



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 19, 2024 – 04:18 PM JST

PDB ID : 8JEL
Title : Crystal structure of TIGIT in complexed with Ociperlimab, crystal form I
Authors : Sun, J.; Zhang, X.X.; Song, J.
Deposited on : 2023-05-16
Resolution : 2.45 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467
Xtrriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

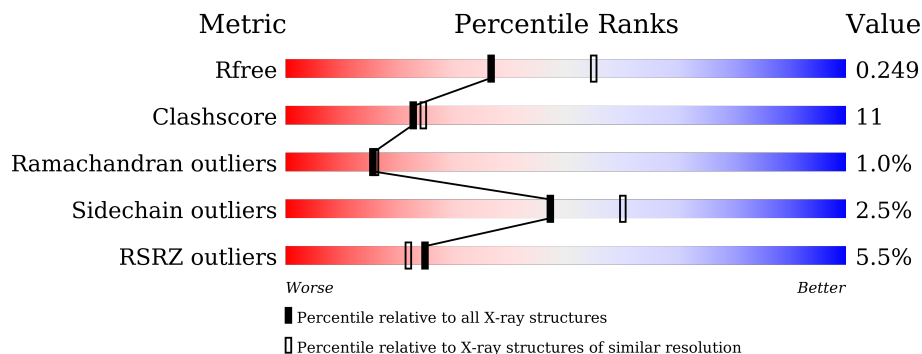
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.45 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1544 (2.48-2.44)
Clashscore	141614	1613 (2.48-2.44)
Ramachandran outliers	138981	1598 (2.48-2.44)
Sidechain outliers	138945	1598 (2.48-2.44)
RSRZ outliers	127900	1523 (2.48-2.44)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	222	 9% 73% 21% . .
1	C	222	 2% 79% 18% .
1	F	222	 7% 67% 28% . .
1	I	222	 69% 27% .
2	B	214	 8% 78% 19% .
2	D	214	 3% 78% 21% .

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Mol	Chain	Length	Quality of chain
2	G	214	<p>13% 62% 30% 5%</p>
2	K	214	<p>12% 76% 23%</p>
3	E	115	<p>% 83% 11% 6%</p>
3	H	115	<p>74% 19% 7%</p>
3	J	115	<p>80% 14% 6%</p>
3	L	115	<p>86% 5% 8%</p>

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 17094 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 antibody heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	C	216	Total 1634	C 1037	N 269	O 320	S 8	0	0	0
1	A	216	Total 1634	C 1037	N 269	O 320	S 8	0	0	0
1	F	213	Total 1613	C 1025	N 265	O 316	S 7	0	0	0
1	I	214	Total 1622	C 1031	N 267	O 317	S 7	0	0	0

- Molecule 2 is a protein called antibody light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	D	214	Total 1638	C 1027	N 275	O 330	S 6	0	0	0
2	B	214	Total 1638	C 1027	N 275	O 330	S 6	0	0	0
2	G	208	Total 1589	C 998	N 265	O 321	S 5	0	0	0
2	K	212	Total 1623	C 1019	N 273	O 326	S 5	0	0	0

- Molecule 3 is a protein called T-cell immunoreceptor with Ig and ITIM domains.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	J	108	Total 827	C 522	N 135	O 165	S 5	0	0	0
3	E	108	Total 828	C 522	N 135	O 167	S 4	0	0	0
3	H	107	Total 819	C 517	N 134	O 164	S 4	0	0	0
3	L	106	Total 811	C 511	N 133	O 163	S 4	0	0	0

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	129	LEU	-	expression tag	UNP Q495A1
J	130	GLU	-	expression tag	UNP Q495A1
J	131	HIS	-	expression tag	UNP Q495A1
J	132	HIS	-	expression tag	UNP Q495A1
J	133	HIS	-	expression tag	UNP Q495A1
J	134	HIS	-	expression tag	UNP Q495A1
J	135	HIS	-	expression tag	UNP Q495A1
J	136	HIS	-	expression tag	UNP Q495A1
E	129	LEU	-	expression tag	UNP Q495A1
E	130	GLU	-	expression tag	UNP Q495A1
E	131	HIS	-	expression tag	UNP Q495A1
E	132	HIS	-	expression tag	UNP Q495A1
E	133	HIS	-	expression tag	UNP Q495A1
E	134	HIS	-	expression tag	UNP Q495A1
E	135	HIS	-	expression tag	UNP Q495A1
E	136	HIS	-	expression tag	UNP Q495A1
H	129	LEU	-	expression tag	UNP Q495A1
H	130	GLU	-	expression tag	UNP Q495A1
H	131	HIS	-	expression tag	UNP Q495A1
H	132	HIS	-	expression tag	UNP Q495A1
H	133	HIS	-	expression tag	UNP Q495A1
H	134	HIS	-	expression tag	UNP Q495A1
H	135	HIS	-	expression tag	UNP Q495A1
H	136	HIS	-	expression tag	UNP Q495A1
L	129	LEU	-	expression tag	UNP Q495A1
L	130	GLU	-	expression tag	UNP Q495A1
L	131	HIS	-	expression tag	UNP Q495A1
L	132	HIS	-	expression tag	UNP Q495A1
L	133	HIS	-	expression tag	UNP Q495A1
L	134	HIS	-	expression tag	UNP Q495A1
L	135	HIS	-	expression tag	UNP Q495A1
L	136	HIS	-	expression tag	UNP Q495A1

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	78	Total O 78 78	0	0
4	D	97	Total O 97 97	0	0
4	J	50	Total O 50 50	0	0

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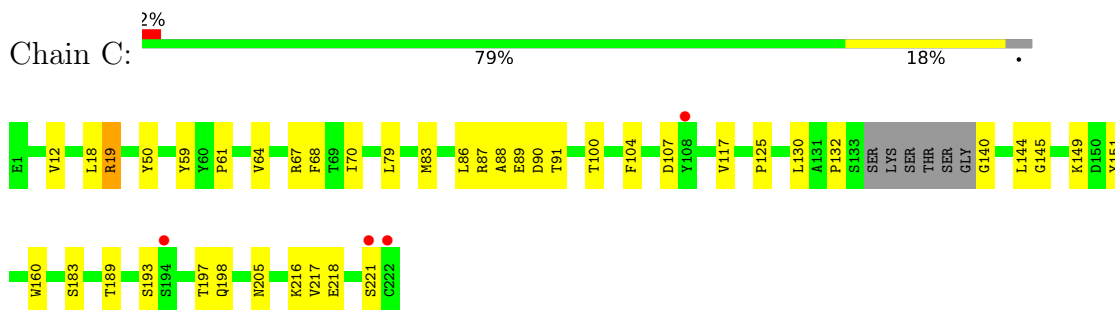
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	90	Total 90	O 90	0	0
4	B	76	Total 76	O 76	0	0
4	E	49	Total 49	O 49	0	0
4	F	41	Total 41	O 41	0	0
4	G	67	Total 67	O 67	0	0
4	H	54	Total 54	O 54	0	0
4	I	78	Total 78	O 78	0	0
4	K	88	Total 88	O 88	0	0
4	L	50	Total 50	O 50	0	0

