N	2.10	0.64
1:E:62:ILE:HD13	2:F:33:ALA:HB1	1.79	0.64
9:O:288:TYR:CE1	10:P:343:ILE:HD11	2.33	0.64
7:K:1194:MET:HB2	7:K:1196:LEU:HG	1.78	0.64
9:M:22:MET:SD	9:M:98:ARG:NH2	2.71	0.64
3:G:84:GLN:HA	3:G:87:VAL:HG12	1.80	0.63
1:A:71:VAL:HG13	2:B:66:ILE:HD13	1.79	0.63
7:K:754:SER:HB2	8:L:218:THR:HG22	1.79	0.63
1:E:5:GLN:NE2	10:N:271:SER:HB2	2.13	0.63
1:E:65:LEU:HB2	1:E:66:PRO:HD3	1.80	0.63
9:O:222:LEU:HD13	9:O:339:PRO:HG3	1.80	0.63
7:K:1196:LEU:HD22	7:K:1210:LEU:HD11	1.81	0.63
5:I:220:DA:H2"	5:I:221:DG:H5'	1.80	0.63
9:O:286:LYS:HA	9:O:323:ILE:HD11	1.80	0.63
7:K:722:ASN:C	7:K:724:VAL:H	2.00	0.63
8:L:29:VAL:HG11	8:L:45:ILE:HG21	1.79	0.63
10:N:557:LYS:HB2	9:O:275:GLN:HE22	1.63	0.63
2:B:65:VAL:CG2	2:B:93:GLN:HE22	2.05	0.63
10:N:562:GLN:HE22	9:O:270:GLU:HA	1.64	0.63
10:P:339:LEU:HD12	10:P:342:ASN:HD21	1.63	0.63
3:G:57:TYR:CD2	3:G:58:LEU:HD22	2.34	0.62
2:B:90:LEU:HD23	2:B:93:GLN:NE2	2.14	0.62
1:A:40:ARG:HH22	6:J:85:DG:H21	1.47	0.62
1:A:71:VAL:O	1:A:74:ILE:N	2.31	0.62
3:C:79:ILE:CG2	3:C:80:PRO:CD	2.78	0.62
9:O:260:LYS:HD3	9:O:373:TYR:OH	1.99	0.62
3:G:102:ILE:HG23	4:H:58:ILE:CD1	2.26	0.62
7:K:937:GLN:HA	7:K:940:LYS:CE	2.29	0.62
1:E:124:ILE:HD11	2:F:53:GLU:CG	2.30	0.61
2:B:26:ILE:HG13	2:B:55:ARG:HD3	1.81	0.61
3:C:97:LEU:HD21	4:D:62:PHE:HE1	1.65	0.61
1:E:68:GLN:NE2	1:E:72:ARG:HH21	1.99	0.61
4:H:92:GLN:HA	4:H:95:VAL:HG12	1.82	0.61
1:E:18:LYS:HD2	8:L:188:HIS:CE1	2.36	0.61
1:E:92:LEU:HD12	2:F:62:LEU:CD1	2.30	0.61
1:A:82:LEU:HD11	2:B:70:VAL:CG2	2.29	0.61
1:E:17:ARG:HB3	8:L:109:ASP:CG	2.21	0.61
3:C:11:ARG:HH21	5:I:295:DC:H1'	1.66	0.61
6:J:79:DA:H2"	6:J:80:DA:H8	1.66	0.61
2:B:32:PRO:HG2	6:J:80:DA:H3'	1.83	0.60
1:A:92:LEU:HD21	2:B:66:ILE:HG12	1.82	0.60



		Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:A:36:ML3:HM2B	9:M:18:HIS:CE1	2.36	0.60
2:B:32:PRO:O	2:B:36:ARG:HG3	2.00	0.60
3:G:83:LEU:HD13	4:H:59:MET:HE3	1.84	0.60
6:J:142:DC:H2'	6:J:143:DG:C8	2.36	0.60
7:K:788:TRP:NE1	9:M:395:GLU:OE1	2.31	0.60
6:J:80:DA:H2"	6:J:81:DA:H5'	1.82	0.59
7:K:1226:GLU:HA	7:K:1229:ARG:HG2	1.83	0.59
3:C:64:GLU:HA	4:D:46:HIS:CD2	2.36	0.59
2:F:67:ARG:O	2:F:70:VAL:HG12	2.03	0.59
1:A:36:ML3:HM2B	9:M:18:HIS:CD2	2.37	0.59
1:A:70:LEU:CD2	2:B:29:ILE:HD11	2.32	0.59
7:K:937:GLN:CA	7:K:940:LYS:HG2	2.33	0.59
7:K:1309:THR:O	7:K:1310:LEU:C	2.38	0.59
10:N:176:THR:O	10:N:176:THR:HG23	2.02	0.59
9:M:105:ILE:HG22	9:M:109:LYS:HE3	1.83	0.59
9:O:289:PHE:CD2	9:O:323:ILE:HD13	2.38	0.58
1:A:63:ARG:NH2	6:J:79:DA:H5"	2.18	0.58
4:D:45:VAL:HG23	4:D:46:HIS:N	2.19	0.58
9:O:265:VAL:O	9:O:269:LEU:N	2.33	0.58
1:E:2:ARG:HG3	10:N:274:CYS:HB2	1.84	0.58
8:L:73:GLU:OE1	10:N:182:ARG:NH1	2.36	0.58
10:N:414:PHE:HB3	10:N:423:THR:HG21	1.85	0.58
4:D:40:LYS:O	4:D:44:GLN:HG2	2.04	0.58
4:D:51:ILE:HG21	4:D:56:MET:HE1	1.86	0.58
3:C:65:LEU:HB3	3:C:86:ALA:HB1	1.85	0.58
7:K:937:GLN:C	7:K:940:LYS:HG2	2.23	0.58
2:F:31:LYS:HB3	2:F:32:PRO:HD3	1.86	0.58
5:I:220:DA:H2"	5:I:221:DG:C5'	2.34	0.58
4:D:83:ARG:HH22	6:J:60:DG:P	2.26	0.58
4:D:105:LYS:HD2	4:D:105:LYS:N	2.19	0.57
7:K:911:GLU:HG3	10:N:119:PRO:HD2	1.86	0.57
1:A:60:LEU:HD21	1:A:94:GLU:OE2	2.04	0.57
1:E:7:ALA:HB1	1:E:9:LYS:HE3	1.86	0.57
10:N:173:GLU:O	10:N:176:THR:HG22	2.03	0.57
7:K:706:VAL:HG12	7:K:717:PHE:CD1	2.40	0.57
7:K:937:GLN:O	7:K:940:LYS:CG	2.51	0.57
9:M:18:HIS:HB3	9:M:23:TYR:HE2	1.66	0.57
9:M:335:ILE:HG21	9:M:363:LEU:HD21	1.86	0.57
2:B:91:LYS:HD3	2:B:96:THR:HG21	1.82	0.57
2:F:52:GLU:O	2:F:52:GLU:HG2	2.04	0.57
6:J:77:DT:H2"	6:J:78:DA:C8	2.40	0.57



