Full wwPDB X-ray Structure Validation Report ⓘ

Nov 6, 2023 – 01:58 PM EST

PDB ID	:	5VE8
Title	:	Crystal structure of full-length Kluyveromyces lactis Kap123 with histone H3 1-28
Authors	:	An, S.; Yoon, J.; Song, J.-J.; Cho, U.-S.
Deposited on	:	2017-04-04
Resolution	:	2.70 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:

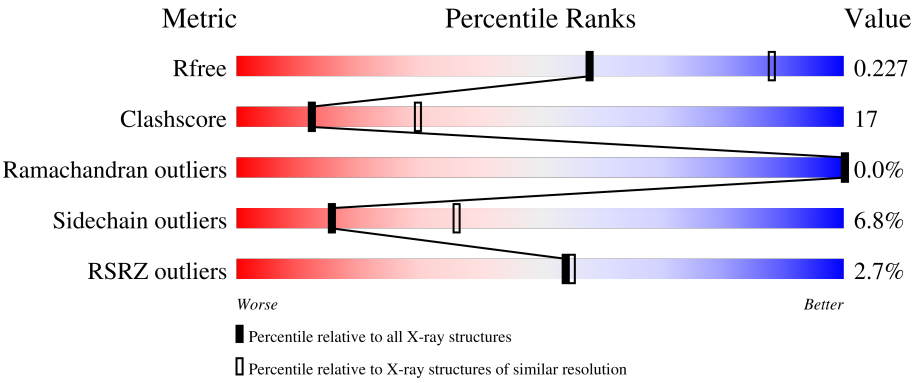
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, 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 2.70 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	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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	1116	3% 65% 25% • 8%
1	B	1116	2% 64% 25% • 8%
2	C	28	7% 14% 18% 7% 61%
2	E	28	4% 18% 18% 7% 57%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 16167 atoms, of which 38 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 Kap123.

Mol	Chain	Residues	Atoms							ZeroOcc	AltConf	Trace
1	A	1025	Total	C	H	N	O	S	Se	0	0	0
			7957	5045	38	1296	1557	10	11			
1	B	1030	Total	C		N	O	S	Se	0	0	0
			7977	5082		1303	1571	10	11			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	expression tag	UNP Q6CMF0
A	-1	ASN	-	expression tag	UNP Q6CMF0
A	0	ALA	-	expression tag	UNP Q6CMF0
A	1	MSE	-	expression tag	UNP Q6CMF0
B	-2	SER	-	expression tag	UNP Q6CMF0
B	-1	ASN	-	expression tag	UNP Q6CMF0
B	0	ALA	-	expression tag	UNP Q6CMF0
B	1	MSE	-	expression tag	UNP Q6CMF0

- Molecule 2 is a protein called Histone H3.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	11	Total	C	N	O	0	0	0
			70	42	16	12			
2	E	12	Total	C	N	O	0	0	0
			81	48	20	13			

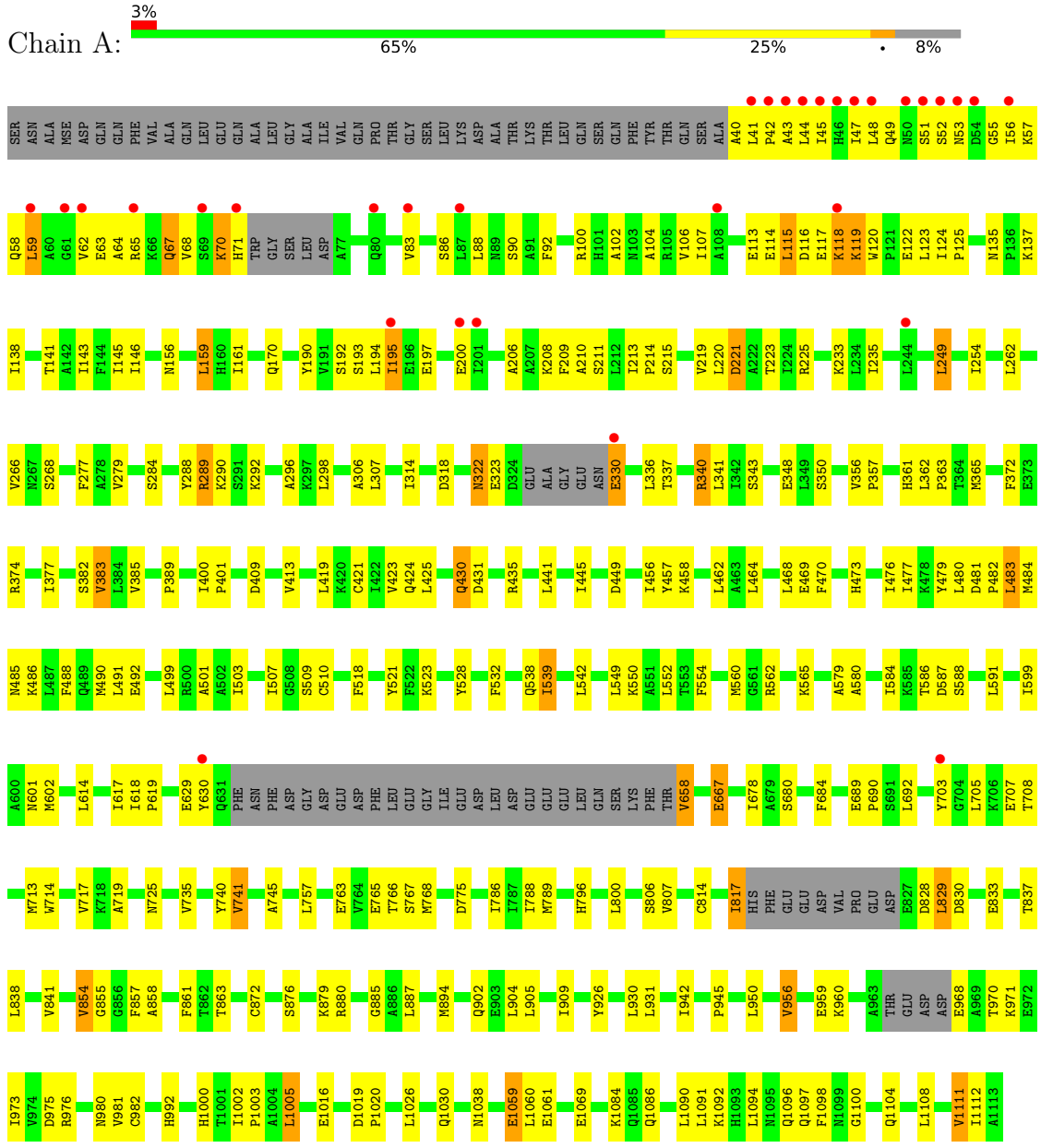
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	35	Total	O	0	0
			35	35		
3	B	47	Total	O	0	0
			47	47		