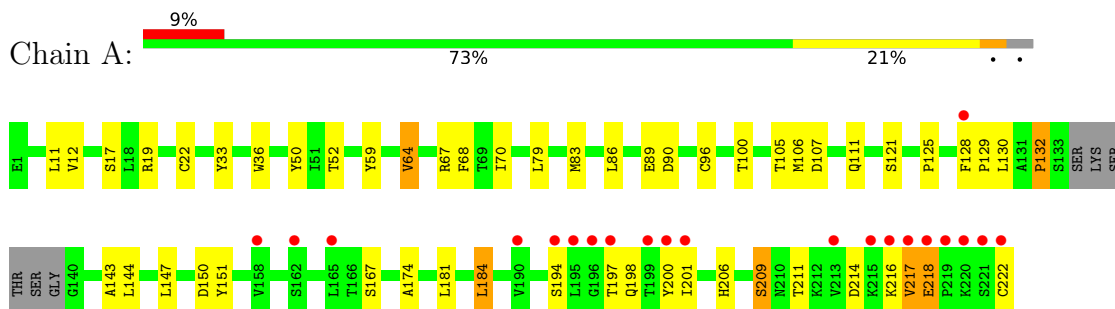
3 Residue-property plots [i](#)

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 and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

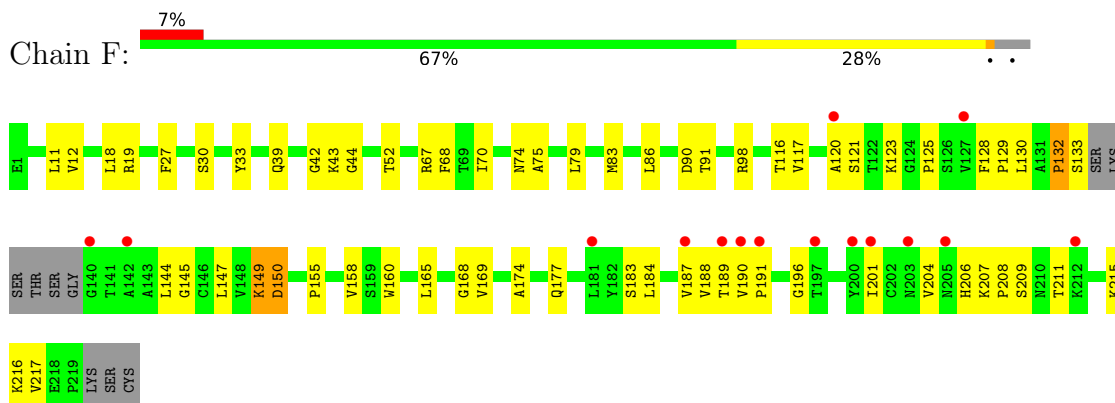
- Molecule 1: antibody heavy chain



- Molecule 1: antibody heavy chain



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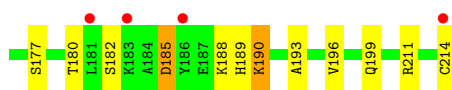
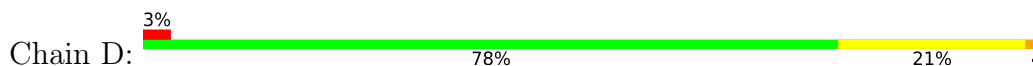


- Molecule 1: antibody heavy chain

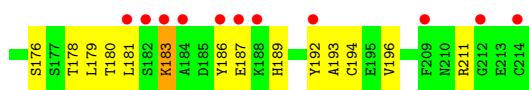
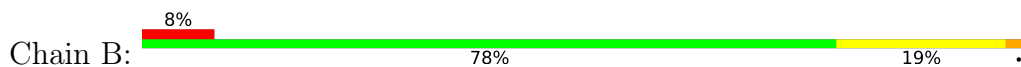




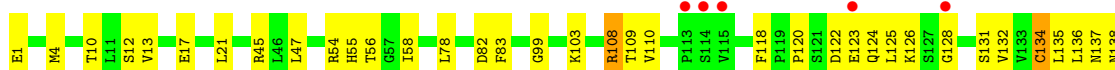
• Molecule 2: antibody light chain



• Molecule 2: antibody light chain

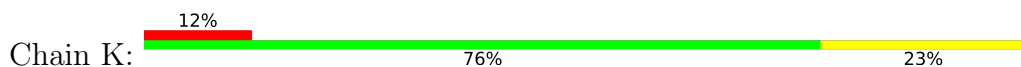


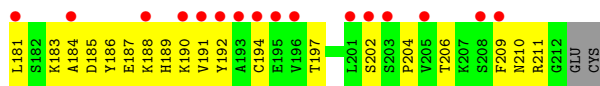
• Molecule 2: antibody light chain



GLY
GLU
CYS

• Molecule 2: antibody light chain





- Molecule 3: T-cell immunoreceptor with Ig and ITIM domains

Chain J: 80% 14% 6%



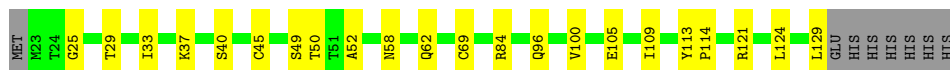
- Molecule 3: T-cell immunoreceptor with Ig and ITIM domains

Chain E: 83% 11% 6%



- Molecule 3: T-cell immunoreceptor with Ig and ITIM domains

Chain H: 74% 19% 7%



- Molecule 3: T-cell immunoreceptor with Ig and ITIM domains

Chain L: 86% 5% 8%



4 Data and refinement statistics i

Property	Value	Source
Space group	P 2 21 21	Depositor
Cell constants a, b, c, α , β , γ	135.53Å 138.31Å 196.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.40 – 2.45 48.40 – 2.45	Depositor EDS
% Data completeness (in resolution range)	99.9 (48.40-2.45) 100.0 (48.40-2.45)	Depositor EDS
R_{merge}	0.21	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.00 (at 2.45Å)	Xtrriage
Refinement program	PHENIX (1.17.1_3660: ???)	Depositor
R, R_{free}	0.192 , 0.249 0.192 , 0.249	Depositor DCC
R_{free} test set	6942 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å ²)	63.7	Xtrriage
Anisotropy	0.419	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 59.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.000 for k,h,-l	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	17094	wwPDB-VP
Average B, all atoms (Å ²)	79.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 25.59 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.0831e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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	0.50	1/1675 (0.1%)	0.64	1/2282 (0.0%)
1	C	0.41	0/1675	0.60	0/2282
1	F	0.42	0/1654	0.65	0/2255
1	I	0.41	0/1663	0.61	0/2266
2	B	0.41	0/1675	0.61	0/2276
2	D	0.45	0/1675	0.59	0/2276
2	G	0.40	0/1625	0.65	0/2210
2	K	0.45	0/1660	0.65	0/2256
3	E	0.45	0/845	0.66	0/1153
3	H	0.56	0/836	0.76	1/1141 (0.1%)
3	J	0.48	0/844	0.67	0/1151
3	L	0.48	0/828	0.67	0/1130
All	All	0.45	1/16655 (0.0%)	0.64	2/22678 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
2	B	0	1
2	G	0	4
2	K	0	1
All	All	0	7

