Full wwPDB X-ray Structure Validation Report (i)

Oct 31, 2023 – 11:03 AM JST

PDB ID	:	5C90
Title	:	Staphylococcus aureus ClpP mutant - Y63A
Authors	:	Ye, F.; Liu, H.; Zhang, J.; Gan, J.; Yang, C.-G.
Deposited on	:	2015-06-26
Resolution	:	1.75 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 (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 (i)) were used in the production of this report:

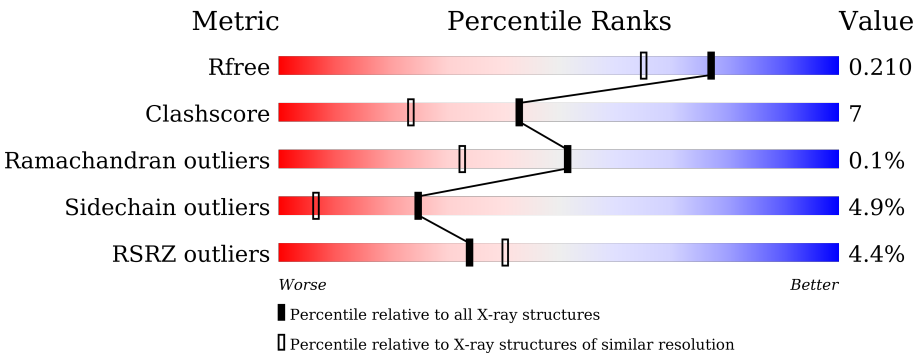
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.75 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	2340 (1.76-1.76)
Clashscore	141614	2466 (1.76-1.76)
Ramachandran outliers	138981	2437 (1.76-1.76)
Sidechain outliers	138945	2437 (1.76-1.76)
RSRZ outliers	127900	2298 (1.76-1.76)

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 <=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	195	4%, 81%, 10%, •, 8%
1	B	195	6%, 82%, 12%, •, •
1	C	195	4%, 82%, 9%, •, 7%
1	D	195	5%, 83%, 8%, ••, 8%
1	E	195	5%, 87%, 8%, •, 5%
1	F	195	5%, 84%, 10%, •, 5%

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Mol	Chain	Length	Quality of chain
1	G	195	6% 82% 12% • 5%
1	H	195	4% 84% 7% • 8%
1	I	195	3% 83% 8% • 8%
1	J	195	5% 85% 9% • 5%
1	K	195	2% 83% 9% • 5%
1	L	195	4% 81% 10% • • 7%
1	M	195	3% 83% 9% • 8%
1	N	195	5% 82% 9% • 7%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	MPD	B	201	-	-	X	-

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 21763 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 ATP-dependent Clp protease proteolytic subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	179	1391	879	235	270	7	0	4	0
1	B	187	1457	918	246	285	8	0	4	0
1	C	182	1429	901	243	277	8	0	6	0
1	D	180	1392	880	235	270	7	0	3	0
1	E	186	1460	924	246	283	7	0	6	0
1	F	186	1445	910	245	283	7	0	3	0
1	G	186	1442	909	244	282	7	0	3	0
1	H	179	1386	873	236	271	6	0	3	0
1	I	179	1381	871	234	269	7	0	2	0
1	J	185	1435	903	244	281	7	0	3	0
1	K	186	1453	914	249	284	6	0	4	0
1	L	182	1408	890	237	274	7	0	3	0
1	M	180	1400	884	236	273	7	0	4	0
1	N	181	1406	886	238	275	7	0	3	0

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	63	ALA	TYR	engineered mutation	UNP Q2G036

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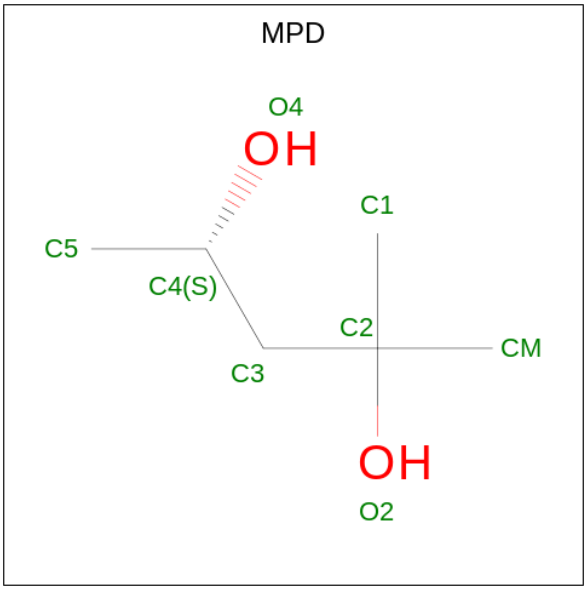
Chain	Residue	Modelled	Actual	Comment	Reference
B	63	ALA	TYR	engineered mutation	UNP Q2G036
C	63	ALA	TYR	engineered mutation	UNP Q2G036
D	63	ALA	TYR	engineered mutation	UNP Q2G036
E	63	ALA	TYR	engineered mutation	UNP Q2G036
F	63	ALA	TYR	engineered mutation	UNP Q2G036
G	63	ALA	TYR	engineered mutation	UNP Q2G036
H	63	ALA	TYR	engineered mutation	UNP Q2G036
I	63	ALA	TYR	engineered mutation	UNP Q2G036
J	63	ALA	TYR	engineered mutation	UNP Q2G036
K	63	ALA	TYR	engineered mutation	UNP Q2G036
L	63	ALA	TYR	engineered mutation	UNP Q2G036
M	63	ALA	TYR	engineered mutation	UNP Q2G036
N	63	ALA	TYR	engineered mutation	UNP Q2G036

- Molecule 2 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula: $C_6H_{14}O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	O			
2	A	1	8	6	2		0	0
2	B	1	8	6	2		0	0
2	C	1	8	6	2		0	0
2	D	1	8	6	2		0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	E	1	8	6	2	0	0
2	F	1	8	6	2	0	0
2	G	1	8	6	2	0	0
2	H	1	8	6	2	0	0
2	I	1	8	6	2	0	0
2	J	1	8	6	2	0	0
2	K	1	8	6	2	0	0
2	L	1	8	6	2	0	0
2	M	1	8	6	2	0	0
2	N	1	8	6	2	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	139	139	139	0	0
3	B	84	84	84	0	0
3	C	103	103	103	0	0
3	D	96	96	96	0	0
3	E	146	146	146	0	0
3	F	168	168	168	0	0
3	G	163	163	163	0	0
3	H	87	87	87	0	0
3	I	143	143	143	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	J	163	163	163	0	0
			Total	O		
3	K	162	162	162	0	0
			Total	O		
3	L	137	137	137	0	0
			Total	O		
3	M	94	94	94	0	0
			Total	O		
3	N	81	81	81	0	0

3 Residue-property plots (i)

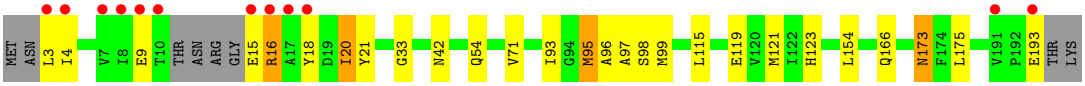
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: ATP-dependent Clp protease proteolytic subunit

Chain A:

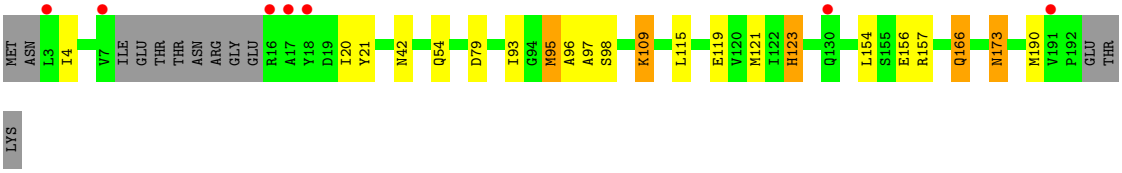
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain B:



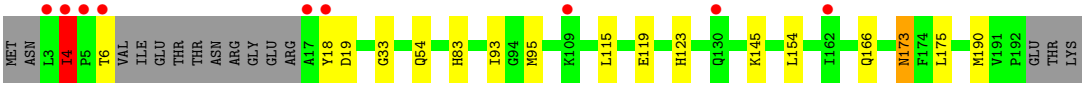
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain C:



• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain D:

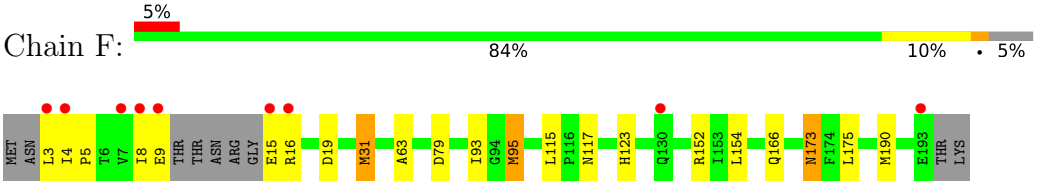


• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain E:

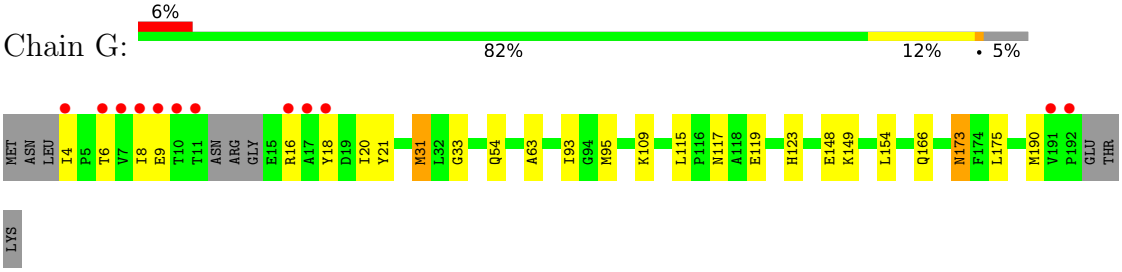
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain F:



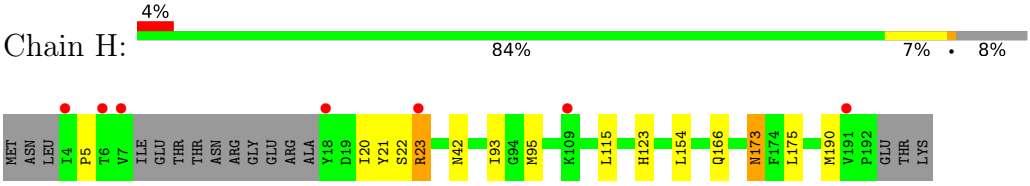
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain G:



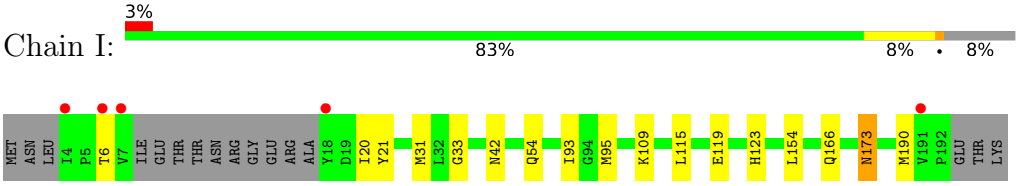
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain H:



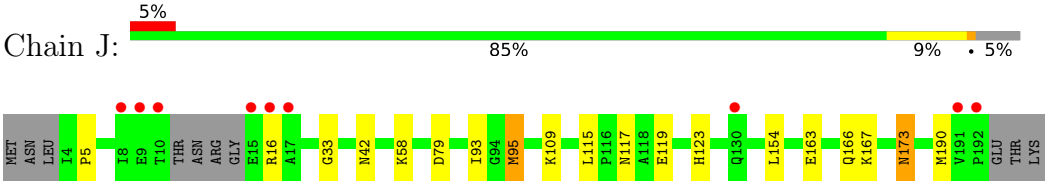
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain I:



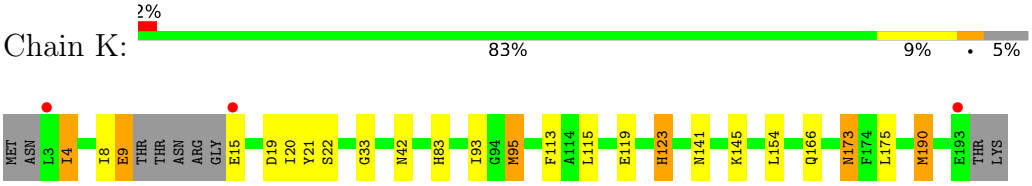
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain J:



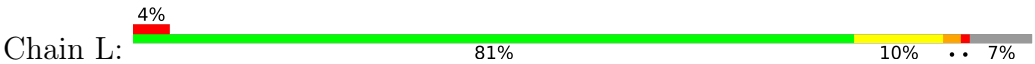
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

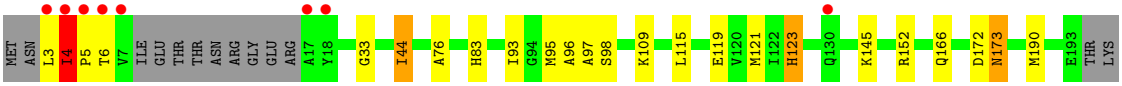
Chain K:



• Molecule 1: ATP-dependent Clp protease proteolytic subunit

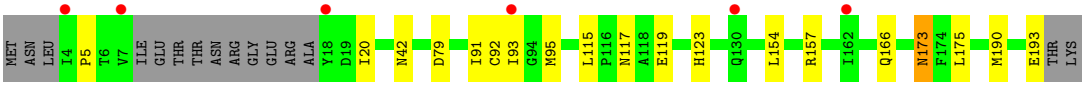
Chain L:





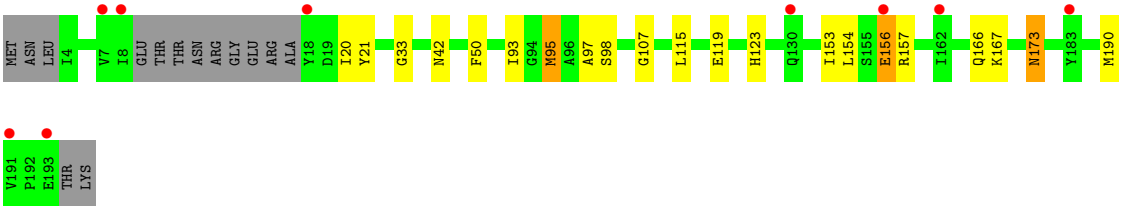
• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain M:



• Molecule 1: ATP-dependent Clp protease proteolytic subunit

Chain N:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	94.36Å 126.24Å 145.65Å 90.00° 93.74° 90.00°	Depositor
Resolution (Å)	30.00 – 1.75 48.76 – 1.75	Depositor EDS
% Data completeness (in resolution range)	99.4 (30.00-1.75) 99.3 (48.76-1.75)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.33 (at 1.75Å)	Xtriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.182 , 0.202 0.195 , 0.210	Depositor DCC
R_{free} test set	17181 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	21.8	Xtriage
Anisotropy	0.431	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 48.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	21763	wwPDB-VP
Average B, all atoms (Å^2)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.02% of the height of the origin peak. No significant pseudotranslation is detected.*

[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ 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)

Bond lengths and bond angles in the following residue types are not validated in this section: MPD

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	0.62	1/1420 (0.1%)	0.75	0/1915
1	B	0.48	0/1486	0.74	0/2004
1	C	0.52	0/1461	0.75	0/1970
1	D	0.48	0/1418	0.75	2/1913 (0.1%)
1	E	0.58	1/1492 (0.1%)	0.76	2/2016 (0.1%)
1	F	0.61	0/1471	0.76	0/1984
1	G	0.60	0/1468	0.78	1/1981 (0.1%)
1	H	0.47	0/1412	0.70	0/1906
1	I	0.55	0/1404	0.74	0/1894
1	J	0.62	0/1461	0.79	0/1971
1	K	0.61	0/1482	0.79	1/1999 (0.1%)
1	L	0.57	0/1434	0.79	4/1935 (0.2%)
1	M	0.50	0/1429	0.75	0/1928
1	N	0.53	0/1429	0.74	1/1928 (0.1%)
All	All	0.56	2/20267 (0.0%)	0.76	11/27344 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	119	GLU	CD-OE1	-5.89	1.19	1.25
1	A	18	TYR	CB-CG	-5.02	1.44	1.51

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	19	ASP	CB-CG-OD1	5.95	123.65	118.30
1	L	44	ILE	CA-CB-CG1	-5.94	99.71	111.00
1	K	190	MET	CG-SD-CE	5.88	109.61	100.20
1	N	167	LYS	CG-CD-CE	5.78	129.23	111.90
1	L	152	ARG	NE-CZ-NH1	5.63	123.11	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	119	GLU	CG-CD-OE1	-5.60	107.10	118.30
1	D	4	ILE	CB-CA-C	5.29	122.18	111.60
1	D	19	ASP	CB-CG-OD1	5.19	122.97	118.30
1	L	4	ILE	N-CA-C	-5.12	97.18	111.00
1	G	148	GLU	OE1-CD-OE2	-5.10	117.18	123.30
1	L	172	ASP	CB-CG-OD1	5.02	122.82	118.30

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	A	1391	0	1424	22	0
1	B	1457	0	1486	51	0
1	C	1429	0	1461	31	0
1	D	1392	0	1424	12	0
1	E	1460	0	1501	16	0
1	F	1445	0	1470	23	0
1	G	1442	0	1472	22	0
1	H	1386	0	1409	16	0
1	I	1381	0	1406	15	0
1	J	1435	0	1460	15	0
1	K	1453	0	1480	32	0
1	L	1408	0	1439	32	0
1	M	1400	0	1429	24	0
1	N	1406	0	1428	18	0
2	A	8	0	14	0	0
2	B	8	0	14	20	0
2	C	8	0	14	5	0
2	D	8	0	14	0	0
2	E	8	0	14	0	0
2	F	8	0	14	0	0
2	G	8	0	14	0	0
2	H	8	0	14	0	0
2	I	8	0	14	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	J	8	0	14	0	0
2	K	8	0	14	0	0
2	L	8	0	14	5	0
2	M	8	0	14	0	0
2	N	8	0	14	0	0
3	A	139	0	0	3	0
3	B	84	0	0	3	0
3	C	103	0	0	6	0
3	D	96	0	0	5	0
3	E	146	0	0	5	0
3	F	168	0	0	3	0
3	G	163	0	0	6	0
3	H	87	0	0	1	0
3	I	143	0	0	4	0
3	J	163	0	0	5	0
3	K	162	0	0	5	0
3	L	137	0	0	3	0
3	M	94	0	0	5	0
3	N	81	0	0	1	0
All	All	21763	0	20485	276	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 7.