3 Residue-property plots (i)

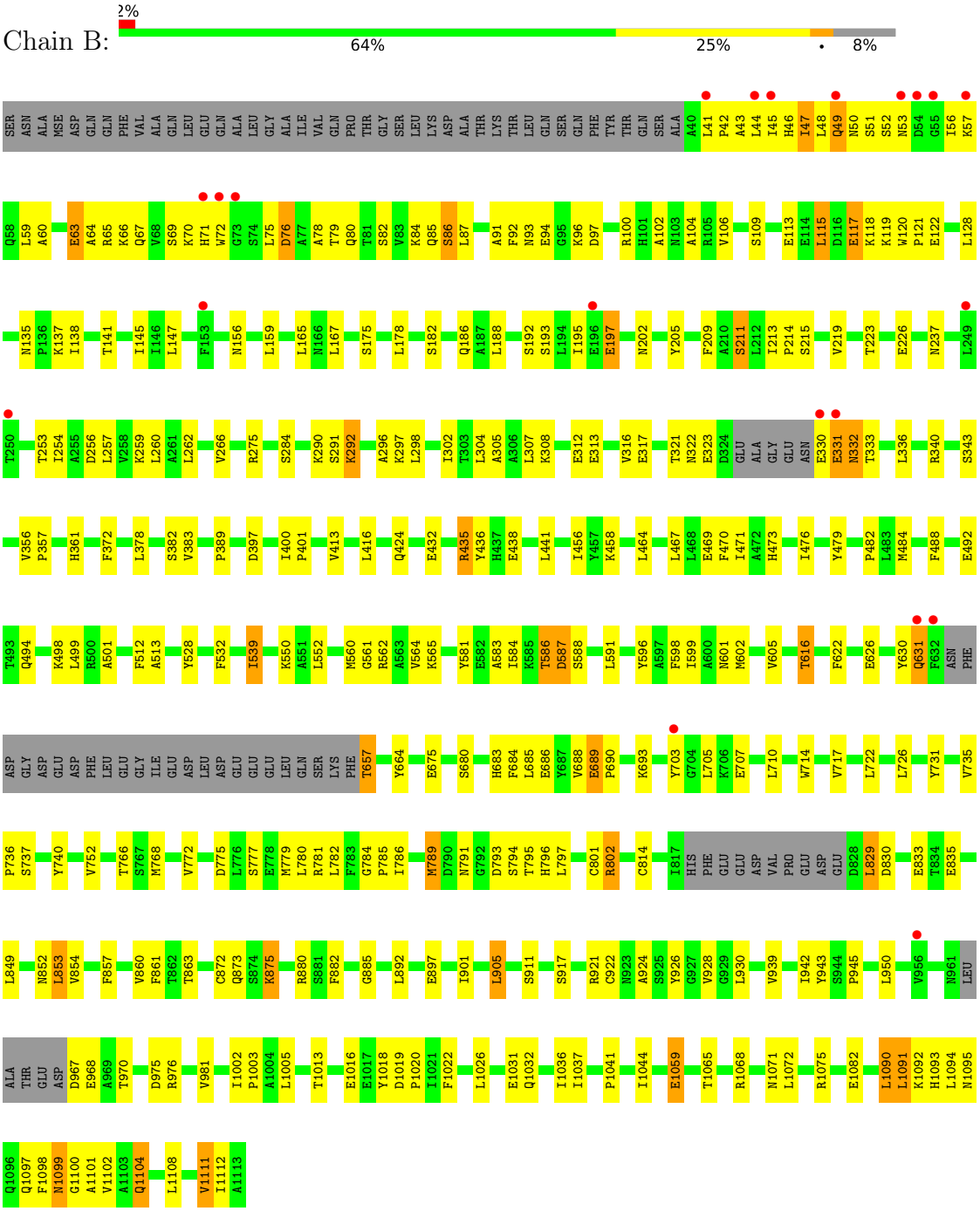
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Kap123



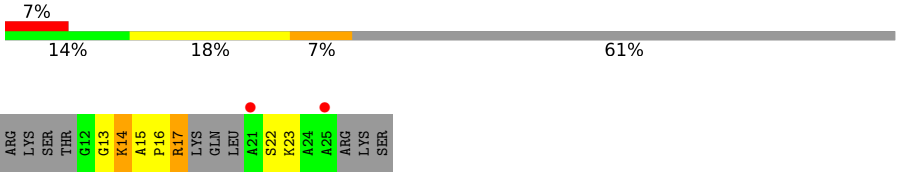
• Molecule 1: Kap123

Chain B:



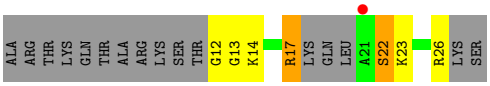
• Molecule 2: Histone H3

Chain C:



• Molecule 2: Histone H3

Chain E:


ALA
ARG
THR
LYS
GLN
THR
ALA
ARG
LYS
SER
THR
G12
G13
K14
R17
LYS
GLN
LEU
A21
S22
K23
R26
LYS
SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	79.10Å 88.11Å 102.28Å 79.59° 80.77° 70.74°	Depositor
Resolution (Å)	44.61 – 2.70 44.62 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.8 (44.61-2.70) 98.8 (44.62-2.70)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.81 (at 2.69Å)	Xtriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.185 , 0.230 0.186 , 0.227	Depositor DCC
R_{free} test set	2000 reflections (2.89%)	wwPDB-VP
Wilson B-factor (Å^2)	58.5	Xtriage
Anisotropy	0.383	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 51.2	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	0.96	EDS
Total number of atoms	16167	wwPDB-VP
Average B, all atoms (Å^2)	67.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.86% 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

5.1 Standard geometry

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	0.49	0/8025	0.61	1/10873 (0.0%)
1	B	0.74	5/8087 (0.1%)	0.65	2/10959 (0.0%)
2	C	1.67	0/69	0.94	0/88
2	E	0.93	0/80	1.41	1/102 (1.0%)
All	All	0.64	5/16261 (0.0%)	0.64	4/22022 (0.0%)

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	675	GLU	CD-OE1	-6.20	1.18	1.25
1	B	436	TYR	CE1-CZ	-6.12	1.30	1.38
1	B	432	GLU	CD-OE2	-5.73	1.19	1.25
1	B	801	CYS	CB-SG	-5.21	1.73	1.81
1	B	436	TYR	CB-CG	-5.19	1.43	1.51

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	22	SER	N-CA-C	9.57	136.85	111.00
1	B	801	CYS	CA-CB-SG	-5.77	103.62	114.00
1	A	430	GLN	N-CA-C	5.27	125.22	111.00
1	B	1091	LEU	CB-CG-CD1	-5.22	102.13	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7919	38	8002	235	0
1	B	7977	0	8055	303	0
2	C	70	0	75	13	0
2	E	81	0	88	13	0
3	A	35	0	0	5	0
3	B	47	0	0	4	0
All	All	16129	38	16220	546	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 17.