		Interatomic	Clash
Atom-1	Atom-2	distance $(Å)$	overlap (Å)
2:B:61:PHE:O	2:B:65:VAL:HG23	2.04	0.57
3:G:58:LEU:HD21	4:H:99:LEU:CD2	2.30	0.57
7:K:1132:ASN:H	7:K:1277:THR:HG22	1.68	0.57
10:N:559:LYS:O	10:N:563:LYS:HG3	2.05	0.57
9:O:291:LYS:NZ	10:P:343:ILE:HB	2.20	0.57
7:K:818:ASP:OD1	7:K:909:GLN:NE2	2.37	0.57
4:D:51:ILE:HG21	4:D:56:MET:CE	2.35	0.56
1:E:109:LEU:HA	1:E:112:ILE:HG22	1.87	0.56
8:L:152:ALA:O	8:L:164:ASN:ND2	2.38	0.56
8:L:212:GLY:HA2	10:N:456:SER:HB3	1.87	0.56
10:N:454:ARG:NH2	10:N:456:SER:OG	2.38	0.56
7:K:1305:PHE:CE1	7:K:1310:LEU:HA	2.40	0.56
8:L:148:GLY:HA3	8:L:310:GLY:HA2	1.86	0.56
10:N:122:LYS:HG3	10:N:125:ARG:HH21	1.70	0.56
10:N:562:GLN:NE2	9:O:270:GLU:O	2.38	0.56
1:E:7:ALA:HB1	1:E:9:LYS:HG2	1.87	0.56
2:B:72:TYR:HE1	4:D:97:LEU:HD13	1.71	0.56
7:K:937:GLN:HA	7:K:940:LYS:CD	2.35	0.56
7:K:1197:ASP:OD1	7:K:1197:ASP:N	2.39	0.56
10:P:266:CYS:HA	10:P:350:GLN:HB2	1.87	0.56
1:A:103:LEU:HD11	1:A:128:ARG:HD2	1.87	0.56
7:K:937:GLN:HA	7:K:940:LYS:CG	2.36	0.56
10:P:339:LEU:HD12	10:P:342:ASN:ND2	2.20	0.56
3:G:25:PHE:CZ	4:H:38:VAL:HG22	2.41	0.56
9:O:291:LYS:HZ3	10:P:343:ILE:HB	1.68	0.56
1:A:79:LYS:HB2	2:B:70:VAL:CG2	2.36	0.56
3:C:51:LEU:O	3:C:54:VAL:HG22	2.06	0.56
1:E:71:VAL:HG13	2:F:66:ILE:CD1	2.37	0.55
1:E:119:ILE:HG23	2:F:43:VAL:HG13	1.88	0.55
3:G:97:LEU:HD21	4:H:62:PHE:CD1	2.41	0.55
8:L:114:ASP:OD1	8:L:114:ASP:N	2.38	0.55
2:B:29:ILE:CD1	2:B:58:LEU:HD23	2.31	0.55
1:E:16:PRO:HG2	7:K:787:VAL:HG22	1.88	0.55
2:B:38:ALA:O	2:B:43:VAL:HG22	2.07	0.55
9:M:17:PHE:CD1	9:M:22:MET:HE1	2.38	0.55
7:K:851:LEU:HD13	7:K:855:LEU:HD22	1.88	0.55
1:A:99:TYR:CE2	2:B:61:PHE:HB2	2.42	0.55
1:E:84:PHE:CD2	2:F:81:VAL:HG21	2.42	0.55
9:O:260:LYS:HE2	9:O:365:TRP:CZ2	2.42	0.55
8:L:257:LYS:O	8:L:261:TRP:HB2	2.06	0.55
1:E:84:PHE:HA	2:F:81:VAL:HG22	1.88	0.55



		Interatomic	Clash
Atom-1	Atom-2	distance $(Å)$	overlap (Å)
7:K:759:PRO:HG3	9:M:388:VAL:HB	1.88	0.55
9:M:297:LEU:HD21	9:M:334:LEU:HB2	1.88	0.55
2:B:38:ALA:HB1	2:B:43:VAL:HG21	1.89	0.55
4:D:38:VAL:O	4:D:41:VAL:HG22	2.07	0.55
1:E:84:PHE:HA	2:F:81:VAL:CG2	2.37	0.55
3:G:27:VAL:HG11	3:G:49:VAL:HG22	1.88	0.54
8:L:239:ARG:HE	10:N:455:ALA:HA	1.72	0.54
1:A:82:LEU:HD11	2:B:70:VAL:HG21	1.90	0.54
3:C:58:LEU:HD11	4:D:99:LEU:HD21	1.88	0.54
1:E:5:GLN:HE22	10:N:271:SER:HB2	1.70	0.54
9:M:17:PHE:HD1	9:M:22:MET:CE	2.20	0.54
3:C:59:THR:HA	3:C:62:ILE:HG22	1.87	0.54
3:C:66:ALA:HB1	3:C:78:ILE:HG23	1.90	0.54
3:G:31:HIS:CE1	3:G:35:ARG:HE	2.25	0.54
2:B:26:ILE:CD1	2:B:29:ILE:HD12	2.33	0.54
3:C:78:ILE:HB	4:D:51:ILE:HG13	1.89	0.54
4:D:105:LYS:HD2	4:D:105:LYS:H	1.72	0.54
8:L:272:GLY:O	8:L:291:HIS:NE2	2.41	0.54
6:J:79:DA:H2"	6:J:80:DA:C8	2.43	0.54
1:A:51:ILE:HD11	2:B:39:ARG:HD3	1.90	0.54
1:A:61:LEU:N	1:A:97:GLU:OE2	2.36	0.54
2:B:35:ARG:HD3	2:B:46:ILE:HG13	1.89	0.54
4:D:94:ALA:HA	4:D:97:LEU:HD12	1.89	0.54
3:G:39:TYR:O	4:H:75:SER:HB2	2.07	0.54
3:G:56:GLU:HG3	4:H:41:VAL:HG21	1.89	0.54
1:A:106:ASP:HB2	1:E:130:ILE:HG22	1.90	0.54
2:F:92:ARG:HE	4:H:98:LEU:HD23	1.72	0.54
2:F:61:PHE:HD2	2:F:62:LEU:HD22	1.73	0.53
1:A:46:VAL:HG21	5:I:260:DG:C3'	2.34	0.53
8:L:149:LEU:HB3	8:L:161:CYS:HB3	1.91	0.53
10:N:498:ILE:HD11	10:P:537:PHE:HD2	1.73	0.53
1:A:40:ARG:HH22	6:J:85:DG:N2	2.06	0.53
9:M:244:LYS:HD3	9:M:379:PRO:HG2	1.90	0.53
4:D:36:ILE:HD11	4:D:37:TYR:CZ	2.43	0.53
1:E:77:ASP:OD1	1:E:78:PHE:N	2.42	0.53
1:E:82:LEU:HG	2:F:81:VAL:HG13	1.91	0.53
8:L:133:ARG:HG2	10:N:181:ILE:HD11	1.91	0.53
9:O:248:LEU:HB2	9:O:249:PRO:HD3	1.91	0.53
3:C:66:ALA:HB2	3:C:83:LEU:HD23	1.91	0.53
9:M:18:HIS:HB3	9:M:23:TYR:CD2	2.43	0.53
9:M:303:ARG:HD3	10:N:286:CYS:HA	1.90	0.53



		Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
9:O:254:VAL:CA	9:O:257:VAL:HG12	2.38	0.53
2:B:90:LEU:HD23	2:B:93:GLN:HE21	1.72	0.53
3:G:97:LEU:HD21	4:H:62:PHE:HD1	1.74	0.53
1:A:78:PHE:CB	2:B:70:VAL:HG11	2.37	0.53
7:K:723:PHE:CZ	10:P:552:PHE:CE1	2.97	0.53
8:L:299:LYS:HA	8:L:305:MET:HE1	1.91	0.53
1:E:11:THR:HA	8:L:102:VAL:HG12	1.91	0.52
7:K:1181:ALA:HB1	7:K:1187:LEU:HG	1.90	0.52
3:G:18:SER:O	3:G:22:GLY:N	2.42	0.52
3:C:66:ALA:HB1	3:C:78:ILE:CG2	2.39	0.52
4:H:38:VAL:HA	4:H:41:VAL:HG12	1.92	0.52
2:B:33:ALA:O	2:B:34:ILE:C	2.46	0.52
1:E:71:VAL:HA	1:E:74:ILE:HG22	1.92	0.52
8:L:29:VAL:HG21	8:L:45:ILE:HD13	1.90	0.52
1:E:83:ARG:O	2:F:81:VAL:HG22	2.10	0.52
2:F:61:PHE:CD2	2:F:62:LEU:HD22	2.45	0.52
1:A:36:ML3:HM2B	9:M:18:HIS:CG	2.44	0.52
1:A:47:ALA:O	1:A:51:ILE:HG12	2.10	0.52
1:A:120:MET:C	2:B:50:ILE:HD11	2.31	0.52
3:G:31:HIS:CD2	3:G:48:PRO:HG3	2.44	0.52
6:J:82:DC:H2"	6:J:83:DG:H8	1.75	0.52
7:K:778:LEU:HD11	8:L:171:ILE:HD11	1.91	0.52
7:K:937:GLN:HB2	7:K:940:LYS:CE	2.32	0.52
1:A:89:VAL:HG23	1:A:90:MET:N	2.24	0.52
1:E:119:ILE:HD11	2:F:46:ILE:HG23	1.90	0.52
9:O:364:VAL:HA	9:O:367:LEU:HD12	1.92	0.52
7:K:979:PHE:HZ	7:K:1152:THR:HG22	1.75	0.51
1:A:63:ARG:HB2	1:A:66:PRO:HG2	1.92	0.51
2:F:39:ARG:NH1	2:F:46:ILE:HD11	2.25	0.51
4:H:43:LYS:HD2	4:H:47:PRO:HA	1.92	0.51
7:K:1140:ALA:HB1	7:K:1144:ILE:HB	1.91	0.51
7:K:1186:LEU:HD11	8:L:344:TYR:HE2	1.76	0.51
9:O:293:LEU:HD13	9:O:322:PRO:HB3	1.93	0.51
1:A:58:THR:CG2	3:G:81:ARG:HD3	2.41	0.51
1:A:61:LEU:HD23	2:B:37:LEU:HD23	1.93	0.51
2:B:71:THR:O	2:B:74:GLU:HG2	2.11	0.51
4:D:58:ILE:HD13	2:F:99:GLY:CA	2.41	0.51
2:F:71:THR:HG22	4:H:93:THR:HG23	1.91	0.51
1:E:92:LEU:HD12	2:F:62:LEU:HD13	1.92	0.51
7:K:683:THR:HG23	10:N:522:ILE:HG13	1.93	0.51
8:L:44:ARG:NH1	8:L:311:GLY:O	2.44	0.51



		Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:A:79:LYS:HB3	1:A:82:LEU:HG	1.93	0.51
4:H:76:ARG:HB3	4:H:80:TYR:CE2	2.46	0.51
7:K:897:ARG:NH1	10:N:101:THR:OG1	2.43	0.51
7:K:1300:MET:HB3	7:K:1317:ILE:HG13	1.93	0.51
9:M:99:ALA:O	9:M:104:ASN:ND2	2.34	0.51
9:M:254:VAL:O	9:M:257:VAL:HG22	2.11	0.51
10:N:558:SER:O	10:N:562:GLN:HG2	2.11	0.51
1:A:79:LYS:CB	2:B:70:VAL:HG21	2.37	0.51
7:K:690:ASN:ND2	10:N:520:ILE:HD13	2.26	0.51
8:L:76:GLN:OE1	8:L:175:ARG:NH2	2.40	0.51
9:O:289:PHE:HD2	9:O:323:ILE:HD13	1.73	0.51
3:C:85:LEU:O	3:C:89:ASN:HB2	2.11	0.50
1:E:13:GLY:O	1:E:16:PRO:HD2	2.11	0.50
2:B:61:PHE:HE1	2:B:95:ARG:HD2	1.75	0.50
2:F:70:VAL:O	2:F:74:GLU:HG2	2.11	0.50
1:A:108:ASN:ND2	2:B:42:GLY:O	2.44	0.50
9:M:101:ASN:OD1	9:M:104:ASN:ND2	2.44	0.50
9:O:293:LEU:HD11	9:O:326:TYR:CG	2.47	0.50
10:P:292:ASP:CG	10:P:295:ASN:HB3	2.31	0.50
1:A:119:ILE:HD11	2:B:46:ILE:HD13	1.94	0.50
1:A:129:ARG:O	1:A:130:ILE:HD13	2.11	0.50
1:E:61:LEU:N	1:E:97:GLU:OE2	2.45	0.50
6:J:69:DT:H2'	6:J:70:DT:H71	1.93	0.50
8:L:299:LYS:HD2	8:L:329:LEU:HD23	1.92	0.50
9:M:236:TRP:O	9:M:240:THR:OG1	2.29	0.50
1:A:79:LYS:HB3	1:A:82:LEU:CG	2.40	0.50
1:A:117:VAL:HG23	2:B:45:ARG:HD3	1.93	0.50
3:C:40:ALA:HB3	4:D:86:ILE:CD1	2.40	0.50
3:C:93:LEU:HD13	4:D:103:LEU:HD21	1.93	0.50
3:C:58:LEU:HD21	4:D:99:LEU:HD21	1.94	0.50
4:H:36:ILE:O	4:H:40:LYS:HG3	2.12	0.50
2:B:34:ILE:HD11	2:B:55:ARG:HG3	1.94	0.50
3:G:89:ASN:OD1	3:G:108:LEU:HD21	2.12	0.50
7:K:854:GLY:HA3	7:K:860:MET:SD	2.51	0.50
1:E:19:GLN:HB2	8:L:160:PHE:CZ	2.47	0.50
7:K:1256:LEU:HD21	7:K:1266:MET:HE2	1.93	0.49
1:E:68:GLN:HE21	1:E:72:ARG:NH2	2.06	0.49
7:K:663:ASN:O	7:K:667:THR:OG1	2.21	0.49
7:K:875:ARG:HE	10:N:99:PRO:HB3	1.77	0.49
8:L:150:HIS:H	8:L:150:HIS:CD2	2.29	0.49
10:N:466:CYS:SG	10:N:469:HIS:HD2	2.23	0.49