All (276) 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:4:ILE:CD1	1:F:19:ASP:HB2	1.64	1.27
1:M:93:ILE:HD12	1:M:115:LEU:CD1	1.77	1.14
1:B:15:GLU:HG2	1:B:16:ARG:HD3	1.28	1.06
1:M:93:ILE:HG23	1:M:115:LEU:HD12	1.36	1.05
1:L:95[A]:MET:SD	1:L:119:GLU:HG2	2.08	0.94
1:F:4:ILE:HD13	1:F:19:ASP:HB2	1.45	0.93
1:C:95[B]:MET:SD	1:C:119:GLU:HG2	2.10	0.91
1:K:4:ILE:HD12	1:K:21:TYR:CE2	2.06	0.91
1:A:95[A]:MET:SD	1:A:119:GLU:HG2	2.10	0.91
1:B:95[B]:MET:SD	1:B:119:GLU:HG2	2.10	0.90
1:F:4:ILE:CD1	1:F:19:ASP:CB	2.51	0.87
1:M:93:ILE:HD12	1:M:115:LEU:HD12	1.55	0.87
1:A:18:TYR:CE1	1:G:8:ILE:HD12	2.10	0.86
1:B:98[A]:SER:HB2	2:B:201:MPD:H11	1.56	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:99[A]:MET:CE	2:B:201:MPD:HM2	2.05	0.86
1:H:23:ARG:HD2	1:N:50:PHE:CE1	2.12	0.84
1:C:109:LYS:HE2	3:C:310:HOH:O	1.77	0.84
1:M:91:ILE:HG22	1:M:93:ILE:HD11	1.62	0.82
1:K:4:ILE:CD1	1:K:21:TYR:CD2	2.63	0.81
1:F:4:ILE:HD11	1:F:19:ASP:HB2	1.60	0.80
1:J:58:LYS:HE2	3:J:443:HOH:O	1.81	0.80
1:C:121:MET:HE2	3:C:309:HOH:O	1.82	0.79
1:K:141:ASN:HB3	3:K:423:HOH:O	1.81	0.79
1:B:95[B]:MET:CE	1:B:97:ALA:HB2	2.13	0.78
1:C:95[B]:MET:CE	1:C:97:ALA:HB2	2.12	0.78
1:L:95[A]:MET:CE	1:L:97:ALA:HB2	2.12	0.78
1:A:95[A]:MET:HE1	1:A:119:GLU:OE2	1.84	0.78
1:B:98[A]:SER:HB2	2:B:201:MPD:C1	2.15	0.77
1:C:95[B]:MET:HE2	1:C:97:ALA:HB2	1.66	0.77
1:B:193:GLU:C	3:B:4171:HOH:O	2.24	0.76
1:M:93:ILE:HD12	1:M:115:LEU:HD11	1.65	0.76
1:F:4:ILE:HD11	1:F:19:ASP:CB	2.16	0.73
1:M:173:ASN:ND2	3:M:301:HOH:O	2.20	0.73
1:L:4:ILE:HB	1:L:5:PRO:CD	2.20	0.71
1:J:16:ARG:HD2	1:K:8:ILE:HG21	1.72	0.70
1:K:173:ASN:ND2	3:K:302:HOH:O	2.25	0.70
1:B:173:ASN:ND2	3:B:4101:HOH:O	2.25	0.70
1:L:95[A]:MET:HE2	1:L:97:ALA:HB2	1.74	0.69
1:A:95[A]:MET:CE	1:A:119:GLU:OE2	2.40	0.69
1:M:93:ILE:HD12	1:M:115:LEU:CG	2.21	0.69
1:I:54:GLN:HG3	3:I:373:HOH:O	1.91	0.69
1:M:92:CYS:O	1:M:93:ILE:HD13	1.93	0.69
1:N:173:ASN:ND2	3:N:301:HOH:O	2.26	0.69
1:F:3:LEU:CD1	1:G:4:ILE:CD1	2.72	0.68
3:A:2105:HOH:O	1:K:123:HIS:HB2	1.93	0.68
2:B:201:MPD:H12	2:B:201:MPD:O4	1.94	0.67
1:J:173:ASN:ND2	3:J:301:HOH:O	2.27	0.67
1:M:93:ILE:CD1	1:M:115:LEU:HG	2.25	0.67
1:B:98[B]:SER:HB3	2:B:201:MPD:H11	1.76	0.67
1:A:33:GLY:HA3	1:B:42[B]:ASN:ND2	2.09	0.67
1:B:95[B]:MET:SD	1:B:119:GLU:CG	2.83	0.67
1:H:23:ARG:HD2	1:N:50:PHE:CD1	2.30	0.67
1:B:33:GLY:HA3	1:C:42[B]:ASN:ND2	2.10	0.66
1:L:95[A]:MET:HE3	1:L:97:ALA:HB2	1.77	0.66
1:F:3:LEU:HD11	1:G:4:ILE:HD12	1.76	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:95[B]:MET:HE3	1:B:97:ALA:HB2	1.75	0.66
1:C:54:GLN:HG3	3:C:333:HOH:O	1.96	0.66
1:K:42[B]:ASN:ND2	1:L:33:GLY:HA3	2.10	0.66
1:L:95[A]:MET:SD	1:L:119:GLU:CG	2.82	0.66
1:B:99[A]:MET:CE	2:B:201:MPD:CM	2.73	0.66
1:C:95[B]:MET:SD	1:C:119:GLU:CG	2.83	0.65
1:G:173:ASN:ND2	3:G:301:HOH:O	2.28	0.65
1:L:173:ASN:ND2	3:L:301:HOH:O	2.28	0.65
1:H:42[B]:ASN:CB	1:I:31[B]:MET:HE3	2.28	0.64
1:F:4:ILE:HD12	1:F:19:ASP:HB2	1.76	0.64
1:A:95[A]:MET:SD	1:A:119:GLU:CG	2.86	0.64
1:K:42[B]:ASN:ND2	1:L:33:GLY:O	2.29	0.64
1:B:95[B]:MET:HE2	1:B:97:ALA:HB2	1.80	0.64
1:D:173:ASN:ND2	3:D:301:HOH:O	2.31	0.63
1:L:93[B]:ILE:HG23	1:L:115:LEU:HD12	1.81	0.63
1:F:173:ASN:ND2	3:F:302:HOH:O	2.31	0.63
1:K:22:SER:HB3	1:L:6:THR:O	1.99	0.63
1:J:42[A]:ASN:ND2	1:K:33:GLY:HA3	2.14	0.62
1:B:95[B]:MET:HE1	1:B:121:MET:N	2.14	0.62
1:C:95[B]:MET:HE3	1:C:121:MET:N	2.14	0.62
1:L:95[A]:MET:HE1	1:L:121:MET:N	2.13	0.62
1:H:42[B]:ASN:ND2	1:I:33:GLY:HA3	2.13	0.62
1:H:173:ASN:ND2	3:H:301:HOH:O	2.33	0.62
1:D:93:ILE:HG23	1:D:115:LEU:HD12	1.81	0.62
1:J:93:ILE:HG23	1:J:115:LEU:HD12	1.81	0.61
1:K:4:ILE:CD1	1:K:20:ILE:HG22	2.31	0.61
1:M:91:ILE:CG2	1:M:93:ILE:HD11	2.30	0.61
2:B:201:MPD:O2	2:B:201:MPD:H53	2.01	0.61
1:F:93:ILE:HG23	1:F:115:LEU:HD12	1.82	0.60
1:D:4:ILE:HG22	3:E:318:HOH:O	2.00	0.60
1:G:119:GLU:HG2	3:G:384:HOH:O	2.01	0.60
1:A:18:TYR:CD1	1:G:8:ILE:HD12	2.36	0.59
1:C:123:HIS:H	2:C:201:MPD:H11	1.68	0.59
1:K:4:ILE:CD1	1:K:21:TYR:CE2	2.80	0.59
1:B:98[B]:SER:HB3	2:B:201:MPD:C1	2.33	0.58
1:D:33:GLY:HA3	1:E:42:ASN:ND2	2.18	0.58
1:L:4:ILE:HB	1:L:5:PRO:HD3	1.85	0.58
1:F:31[A]:MET:HE2	1:F:63:ALA:HB3	1.84	0.58
1:J:163:GLU:HG3	1:J:167:LYS:HE2	1.85	0.58
1:C:95[B]:MET:HE2	1:C:97:ALA:CB	2.34	0.58