All (546) 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:B:735:VAL:HG13	1:B:789:MSE:HE1	1.16	1.15
1:B:630:TYR:HE2	1:B:703:TYR:CE1	1.67	1.13
1:B:195:ILE:HD13	1:B:205:TYR:HB3	1.24	1.11
1:B:92:PHE:HA	1:B:100:ARG:HH12	1.15	1.08
1:B:435:ARG:NH1	1:B:968:GLU:OE2	1.87	1.08
1:B:397:ASP:HB3	1:B:967:ASP:HB3	1.34	1.06
1:B:736:PRO:HD2	1:B:789:MSE:HE3	1.38	1.03
1:B:49:GLN:HE21	1:B:86:SER:HB2	1.15	1.03
1:B:330:GLU:HG3	1:B:340:ARG:NE	1.77	0.99
1:B:323:GLU:HB3	1:B:498:LYS:HE3	1.47	0.97
1:A:539:ILE:HG21	1:A:586:THR:HG23	1.45	0.97
1:A:1091:LEU:HB3	1:A:1112:ILE:HD11	1.45	0.96
1:B:802:ARG:HG2	1:B:802:ARG:HH21	1.30	0.94
1:B:735:VAL:CG1	1:B:789:MSE:HE1	1.98	0.93
1:B:330:GLU:HG3	1:B:340:ARG:HE	1.32	0.92
1:A:470:PHE:HE1	2:C:22:SER:HG	0.97	0.90
1:B:586:THR:HG22	1:B:588:SER:H	1.36	0.90
1:A:119:LYS:HE3	1:A:119:LYS:HA	1.53	0.90
1:B:51:SER:HB3	1:B:57:LYS:HG3	1.55	0.89
1:B:630:TYR:CE2	1:B:703:TYR:CE1	2.59	0.89
1:A:509:SER:OG	2:C:23:LYS:NZ	2.06	0.88
1:B:735:VAL:HG13	1:B:789:MSE:CE	2.02	0.88
1:B:1026:LEU:HD23	1:B:1090:LEU:CD2	2.03	0.88
1:B:213:ILE:HG21	1:B:253:THR:HG21	1.56	0.87
1:A:532:PHE:O	1:A:550:LYS:HG2	1.75	0.86
2:C:17:ARG:HG2	2:C:17:ARG:HH11	1.41	0.86
1:B:736:PRO:HD2	1:B:789:MSE:CE	2.05	0.86
1:B:91:ALA:O	1:B:100:ARG:NH1	2.10	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:49:GLN:NE2	1:B:86:SER:HB2	1.92	0.85
1:B:44:LEU:HB3	1:B:64:ALA:HB2	1.60	0.84
1:B:1090:LEU:HD12	1:B:1090:LEU:O	1.78	0.84
1:B:92:PHE:HA	1:B:100:ARG:NH1	1.94	0.83
1:A:1016:GLU:OE2	2:C:14:LYS:HE3	1.76	0.83
1:B:195:ILE:CD1	1:B:205:TYR:HB3	2.06	0.83
1:B:501:ALA:HB1	1:B:552:LEU:HD12	1.61	0.82
1:A:667:GLU:OE1	1:A:708:THR:OG1	1.98	0.82
1:B:1082:GLU:N	1:B:1082:GLU:OE1	2.11	0.82
1:B:785:PRO:HG3	1:B:852:ASN:HB3	1.60	0.81
1:A:492:GLU:OE1	1:A:528:TYR:OH	1.97	0.81
1:A:479:TYR:HB3	1:A:483:LEU:HD22	1.63	0.81
1:B:736:PRO:HA	3:B:1222:HOH:O	1.79	0.81
1:B:1026:LEU:HD23	1:B:1090:LEU:HD22	1.62	0.80
1:A:192:SER:HB3	1:A:209:PHE:CE2	2.16	0.80
1:A:629:GLU:O	1:A:658:VAL:HG12	1.81	0.80
1:B:781:ARG:HD2	3:B:1234:HOH:O	1.82	0.80
1:B:1108:LEU:HA	1:B:1111:VAL:CG1	2.11	0.80
1:B:63:GLU:OE2	1:B:66:LYS:NZ	2.14	0.80
1:B:797:LEU:HD12	1:B:797:LEU:O	1.82	0.79
1:B:512:PHE:CZ	1:B:1068:ARG:HD3	2.16	0.79
1:B:44:LEU:CD1	1:B:63:GLU:HB3	2.13	0.79
1:A:586:THR:HG22	1:A:588:SER:H	1.48	0.78
1:B:193:SER:O	1:B:197:GLU:HG2	1.84	0.78
1:A:707:GLU:HG3	1:A:768:MSE:HE1	1.66	0.78
1:A:1108:LEU:HA	1:A:1111:VAL:HG13	1.65	0.77
1:A:221:ASP:OD2	1:A:225:ARG:NH2	2.17	0.77
1:B:458:LYS:HE2	1:B:498:LYS:NZ	2.00	0.77
1:B:562:ARG:HD2	1:B:601:ASN:OD1	1.84	0.76
1:B:683:HIS:ND1	3:B:1201:HOH:O	2.20	0.75
1:B:802:ARG:HG2	1:B:802:ARG:NH2	1.96	0.75
1:A:707:GLU:HG3	1:A:768:MSE:CE	2.16	0.75
1:A:470:PHE:HE1	2:C:22:SER:OG	1.70	0.74
1:A:971:LYS:NZ	1:A:975:ASP:OD2	2.20	0.74
1:B:44:LEU:HD13	1:B:63:GLU:HB3	1.69	0.74
1:B:336:LEU:HD23	1:B:336:LEU:N	2.02	0.73
1:A:766:THR:HG22	1:A:814:CYS:HB2	1.70	0.73
1:B:707:GLU:HG3	1:B:768:MSE:CE	2.17	0.73
1:A:330:GLU:O	1:A:336:LEU:HD12	1.89	0.72
1:B:766:THR:HG22	1:B:814:CYS:HB2	1.69	0.72
1:B:789:MSE:SE	1:B:794:SER:HB3	2.39	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:586:THR:CG2	1:B:588:SER:H	2.02	0.72