		Interatomic	Clash	
Atom-1	Atom-2	distance $(Å)$	overlap (Å)	
10:N:561:VAL:HG11	9:O:269:LEU:O	2.12	0.49	
9:O:361:ASP:HA	9:O:364:VAL:HG22	1.93	0.49	
3:C:50:TYR:OH	4:D:108:VAL:HA	2.12	0.49	
1:E:65:LEU:HG	6:J:111:DG:OP2	2.12	0.49	
4:D:41:VAL:O	4:D:45:VAL:HG22	2.13	0.49	
1:E:13:GLY:C	1:E:16:PRO:HD2	2.32	0.49	
7:K:722:ASN:O	7:K:724:VAL:N	2.45	0.49	
9:M:241:LYS:HB2	10:N:372:TYR:HB3	1.94	0.49	
10:N:303:CYS:SG	10:N:306:CYS:HB2	2.52	0.49	
1:A:38:PRO:HB3	9:M:84:TRP:CZ3	2.47	0.49	
4:D:45:VAL:O	4:D:47:PRO:HD3	2.13	0.49	
3:G:16:THR:HG23	3:G:19:SER:H	1.76	0.49	
1:E:14:LYS:HG2	8:L:108:ASP:OD2	2.13	0.49	
5:I:215:DT:H2"	5:I:216:DA:C8	2.47	0.49	
8:L:364:ASN:HB3	8:L:369:LEU:HD11	1.95	0.49	
8:L:367:GLU:OE1	10:N:435:ARG:NE	2.44	0.49	
1:A:71:VAL:HG22	2:B:66:ILE:HD11	1.94	0.49	
2:B:91:LYS:CD	2:B:96:THR:HG22	2.26	0.49	
3:G:79:ILE:HG23	3:G:80:PRO:HD2	1.94	0.49	
6:J:82:DC:H2"	6:J:83:DG:C8	2.48	0.49	
4:D:76:ARG:O	4:D:77:LEU:C	2.50	0.49	
1:E:11:THR:OG1	8:L:108:ASP:HB3	2.12	0.49	
10:N:121:GLU:O	10:N:125:ARG:HG3	2.13	0.49	
9:O:257:VAL:HG13	9:O:258:LEU:N	2.27	0.49	
3:C:58:LEU:HD21	4:D:99:LEU:CD2	2.43	0.49	
2:F:63:GLU:O	2:F:63:GLU:HG2	2.13	0.49	
3:G:110:ASN:O	3:G:111:ILE:HD13	2.13	0.49	
9:M:238:TYR:HA	9:M:242:ASP:HB2	1.95	0.49	
1:A:54:TYR:OH	2:B:36:ARG:HD2	2.12	0.48	
1:A:113:HIS:ND1	1:E:126:LEU:HD22	2.28	0.48	
1:E:65:LEU:HD12	6:J:110:DA:H2'	1.95	0.48	
7:K:886:HIS:HB3	10:N:93:ILE:HD13	1.95	0.48	
1:A:39:HIS:HE1	1:A:41:TYR:CZ	2.30	0.48	
1:A:104:PHE:CZ	2:B:54:THR:HG21	2.48	0.48	
1:A:129:ARG:O	1:A:129:ARG:HG3	2.13	0.48	
2:B:34:ILE:HD13	2:B:54:THR:OG1	2.12	0.48	
4:H:102:GLU:O	4:H:103:LEU:C	2.48	0.48	
7:K:865:LYS:NZ	8:L:31:ASN:O	2.42	0.48	
3:C:20:ARG:O	4:D:118:TYR:HA	2.13	0.48	
1:E:42:ARG:HG3	5:I:321:DC:P	2.53	0.48	
1:E:82:LEU:HD12	2:F:79:LYS:O	2.13	0.48	



		Interatomic	Clash	
Atom-1	Atom-2	distance $(Å)$	overlap (Å)	
7:K:814:ARG:NH1	7:K:913:ASN:OD1	2.46	0.48	
9:M:258:LEU:HD21	9:M:285:LEU:HD23	1.95	0.48	
9:M:264:GLU:OE1	9:M:365:TRP:NE1	2.42	0.48	
4:D:27:ARG:HH22	5:I:302:DC:H5'	1.78	0.48	
4:H:102:GLU:C	4:H:104:ALA:N	2.66	0.48	
8:L:63:ILE:O	10:N:176:THR:HA	2.13	0.48	
9:O:312:LYS:HA	9:O:315:LYS:HD2	1.94	0.48	
9:0:352:CYS:O	9:O:356:ILE:HG12	2.12	0.48	
1:A:79:LYS:HB3	1:A:82:LEU:HD11	1.96	0.48	
2:B:43:VAL:CG2	2:B:46:ILE:HD11	2.42	0.48	
4:D:28:LYS:NZ	4:D:28:LYS:H	2.12	0.48	
3:G:73:ASN:O	3:G:75:LYS:HG2	2.14	0.48	
9:M:253:THR:HG21	9:M:324:ARG:O	2.14	0.48	
9:M:17:PHE:CD1	9:M:22:MET:CE	2.95	0.48	
9:O:222:LEU:HD11	9:O:359:THR:HG21	1.96	0.48	
3:C:15:LYS:HG2	6:J:51:DG:OP1	2.14	0.48	
1:A:124:ILE:O	1:A:128:ARG:HG3	2.14	0.48	
3:G:76:THR:H	6:J:151:DC:P	2.36	0.48	
1:E:74:ILE:HD12	2:F:59:LYS:HG3	1.95	0.48	
3:G:102:ILE:CG2	3:G:103:ALA:N	2.77	0.48	
4:H:92:GLN:O	4:H:93:THR:C	2.50	0.48	
5:I:314:DA:H2"	5:I:315:DT:H5"	1.96	0.48	
9:M:38:TYR:HE1	9:M:61:LEU:HA	1.79	0.48	
9:M:255:GLU:HG2	9:M:259:ASN:ND2	2.28	0.48	
1:A:41:TYR:HA	6:J:163:DC:H5"	1.95	0.47	
1:A:74:ILE:HG22	1:A:74:ILE:O	2.14	0.47	
8:L:316:ARG:HH21	8:L:320:ARG:HH22	1.62	0.47	
1:E:107:THR:CG2	1:E:124:ILE:HG22	2.44	0.47	
7:K:1305:PHE:HE2	7:K:1307:LYS:HD3	1.79	0.47	
7:K:1137:ASN:OD1	7:K:1302:ARG:NH1	2.39	0.47	
1:A:61:LEU:HB2	1:A:97:GLU:OE2	2.15	0.47	
1:E:50:GLU:OE1	2:F:39:ARG:HG3	2.14	0.47	
3:G:76:THR:HB	6:J:150:DG:O3'	2.14	0.47	
1:E:128:ARG:HB3	1:E:133:GLU:HG3	1.96	0.47	
6:J:75:DG:H1'	6:J:76:DT:H5'	1.97	0.47	
1:A:61:LEU:HD21	2:B:40:ARG:CZ	2.45	0.47	
1:A:130:ILE:HG22	1:E:131:ARG:HG2	1.97	0.47	
4:D:54:LYS:O	4:D:58:ILE:HG12	2.14	0.47	
1:E:68:GLN:HG3	1:E:89:VAL:HG11	1.96	0.47	
1:E:119:ILE:HD13	2:F:43:VAL:HG11	1.97	0.47	
7:K:712:SER:OG	10:N:419:LYS:O	2.27	0.47	