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	96	CYS	CB-SG	-6.81	1.70	1.82

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	113	TYR	CA-CB-CG	-7.97	98.26	113.40
1	A	184	LEU	CA-CB-CG	5.06	126.94	115.30

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	217	VAL	Peptide
2	B	7	SER	Peptide
2	G	151	ASP	Peptide
2	G	186	TYR	Peptide
2	G	187	GLU	Peptide
2	G	190	LYS	Peptide
2	K	7	SER	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1634	0	1586	36	1
1	C	1634	0	1586	34	0
1	F	1613	0	1564	54	0
1	I	1622	0	1577	47	0
2	B	1638	0	1588	40	0
2	D	1638	0	1588	36	0
2	G	1589	0	1547	74	1
2	K	1623	0	1578	40	0
3	E	828	0	796	8	0
3	H	819	0	790	13	0
3	J	827	0	799	10	0
3	L	811	0	779	5	0
4	A	90	0	0	6	0
4	B	76	0	0	5	0
4	C	78	0	0	5	0
4	D	97	0	0	4	0
4	E	49	0	0	3	0
4	F	41	0	0	1	0
4	G	67	0	0	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	H	54	0	0	1	0
4	I	78	0	0	4	0
4	J	50	0	0	2	0
4	K	88	0	0	3	0
4	L	50	0	0	2	0
All	All	17094	0	15778	367	1