1:A:114:GLU:CD	1:A:119:LYS:HB3	2.10	0.71
1:B:779:MSE:CE	1:B:782:LEU:HD12	2.21	0.71
1:B:92:PHE:CA	1:B:100:ARG:HH22	2.04	0.71
1:B:1090:LEU:CD1	1:B:1094:LEU:CD2	2.68	0.71
1:B:1026:LEU:HD23	1:B:1090:LEU:HD23	1.73	0.71
1:B:586:THR:HG21	1:B:591:LEU:HD23	1.74	0.70
1:A:740:TYR:CZ	1:A:786:ILE:HB	2.27	0.70
1:A:562:ARG:HD2	1:A:601:ASN:OD1	1.90	0.70
1:A:382:SER:O	1:A:424:GLN:HG2	1.91	0.70
1:B:156:ASN:O	1:B:159:LEU:HG	1.92	0.70
1:A:41:LEU:HD12	1:A:67:GLN:O	1.92	0.69
1:B:1099:ASN:ND2	1:B:1099:ASN:O	2.25	0.69
1:A:190:TYR:O	1:A:194:LEU:HD13	1.92	0.69
1:B:492:GLU:OE1	1:B:492:GLU:HA	1.92	0.69
1:A:49:GLN:OE1	1:A:90:SER:OG	2.11	0.69
1:B:330:GLU:CG	1:B:340:ARG:NE	2.55	0.69
1:B:1108:LEU:HA	1:B:1111:VAL:HG12	1.72	0.69
1:B:630:TYR:HE2	1:B:703:TYR:CZ	2.12	0.68
1:B:1092:LYS:HG3	1:B:1112:ILE:HD12	1.76	0.68
1:B:115:LEU:HD22	1:B:156:ASN:CB	2.23	0.68
1:B:290:LYS:NZ	1:B:835:GLU:OE2	2.24	0.68
1:B:583:ALA:O	1:B:586:THR:HB	1.92	0.68
1:B:44:LEU:HA	1:B:47:ILE:HG22	1.76	0.68
1:A:56:ILE:HA	1:A:59:LEU:HD22	1.76	0.67
1:B:737:SER:O	1:B:791:ASN:HA	1.93	0.67
1:B:100:ARG:NH1	1:B:141:THR:HG21	2.09	0.67
1:A:481:ASP:OD1	1:A:521:TYR:OH	2.11	0.67
1:B:793:ASP:OD1	1:B:795:THR:OG1	2.13	0.67
1:B:740:TYR:CE1	1:B:786:ILE:HB	2.29	0.67
1:B:875:LYS:CD	1:B:875:LYS:H	2.05	0.67
1:A:678:ILE:HD13	1:A:719:ALA:HB2	1.75	0.67
1:B:584:ILE:HD11	1:B:599:ILE:HD12	1.77	0.67
1:B:115:LEU:HD22	1:B:156:ASN:HB2	1.76	0.66
1:B:630:TYR:OH	1:B:703:TYR:CD2	2.46	0.66
1:B:740:TYR:CZ	1:B:786:ILE:HB	2.30	0.66
1:B:92:PHE:N	1:B:100:ARG:HH22	1.93	0.66
1:B:796:HIS:N	3:B:1204:HOH:O	2.28	0.66
1:B:1090:LEU:HD11	1:B:1094:LEU:CD2	2.25	0.66
1:A:193:SER:O	1:A:197:GLU:HG2	1.96	0.66
2:E:17:ARG:HG2	2:E:17:ARG:HH11	1.60	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:479:TYR:O	1:A:482:PRO:HD2	1.96	0.66
1:A:233:LYS:HD3	1:A:277:PHE:CZ	2.31	0.65
1:B:630:TYR:OH	1:B:703:TYR:CE2	2.48	0.65
1:A:195:ILE:HG12	1:A:249:LEU:HD11	1.78	0.65
1:B:458:LYS:HE2	1:B:498:LYS:HZ2	1.61	0.65
1:B:1090:LEU:HD11	1:B:1094:LEU:HD21	1.76	0.65
1:A:539:ILE:HG21	1:A:586:THR:CG2	2.23	0.65
1:B:97:ASP:O	1:B:100:ARG:HB2	1.97	0.65
2:C:17:ARG:HG2	2:C:17:ARG:NH1	2.10	0.65
1:B:435:ARG:HH11	1:B:968:GLU:CD	1.99	0.64
1:A:689:GLU:HB2	1:A:690:PRO:HD3	1.78	0.64
1:B:975:ASP:HB3	1:B:1013:THR:HG22	1.80	0.64
1:B:882:PHE:HA	2:E:12:GLY:HA3	1.80	0.64
1:B:584:ILE:HD13	1:B:596:TYR:CE1	2.33	0.64
1:A:539:ILE:HA	1:A:542:LEU:HD12	1.80	0.64
1:B:215:SER:O	1:B:219:VAL:HG23	1.97	0.63
1:A:580:ALA:O	1:A:584:ILE:HG12	1.98	0.63
1:B:41:LEU:HD23	1:B:41:LEU:C	2.19	0.63
1:B:47:ILE:HG23	1:B:60:ALA:HB1	1.80	0.63
1:A:492:GLU:OE1	1:A:492:GLU:HA	1.99	0.63
1:B:332:ASN:H	1:B:332:ASN:ND2	1.94	0.63
1:B:532:PHE:O	1:B:550:LYS:HG2	1.97	0.63
1:A:41:LEU:N	1:A:42:PRO:HD2	2.13	0.63
1:B:779:MSE:HA	1:B:779:MSE:HE2	1.80	0.63
1:B:780:LEU:HD22	1:B:852:ASN:ND2	2.13	0.63
1:A:1091:LEU:CB	1:A:1112:ILE:HD11	2.26	0.63
1:B:1090:LEU:HD12	1:B:1094:LEU:CD2	2.29	0.63
1:A:192:SER:HB3	1:A:209:PHE:CZ	2.32	0.63
1:B:630:TYR:HE2	1:B:703:TYR:CD1	2.17	0.63
1:B:1071:ASN:HB2	1:B:1075:ARG:NH2	2.14	0.63
1:B:779:MSE:HE1	1:B:782:LEU:HD12	1.79	0.63
1:B:707:GLU:HG3	1:B:768:MSE:HE1	1.80	0.62
1:B:80:GLN:O	1:B:84:LYS:HG3	2.00	0.62
1:A:599:ILE:HD13	1:A:617:ILE:HD13	1.81	0.62