		Interatomic	Clash	
Atom-1	Atom-2	distance (Å)	overlap (Å)	
7:K:1196:LEU:HB3	7:K:1227:SER:HB2	1.97	0.47	
10:P:304:ASN:HA	10:P:307:LYS:HG2	1.97	0.47	
2:B:23:ARG:HA	2:B:23:ARG:NE	2.30	0.47	
2:B:82:THR:HG22	2:B:84:MET:H	1.79	0.47	
4:D:102:GLU:O	4:D:103:LEU:C	2.52	0.47	
10:N:121:GLU:HA	10:N:124:LYS:HB2	1.96	0.47	
9:O:250:ALA:HB3	9:O:325:ILE:O	2.14	0.47	
9:O:331:LEU:O	9:O:335:ILE:HG12	2.15	0.47	
9:O:290:ASP:OD1	9:O:323:ILE:N	2.48	0.47	
3:G:102:ILE:HG22	3:G:103:ALA:N	2.29	0.46	
5:I:281:DT:H2'	5:I:282:DT:H71	1.97	0.46	
10:N:180:ASN:OD1	10:N:180:ASN:N	2.47	0.46	
1:A:61:LEU:H	1:A:97:GLU:CD	2.19	0.46	
4:D:91:ILE:O	4:D:92:GLN:C	2.52	0.46	
9:M:226:ILE:HA	9:M:229:LYS:HB2	1.98	0.46	
10:N:122:LYS:CG	10:N:125:ARG:HH21	2.28	0.46	
1:E:6:THR:HG21	10:N:272:PHE:HE2	1.80	0.46	
1:A:82:LEU:HD11	2:B:70:VAL:HG23	1.97	0.46	
1:A:92:LEU:HD21	2:B:66:ILE:HG13	1.97	0.46	
2:B:31:LYS:HG3	2:B:51:TYR:CE1	2.51	0.46	
3:G:51:LEU:HD12	3:G:51:LEU:HA	1.76	0.46	
10:N:296:LEU:N	10:N:296:LEU:HD22	2.31	0.46	
1:A:51:ILE:CD1	2:B:39:ARG:HD3	2.44	0.46	
1:E:57:SER:OG	2:F:40:ARG:NH2	2.45	0.46	
7:K:1186:LEU:HD11	8:L:344:TYR:CE2	2.50	0.46	
8:L:72:GLN:OE1	10:N:188:ASN:HB2	2.15	0.46	
9:O:288:TYR:HD1	10:P:340:LEU:HD23	1.80	0.46	
1:A:78:PHE:HZ	2:B:63:GLU:HG2	1.81	0.46	
6:J:178:DC:H2"	6:J:179:DA:C8	2.51	0.46	
7:K:1157:ARG:HG2	7:K:1238:LYS:HB3	1.97	0.46	
9:M:255:GLU:HB2	9:M:323:ILE:HG22	1.92	0.46	
10:N:440:CYS:HB2	10:N:466:CYS:HB3	1.98	0.46	
9:O:254:VAL:HG12	9:O:328:ALA:HA	1.98	0.46	
9:O:310:LEU:HD21	10:P:290:PRO:CD	2.45	0.46	
1:A:54:TYR:HE2	2:B:36:ARG:HB3	1.80	0.46	
3:C:81:ARG:HD3	1:E:58:THR:CG2	2.45	0.46	
1:E:114:ALA:O 1:E:116:ARG:E		2.16	0.46	
9:O:280:GLU:OE1	10:P:334:LYS:N	2.49	0.46	
10:P:562:GLN:HA	10:P:565:LYS:HG2	1.97	0.46	
4:D:98:LEU:O	4:D:99:LEU:C	2.54	0.46	
2:F:38:ALA:HB1	2:F:43:VAL:HB	1.98	0.46	



		Interatomic	Clash	
Atom-1	Atom-2	distance (Å)	overlap (Å)	
3:G:51:LEU:HD12	3:G:54:VAL:CG2	2.46	0.46	
1:A:51:ILE:HG21	3:G:111:ILE:HD12	1.98	0.46	
3:C:87:VAL:O	3:C:94:ASN:HB2	2.16	0.46	
3:G:84:GLN:O	3:G:87:VAL:HG12	2.16	0.46	
6:J:89:DG:H2"	6:J:90:DA:C8	2.51	0.46	
8:L:44:ARG:HB3	8:L:315:MET:HG2	1.97	0.46	
3:G:88:ARG:HB2	3:G:108:LEU:HG	1.97	0.45	
7:K:1148:PHE:CZ	7:K:1312:VAL:HG11	2.51	0.45	
9:O:321:VAL:HG11	9:O:324:ARG:NH1	2.31	0.45	
9:O:367:LEU:HA	9:O:370:VAL:HG23	1.99	0.45	
1:A:65:LEU:HB2	1:A:66:PRO:HD3	1.96	0.45	
1:A:92:LEU:CD2	2:B:66:ILE:HG12	2.45	0.45	
8:L:316:ARG:NH2	8:L:348:GLY:O	2.49	0.45	
9:M:375:ASN:H	9:M:386:LEU:HD11	1.81	0.45	
1:A:50:GLU:HA	1:A:53:ARG:HB3	1.99	0.45	
3:G:108:LEU:HD23	3:G:108:LEU:HA	1.82	0.45	
5:I:304:DT:H2"	5:I:305:DG:C8	2.51	0.45	
7:K:956:LYS:HD2	7:K:1316:TYR:HB3	1.98	0.45	
9:M:237:GLU:HG3	10:N:372:TYR:CE2	2.51	0.45	
10:N:557:LYS:CB	9:O:275:GLN:HE22	2.29	0.45	
9:O:248:LEU:HB2	9:O:249:PRO:CD	2.46	0.45	
9:O:260:LYS:HE2	9:O:365:TRP:HZ2	1.81	0.45	
7:K:1012:ASP:OD1	7:K:1012:ASP:N	2.47	0.45	
9:M:380:ASN:OD1	9:M:389:ASN:ND2	2.50	0.45	
10:N:306:CYS:O	10:N:310:ILE:HG12	2.17	0.45	
1:E:68:GLN:HE21	1:E:72:ARG:HE	1.64	0.45	
4:H:102:GLU:O	4:H:104:ALA:N	2.49	0.45	
1:A:54:TYR:HE2	2:B:36:ARG:CB	2.29	0.45	
1:A:54:TYR:CE2	2:B:36:ARG:HB3	2.52	0.45	
4:D:93:THR:O	4:D:96:ARG:HB2	2.16	0.45	
1:E:9:LYS:HD2	1:E:14:LYS:CE	2.47	0.45	
1:E:47:ALA:O	1:E:51:ILE:HG12	2.17	0.45	
7:K:843:GLU:HG2	7:K:846:LYS:HE2	1.99	0.45	
9:M:254:VAL:HG12	9:M:331:LEU:HB2	1.97	0.45	
9:M:291:LYS:HG2	10:N:343:ILE:HD11	1.98	0.45	
2:B:43:VAL:HG21	2:B:46:ILE:CD1	2.45	0.45	
5:I:214:DG:H2"	5:I:215:DT:OP2	2.17	0.45	
7:K:706:VAL:HG21	7:K:720:PHE:CZ	2.52	0.45	
8:L:53:MET:SD	10:N:172:THR:HG22	2.57	0.45	
2:B:75:HIS:CD2	4:D:89:ARG:NH1	2.85	0.45	
4:D:39:TYR:O	4:D:40:LYS:C	2.55	0.45	