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 (367) 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:F:27:PHE:CG	1:F:98:ARG:NH2	2.22	1.07
2:G:110:VAL:HG21	2:G:199:GLN:OE1	1.60	0.99
2:G:149:LYS:HG2	2:G:154:LEU:H	1.29	0.98
3:H:69:CYS:SG	4:H:247:HOH:O	2.29	0.90
2:G:188:LYS:O	2:G:190:LYS:N	2.12	0.82
2:G:199:GLN:OE1	2:G:200:GLY:N	2.14	0.80
2:G:137:ASN:OD1	2:G:138:ASN:ND2	2.16	0.79
2:G:123:GLU:HA	2:G:126:LYS:HD2	1.63	0.78
3:H:50:THR:HG22	3:H:52:ALA:H	1.49	0.77
1:A:150:ASP:HB3	1:A:181:LEU:HD13	1.65	0.77
1:I:6:GLU:H	1:I:111:GLN:HE22	1.35	0.74
2:G:149:LYS:HG3	2:G:155:GLN:HE21	1.53	0.74
1:I:105:THR:HG22	1:I:106:MET:H	1.50	0.74
1:A:200:TYR:O	4:A:301:HOH:O	2.04	0.74
2:D:189:HIS:O	2:D:211:ARG:NH1	2.21	0.73
1:I:83:MET:HB3	1:I:86:LEU:HD21	1.68	0.73
2:G:150:VAL:HG22	2:G:151:ASP:H	1.54	0.73
2:K:191:VAL:HG12	2:K:210:ASN:HD21	1.54	0.73
1:C:149:LYS:NZ	4:C:301:HOH:O	2.22	0.73
1:F:174:ALA:HA	1:F:184:LEU:HB3	1.71	0.72
2:G:169:LYS:NZ	4:G:303:HOH:O	2.20	0.72
1:C:67:ARG:NH1	1:C:90:ASP:OD2	2.23	0.71
1:C:87:ARG:O	1:C:117:VAL:HG11	1.91	0.71
1:F:125:PRO:HD2	1:F:211:THR:HG21	1.73	0.71
1:A:12:VAL:HG11	1:A:86:LEU:HD13	1.73	0.70
3:H:105:GLU:OE2	3:H:121:ARG:NH1	2.24	0.70
2:G:149:LYS:HE3	2:G:153:ALA:HA	1.73	0.70
3:H:37:LYS:HZ2	3:H:100:VAL:H	1.39	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:63:ASP:OD2	4:L:201:HOH:O	2.11	0.69
3:E:30:THR:OG1	4:E:201:HOH:O	2.11	0.69
2:D:120:PRO:HD3	2:D:132:VAL:HG22	1.74	0.68
2:G:122:ASP:HA	2:G:125:LEU:HD12	1.76	0.67
1:A:89:GLU:OE2	4:A:302:HOH:O	2.13	0.67
1:C:18:LEU:HD12	1:C:19:ARG:H	1.60	0.66
1:A:67:ARG:NH1	1:A:90:ASP:OD2	2.27	0.66
1:I:220:LYS:O	4:I:301:HOH:O	2.14	0.66
2:D:190:LYS:HG3	2:D:211:ARG:HH12	1.61	0.66
1:C:149:LYS:HA	1:C:183:SER:HB2	1.78	0.66
1:C:125:PRO:HB3	1:C:151:TYR:HB3	1.77	0.66
1:F:130:LEU:HB3	2:G:118:PHE:CD2	2.32	0.66
1:A:83:MET:HE2	1:A:86:LEU:HD21	1.79	0.65
1:A:216:LYS:HA	4:A:301:HOH:O	1.94	0.65
1:A:197:THR:HG23	1:A:198:GLN:H	1.61	0.65
1:F:27:PHE:CD2	1:F:98:ARG:NH2	2.58	0.65
1:F:206:HIS:HB3	1:F:211:THR:HG23	1.78	0.65
2:G:45:ARG:NH1	4:G:304:HOH:O	2.29	0.65
2:K:165:GLU:OE2	4:K:302:HOH:O	2.15	0.65
2:G:108:ARG:HD3	2:G:109:THR:O	1.97	0.65
2:G:184:ALA:HB1	2:G:186:TYR:CD1	2.32	0.64
3:J:125:GLU:HG3	4:J:205:HOH:O	1.98	0.64
1:I:118:SER:O	4:I:302:HOH:O	2.15	0.64
2:K:187:GLU:OE1	4:K:301:HOH:O	2.15	0.64
1:A:201:ILE:HA	4:A:301:HOH:O	1.96	0.64
2:G:186:TYR:CD1	2:G:188:LYS:HG3	2.32	0.64
2:D:154:LEU:HD13	2:D:155:GLN:O	1.97	0.63
2:B:187:GLU:OE1	2:B:211:ARG:NH1	2.31	0.63
1:F:27:PHE:CD1	1:F:98:ARG:NH2	2.58	0.63
2:G:200:GLY:O	2:G:201:LEU:HB2	2.00	0.62
2:K:145:LYS:HB2	2:K:197:THR:HG23	1.81	0.62
2:D:149:LYS:HG2	2:D:193:ALA:HB3	1.81	0.62
2:G:150:VAL:HB	2:G:154:LEU:HB3	1.82	0.61
2:G:183:LYS:HE2	1:I:84:ASN:HD21	1.65	0.61
3:L:23:MET:N	4:L:202:HOH:O	2.33	0.61
1:I:105:THR:HG22	2:K:36:TYR:OH	2.01	0.61
1:C:144:LEU:HD13	1:C:217:VAL:HG21	1.82	0.60
1:I:12:VAL:O	1:I:117:VAL:HA	2.01	0.60
2:K:132:VAL:HG12	2:K:179:LEU:HB3	1.84	0.60
3:E:96:GLN:NE2	4:E:202:HOH:O	2.32	0.60
1:C:83:MET:HB3	1:C:86:LEU:HD21	1.82	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:158:ASN:HD22	2:B:181:LEU:HD11	1.67	0.59
1:I:65:LYS:HD2	1:I:66:GLY:H	1.67	0.59
2:K:125:LEU:O	2:K:183:LYS:HD2	2.02	0.59
2:G:188:LYS:C	2:G:190:LYS:H	2.02	0.59
2:G:150:VAL:HG23	2:G:192:TYR:OH	2.02	0.59
2:G:147:GLN:HB2	2:G:195:GLU:HB3	1.86	0.58
1:I:36:TRP:HD1	1:I:70:ILE:HD12	1.68	0.58
2:G:170:ASP:HB3	2:G:172:THR:HG23	1.85	0.58
1:C:91:THR:OG1	1:C:117:VAL:HG12	2.04	0.58
1:I:67:ARG:NH1	1:I:90:ASP:OD2	2.37	0.57
1:A:125:PRO:HB3	1:A:151:TYR:HB3	1.86	0.57
2:B:186:TYR:O	2:B:192:TYR:OH	2.23	0.57
1:F:132:PRO:HG3	1:F:144:LEU:HB3	1.85	0.57
2:B:154:LEU:HD23	2:B:154:LEU:H	1.70	0.57
1:C:104:PHE:CE1	3:J:78:SER:HB2	2.40	0.57
2:G:150:VAL:HB	2:G:154:LEU:CB	2.34	0.57
2:G:186:TYR:CE1	2:G:188:LYS:HG3	2.40	0.57
2:D:124:GLN:NE2	4:D:307:HOH:O	2.32	0.57
1:C:198:GLN:OE1	1:F:75:ALA:HA	2.05	0.57
2:D:211:ARG:HH11	2:D:211:ARG:HB3	1.70	0.56
1:A:144:LEU:HD13	1:A:217:VAL:HG21	1.86	0.56
2:K:119:PRO:HB3	2:K:209:PHE:CE1	2.40	0.56
3:J:61:GLN:O	3:J:63:ASP:N	2.36	0.56
1:F:67:ARG:NH1	1:F:90:ASP:OD2	2.39	0.56
1:I:18:LEU:HD12	1:I:19:ARG:H	1.69	0.56
2:B:176:SER:OG	4:B:301:HOH:O	2.18	0.56
2:K:191:VAL:HG12	2:K:210:ASN:ND2	2.19	0.56
1:F:68:PHE:CE2	1:F:83:MET:HG2	2.42	0.55
1:C:50:TYR:HD1	1:C:59:TYR:HD2	1.55	0.55
2:G:188:LYS:HD3	2:G:189:HIS:N	2.22	0.55
3:J:60:GLU:HG2	3:J:65:LEU:HD13	1.88	0.55
3:J:84:ARG:HH21	3:J:84:ARG:HG3	1.72	0.55
1:F:12:VAL:HG21	1:F:86:LEU:HD13	1.89	0.55
1:F:130:LEU:HD11	1:F:147:LEU:HB2	1.89	0.54
1:F:168:GLY:O	1:F:189:THR:HG22	2.08	0.54
1:C:140:GLY:N	4:C:305:HOH:O	2.39	0.54
1:C:189:THR:HG21	2:D:137:ASN:ND2	2.23	0.54
2:K:163:VAL:HG22	2:K:175:LEU:HD12	1.88	0.54
2:D:188:LYS:C	2:D:190:LYS:HZ3	2.11	0.54
2:K:151:ASP:OD2	2:K:190:LYS:HB2	2.08	0.54
2:D:80:SER:HA	2:D:106:ILE:HD13	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:191:VAL:CG1	2:K:210:ASN:HD21	2.19	0.54
2:K:46:LEU:HD23	2:K:55:HIS:HD2	1.73	0.53
1:F:33:TYR:CD2	1:F:52:THR:HA	2.42	0.53
1:F:91:THR:HB	1:F:117:VAL:HG22	1.91	0.53
2:G:167:ASP:HB3	2:G:170:ASP:HB2	1.90	0.53
2:K:185:ASP:HA	2:K:188:LYS:HB2	1.91	0.53
1:A:105:THR:HG23	2:B:91:TYR:CD2	2.43	0.53
2:B:149:LYS:HG3	2:B:193:ALA:HB3	1.91	0.53
1:I:174:ALA:HA	1:I:184:LEU:HB3	1.90	0.53
1:F:206:HIS:HB3	1:F:211:THR:CG2	2.38	0.53
2:B:7:SER:HB3	4:B:364:HOH:O	2.09	0.52