1:B:705:LEU:O	1:B:705:LEU:HG	1.99	0.62
1:A:1097:GLN:HG2	1:A:1098:PHE:CD2	2.34	0.62
1:B:664:TYR:CD1	2:E:26:ARG:HD3	2.34	0.62
1:A:956:VAL:O	1:A:960:LYS:HG3	2.00	0.62
1:B:49:GLN:OE1	1:B:49:GLN:HA	1.98	0.62
1:B:630:TYR:CE2	1:B:703:TYR:CZ	2.87	0.62
1:B:128:LEU:HD23	1:B:167:LEU:HD22	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:254:ILE:HD13	1:B:292:LYS:HD3	1.81	0.61
1:B:262:LEU:O	1:B:266:VAL:HG22	2.00	0.61
1:A:40:ALA:HB3	1:A:71:HIS:CD2	2.35	0.61
1:A:1026:LEU:HD23	1:A:1090:LEU:HD22	1.82	0.61
1:B:92:PHE:C	1:B:100:ARG:HH22	2.04	0.61
1:B:45:ILE:O	1:B:49:GLN:HB2	2.00	0.61
1:B:829:LEU:HD13	1:B:830:ASP:OD1	2.00	0.61
1:A:206:ALA:CB	1:A:249:LEU:HD22	2.30	0.61
1:B:42:PRO:O	1:B:46:HIS:HB2	2.01	0.61
2:E:17:ARG:HG2	2:E:17:ARG:NH1	2.16	0.61
1:A:64:ALA:O	1:A:68:VAL:HG23	2.01	0.61
1:A:1094:LEU:O	1:A:1097:GLN:O	2.19	0.61
1:A:343:SER:HB2	1:A:383:VAL:HG13	1.82	0.61
1:A:114:GLU:HG2	1:A:120:TRP:HB2	1.83	0.60
1:B:939:VAL:HB	1:B:942:ILE:HD11	1.82	0.60
1:B:766:THR:HG22	1:B:814:CYS:CB	2.32	0.60
1:B:44:LEU:O	1:B:47:ILE:HG22	2.01	0.60
1:B:192:SER:HB3	1:B:209:PHE:CE2	2.37	0.59
1:B:331:GLU:HB2	1:B:336:LEU:CB	2.31	0.59
1:A:389:PRO:HD2	1:A:833:GLU:OE2	2.03	0.59
1:A:586:THR:HG21	1:A:591:LEU:HD23	1.84	0.59
1:B:707:GLU:HG3	1:B:768:MSE:HE2	1.82	0.59
1:A:49:GLN:O	1:A:57:LYS:HE2	2.03	0.58
1:A:262:LEU:O	1:A:266:VAL:HG22	2.02	0.58
1:A:858:ALA:HB2	1:A:894:MSE:HE1	1.85	0.58
1:B:469:GLU:OE2	2:E:23:LYS:HB3	2.03	0.58
1:A:473:HIS:HB3	1:A:1060:LEU:HD11	1.86	0.58
1:B:70:LYS:HG2	1:B:71:HIS:CD2	2.39	0.58
1:A:208:LYS:O	1:A:211:SER:OG	2.22	0.58
1:B:797:LEU:HD12	1:B:797:LEU:C	2.19	0.58
1:B:275:ARG:HH22	1:B:312:GLU:CD	2.07	0.58
1:B:689:GLU:HB3	1:B:690:PRO:HD3	1.86	0.58
1:B:872:CYS:O	1:B:880:ARG:HD2	2.04	0.57
1:A:322:ASN:ND2	1:A:322:ASN:O	2.37	0.57
1:A:41:LEU:CD1	1:A:71:HIS:HB2	2.35	0.57
1:A:206:ALA:HB2	1:A:249:LEU:HD22	1.86	0.57
1:A:1108:LEU:HA	1:A:1111:VAL:CG1	2.35	0.57
1:A:340:ARG:HE	1:A:340:ARG:HA	1.70	0.57
1:B:297:LYS:O	1:B:297:LYS:HG3	2.05	0.57
1:B:44:LEU:HD13	1:B:64:ALA:N	2.20	0.57
1:B:680:SER:HB2	1:B:684:PHE:HB2	1.85	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:331:GLU:HB2	1:B:336:LEU:HB2	1.87	0.56
1:B:581:TYR:OH	1:B:616:THR:HB	2.05	0.56
1:B:630:TYR:CE2	1:B:703:TYR:CD1	2.94	0.56
1:B:1101:ALA:HA	1:B:1104:GLN:HB2	1.88	0.56
1:A:44:LEU:HA	1:A:47:ILE:HD12	1.88	0.56
1:A:539:ILE:HG13	1:A:539:ILE:O	2.06	0.56
1:A:45:ILE:HD13	1:A:83:VAL:CG1	2.36	0.56
1:B:849:LEU:O	1:B:853:LEU:HD22	2.05	0.56
1:A:233:LYS:HD3	1:A:277:PHE:CE1	2.41	0.56
1:A:210:ALA:HB2	1:A:249:LEU:O	2.05	0.56
1:B:875:LYS:H	1:B:875:LYS:HE3	1.71	0.56
1:A:362:LEU:HA	1:A:377:ILE:HG12	1.87	0.56
1:B:875:LYS:H	1:B:875:LYS:CE	2.19	0.56
1:B:1041:PRO:O	1:B:1044:ILE:HG13	2.06	0.56
1:A:45:ILE:HD13	1:A:83:VAL:HG13	1.87	0.56
1:A:885:GLY:CA	2:C:13:GLY:HA3	2.36	0.56
1:B:84:LYS:HD3	1:B:120:TRP:CE2	2.41	0.55
1:B:470:PHE:CE1	2:E:22:SER:HB2	2.41	0.55
1:A:484:MSE:HE1	1:A:507:ILE:HG23	1.89	0.55
1:A:876:SER:HB3	1:A:879:LYS:HB2	1.87	0.55
1:B:1032:GLN:OE1	1:B:1037:ILE:HD11	2.07	0.55
1:A:501:ALA:HB1	1:A:552:LEU:HD12	1.88	0.55
1:A:554:PHE:HZ	1:A:579:ALA:HB1	1.72	0.55
1:B:1094:LEU:CB	1:B:1102:VAL:HG21	2.37	0.55