		Interatomic	Clach	
Atom-1	Atom-2	distance $(Å)$	overlap (Å)	
1:E:42:ARG:HG3	5:I:321:DC:OP1	2.16	0.45	
1:E:65:LEU:O	1:E:66:PRO:C	2.53	0.45	
1:E:94:GLU:HG3	2:F:100:PHE:CE2	2.51	0.45	
8:L:191:ASP:OD1	8:L:191:ASP:N	2.49	0.45	
1:A:36:ML3:HM2B	9:M:18:HIS:NE2	2.31	0.44	
3:C:17:ARG:HG2	3:C:20:ARG:NH2	2.32	0.44	
6:J:142:DC:H2'	6:J:143:DG:H8	1.81	0.44	
7:K:1280:ALA:O	7:K:1284:ILE:HD12	2.16	0.44	
3:C:62:ILE:HG12	4:D:59:MET:HE1	1.98	0.44	
2:F:46:ILE:HG22	2:F:47:SER:O	2.17	0.44	
3:G:27:VAL:HA	3:G:30:VAL:HG22	1.99	0.44	
8:L:153:LYS:HB2	8:L:156:GLU:HG2	1.98	0.44	
9:M:356:ILE:HD13	9:M:356:ILE:HA	1.88	0.44	
2:B:72:TYR:HE1	4:D:97:LEU:CD1	2.28	0.44	
1:E:19:GLN:N	8:L:109:ASP:OD1	2.50	0.44	
5:I:194:DC:H2"	5:I:195:DC:C5	2.53	0.44	
6:J:179:DA:H2"	6:J:180:DG:C8	2.53	0.44	
10:N:436:LEU:HD22	10:N:457:PHE:HE2	1.82	0.44	
4:D:28:LYS:H	4:D:28:LYS:HZ3	1.64	0.44	
4:D:34:TYR:HA	4:D:37:TYR:HD2	1.83	0.44	
10:P:342:ASN:HB2	10:P:346:HIS:CE1	2.53	0.44	
5:I:251:DC:H2'	5:I:252:DT:H71	2.00	0.44	
7:K:1191:LEU:HD21	7:K:1227:SER:HA	2.00	0.44	
8:L:23:TYR:HD2	8:L:63:ILE:HG23	1.82	0.44	
10:N:164:ARG:HD2	10:N:164:ARG:HA	1.75	0.44	
9:0:235:ASP:OD2	9:O:333:ARG:NH2	2.49	0.44	
2:B:59:LYS:HE2	2:B:59:LYS:HB3	1.86	0.44	
1:E:127:ALA:O	1:E:130:ILE:HG12	2.18	0.44	
3:G:60:ALA:O	3:G:61:GLU:C	2.52	0.44	
9:O:224:ILE:HD11	9:O:229:LYS:HD3	1.99	0.44	
1:A:72:ARG:O	1:A:76:GLN:HG2	2.18	0.44	
3:G:90:ASP:OD1	3:G:91:GLU:N	2.51	0.44	
7:K:813:GLU:HG2	10:N:111:THR:HG22	2.00	0.44	
7:K:841:MET:HE3	7:K:846:LYS:HG3	1.99	0.44	
9:M:222:LEU:HD13	9:M:356:ILE:HD12	2.00	0.44	
9:O:254:VAL:HG23	9:O:323:ILE:HG23	1.98	0.44	
9:O:255:GLU:CG	9:O:259:ASN:HD21	2.27	0.44	
7:K:874:GLU:HG3	7:K:875:ARG:HG2	2.00	0.44	
9:M:122:LEU:HD12	9:M:125:GLN:HE21	1.83	0.44	
9:M:290:ASP:OD1	9:M:323:ILE:HG12	2.17	0.44	
2:B:31:LYS:O	2:B:32:PRO:C	2.53	0.43	



		Interatomic	Clash	
Atom-1	Atom-2	distance (Å)	overlap (Å)	
6:J:169:DT:H2"	6:J:170:DA:C8	2.53	0.43	
7:K:1198:PHE:HE1	7:K:1227:SER:OG	2.01	0.43	
7:K:1321:ASP:OD1	7:K:1321:ASP:N	2.51	0.43	
9:M:323:ILE:HD13	9:M:323:ILE:HA	1.90	0.43	
2:B:80:THR:O	2:B:81:VAL:C	2.56	0.43	
1:E:19:GLN:HE22	8:L:38:HIS:CD2	2.36	0.43	
1:E:50:GLU:OE2	2:F:39:ARG:NE	2.51	0.43	
9:M:304:LEU:HD13	10:N:285:LEU:HD11	1.99	0.43	
10:N:372:TYR:OH	10:N:496:ARG:NH1	2.49	0.43	
2:B:78:ARG:NH2	2:B:85:ASP:OD1	2.52	0.43	
1:A:75:ALA:C	1:A:77:ASP:N	2.72	0.43	
2:B:96:THR:OG1	3:G:100:VAL:HG22	2.18	0.43	
3:C:18:SER:O	3:C:22:GLY:N	2.52	0.43	
1:E:70:LEU:O	1:E:74:ILE:HG22	2.17	0.43	
10:N:172:THR:HA	10:N:175:MET:CG	2.47	0.43	
9:O:260:LYS:HG3	9:O:261:TYR:N	2.33	0.43	
2:F:31:LYS:O	2:F:32:PRO:C	2.51	0.43	
1:E:62:ILE:O	1:E:63:ARG:C	2.54	0.43	
2:F:30:THR:HG23	2:F:33:ALA:H	1.83	0.43	
6:J:100:DC:H2"	6:J:101:DG:C8	2.54	0.43	
7:K:928:LEU:HD21	8:L:356:ARG:HB2	2.01	0.43	
7:K:1189:SER:O	7:K:1193:GLU:HG3	2.18	0.43	
9:M:321:VAL:HG22	9:M:323:ILE:H	1.84	0.43	
10:N:176:THR:O	10:N:176:THR:CG2	2.67	0.43	
10:P:330:ASN:HB2	10:P:333:VAL:HG22	2.00	0.43	
3:C:84:GLN:O	3:C:85:LEU:C	2.55	0.43	
4:D:51:ILE:HG12	4:D:55:ALA:HB3	2.00	0.43	
1:E:90:MET:HB3	1:E:90:MET:HE3	1.93	0.43	
7:K:697:LEU:HD12	10:N:474:VAL:HG21	1.99	0.43	
7:K:723:PHE:HZ	10:P:552:PHE:CE1	2.37	0.43	
7:K:1257:MET:HG3	7:K:1258:THR:HG23	2.01	0.43	
10:P:284:PHE:CE2	10:P:293:PRO:HA	2.53	0.43	
3:C:18:SER:HB3	3:C:23:LEU:O	2.19	0.43	
1:A:67:PHE:CZ	2:B:62:LEU:HD11	2.53	0.43	
1:E:126:LEU:O	1:E:127:ALA:C	2.55	0.43	
7:K:706:VAL:HG12	7:K:717:PHE:CE1	2.54	0.43	
9:M:354:LEU:HD11	10:N:335:ILE:HG21	2.00	0.43	
9:O:258:LEU:HD12	9:O:286:LYS:CG	2.49	0.43	
1:A:126:LEU:O	1:A:130:ILE:HG12	2.19	0.43	
4:D:73:GLU:O	4:D:74:ALA:C	2.56	0.43	
4:D:108:VAL:O	4:D:112:THR:HG23	2.18	0.43	