1:K:4:ILE:HD12	1:K:21:TYR:CD2	2.30	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:42[A]:ASN:HD21	1:N:33:GLY:HA3	1.68	0.58
1:J:16:ARG:CD	1:K:8:ILE:HG21	2.33	0.58
1:N:156:GLU:HG3	1:N:157:ARG:N	2.19	0.57
1:A:42[A]:ASN:ND2	1:G:33:GLY:HA3	2.19	0.57
1:B:98[A]:SER:CB	2:B:201:MPD:H11	2.29	0.57
1:C:123:HIS:H	2:C:201:MPD:C1	2.17	0.56
1:K:145:LYS:HE3	3:K:423:HOH:O	2.06	0.56
1:L:123:HIS:H	2:L:201:MPD:C1	2.18	0.56
1:M:93:ILE:HD12	1:M:115:LEU:HG	1.86	0.55
1:A:42[B]:ASN:HB3	1:G:21:TYR:OH	2.06	0.55
1:D:119:GLU:HG2	3:D:350:HOH:O	2.05	0.55
1:L:98[A]:SER:HA	2:L:201:MPD:H12	1.89	0.55
1:A:7:VAL:O	1:A:18:TYR:N	2.40	0.55
1:B:99[A]:MET:HE3	2:B:201:MPD:HM2	1.85	0.55
1:M:93:ILE:HG23	1:M:115:LEU:CD1	2.25	0.55
1:C:95[B]:MET:SD	1:C:119:GLU:OE2	2.65	0.55
1:F:117:ASN:HD22	1:G:149:LYS:HD2	1.71	0.55
1:G:31[A]:MET:HE2	1:G:63:ALA:HB3	1.88	0.55
1:C:95[B]:MET:HE1	1:C:97:ALA:HB2	1.87	0.55
1:B:3:LEU:CD1	1:C:4:ILE:HD13	2.37	0.54
1:L:123:HIS:H	2:L:201:MPD:H11	1.72	0.54
1:B:33:GLY:O	1:C:42[B]:ASN:ND2	2.40	0.54
1:J:16:ARG:HD2	1:K:8:ILE:CG2	2.38	0.54
1:E:93:ILE:HG22	1:E:115[B]:LEU:HD23	1.91	0.53
1:B:95[B]:MET:SD	1:B:119:GLU:OE2	2.66	0.53
1:N:95[B]:MET:CE	1:N:119:GLU:HG2	2.38	0.53
1:B:115:LEU:HD13	1:C:79:ASP:HB3	1.90	0.53
1:C:173:ASN:ND2	3:C:301:HOH:O	2.40	0.53
1:A:22:SER:HB3	1:G:6:THR:O	2.07	0.53
1:C:98[B]:SER:HA	2:C:201:MPD:H12	1.90	0.53
1:L:95[A]:MET:HE3	1:L:96:ALA:C	2.29	0.53
1:M:42[A]:ASN:ND2	1:N:33:GLY:HA3	2.23	0.53
1:C:95[B]:MET:HE2	1:C:97:ALA:CA	2.39	0.52
1:L:95[A]:MET:SD	1:L:119:GLU:OE2	2.66	0.52
1:H:42[B]:ASN:CG	1:I:31[B]:MET:HE3	2.30	0.52
1:B:98[B]:SER:HA	2:B:201:MPD:H12	1.91	0.52
1:J:79:ASP:HB3	1:K:115:LEU:HD13	1.92	0.52
1:M:91:ILE:HG22	1:M:93:ILE:CD1	2.36	0.52
1:B:21:TYR:OH	1:C:42[A]:ASN:HB3	2.10	0.52
1:B:15:GLU:C	1:B:16:ARG:HD3	2.30	0.51
1:B:95[B]:MET:HE3	1:B:97:ALA:CA	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:54:GLN:HG3	3:B:4112:HOH:O	2.11	0.51
1:K:113:PHE:CD1	1:K:190:MET:HE2	2.45	0.51
1:B:98[A]:SER:CB	2:B:201:MPD:C1	2.87	0.51
1:J:42[A]:ASN:ND2	1:K:33:GLY:O	2.44	0.51
1:E:115[A]:LEU:HD13	1:F:79:ASP:HB3	1.93	0.51
1:K:4:ILE:HD11	1:K:20:ILE:HG22	1.93	0.51
1:M:42[A]:ASN:HB3	1:N:21:TYR:OH	2.11	0.51
1:F:3:LEU:CD1	1:G:4:ILE:HD13	2.41	0.50
1:L:98[B]:SER:HA	2:L:201:MPD:H12	1.92	0.50
1:B:98[A]:SER:HA	2:B:201:MPD:H12	1.93	0.50
1:F:152:ARG:NE	3:F:303:HOH:O	2.32	0.50
1:D:145:LYS:HD3	3:D:383:HOH:O	2.11	0.50
1:B:95[B]:MET:HE3	1:B:97:ALA:CB	2.41	0.50
1:L:145:LYS:CE	3:L:311:HOH:O	2.59	0.49
1:H:21:TYR:OH	1:N:42[A]:ASN:HB3	2.13	0.49
1:C:156[B]:GLU:HG3	1:C:157:ARG:N	2.27	0.49
1:M:117:ASN:ND2	3:M:303:HOH:O	2.45	0.49
1:C:98[A]:SER:HA	2:C:201:MPD:H12	1.94	0.49
1:A:21:TYR:OH	1:B:42[A]:ASN:HB3	2.12	0.49
1:J:119:GLU:HG2	3:J:406:HOH:O	2.12	0.49
1:A:95[A]:MET:SD	1:A:119:GLU:OE2	2.70	0.48
1:F:3:LEU:HD11	1:G:4:ILE:CD1	2.37	0.48
1:H:42[B]:ASN:HB3	1:I:31[B]:MET:HE3	1.95	0.48
1:L:95[A]:MET:HE3	1:L:97:ALA:CA	2.43	0.48
1:A:93:ILE:HG13	1:A:93:ILE:O	2.13	0.48
1:A:95[A]:MET:HE3	1:A:97:ALA:HB2	1.94	0.48
1:B:15:GLU:CG	1:B:16:ARG:HD3	2.20	0.48
1:B:98[B]:SER:HA	2:B:201:MPD:C1	2.43	0.48
1:A:178:GLU:OE1	3:A:2101:HOH:O	2.20	0.48
1:E:173:ASN:ND2	3:E:305:HOH:O	2.47	0.48
1:G:93:ILE:HG13	1:G:93:ILE:O	2.14	0.48
1:K:4:ILE:HG12	1:K:19:ASP:HB2	1.96	0.48
1:C:93:ILE:HG13	1:C:93:ILE:O	2.14	0.48
1:M:119:GLU:HG2	3:M:369:HOH:O	2.12	0.48
1:I:93:ILE:HG13	1:I:93:ILE:O	2.14	0.48
1:K:93:ILE:HG13	1:K:93:ILE:O	2.14	0.48
1:H:42[A]:ASN:HB3	1:I:21:TYR:OH	2.13	0.48
1:M:157:ARG:HD3	3:M:321:HOH:O	2.14	0.47
1:L:95[A]:MET:HE3	1:L:97:ALA:N	2.29	0.47
1:B:99[A]:MET:HE1	2:B:201:MPD:CM	2.45	0.47
1:D:54:GLN:HG3	3:D:380:HOH:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:8:ILE:HD13	1:F:16:ARG:HB2	1.97	0.47
1:B:71:VAL:HG22	1:B:99[A]:MET:HE3	1.96	0.47
1:K:22:SER:OG	1:L:6:THR:N	2.37	0.47
1:B:95[B]:MET:HE3	1:B:96:ALA:C	2.35	0.47
1:B:98[A]:SER:CA	2:B:201:MPD:H11	2.45	0.47
1:E:93:ILE:O	1:E:93:ILE:HG13	2.14	0.47
3:D:349:HOH:O	1:E:83:HIS:HD2	1.97	0.47
1:N:93:ILE:O	1:N:93:ILE:HG13	2.14	0.47
1:B:93:ILE:HG13	1:B:93:ILE:O	2.14	0.46
1:B:99[A]:MET:HE2	2:B:201:MPD:HM2	1.93	0.46
1:H:93:ILE:HG13	1:H:93:ILE:O	2.14	0.46
1:L:115:LEU:HD21	1:L:190:MET:CE	2.45	0.46
1:N:95[B]:MET:HE3	1:N:119:GLU:HG2	1.96	0.46
1:K:119:GLU:HG2	3:K:398:HOH:O	2.14	0.46
1:C:109:LYS:CE	3:C:310:HOH:O	2.50	0.46