2:K:148:TRP:CG	2:K:179:LEU:HD13	2.44	0.52
1:C:132:PRO:HD3	1:C:144:LEU:HB3	1.92	0.52
1:I:13:GLN:H	1:I:13:GLN:NE2	2.08	0.52
3:H:33:ILE:HD11	3:H:124:LEU:HD13	1.92	0.51
2:G:150:VAL:HA	2:G:192:TYR:CZ	2.45	0.51
1:I:105:THR:HG22	1:I:106:MET:N	2.23	0.51
1:A:206:HIS:ND1	1:A:209:SER:HB3	2.26	0.51
3:H:33:ILE:CD1	3:H:124:LEU:HD13	2.40	0.51
2:D:122:ASP:HA	2:D:125:LEU:HD12	1.92	0.51
1:C:89:GLU:HG3	4:C:350:HOH:O	2.10	0.51
1:A:105:THR:HG23	2:B:91:TYR:CE2	2.46	0.51
2:B:61:ARG:NH2	2:B:82:ASP:OD1	2.41	0.51
2:B:189:HIS:O	2:B:211:ARG:NE	2.39	0.51
1:I:160:TRP:CH2	1:I:202:CYS:HB3	2.46	0.51
2:B:166:GLN:HG3	2:B:173:TYR:CZ	2.46	0.50
1:I:13:GLN:H	1:I:13:GLN:CD	2.13	0.50
2:D:146:VAL:HG22	2:D:196:VAL:HG22	1.94	0.50
2:D:61:ARG:HD2	2:D:76:SER:O	2.12	0.50
1:F:39:GLN:HG3	1:F:44:GLY:O	2.11	0.50
1:I:205:ASN:ND2	1:I:212:LYS:HG3	2.27	0.50
3:H:25:GLY:HA2	3:H:49:SER:HB2	1.94	0.50
1:I:87:ARG:O	1:I:117:VAL:HG21	2.12	0.50
1:I:64:VAL:HG13	1:I:68:PHE:CG	2.47	0.50
1:A:132:PRO:HB3	1:A:143:ALA:O	2.12	0.50
1:F:165:LEU:HD23	1:F:165:LEU:H	1.76	0.50
1:F:183:SER:OG	4:F:301:HOH:O	2.19	0.50
1:F:190:VAL:N	1:F:191:PRO:HD2	2.27	0.50
2:B:146:VAL:HG22	2:B:196:VAL:HG22	1.93	0.49
2:K:118:PHE:HB2	2:K:133:VAL:HG13	1.95	0.49
2:K:132:VAL:CG1	2:K:179:LEU:HB3	2.41	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:199:GLN:NE2	4:D:308:HOH:O	2.40	0.49
1:A:50:TYR:HD1	1:A:59:TYR:HD2	1.59	0.49
2:G:135:LEU:HD12	2:G:136:LEU:N	2.28	0.49
2:G:54:ARG:HG2	2:G:58:ILE:HB	1.95	0.49
2:G:10:THR:HG22	2:G:103:LYS:HB3	1.95	0.49
2:G:150:VAL:HG12	2:G:153:ALA:N	2.27	0.49
2:G:135:LEU:HD12	2:G:136:LEU:H	1.77	0.48
1:I:118:SER:OG	4:I:303:HOH:O	2.16	0.48
1:I:171:THR:HG23	1:I:186:SER:HB2	1.95	0.48
1:F:123:LYS:CD	1:I:121:SER:HB2	2.43	0.48
1:F:158:VAL:HG22	1:F:204:VAL:HG22	1.95	0.48
2:G:13:VAL:HG11	2:G:78:LEU:HD12	1.96	0.48
1:F:149:LYS:HE3	2:G:131:SER:OG	2.14	0.48
1:A:111:GLN:NE2	4:A:303:HOH:O	2.23	0.48
1:F:201:ILE:HA	1:F:216:LYS:HA	1.95	0.48
2:G:108:ARG:NH1	2:G:109:THR:O	2.42	0.48
2:G:161:GLU:HG3	2:G:175:LEU:HD21	1.96	0.48
1:I:64:VAL:HG13	1:I:68:PHE:CD1	2.48	0.48
2:G:55:HIS:CE1	2:G:56:THR:HG22	2.49	0.48
2:B:153:ALA:HB3	4:B:305:HOH:O	2.13	0.48
1:I:165:LEU:HD21	1:I:188:VAL:HG21	1.96	0.48
2:K:145:LYS:HA	2:K:145:LYS:HD3	1.66	0.48
2:D:1:GLU:O	4:D:301:HOH:O	2.20	0.48
2:K:94:TYR:HE1	3:L:80:SER:HB3	1.79	0.48
1:F:174:ALA:HB2	1:F:184:LEU:HD23	1.96	0.47
2:G:1:GLU:OE1	4:G:302:HOH:O	2.20	0.47
2:G:188:LYS:HD3	2:G:189:HIS:H	1.79	0.47
3:E:64:GLN:NE2	4:E:206:HOH:O	2.47	0.47
1:A:125:PRO:HD2	1:A:211:THR:HG21	1.97	0.47
2:D:83:PHE:HB2	2:D:106:ILE:HD12	1.97	0.47
2:B:133:VAL:HG12	2:B:178:THR:HB	1.96	0.47
2:G:83:PHE:O	4:G:301:HOH:O	2.19	0.47
1:C:130:LEU:HD22	2:D:133:VAL:HG11	1.96	0.47
2:B:7:SER:OG	2:B:8:PRO:HD2	2.15	0.47
2:G:149:LYS:CG	2:G:155:GLN:HE21	2.23	0.47
1:A:11:LEU:HD23	1:A:12:VAL:N	2.29	0.47
2:G:145:LYS:CE	2:G:147:GLN:HE22	2.28	0.47
1:C:100:THR:HG22	1:C:107:ASP:HB2	1.95	0.47
1:A:129:PRO:HD2	2:B:121:SER:HB2	1.97	0.47
2:B:61:ARG:HH21	2:B:82:ASP:CG	2.18	0.47
1:F:187:VAL:HG11	2:G:135:LEU:HD22	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:128:GLY:O	1:I:16:GLY:HA2	2.15	0.47
2:K:46:LEU:HD23	2:K:55:HIS:CD2	2.48	0.47
1:F:33:TYR:HD2	1:F:52:THR:HA	1.80	0.47
3:H:40:SER:HB3	3:H:96:GLN:HA	1.97	0.47
2:D:81:GLU:CD	2:D:81:GLU:H	2.18	0.47
2:B:145:LYS:HB3	3:L:113:TYR:OH	2.15	0.47
3:J:37:LYS:NZ	4:J:206:HOH:O	2.48	0.47
1:I:128:PHE:CE2	2:K:124:GLN:HG3	2.50	0.47
1:F:177:GLN:HB3	2:G:160:GLN:HE22	1.79	0.46
2:G:120:PRO:HD3	2:G:132:VAL:HG12	1.97	0.46
2:D:60:ALA:O	4:D:302:HOH:O	2.20	0.46
1:A:217:VAL:O	1:A:218:GLU:HB2	2.15	0.46
2:G:78:LEU:HD23	2:G:82:ASP:HB2	1.97	0.46
2:K:18:ARG:HG3	2:K:18:ARG:HH11	1.80	0.46
1:F:27:PHE:CB	1:F:98:ARG:NH2	2.75	0.46
1:A:105:THR:HB	1:A:106:MET:H	1.60	0.46
1:A:174:ALA:HA	1:A:184:LEU:HB3	1.97	0.46
1:F:11:LEU:HD21	1:F:121:SER:HA	1.96	0.46
2:G:108:ARG:NH1	2:G:109:THR:OG1	2.49	0.46
2:D:154:LEU:HD13	2:D:154:LEU:C	2.36	0.46
1:F:145:GLY:HA2	1:F:160:TRP:CZ2	2.51	0.46
2:G:206:THR:OG1	2:G:207:LYS:N	2.49	0.46
2:B:180:THR:O	2:B:181:LEU:HD13	2.16	0.46
1:F:128:PHE:CE1	2:G:124:GLN:HG3	2.51	0.46
2:G:190:LYS:HB3	2:G:190:LYS:HE3	1.64	0.46
2:K:194:CYS:O	2:K:206:THR:HA	2.16	0.46
1:C:145:GLY:HA2	1:C:160:TRP:CZ2	2.51	0.45
3:E:59:TRP:CG	3:E:93:LEU:HD22	2.51	0.45
3:E:113:TYR:HA	3:E:114:PRO:HA	1.66	0.45
1:C:216:LYS:HE2	1:C:218:GLU:OE2	2.17	0.45
1:F:150:ASP:OD2	1:F:177:GLN:NE2	2.49	0.45
1:F:188:VAL:HG12	1:F:191:PRO:HD2	1.99	0.45
3:E:54:VAL:HG22	3:E:112:THR:HG22	1.99	0.45
1:F:206:HIS:ND1	1:F:208:PRO:HD2	2.31	0.45
1:C:64:VAL:HG22	1:C:68:PHE:CG	2.52	0.45
2:D:55:HIS:ND1	2:D:56:THR:O	2.48	0.45
1:A:128:PHE:CE2	2:B:124:GLN:HG3	2.52	0.45
1:A:130:LEU:HD11	1:A:147:LEU:HB2	1.99	0.45
2:B:166:GLN:NE2	2:B:171:SER:HB3	2.31	0.45
1:F:177:GLN:HA	2:G:160:GLN:OE1	2.16	0.45
1:A:22:CYS:HB3	1:A:79:LEU:HB3	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:191:VAL:HA	2:K:210:ASN:OD1	2.16	0.45
1:F:206:HIS:CE1	1:F:209:SER:H	2.35	0.45
1:F:129:PRO:HD3	1:F:215:LYS:HD2	1.98	0.45
2:K:187:GLU:OE1	2:K:187:GLU:HA	2.17	0.45
2:B:151:ASP:N	4:B:305:HOH:O	2.50	0.45
1:C:86:LEU:HD23	1:C:86:LEU:HA	1.77	0.44
2:D:118:PHE:HB2	2:D:133:VAL:CG1	2.48	0.44
1:I:130:LEU:HD23	1:I:130:LEU:HA	1.68	0.44
2:D:32:SER:HB3	2:D:91:TYR:CD1	2.52	0.44
2:D:211:ARG:NH1	2:D:211:ARG:HB3	2.31	0.44
1:I:105:THR:HG21	2:K:34:ALA:HB2	2.00	0.44
2:B:118:PHE:HB2	2:B:133:VAL:HG22	1.98	0.44