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Atom-1	Atom-2	distance (Å)	overlap (Å)	
7:K:662:LEU:HD13	10:N:559:LYS:NZ	2.33	0.43	
8:L:242:ILE:HG13	8:L:246:THR:HB	2.00	0.43	
9:M:242:ASP:HB3	9:M:244:LYS:HE2	2.01	0.43	
9:M:293:LEU:HA	9:M:297:LEU:HB2	2.00	0.43	
3:C:15:LYS:HG3	3:C:20:ARG:NH1	2.33	0.42	
10:N:442:TYR:HB2	10:N:469:HIS:CE1	2.53	0.42	
1:A:104:PHE:HZ	2:B:54:THR:HG21	1.84	0.42	
3:C:117:PRO:HD3	1:E:48:LEU:HD22	2.00	0.42	
1:E:7:ALA:HB1	1:E:9:LYS:CE	2.49	0.42	
1:E:107:THR:OG1	1:E:124:ILE:HG22	2.19	0.42	
7:K:1182:LYS:HD2	7:K:1187:LEU:HD12	2.00	0.42	
9:O:276:SER:O	9:O:280:GLU:HB2	2.18	0.42	
3:C:29:ARG:HG3	3:C:32:ARG:NH2	2.34	0.42	
4:H:92:GLN:O	4:H:95:VAL:HG12	2.19	0.42	
10:P:296:LEU:HD12	10:P:296:LEU:C	2.38	0.42	
4:D:36:ILE:HG13	4:D:37:TYR:H	1.80	0.42	
4:H:92:GLN:C	4:H:94:ALA:N	2.71	0.42	
6:J:148:DC:H2"	6:J:149:DG:C8	2.54	0.42	
7:K:962:LYS:HA	7:K:962:LYS:HD2	1.85	0.42	
3:C:96:LEU:C	3:C:97:LEU:HD22	2.40	0.42	
1:E:120:MET:HG2	2:F:47:SER:HB2	2.00	0.42	
2:F:92:ARG:HD2	4:H:97:LEU:CD2	2.49	0.42	
3:G:70:ALA:O	3:G:71:ARG:C	2.56	0.42	
3:G:110:ASN:C	3:G:111:ILE:HD13	2.39	0.42	
10:P:266:CYS:HB3	10:P:286:CYS:SG	2.59	0.42	
10:P:283:HIS:HB2	10:P:286:CYS:SG	2.59	0.42	
1:A:61:LEU:O	1:A:62:ILE:C	2.56	0.42	
1:A:78:PHE:CZ	2:B:63:GLU:HG2	2.55	0.42	
2:B:90:LEU:HB3	2:B:95:ARG:O	2.20	0.42	
3:C:63:LEU:HD21	4:D:38:VAL:HG13	2.00	0.42	
3:C:76:THR:OG1	5:I:308:DA:O3'	2.37	0.42	
4:D:81:ASN:O	4:D:83:ARG:HG3	2.20	0.42	
5:I:179:DT:H2"	5:I:180:DG:C8	2.54	0.42	
7:K:1303:ILE:HG23	7:K:1314:ILE:HG12	2.01	0.42	
7:K:1304:GLU:O	7:K:1312:VAL:HA	2.19	0.42	
8:L:269:LEU:HD21	8:L:295:VAL:HG22	2.02	0.42	
1:E:120:MET:O	1:E:121:PRO:C	2.57	0.42	
4:H:108:VAL:O	4:H:109:SER:C	2.57	0.42	
10:P:287:LEU:O	10:P:288:ASP:C	2.57	0.42	
1:E:75:ALA:O	1:E:76:GLN:C	2.58	0.42	
3:G:64:GLU:O	3:G:67:GLY:N	2.53	0.42	



		Interatomic	Clash	
Atom-1	Atom-2	distance $(Å)$	overlap (Å)	
4:H:70:ILE:HA	4:H:98:LEU:HD12	2.01	0.42	
7:K:1196:LEU:CD2	7:K:1210:LEU:HD11	2.49	0.42	
10:N:379:ILE:HD12	10:N:379:ILE:H	1.85	0.42	
1:A:108:ASN:O	1:A:111:ALA:N	2.53	0.42	
4:D:27:ARG:NH2	5:I:302:DC:H5'	2.35	0.42	
7:K:901:LYS:HB2	7:K:901:LYS:HE2	1.69	0.42	
8:L:243:ASP:OD1	8:L:246:THR:OG1	2.36	0.42	
10:N:384:ARG:HA	10:N:388:ASN:HB2	2.01	0.42	
1:A:65:LEU:HG	5:I:269:DC:OP2	2.19	0.41	
2:B:97:LEU:HD12	3:G:101:THR:O	2.20	0.41	
3:C:111:ILE:HD12	1:E:51:ILE:HG21	1.96	0.41	
1:E:111:ALA:O	1:E:112:ILE:C	2.56	0.41	
2:F:64:ASN:HA	2:F:67:ARG:NH1	2.34	0.41	
8:L:341:ASN:HD21	8:L:347:TYR:HE2	1.68	0.41	
9:O:371:ASP:HB3	9:O:375:ASN:HD21	1.85	0.41	
1:A:108:ASN:O	1:A:109:LEU:C	2.57	0.41	
4:H:43:LYS:HE2	4:H:49:THR:O	2.20	0.41	
7:K:810:ILE:HD11	7:K:919:LEU:HD23	2.02	0.41	
3:C:115:LEU:HD11	1:E:108:ASN:ND2	2.20	0.41	
1:E:111:ALA:C	1:E:113:HIS:N	2.74	0.41	
3:G:84:GLN:CA	3:G:87:VAL:HG12	2.48	0.41	
7:K:710:LEU:O	7:K:717:PHE:HB2	2.20	0.41	
10:N:327:ILE:HD11	10:N:338:LYS:HG3	2.01	0.41	
9:O:254:VAL:O	9:O:255:GLU:C	2.58	0.41	
9:M:31:TRP:HB3	9:M:76:CYS:HB2	2.02	0.41	
1:A:79:LYS:HB3	1:A:82:LEU:CD1	2.50	0.41	
2:B:62:LEU:HD23	2:B:62:LEU:HA	1.86	0.41	
3:C:65:LEU:CB	3:C:86:ALA:HB1	2.51	0.41	
3:C:119:LYS:HB2	3:C:119:LYS:HE2	1.88	0.41	
1:E:127:ALA:O	1:E:131:ARG:HG3	2.20	0.41	
6:J:106:DT:H6	6:J:106:DT:H2'	1.76	0.41	
8:L:270:GLN:NE2	8:L:310:GLY:HA3	2.35	0.41	
3:C:67:GLY:HA2	3:C:78:ILE:HD11	2.01	0.41	
9:O:260:LYS:O	9:O:263:HIS:N	2.53	0.41	
9:O:318:LYS:HA	9:O:318:LYS:HD3	1.81	0.41	
1:A:97:GLU:OE2	2:B:37:LEU:HD21	2.21	0.41	
1:A:113:HIS:HE1	1:E:123:ASP:HA	1.85	0.41	
3:C:90:ASP:CG	3:C:91:GLU:H	2.23	0.41	
8:L:328:LEU:HD23	8:L:328:LEU:HA	1.91	0.41	
10:N:293:PRO:O	10:N:296:LEU:HD21	2.20	0.41	
3:C:79:ILE:HG23	3:C:80:PRO:CD	2.29	0.41	