1:B:802:ARG:HH21	1:B:802:ARG:CG	2.11	0.55
1:B:41:LEU:HD12	1:B:67:GLN:O	2.07	0.54
1:B:1108:LEU:HD23	1:B:1111:VAL:HG11	1.89	0.54
1:A:1090:LEU:O	1:A:1090:LEU:HD12	2.06	0.54
1:B:44:LEU:CB	1:B:64:ALA:HB2	2.33	0.54
1:A:479:TYR:HB3	1:A:483:LEU:CD2	2.36	0.54
1:A:539:ILE:CG2	1:A:586:THR:HG23	2.28	0.54
1:B:926:TYR:CZ	1:B:930:LEU:HD11	2.42	0.54
1:A:220:LEU:HB2	1:A:235:ILE:HG21	1.88	0.54
1:B:1090:LEU:HD12	1:B:1090:LEU:C	2.26	0.54
1:A:374:ARG:NE	1:A:409:ASP:OD2	2.36	0.54
1:B:598:PHE:O	1:B:602:MSE:HG2	2.08	0.54
1:B:104:ALA:HB1	1:B:145:ILE:HG12	1.90	0.54
1:B:331:GLU:HB2	1:B:336:LEU:HD12	1.89	0.54
1:A:539:ILE:HA	1:A:542:LEU:CD1	2.38	0.54
1:A:942:ILE:O	1:A:945:PRO:HD2	2.08	0.54
1:A:479:TYR:CB	1:A:483:LEU:HD22	2.33	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:93:ASN:N	1:B:100:ARG:HH22	2.06	0.53
1:B:473:HIS:O	1:B:476:ILE:HG22	2.08	0.53
1:A:473:HIS:O	1:A:476:ILE:HG22	2.07	0.53
1:A:788:ILE:O	1:A:788:ILE:HG13	2.08	0.53
1:B:584:ILE:CD1	1:B:599:ILE:HD12	2.37	0.53
1:B:47:ILE:HG23	1:B:60:ALA:CB	2.38	0.53
1:A:288:TYR:O	1:A:289:ARG:HG2	2.08	0.53
1:A:289:ARG:HD3	1:A:292:LYS:HD3	1.90	0.53
1:B:178:LEU:HD22	1:B:226:GLU:HG3	1.90	0.53
1:B:494:GLN:CG	1:B:499:LEU:HD12	2.38	0.53
1:A:707:GLU:OE1	1:A:767:SER:OG	2.27	0.53
1:A:1092:LYS:HE2	1:A:1112:ILE:O	2.09	0.53
1:A:114:GLU:O	1:A:114:GLU:HG3	2.07	0.53
1:B:115:LEU:HD22	1:B:156:ASN:HB3	1.91	0.53
1:B:622:PHE:O	1:B:626:GLU:HG3	2.08	0.53
1:A:340:ARG:HA	1:A:340:ARG:NE	2.24	0.53
1:A:55:GLY:O	1:A:59:LEU:HD22	2.09	0.52
1:A:757:LEU:HD11	1:A:796:HIS:HB3	1.91	0.52
1:A:766:THR:HG22	1:A:814:CYS:CB	2.37	0.52
1:A:484:MSE:HE3	1:A:488:PHE:HE2	1.75	0.52
1:A:41:LEU:C	1:A:41:LEU:HD23	2.29	0.52
1:A:741:VAL:HG13	1:A:745:ALA:HB3	1.90	0.52
1:B:118:LYS:HG3	1:B:118:LYS:O	2.08	0.52
1:B:53:ASN:HB3	1:B:56:ILE:HD12	1.92	0.52
1:B:91:ALA:O	1:B:100:ARG:CZ	2.57	0.52
1:B:211:SER:O	1:B:214:PRO:HD2	2.10	0.52
1:B:1071:ASN:HB2	1:B:1075:ARG:CZ	2.40	0.52
1:B:1094:LEU:HB3	1:B:1102:VAL:HG21	1.92	0.52
1:A:88:LEU:HD23	1:A:107:ILE:HD13	1.92	0.52
1:A:680:SER:HB2	1:A:684:PHE:HB2	1.92	0.52
1:A:41:LEU:H	1:A:42:PRO:HD2	1.74	0.51
1:A:630:TYR:HE2	1:A:703:TYR:CZ	2.28	0.51
1:A:885:GLY:HA3	2:C:13:GLY:HA3	1.91	0.51
1:A:318:ASP:O	1:A:322:ASN:ND2	2.43	0.51
1:A:705:LEU:HG	1:A:705:LEU:O	2.10	0.51
1:B:41:LEU:HD23	1:B:41:LEU:O	2.11	0.51
1:B:94:GLU:O	1:B:100:ARG:HD3	2.10	0.51
1:B:717:VAL:CG2	1:B:752:VAL:HG21	2.41	0.51
1:B:1059:GLU:OE1	1:B:1059:GLU:HA	2.11	0.51
1:B:135:ASN:HB3	1:B:138:ILE:HD12	1.92	0.51
1:B:470:PHE:HE1	2:E:22:SER:HB2	1.76	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:213:ILE:HG21	1:B:253:THR:CG2	2.33	0.51
1:B:565:LYS:HD2	1:B:565:LYS:N	2.26	0.51
1:A:469:GLU:OE1	2:C:23:LYS:HB3	2.11	0.50
1:A:518:PHE:CZ	1:A:560:MSE:HE2	2.46	0.50
1:B:72:TRP:CZ2	1:B:80:GLN:HB3	2.46	0.50
1:B:854:VAL:O	1:B:897:GLU:OE2	2.29	0.50
1:A:1108:LEU:O	1:A:1112:ILE:HG12	2.11	0.50
1:B:479:TYR:O	1:B:482:PRO:HD2	2.10	0.50
1:A:197:GLU:HA	1:A:197:GLU:OE1	2.11	0.50
1:A:362:LEU:N	1:A:363:PRO:HD2	2.27	0.50
1:A:837:THR:O	1:A:841:VAL:HG22	2.11	0.50
1:A:118:LYS:CD	1:A:118:LYS:H	2.24	0.50
1:B:330:GLU:CG	1:B:340:ARG:HE	2.13	0.50
1:B:631:GLN:OE1	1:B:631:GLN:HA	2.10	0.50
2:C:17:ARG:NH1	2:C:17:ARG:CG	2.73	0.50