1:F:117:VAL:HG23	1:F:117:VAL:O	2.17	0.44
2:G:158:ASN:OD1	2:G:158:ASN:N	2.49	0.44
2:K:13:VAL:HB	2:K:78:LEU:HD22	1.99	0.44
4:C:301:HOH:O	2:D:180:THR:HG22	2.17	0.44
3:H:29:THR:HG22	3:H:45:CYS:SG	2.58	0.44
1:I:142:ALA:HB2	1:I:192:SER:HB3	1.98	0.44
1:F:169:VAL:HG22	1:F:188:VAL:HG22	1.99	0.44
1:I:41:PRO:O	4:I:304:HOH:O	2.21	0.44
2:D:61:ARG:HH21	2:D:82:ASP:CG	2.21	0.44
1:A:194:SER:HA	1:A:197:THR:CG2	2.48	0.43
2:B:158:ASN:O	2:B:179:LEU:HD12	2.18	0.43
1:C:67:ARG:HH12	1:C:90:ASP:CG	2.21	0.43
1:F:130:LEU:HD23	2:G:118:PHE:CB	2.48	0.43
1:A:121:SER:HB3	4:A:381:HOH:O	2.17	0.43
1:I:176:LEU:HD13	1:I:182:TYR:CE1	2.54	0.43
2:K:11:LEU:HA	2:K:11:LEU:HD23	1.69	0.43
2:D:4:MET:HE2	2:D:25:ALA:HA	2.00	0.43
2:B:131:SER:OG	2:B:180:THR:HG22	2.18	0.43
3:E:65:LEU:HD21	3:E:68:ILE:HD11	2.00	0.43
1:I:39:GLN:HG3	1:I:44:GLY:O	2.17	0.43
2:B:187:GLU:O	2:B:211:ARG:NH2	2.52	0.43
1:F:215:LYS:HE2	1:F:215:LYS:HB2	1.86	0.43
2:G:17:GLU:HG2	4:G:309:HOH:O	2.18	0.43
2:G:134:CYS:SG	2:G:194:CYS:CB	3.07	0.43
3:H:84:ARG:O	3:H:96:GLN:HG2	2.19	0.43
1:I:64:VAL:CG1	1:I:68:PHE:HB2	2.48	0.43
1:I:174:ALA:HB2	1:I:184:LEU:HD23	2.01	0.43
1:C:12:VAL:O	1:C:117:VAL:HA	2.18	0.43
1:C:70:ILE:HD11	1:C:79:LEU:HD11	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:12:VAL:O	1:F:117:VAL:HA	2.19	0.43
2:K:158:ASN:HD21	2:K:181:LEU:CD2	2.32	0.43
2:D:140:TYR:CG	2:D:141:PRO:HA	2.54	0.43
2:B:178:THR:HG23	4:B:301:HOH:O	2.19	0.42
1:F:70:ILE:HD11	1:F:79:LEU:HD11	2.00	0.42
1:I:105:THR:HG21	2:K:34:ALA:CB	2.48	0.42
2:B:158:ASN:ND2	2:B:181:LEU:HD11	2.33	0.42
1:F:132:PRO:HB2	1:F:133:SER:H	1.64	0.42
1:I:33:TYR:CD2	1:I:52:THR:HA	2.55	0.42
1:I:152:PHE:HB2	1:I:181:LEU:HD22	2.00	0.42
2:K:89:GLN:HB2	2:K:98:PHE:CD1	2.54	0.42
1:A:33:TYR:CD2	1:A:52:THR:HA	2.55	0.42
2:B:134:CYS:HB2	2:B:148:TRP:CZ2	2.54	0.42
2:K:150:VAL:HB	2:K:155:GLN:NE2	2.35	0.42
2:D:120:PRO:HG3	2:D:130:ALA:HB1	2.01	0.42
2:B:148:TRP:CZ3	2:B:194:CYS:HB2	2.54	0.42
1:F:201:ILE:HG22	1:F:216:LYS:CG	2.50	0.42
2:K:186:TYR:O	2:K:192:TYR:OH	2.37	0.42
1:I:65:LYS:HD2	1:I:66:GLY:N	2.32	0.42
2:D:61:ARG:NH2	2:D:82:ASP:OD1	2.52	0.42
1:F:18:LEU:HD12	1:F:19:ARG:H	1.84	0.42
1:F:160:TRP:HB3	1:F:165:LEU:HD21	2.01	0.42
2:G:21:LEU:N	2:G:21:LEU:HD12	2.35	0.42
2:G:47:LEU:HD23	2:G:47:LEU:HA	1.83	0.42
1:I:133:SER:O	1:I:133:SER:OG	2.36	0.42
1:A:100:THR:HG22	1:A:107:ASP:HB2	2.02	0.42
2:B:140:TYR:CD1	2:B:141:PRO:HA	2.55	0.42
1:F:42:GLY:O	1:F:43:LYS:HD3	2.20	0.42
2:G:1:GLU:HG3	2:G:1:GLU:O	2.19	0.42
2:G:150:VAL:C	2:G:152:ASN:H	2.23	0.42
2:K:180:THR:HG23	4:K:330:HOH:O	2.20	0.42
3:J:23:MET:HB2	1:I:198:GLN:OE1	2.20	0.42
1:C:88:ALA:HA	1:C:117:VAL:HG13	2.01	0.42
1:C:197:THR:OG1	1:C:198:GLN:N	2.53	0.42
1:A:194:SER:O	1:A:194:SER:OG	2.38	0.42
2:B:61:ARG:HD2	2:B:76:SER:O	2.20	0.42
2:G:150:VAL:C	2:G:152:ASN:N	2.73	0.42
1:I:100:THR:HG22	1:I:107:ASP:HB2	2.02	0.42
2:K:125:LEU:HA	2:K:125:LEU:HD23	1.75	0.42
1:C:61:PRO:HB2	4:C:342:HOH:O	2.20	0.41
1:C:64:VAL:CG2	1:C:68:PHE:CG	3.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:TRP:HD1	1:A:70:ILE:HD12	1.85	0.41
1:A:201:ILE:HD11	1:A:214:ASP:C	2.41	0.41
2:G:191:VAL:HG21	2:G:208:SER:C	2.40	0.41
1:C:198:GLN:OE1	1:F:74:ASN:O	2.38	0.41
2:G:151:ASP:OD1	2:G:187:GLU:HG2	2.20	0.41
2:G:203:SER:O	2:G:205:VAL:HG23	2.21	0.41
2:D:190:LYS:HA	2:D:211:ARG:NH1	2.35	0.41
1:A:64:VAL:HG13	1:A:68:PHE:CG	2.56	0.41
2:G:4:MET:O	2:G:99:GLY:HA2	2.20	0.41
2:G:132:VAL:CG2	2:G:179:LEU:HB3	2.50	0.41
2:G:191:VAL:HG11	2:G:208:SER:O	2.20	0.41
3:J:66:LEU:HD23	3:J:85:VAL:HG21	2.02	0.41
1:F:130:LEU:O	1:F:217:VAL:HG11	2.21	0.41
1:A:105:THR:HG21	2:B:34:ALA:HB2	2.03	0.41
2:G:149:LYS:HG2	2:G:154:LEU:N	2.13	0.41
2:D:24:LYS:HG3	2:D:25:ALA:H	1.85	0.41
2:D:118:PHE:HB2	2:D:133:VAL:HG12	2.02	0.41
3:J:113:TYR:HA	3:J:114:PRO:HA	1.80	0.41
1:C:198:GLN:HE21	1:C:198:GLN:HB2	1.53	0.41
1:F:91:THR:OG1	1:F:116:THR:HA	2.20	0.41
2:G:150:VAL:HG22	2:G:151:ASP:N	2.28	0.41
2:K:132:VAL:HG21	2:K:209:PHE:HE2	1.85	0.41
2:K:149:LYS:HB3	2:K:149:LYS:HE3	1.77	0.41
3:L:59:TRP:CH2	3:L:108:CYS:HB3	2.56	0.41
1:C:50:TYR:CD1	1:C:59:TYR:HD2	2.36	0.41
1:C:189:THR:HG21	2:D:137:ASN:HD21	1.83	0.41
2:B:21:LEU:HD12	2:B:21:LEU:N	2.36	0.41
3:E:93:LEU:HD12	3:E:93:LEU:HA	1.85	0.41
2:G:54:ARG:HD2	2:G:58:ILE:O	2.21	0.41
3:H:58:ASN:HB2	3:H:109:ILE:HB	2.03	0.41
1:I:60:TYR:OH	1:I:69:THR:HA	2.21	0.41
2:K:186:TYR:CE1	2:K:192:TYR:CE1	3.09	0.41
2:B:149:LYS:HA	2:B:153:ALA:O	2.21	0.41
2:K:150:VAL:HG22	2:K:192:TYR:CD2	2.56	0.41
2:B:128:GLY:HA2	2:B:183:LYS:HG2	2.04	0.40
3:H:37:LYS:NZ	3:H:100:VAL:H	2.12	0.40
1:A:105:THR:CG2	2:B:91:TYR:CD2	3.04	0.40
2:B:125:LEU:O	2:B:183:LYS:HD3	2.20	0.40
2:G:159:SER:O	2:G:160:GLN:HG3	2.21	0.40
1:I:36:TRP:CE2	1:I:81:LEU:HB2	2.55	0.40
2:K:187:GLU:OE2	2:K:211:ARG:HD3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:182:SER:HG	2:D:185:ASP:H	1.67	0.40
2:B:125:LEU:HD23	2:B:125:LEU:HA	1.93	0.40
2:G:147:GLN:O	2:G:194:CYS:HA	2.20	0.40
1:C:117:VAL:HG13	1:C:117:VAL:O	2.20	0.40
1:F:12:VAL:HG13	1:F:18:LEU:HD22	2.03	0.40
1:I:8:GLY:O	1:I:18:LEU:HD11	2.21	0.40
1:I:125:PRO:HB3	1:I:151:TYR:HB3	2.03	0.40
2:D:153:ALA:O	2:D:155:GLN:NE2	2.53	0.40
3:J:27:ILE:HG21	3:J:120:GLY:HA3	2.03	0.40
2:G:183:LYS:HE2	1:I:84:ASN:ND2	2.35	0.40
3:H:129:LEU:HD23	3:H:129:LEU:HA	1.86	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:89:GLU:OE1	2:G:152:ASN:ND2[4_455]	2.19	0.01