	na pagem	Interatomic	Clash overlap (Å)	
Atom-1	Atom-2	distance (Å)		
1:E:56:LYS:O	1:E:56:LYS:HG2	2.19	0.41	
4:H:73:GLU:OE2	4:H:77:LEU:HG	2.21	0.41	
7:K:867:ILE:HG21	7:K:880:ILE:HG13	2.03	0.41	
8:L:44:ARG:NH1	8:L:322:TRP:CH2	2.89	0.41	
8:L:177:HIS:HB3	8:L:265:SER:HB2	2.03	0.41	
9:M:26:LYS:O	9:M:79:ILE:HA	2.21	0.41	
3:C:29:ARG:O	3:C:33:LEU:HD23	2.20	0.41	
1:E:48:LEU:HD11	2:F:44:LYS:HD2	2.03	0.41	
1:E:101:VAL:O	1:E:105:GLU:HG2	2.21	0.41	
1:E:105:GLU:O	1:E:109:LEU:HD23	2.20	0.41	
4:H:76:ARG:O	4:H:77:LEU:C	2.57	0.41	
6:J:36:DT:H2"	6:J:37:DG:C8	2.55	0.41	
7:K:785:HIS:CD2	7:K:786:PRO:HD2	2.56	0.41	
7:K:1190:GLN:HG3	10:N:129:TRP:CE2	2.56	0.41	
8:L:138:LYS:H	8:L:138:LYS:HG2	1.72	0.41	
9:M:80:HIS:ND1	9:M:89:ASP:OD1	2.41	0.41	
9:M:92:VAL:HB	9:M:96:ARG:HB2	2.02	0.41	
1:E:128:ARG:HG2	1:E:133:GLU:OE2	2.21	0.41	
5:I:214:DG:N2	6:J:131:DG:C2	2.89	0.41	
7:K:709:TYR:OH	10:N:468:LEU:O	2.29	0.41	
8:L:256:LYS:O	8:L:260:GLU:HG2	2.21	0.41	
10:N:285:LEU:HD23	10:N:285:LEU:HA	1.95	0.41	
1:E:9:LYS:HD2	1:E:14:LYS:HD3	2.04	0.40	
2:F:52:GLU:O	2:F:52:GLU:CG	2.68	0.40	
8:L:273:GLY:HA3	8:L:318:VAL:HG23	2.04	0.40	
10:N:104:GLU:HB3	10:N:107:LYS:HE3	2.03	0.40	
10:P:307:LYS:O	10:P:311:PHE:HB2	2.21	0.40	
1:A:101:VAL:HG21	2:B:40:ARG:HG2	2.03	0.40	
3:C:29:ARG:HA	6:J:49:DG:OP1	2.21	0.40	
1:E:9:LYS:HD2	1:E:14:LYS:HE3	2.03	0.40	
1:E:80:THR:O	1:E:81:ASP:C	2.59	0.40	
5:I:287:DC:H6	5:I:287:DC:H2'	1.72	0.40	
7:K:671:LYS:HD2	7:K:716:LEU:HD13	2.03	0.40	
10:N:296:LEU:HD22	10:N:296:LEU:H	1.85	0.40	
9:O:355:LEU:HD23	9:O:355:LEU:HA	1.80	0.40	
4:D:36:ILE:HD13	5:I:299:DG:H3'	2.04	0.40	
8:L:242:ILE:HA	8:L:362:ASN:ND2	2.36	0.40	
9:M:334:LEU:O	9:M:338:LEU:HB2	2.22	0.40	
1:A:62:ILE:HD11	2:B:37:LEU:HD11	2.03	0.40	
1:A:67:PHE:O	1:A:70:LEU:HB3	2.21	0.40	
2:F:71:THR:HG22	4:H:93:THR:CG2	2.51	0.40	



Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)	
2:F:90:LEU:HD12	2:F:97:LEU:CB	2.51	0.40	
7:K:720:PHE:O	7:K:721:LYS:C	2.58	0.40	
2:F:39:ARG:HH12	2:F:46:ILE:CD1	2.34	0.40	
4:H:56:MET:O	4:H:59:MET:N	2.55	0.40	
5:I:174:DT:H2"	5:I:175:DA:C8	2.57	0.40	
7:K:963:LYS:HE2	7:K:963:LYS:HB3	1.94	0.40	
8:L:299:LYS:HD2	8:L:329:LEU:HA	2.02	0.40	
9:M:15:LEU:HD22	9:M:108:LYS:HD2	2.03	0.40	
10:N:561:VAL:HG22	9:O:267:GLN:HA	2.04	0.40	
9:O:310:LEU:HD21	10:P:290:PRO:CG	2.51	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	Perce	entiles
1	А	99/135~(73%)	90 (91%)	9 (9%)	0	100	100
1	Ε	112/135~(83%)	108 (96%)	4 (4%)	0	100	100
2	В	78/102~(76%)	72 (92%)	6 (8%)	0	100	100
2	F	77/102~(76%)	74 (96%)	3 (4%)	0	100	100
3	С	107/129~(83%)	103 (96%)	4 (4%)	0	100	100
3	G	104/129~(81%)	98~(94%)	6 (6%)	0	100	100
4	D	94/122~(77%)	86 (92%)	8 (8%)	0	100	100
4	Н	92/122~(75%)	81 (88%)	11 (12%)	0	100	100
7	Κ	543/1536~(35%)	526 (97%)	17 (3%)	0	100	100
8	L	382/433~(88%)	369~(97%)	13 (3%)	0	100	100
9	М	288/401 (72%)	284 (99%)	4 (1%)	0	100	100
9	Ο	154/401 (38%)	147 (96%)	7 (4%)	0	100	100



	J = J = J						
Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percer	\mathbf{ntiles}
10	Ν	365/684~(53%)	350~(96%)	15~(4%)	0	100	100
10	Р	147/684~(22%)	140 (95%)	7 (5%)	0	100	100
All	All	2642/5115~(52%)	2528~(96%)	114 (4%)	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 side chain 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	А	86/108~(80%)	86 (100%)	0	100 100	
1	Ε	98/108~(91%)	98 (100%)	0	100 100	
2	В	66/78~(85%)	66 (100%)	0	100 100	
2	F	64/78~(82%)	64 (100%)	0	100 100	
3	С	86/101 (85%)	86 (100%)	0	100 100	
3	G	84/101 (83%)	84 (100%)	0	100 100	
4	D	82/102 (80%)	82 (100%)	0	100 100	
4	Н	80/102~(78%)	80 (100%)	0	100 100	
7	Κ	510/1391~(37%)	510 (100%)	0	100 100	
8	L	326/367~(89%)	324 (99%)	2 (1%)	86 94	
9	М	268/359~(75%)	267 (100%)	1 (0%)	91 96	
9	Ο	149/359~(42%)	149 (100%)	0	100 100	
10	Ν	356/653~(54%)	356 (100%)	0	100 100	
10	Р	146/653~(22%)	146 (100%)	0	100 100	
All	All	2401/4560~(53%)	2398 (100%)	3 (0%)	93 98	

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type				
8	L	150	HIS				
Continued on next page							

PROTEIN DATA BANK

Continued from previous page...

Mol	Chain	Res	Type
8	L	259	MET
9	9 M		CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	А	39	HIS
1	А	76	GLN
2	В	93	GLN
3	С	112	GLN
4	D	92	GLN
1	Е	19	GLN
1	Е	68	GLN
1	Е	93	GLN
1	Е	108	ASN
1	Е	113	HIS
3	G	68	ASN
7	Κ	937	GLN
7	Κ	1190	GLN
9	М	389	ASN
10	Ν	304	ASN
10	Ν	393	GLN
10	Ν	517	ASN
9	0	275	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)

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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



Mol	Turne	Chain	Res	Link	Bond lengths			Bond angles		
	туре	Unam			Counts	RMSZ	# Z >2	Counts	RMSZ	# Z >2
1	ML3	А	36	1	10,11,12	0.77	0	10,14,16	0.82	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	ML3	А	36	1	-	5/8/10/12	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	А	36	ML3	SG-CD-CE-NZ
1	А	36	ML3	CD-CE-NZ-CM1
1	А	36	ML3	CD-CE-NZ-CM2
1	А	36	ML3	CD-CE-NZ-CM3
1	А	36	ML3	CA-CB-SG-CD

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	А	36	ML3	4	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

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

There are no bond length outliers.

There are no bond angle outliers.



There are no chirality outliers. There are no torsion outliers. There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