1:D:6:THR:O	1:E:22:SER:HB3	2.16	0.46
1:F:95:MET:HE3	3:G:318:HOH:O	2.14	0.46
1:K:9:GLU:O	1:K:15:GLU:HA	2.15	0.46
1:A:115:LEU:HD21	1:A:190:MET:CE	2.45	0.46
1:B:98[B]:SER:CA	2:B:201:MPD:H11	2.46	0.46
1:E:34:SER:HA	3:F:308:HOH:O	2.15	0.46
1:I:119:GLU:HG2	3:I:409:HOH:O	2.15	0.46
1:B:20:ILE:HD12	1:B:21:TYR:N	2.31	0.45
1:C:115:LEU:HD21	1:C:190:MET:CE	2.46	0.45
1:I:115:LEU:HD21	1:I:190:MET:CE	2.46	0.45
1:L:95[A]:MET:HE3	1:L:97:ALA:CB	2.43	0.45
1:E:115[A]:LEU:HD21	1:E:190:MET:CE	2.47	0.45
1:I:173:ASN:ND2	3:I:302:HOH:O	2.48	0.45
1:K:113:PHE:CG	1:K:190:MET:CE	2.99	0.45
1:M:115:LEU:HD21	1:M:190:MET:CE	2.46	0.45
1:A:33:GLY:O	1:B:42[B]:ASN:ND2	2.49	0.45
1:N:115:LEU:HD21	1:N:190:MET:CE	2.46	0.45
1:H:115:LEU:HD21	1:H:190:MET:CE	2.47	0.45
1:C:123:HIS:O	2:C:201:MPD:H11	2.17	0.45
1:F:3:LEU:CD1	1:G:4:ILE:HD12	2.38	0.45
1:M:92:CYS:C	1:M:93:ILE:HD13	2.38	0.45
1:B:15:GLU:O	1:B:16:ARG:CD	2.65	0.45
1:D:115:LEU:HD21	1:D:190:MET:CE	2.47	0.44
1:H:42[B]:ASN:ND2	1:I:33:GLY:O	2.50	0.44
1:N:97:ALA:C	1:N:98[A]:SER:OG	2.55	0.44
1:B:95[B]:MET:HE3	1:B:97:ALA:N	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98[A]:SER:HA	2:B:201:MPD:C1	2.47	0.44
1:B:99[A]:MET:HE2	2:B:201:MPD:H31	1.99	0.44
1:C:95[B]:MET:HE2	1:C:97:ALA:N	2.33	0.43
1:E:109:LYS:CE	3:E:330:HOH:O	2.67	0.43
1:F:8:ILE:HD12	1:G:18:TYR:CZ	2.53	0.43
1:J:117:ASN:ND2	3:J:304:HOH:O	2.51	0.43
1:K:95:MET:HG3	3:K:398:HOH:O	2.17	0.43
1:E:109:LYS:HE3	3:E:330:HOH:O	2.18	0.43
1:L:3:LEU:C	1:L:4:ILE:O	2.57	0.43
1:D:33:GLY:O	1:E:42:ASN:ND2	2.50	0.43
1:M:79:ASP:HB3	1:N:115:LEU:HD13	1.99	0.43
1:N:95[B]:MET:SD	1:N:119:GLU:OE2	2.76	0.43
1:B:3:LEU:HD23	1:B:4:ILE:N	2.33	0.43
1:G:20:ILE:HG23	1:G:21:TYR:N	2.33	0.43
1:G:54:GLN:HB3	3:G:442:HOH:O	2.19	0.43
1:H:42[B]:ASN:OD1	1:I:31[B]:MET:HE1	2.19	0.43
1:F:115:LEU:HD21	1:F:190:MET:CE	2.48	0.42
1:H:20:ILE:H	1:H:20:ILE:HG13	1.66	0.42
1:N:107:GLY:O	1:N:157:ARG:NH2	2.52	0.42
1:B:15:GLU:O	1:B:16:ARG:HD2	2.19	0.42
1:H:22:SER:HB3	1:I:6:THR:O	2.18	0.42
1:C:20:ILE:HG23	1:C:21:TYR:N	2.33	0.42
1:G:115:LEU:HD21	1:G:190:MET:CE	2.49	0.42
1:I:42:ASN:ND2	1:J:33:GLY:HA3	2.34	0.42
1:L:83:HIS:HD2	3:M:336:HOH:O	2.02	0.42
1:A:7:VAL:HG22	1:B:18:TYR:CE1	2.55	0.42
1:E:93:ILE:HG22	1:E:115[B]:LEU:CD2	2.50	0.42
1:F:173:ASN:C	1:F:173:ASN:HD22	2.21	0.42
3:C:323:HOH:O	1:D:83:HIS:HD2	2.02	0.42
1:L:4:ILE:CB	1:L:5:PRO:HD3	2.49	0.42
1:A:6:THR:O	1:A:6:THR:HG22	2.16	0.42
1:H:20:ILE:HD12	1:H:21:TYR:N	2.34	0.42
1:C:95[B]:MET:HE2	1:C:96:ALA:C	2.40	0.41
1:G:109:LYS:HE3	3:G:344:HOH:O	2.20	0.41
1:J:115:LEU:HD21	1:J:190:MET:CE	2.50	0.41
1:A:132:GLN:NE2	3:A:2105:HOH:O	2.54	0.41
1:K:113:PHE:CG	1:K:190:MET:HE2	2.55	0.41
1:F:4:ILE:HD11	1:F:19:ASP:HB3	1.97	0.41
1:K:42[B]:ASN:ND2	1:L:33:GLY:CA	2.80	0.41
1:K:173:ASN:C	1:K:173:ASN:HD22	2.23	0.41
1:C:166:GLN:HA	1:C:166:GLN:HE21	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:95:MET:HG3	3:J:406:HOH:O	2.21	0.41
1:B:173:ASN:C	1:B:173:ASN:HD22	2.24	0.41
1:N:153:ILE:O	1:N:157:ARG:HG2	2.20	0.41
1:N:173:ASN:C	1:N:173:ASN:HD22	2.23	0.41
1:D:4:ILE:CG2	3:E:318:HOH:O	2.65	0.41
1:G:109:LYS:CE	3:G:344:HOH:O	2.69	0.41
1:I:109:LYS:HE3	3:I:310:HOH:O	2.21	0.41
1:A:149:LYS:HD2	1:G:117:ASN:HD22	1.86	0.41
1:L:76:ALA:HA	1:M:93:ILE:HG22	2.02	0.41
1:K:83:HIS:HD2	3:L:329:HOH:O	2.02	0.40
1:K:113:PHE:CG	1:K:190:MET:HE3	2.56	0.40
1:L:123:HIS:O	2:L:201:MPD:H11	2.22	0.40
1:M:93:ILE:CD1	1:M:115:LEU:HD12	2.40	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 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	179/195 (92%)	176 (98%)	3 (2%)	0	100	100
1	B	187/195 (96%)	183 (98%)	4 (2%)	0	100	100
1	C	184/195 (94%)	182 (99%)	2 (1%)	0	100	100
1	D	179/195 (92%)	176 (98%)	2 (1%)	1 (1%)	25	10
1	E	188/195 (96%)	186 (99%)	2 (1%)	0	100	100
1	F	185/195 (95%)	181 (98%)	4 (2%)	0	100	100
1	G	185/195 (95%)	183 (99%)	2 (1%)	0	100	100
1	H	178/195 (91%)	174 (98%)	4 (2%)	0	100	100
1	I	177/195 (91%)	175 (99%)	2 (1%)	0	100	100
1	J	184/195 (94%)	180 (98%)	4 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	K	186/195 (95%)	182 (98%)	4 (2%)	0	100	100
1	L	181/195 (93%)	178 (98%)	2 (1%)	1 (1%)	25	10
1	M	180/195 (92%)	178 (99%)	2 (1%)	0	100	100
1	N	180/195 (92%)	178 (99%)	2 (1%)	0	100	100
All	All	2553/2730 (94%)	2512 (98%)	39 (2%)	2 (0%)	51	33