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 X-ray entries followed by that with respect to entries of similar resolution.

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	212/222 (96%)	197 (93%)	12 (6%)	3 (1%)	11 9
1	C	212/222 (96%)	198 (93%)	14 (7%)	0	100 100
1	F	209/222 (94%)	187 (90%)	17 (8%)	5 (2%)	6 3
1	I	210/222 (95%)	198 (94%)	11 (5%)	1 (0%)	29 34
2	B	212/214 (99%)	201 (95%)	10 (5%)	1 (0%)	29 34
2	D	212/214 (99%)	204 (96%)	8 (4%)	0	100 100
2	G	206/214 (96%)	177 (86%)	23 (11%)	6 (3%)	4 2

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	K	210/214 (98%)	194 (92%)	12 (6%)	4 (2%)	8	6
3	E	106/115 (92%)	103 (97%)	2 (2%)	1 (1%)	17	19
3	H	105/115 (91%)	101 (96%)	3 (3%)	1 (1%)	15	16
3	J	106/115 (92%)	101 (95%)	5 (5%)	0	100	100
3	L	104/115 (90%)	99 (95%)	5 (5%)	0	100	100
All	All	2104/2204 (96%)	1960 (93%)	122 (6%)	22 (1%)	15	16

All (22) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	8	PRO
2	G	151	ASP
2	G	152	ASN
2	G	188	LYS
2	G	201	LEU
3	H	114	PRO
2	K	8	PRO
1	A	218	GLU
1	F	150	ASP
2	K	202	SER
1	F	132	PRO
2	G	189	HIS
2	G	199	GLN
2	K	204	PRO
3	E	97	SER
1	F	120	ALA
2	K	184	ALA
1	F	196	GLY
1	A	64	VAL
1	I	16	GLY
1	A	132	PRO
1	F	155	PRO

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 X-ray entries followed by that with respect to entries of similar resolution.