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	4	ILE
1	D	4	ILE

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	152/162 (94%)	147 (97%)	5 (3%)	38	15
1	B	159/162 (98%)	149 (94%)	10 (6%)	18	3
1	C	156/162 (96%)	149 (96%)	7 (4%)	27	8
1	D	151/162 (93%)	143 (95%)	8 (5%)	22	5
1	E	160/162 (99%)	154 (96%)	6 (4%)	33	11
1	F	157/162 (97%)	146 (93%)	11 (7%)	15	2
1	G	157/162 (97%)	147 (94%)	10 (6%)	17	3
1	H	151/162 (93%)	143 (95%)	8 (5%)	22	5
1	I	150/162 (93%)	144 (96%)	6 (4%)	31	10
1	J	156/162 (96%)	149 (96%)	7 (4%)	27	8
1	K	158/162 (98%)	150 (95%)	8 (5%)	24	6
1	L	153/162 (94%)	147 (96%)	6 (4%)	32	11
1	M	153/162 (94%)	143 (94%)	10 (6%)	17	3
1	N	153/162 (94%)	145 (95%)	8 (5%)	23	6

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2166/2268 (96%)	2056 (95%)	110 (5%)	25 6

All (110) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	ILE
1	A	35	GLN
1	A	123	HIS
1	A	166	GLN
1	A	173	ASN
1	B	9	GLU
1	B	16	ARG
1	B	20	ILE
1	B	95[A]	MET
1	B	95[B]	MET
1	B	123	HIS
1	B	154	LEU
1	B	166	GLN
1	B	173	ASN
1	B	175	LEU
1	C	95[A]	MET
1	C	95[B]	MET
1	C	109	LYS
1	C	123	HIS
1	C	154	LEU
1	C	166	GLN
1	C	173	ASN
1	D	4	ILE
1	D	18	TYR
1	D	95	MET
1	D	123	HIS
1	D	154	LEU
1	D	166	GLN
1	D	173	ASN
1	D	175	LEU
1	E	3	LEU
1	E	95[A]	MET
1	E	95[B]	MET
1	E	123	HIS
1	E	166	GLN
1	E	173	ASN
1	F	5	PRO

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Mol	Chain	Res	Type
1	F	9	GLU
1	F	15	GLU
1	F	31[A]	MET
1	F	31[B]	MET
1	F	95	MET
1	F	123	HIS
1	F	154	LEU
1	F	166	GLN
1	F	173	ASN
1	F	175	LEU
1	G	9	GLU
1	G	16	ARG
1	G	31[A]	MET
1	G	31[B]	MET
1	G	95	MET
1	G	123	HIS
1	G	154	LEU
1	G	166	GLN
1	G	173	ASN
1	G	175	LEU
1	H	5	PRO
1	H	23	ARG
1	H	95	MET
1	H	123	HIS
1	H	154	LEU
1	H	166	GLN
1	H	173	ASN
1	H	175	LEU
1	I	20	ILE
1	I	95	MET
1	I	123	HIS
1	I	154	LEU
1	I	166	GLN
1	I	173	ASN
1	J	5	PRO
1	J	95	MET
1	J	109	LYS
1	J	123	HIS
1	J	154	LEU
1	J	166	GLN
1	J	173	ASN
1	K	4	ILE

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Mol	Chain	Res	Type
1	K	9	GLU
1	K	95	MET
1	K	123	HIS
1	K	154	LEU
1	K	166	GLN
1	K	173	ASN
1	K	175	LEU
1	L	4	ILE
1	L	44	ILE
1	L	109	LYS
1	L	123	HIS
1	L	166	GLN
1	L	173	ASN
1	M	5	PRO
1	M	20	ILE
1	M	95	MET
1	M	123	HIS
1	M	154	LEU
1	M	166	GLN
1	M	173	ASN
1	M	175[A]	LEU
1	M	175[B]	LEU
1	M	193	GLU
1	N	20	ILE
1	N	95[A]	MET
1	N	95[B]	MET
1	N	123	HIS
1	N	154	LEU
1	N	156	GLU
1	N	166	GLN
1	N	173	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (116) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	39	ASN
1	A	82	GLN
1	A	83	HIS
1	A	89	GLN
1	A	117	ASN
1	A	151	ASN
1	A	160	GLN

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Mol	Chain	Res	Type
1	A	166	GLN
1	A	173	ASN
1	B	39	ASN
1	B	82	GLN
1	B	83	HIS
1	B	89	GLN
1	B	117	ASN
1	B	151	ASN
1	B	160	GLN
1	B	166	GLN
1	B	173	ASN
1	C	82	GLN
1	C	89	GLN
1	C	117	ASN
1	C	151	ASN
1	C	160	GLN
1	C	166	GLN
1	C	173	ASN
1	D	39	ASN
1	D	82	GLN
1	D	83	HIS
1	D	89	GLN
1	D	117	ASN
1	D	151	ASN
1	D	160	GLN
1	D	166	GLN
1	D	173	ASN
1	E	82	GLN
1	E	83	HIS
1	E	89	GLN
1	E	117	ASN
1	E	160	GLN
1	E	173	ASN
1	F	82	GLN
1	F	83	HIS
1	F	89	GLN
1	F	117	ASN
1	F	151	ASN
1	F	160	GLN
1	F	166	GLN
1	F	173	ASN
1	G	39	ASN

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Mol	Chain	Res	Type
1	G	82	GLN
1	G	83	HIS
1	G	89	GLN
1	G	117	ASN
1	G	151	ASN
1	G	160	GLN
1	G	166	GLN
1	G	173	ASN
1	H	82	GLN
1	H	83	HIS
1	H	89	GLN
1	H	117	ASN
1	H	151	ASN
1	H	160	GLN
1	H	166	GLN
1	H	173	ASN
1	I	39	ASN
1	I	83	HIS
1	I	89	GLN
1	I	117	ASN
1	I	151	ASN
1	I	160	GLN
1	I	166	GLN
1	I	173	ASN
1	J	35	GLN
1	J	39	ASN
1	J	82	GLN
1	J	83	HIS
1	J	89	GLN
1	J	117	ASN
1	J	151	ASN
1	J	160	GLN
1	J	166	GLN
1	J	173	ASN
1	K	82	GLN
1	K	83	HIS
1	K	89	GLN
1	K	117	ASN
1	K	151	ASN
1	K	160	GLN
1	K	166	GLN
1	K	173	ASN

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Mol	Chain	Res	Type
1	L	39	ASN
1	L	82	GLN
1	L	83	HIS
1	L	89	GLN
1	L	117	ASN
1	L	151	ASN
1	L	160	GLN
1	L	166	GLN
1	L	173	ASN
1	M	39	ASN
1	M	89	GLN
1	M	117	ASN
1	M	151	ASN
1	M	160	GLN
1	M	166	GLN
1	M	173	ASN
1	N	39	ASN
1	N	82	GLN
1	N	83	HIS
1	N	89	GLN
1	N	117	ASN
1	N	151	ASN
1	N	160	GLN
1	N	166	GLN
1	N	173	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)

14 ligands are 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	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	MPD	H	201	-	7,7,7	0.21	0	9,10,10	0.70	0
2	MPD	N	201	-	7,7,7	0.28	0	9,10,10	0.55	0
2	MPD	F	201	-	7,7,7	0.43	0	9,10,10	0.82	0
2	MPD	A	2001	-	7,7,7	0.35	0	9,10,10	0.64	0
2	MPD	G	201	-	7,7,7	0.30	0	9,10,10	0.54	0
2	MPD	B	201	-	7,7,7	0.41	0	9,10,10	1.29	1 (11%)
2	MPD	I	201	-	7,7,7	0.33	0	9,10,10	0.77	0
2	MPD	J	201	-	7,7,7	0.40	0	9,10,10	0.92	0
2	MPD	L	201	-	7,7,7	0.34	0	9,10,10	0.86	0
2	MPD	E	201	-	7,7,7	0.20	0	9,10,10	0.49	0
2	MPD	D	201	-	7,7,7	0.23	0	9,10,10	0.42	0
2	MPD	M	201	-	7,7,7	0.23	0	9,10,10	0.59	0
2	MPD	K	201	-	7,7,7	0.32	0	9,10,10	0.64	0
2	MPD	C	201	-	7,7,7	0.36	0	9,10,10	0.73	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
2	MPD	H	201	-	-	0/5/5/5	-
2	MPD	N	201	-	-	0/5/5/5	-
2	MPD	F	201	-	-	0/5/5/5	-
2	MPD	A	2001	-	-	0/5/5/5	-
2	MPD	G	201	-	-	0/5/5/5	-
2	MPD	B	201	-	-	0/5/5/5	-
2	MPD	I	201	-	-	0/5/5/5	-
2	MPD	J	201	-	-	0/5/5/5	-
2	MPD	L	201	-	-	0/5/5/5	-
2	MPD	E	201	-	-	0/5/5/5	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	MPD	D	201	-	-	0/5/5/5	-
2	MPD	M	201	-	-	0/5/5/5	-
2	MPD	K	201	-	-	0/5/5/5	-
2	MPD	C	201	-	-	0/5/5/5	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	201	MPD	CM-C2-C1	-3.08	104.16	110.57