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	181/186 (97%)	176 (97%)	5 (3%)	43	56
1	C	181/186 (97%)	177 (98%)	4 (2%)	52	64
1	F	178/186 (96%)	175 (98%)	3 (2%)	60	73
1	I	179/186 (96%)	176 (98%)	3 (2%)	60	73
2	B	184/184 (100%)	176 (96%)	8 (4%)	29	38
2	D	184/184 (100%)	174 (95%)	10 (5%)	22	28
2	G	179/184 (97%)	172 (96%)	7 (4%)	32	42
2	K	182/184 (99%)	181 (100%)	1 (0%)	88	93
3	E	92/99 (93%)	91 (99%)	1 (1%)	73	82
3	H	91/99 (92%)	90 (99%)	1 (1%)	73	82
3	J	92/99 (93%)	91 (99%)	1 (1%)	73	82
3	L	90/99 (91%)	88 (98%)	2 (2%)	52	64
All	All	1813/1876 (97%)	1767 (98%)	46 (2%)	47	60

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	19	ARG
1	C	193	SER
1	C	205	ASN
1	C	221	SER
2	D	24	LYS
2	D	45	ARG
2	D	50	TRP
2	D	63	SER
2	D	145	LYS
2	D	149	LYS
2	D	177	SER
2	D	185	ASP
2	D	190	LYS
2	D	214	CYS
3	J	53	GLN
1	A	17	SER
1	A	19	ARG
1	A	167	SER
1	A	209	SER
1	A	222	CYS

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Mol	Chain	Res	Type
2	B	50	TRP
2	B	63	SER
2	B	67	SER
2	B	149	LYS
2	B	151	ASP
2	B	154	LEU
2	B	159	SER
2	B	183	LYS
3	E	49	SER
1	F	30	SER
1	F	149	LYS
1	F	207	LYS
2	G	12	SER
2	G	108	ARG
2	G	134	CYS
2	G	176	SER
2	G	181	LEU
2	G	186	TYR
2	G	207	LYS
3	H	62	GLN
1	I	17	SER
1	I	43	LYS
1	I	167	SER
2	K	189	HIS
3	L	23	MET
3	L	37	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	198	GLN
1	C	205	ASN
1	A	111	GLN
2	B	79	GLN
1	F	210	ASN
2	G	27	GLN
2	G	155	GLN
1	I	13	GLN
1	I	84	ASN
2	K	158	ASN

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 monosaccharides 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.

6 Fit of model and data i

6.1 Protein, DNA and RNA chains i

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	216/222 (97%)	0.67	21 (9%) 7 5	46, 78, 141, 180	0
1	C	216/222 (97%)	0.35	4 (1%) 66 64	54, 83, 109, 167	0
1	F	213/222 (95%)	0.61	15 (7%) 16 13	53, 93, 134, 202	0
1	I	214/222 (96%)	0.15	0 100 100	51, 77, 99, 113	0
2	B	214/214 (100%)	0.57	18 (8%) 11 8	43, 72, 127, 169	0
2	D	214/214 (100%)	0.28	6 (2%) 53 49	50, 70, 107, 158	0
2	G	208/214 (97%)	0.80	27 (12%) 3 2	49, 84, 146, 184	0
2	K	212/214 (99%)	0.80	26 (12%) 4 2	50, 75, 131, 164	0
3	E	108/115 (93%)	0.27	1 (0%) 84 85	43, 60, 92, 126	0
3	H	107/115 (93%)	0.41	0 100 100	50, 62, 101, 118	0
3	J	108/115 (93%)	0.24	0 100 100	50, 60, 89, 120	0
3	L	106/115 (92%)	0.05	0 100 100	51, 64, 97, 145	0
All	All	2136/2204 (96%)	0.47	118 (5%) 25 22	43, 75, 128, 202	0

All (118) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	214	CYS	7.8
2	G	152	ASN	7.2
1	C	222	CYS	6.7
1	A	222	CYS	6.7
1	F	197	THR	6.7
1	C	221	SER	6.0
2	B	150	VAL	5.8
1	A	194	SER	5.5
1	A	217	VAL	5.5
1	A	221	SER	5.4
2	K	191	VAL	5.2

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Mol	Chain	Res	Type	RSRZ
1	A	200	TYR	5.1
2	K	193	ALA	4.9
2	B	184	ALA	4.9
2	D	214	CYS	4.6
2	G	148	TRP	4.6
1	A	195	LEU	4.6
2	G	193	ALA	4.5
2	G	153	ALA	4.4
1	F	191	PRO	4.4
1	F	190	VAL	4.4
2	K	154	LEU	4.3
2	G	186	TYR	4.3
2	B	125	LEU	4.3
1	F	200	TYR	4.2
2	G	155	GLN	4.1
2	G	147	GLN	4.1
2	B	154	LEU	4.0
1	F	120	ALA	3.9
2	K	190	LYS	3.9
2	B	209	PHE	3.9
2	B	188	LYS	3.8
2	G	208	SER	3.8
2	G	154	LEU	3.8
2	B	181	LEU	3.7
2	D	125	LEU	3.5
2	K	153	ALA	3.5
1	A	216	LYS	3.4
2	K	202	SER	3.3
1	A	196	GLY	3.3
2	G	202	SER	3.3
2	K	150	VAL	3.3
2	G	151	ASP	3.3
1	F	205	ASN	3.3
2	B	126	LYS	3.3
2	B	127	SER	3.3
2	K	152	ASN	3.3
2	K	192	TYR	3.3
2	B	192	TYR	3.2
1	A	220	LYS	3.2
1	A	165	LEU	3.2
2	K	201	LEU	3.2
2	B	182	SER	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	199	THR	3.1
2	D	181	LEU	3.1
2	K	184	ALA	3.0
2	K	196	VAL	3.0
1	A	162	SER	2.9
1	A	128	PHE	2.9
2	K	194	CYS	2.9
2	G	146	VAL	2.9
2	B	183	LYS	2.9
2	K	188	LYS	2.9
1	F	201	ILE	2.9
2	K	203	SER	2.8
2	B	186	TYR	2.8
2	K	146	VAL	2.8
2	G	149	LYS	2.7
2	K	149	LYS	2.7
2	G	113	PRO	2.7
2	G	150	VAL	2.7
2	K	147	GLN	2.7
1	F	189	THR	2.7
1	F	140	GLY	2.7
2	D	183	LYS	2.6
2	G	159	SER	2.6
2	K	148	TRP	2.6
2	B	121	SER	2.6
2	G	203	SER	2.6
2	G	128	GLY	2.6
2	G	114	SER	2.6
2	K	181	LEU	2.6
1	A	219	PRO	2.6
2	G	200	GLY	2.6
1	A	197	THR	2.6
2	G	145	LYS	2.5
2	D	186	TYR	2.5
1	F	212	LYS	2.5
1	F	187	VAL	2.5
1	A	213	VAL	2.4
2	G	115	VAL	2.4
2	K	205	VAL	2.4
2	G	192	TYR	2.4
2	B	187	GLU	2.4
3	E	113	TYR	2.4

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Mol	Chain	Res	Type	RSRZ
1	F	142	ALA	2.4
1	F	203	ASN	2.3
1	A	201	ILE	2.3
1	A	190	VAL	2.3
2	K	209	PHE	2.3
2	G	123	GLU	2.2
1	A	218	GLU	2.2
2	K	144	ALA	2.2
2	B	124	GLN	2.2
1	A	215	LYS	2.2
2	G	201	LEU	2.2
2	B	212	GLY	2.2
2	K	195	GLU	2.2
1	C	194	SER	2.2
1	F	181	LEU	2.1
1	A	158	VAL	2.1
2	G	144	ALA	2.1
2	G	194	CYS	2.1
2	K	47	LEU	2.1
2	K	208	SER	2.1
1	C	108	TYR	2.0
2	D	126	LYS	2.0
1	F	127	VAL	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.