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 30 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	201	MPD	20	0
2	L	201	MPD	5	0
2	C	201	MPD	5	0

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	179/195 (91%)	0.07	7 (3%)	39	45	15, 20, 43, 97	0
1	B	187/195 (95%)	0.18	12 (6%)	19	25	17, 28, 47, 88	0
1	C	182/195 (93%)	0.11	7 (3%)	40	47	20, 27, 45, 90	0
1	D	180/195 (92%)	0.12	9 (5%)	28	34	21, 27, 44, 84	0
1	E	186/195 (95%)	0.13	9 (4%)	30	36	15, 21, 41, 64	0
1	F	186/195 (95%)	-0.04	9 (4%)	30	36	13, 18, 39, 83	0
1	G	186/195 (95%)	0.07	12 (6%)	18	24	13, 19, 43, 80	0
1	H	179/195 (91%)	0.13	7 (3%)	39	45	18, 28, 49, 78	0
1	I	179/195 (91%)	-0.04	5 (2%)	53	58	15, 21, 39, 61	0
1	J	185/195 (94%)	0.04	9 (4%)	29	35	13, 18, 39, 91	0
1	K	186/195 (95%)	-0.05	3 (1%)	72	79	13, 19, 38, 65	0
1	L	182/195 (93%)	0.07	8 (4%)	34	40	16, 22, 42, 65	0
1	M	180/195 (92%)	0.10	6 (3%)	46	53	22, 29, 46, 75	0
1	N	181/195 (92%)	0.40	9 (4%)	28	34	23, 31, 50, 80	0
All	All	2558/2730 (93%)	0.09	112 (4%)	34	40	13, 25, 47, 97	0

All (112) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	7	VAL	10.7
1	N	8	ILE	8.7
1	D	3	LEU	8.3
1	F	3	LEU	8.1
1	K	3	LEU	7.9
1	A	18	TYR	7.6
1	D	18	TYR	7.2
1	B	3	LEU	6.7

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Mol	Chain	Res	Type	RSRZ
1	A	8	ILE	6.7
1	G	17	ALA	6.3
1	B	10	THR	6.3
1	A	6	THR	6.3
1	B	8	ILE	6.2
1	D	4	ILE	6.0
1	H	18	TYR	5.9
1	G	8	ILE	5.8
1	C	16	ARG	5.7
1	M	18	TYR	5.6
1	L	17	ALA	5.6
1	L	3	LEU	5.6
1	I	7	VAL	5.3
1	H	7	VAL	5.2
1	L	4	ILE	5.2
1	C	7	VAL	5.0
1	J	10	THR	5.0
1	D	6	THR	5.0
1	N	18	TYR	4.9
1	N	7	VAL	4.8
1	E	194	THR	4.6
1	I	18	TYR	4.6
1	D	17	ALA	4.5
1	H	6	THR	4.4
1	J	17	ALA	4.3
1	L	18	TYR	4.3
1	B	193	GLU	4.2
1	B	16	ARG	4.2
1	E	3	LEU	4.2
1	I	4	ILE	4.1
1	F	9	GLU	4.0
1	M	4	ILE	4.0
1	H	191	VAL	4.0
1	M	7	VAL	4.0
1	E	8	ILE	3.8
1	G	9	GLU	3.8
1	J	191	VAL	3.7
1	G	16	ARG	3.7
1	A	5	PRO	3.7
1	M	93	ILE	3.6
1	C	3	LEU	3.6
1	G	4	ILE	3.5

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Mol	Chain	Res	Type	RSRZ
1	J	15	GLU	3.5
1	G	10	THR	3.4
1	H	4	ILE	3.4
1	L	6	THR	3.4
1	L	7	VAL	3.3
1	F	15	GLU	3.3
1	B	17	ALA	3.2
1	C	17	ALA	3.1
1	A	191	VAL	3.1
1	D	109	LYS	3.0
1	B	15	GLU	3.0
1	F	16	ARG	2.9
1	F	4	ILE	2.9
1	B	9	GLU	2.9
1	J	8	ILE	2.8
1	N	162	ILE	2.8
1	G	11	THR	2.8
1	E	16	ARG	2.7
1	I	6	THR	2.7
1	E	17	ALA	2.6
1	F	8	ILE	2.6
1	F	130	GLN	2.6
1	N	191	VAL	2.6
1	G	18	TYR	2.6
1	K	15	GLU	2.5
1	E	32	LEU	2.5
1	G	7	VAL	2.5
1	B	7	VAL	2.4
1	D	130	GLN	2.4
1	G	6	THR	2.4
1	J	16	ARG	2.3
1	C	18	TYR	2.3
1	N	183	TYR	2.3
1	C	130	GLN	2.3
1	E	18	TYR	2.3
1	L	130	GLN	2.3
1	D	162	ILE	2.3
1	N	193	GLU	2.2
1	C	191	VAL	2.2
1	M	130	GLN	2.2
1	N	130	GLN	2.2
1	D	5	PRO	2.2

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Mol	Chain	Res	Type	RSRZ
1	L	5	PRO	2.2
1	K	193	GLU	2.2
1	H	23	ARG	2.2
1	J	192	PRO	2.2
1	G	191	VAL	2.2
1	B	4	ILE	2.2
1	E	193	GLU	2.2
1	E	130	GLN	2.1
1	J	130	GLN	2.1
1	I	191	VAL	2.1
1	G	192	PRO	2.1
1	N	156	GLU	2.1
1	M	162	ILE	2.1
1	H	109	LYS	2.1
1	F	193	GLU	2.1
1	A	130	GLN	2.0
1	J	9	GLU	2.0
1	B	18	TYR	2.0
1	B	191	VAL	2.0
1	F	7	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)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MPD	B	201	8/8	0.70	0.30	25,27,28,29	0
2	MPD	D	201	8/8	0.85	0.15	33,34,38,39	0
2	MPD	L	201	8/8	0.85	0.13	23,29,33,34	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MPD	I	201	8/8	0.89	0.11	25,28,30,30	0
2	MPD	A	2001	8/8	0.90	0.12	28,30,34,35	0
2	MPD	N	201	8/8	0.90	0.12	33,37,41,41	0
2	MPD	C	201	8/8	0.91	0.12	32,35,38,42	0
2	MPD	E	201	8/8	0.92	0.12	27,31,33,34	0
2	MPD	H	201	8/8	0.93	0.12	31,34,36,38	0
2	MPD	F	201	8/8	0.93	0.12	22,24,26,27	0
2	MPD	K	201	8/8	0.94	0.11	26,28,29,31	0
2	MPD	G	201	8/8	0.94	0.11	25,27,28,31	0
2	MPD	M	201	8/8	0.94	0.09	33,35,38,41	0
2	MPD	J	201	8/8	0.94	0.11	22,25,28,30	0

6.5 Other polymers (i)

There are no such residues in this entry.