1:B:91:ALA:O	1:B:141:THR:HG21	2.12	0.50
1:B:766:THR:HG22	1:B:814:CYS:SG	2.52	0.50
1:A:104:ALA:HA	1:A:107:ILE:HD12	1.93	0.50
1:A:926:TYR:CZ	1:A:930:LEU:HD11	2.47	0.50
1:B:685:LEU:HA	1:B:688:VAL:HG23	1.92	0.50
1:A:481:ASP:HB3	1:A:482:PRO:HD3	1.94	0.50
1:B:117:GLU:OE2	1:B:117:GLU:HA	2.11	0.50
1:B:121:PRO:HD2	1:B:122:GLU:OE2	2.12	0.50
1:B:707:GLU:CG	1:B:768:MSE:HE2	2.42	0.50
1:A:102:ALA:O	1:A:106:VAL:HG23	2.11	0.49
1:B:789:MSE:SE	1:B:794:SER:CB	3.07	0.49
1:A:70:LYS:HZ3	1:A:70:LYS:HB2	1.77	0.49
1:B:91:ALA:C	1:B:100:ARG:NH2	2.65	0.49
1:A:135:ASN:HB3	1:A:138:ILE:HD12	1.92	0.49
1:A:419:LEU:O	1:A:423:VAL:HG23	2.12	0.49
1:A:707:GLU:HG3	1:A:768:MSE:HE2	1.92	0.49
1:B:195:ILE:HD13	1:B:205:TYR:CB	2.16	0.49
1:B:330:GLU:HG3	1:B:340:ARG:CZ	2.40	0.49
1:A:290:LYS:HD2	1:A:348:GLU:HB3	1.95	0.49
1:B:586:THR:HG22	1:B:588:SER:N	2.17	0.49
1:A:763:GLU:OE1	1:A:765:GLU:HB2	2.13	0.49
1:A:51:SER:OG	1:A:56:ILE:HG22	2.11	0.49
1:A:490:MSE:HB3	1:A:503:ILE:HD13	1.94	0.49
1:B:924:ALA:O	1:B:928:VAL:HG23	2.13	0.49
1:A:602:MSE:HE2	1:A:602:MSE:HA	1.94	0.48
1:A:788:ILE:HD13	1:A:800:LEU:HD22	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:51:SER:HB3	1:B:57:LYS:HE3	1.95	0.48
1:B:332:ASN:ND2	1:B:332:ASN:N	2.60	0.48
1:A:942:ILE:C	1:A:945:PRO:HD2	2.33	0.48
1:A:970:THR:OG1	1:A:971:LYS:N	2.46	0.48
1:A:1002:ILE:HB	1:A:1003:PRO:HD3	1.96	0.48
1:A:48:LEU:O	1:A:57:LYS:HG2	2.14	0.48
1:A:141:THR:O	1:A:145:ILE:HG13	2.14	0.48
1:A:565:LYS:HD2	1:A:565:LYS:N	2.28	0.48
1:B:256:ASP:HA	1:B:259:LYS:HE3	1.96	0.48
1:B:561:GLY:O	1:B:564:VAL:O	2.32	0.48
1:B:586:THR:CG2	1:B:587:ASP:N	2.77	0.48
1:B:885:GLY:CA	2:E:13:GLY:HA3	2.44	0.48
1:A:314:ILE:HG13	1:A:372:PHE:CE1	2.48	0.48
1:A:464:LEU:HD12	1:A:468:LEU:HG	1.96	0.48
1:B:76:ASP:OD1	1:B:79:THR:HG23	2.13	0.48
1:B:494:GLN:HG2	1:B:499:LEU:HD12	1.94	0.48
1:B:1026:LEU:CD2	1:B:1090:LEU:HD23	2.43	0.48
1:A:161:ILE:HD11	1:A:194:LEU:HB3	1.94	0.48
1:A:970:THR:CG2	1:A:973:ILE:HG12	2.43	0.48
1:B:253:THR:HG22	1:B:257:LEU:HG	1.95	0.48
1:A:63:GLU:O	1:A:67:GLN:NE2	2.47	0.48
1:A:249:LEU:N	1:A:249:LEU:HD23	2.28	0.48
1:A:618:ILE:N	1:A:619:PRO:HD2	2.29	0.48
1:A:982:CYS:SG	1:A:1005:LEU:HD12	2.53	0.48
1:B:1016:GLU:OE2	2:E:14:LYS:HE2	2.14	0.48
1:A:340:ARG:HE	1:A:340:ARG:CA	2.26	0.47
1:A:1059:GLU:HG2	1:A:1060:LEU:N	2.27	0.47
1:B:47:ILE:HG23	1:B:48:LEU:N	2.28	0.47
1:B:1016:GLU:H	1:B:1016:GLU:CD	2.17	0.47
1:B:492:GLU:OE1	1:B:528:TYR:OH	2.20	0.47
1:B:113:GLU:OE2	1:B:113:GLU:HA	2.14	0.47
1:A:457:TYR:CD1	1:A:499:LEU:HD13	2.50	0.47
1:B:219:VAL:O	1:B:223:THR:HG23	2.14	0.47
1:B:1095:ASN:O	1:B:1100:GLY:N	2.47	0.47
2:C:17:ARG:HD2	2:C:17:ARG:C	2.34	0.47
1:A:468:LEU:HD13	1:A:510:CYS:SG	2.55	0.47
1:B:44:LEU:CA	1:B:47:ILE:HG22	2.43	0.47
1:B:75:LEU:HD13	1:B:75:LEU:HA	1.69	0.47
1:A:361:HIS:O	1:A:365:MSE:HG3	2.14	0.47
1:A:689:GLU:HA	1:A:689:GLU:OE1	2.15	0.47
1:B:731:TYR:CD2	1:B:784:GLY:HA3	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1031:GLU:HG3	1:B:1031:GLU:O	2.13	0.47
1:A:356:VAL:HB	1:A:357:PRO:HD3	1.97	0.47
1:A:484:MSE:HG2	1:A:521:TYR:CD1	2.50	0.47
1:B:356:VAL:HB	1:B:357:PRO:HD3	1.97	0.47
1:A:55:GLY:O	1:A:59:LEU:HD13	2.14	0.47
1:A:491:LEU:HD23	1:A:528:TYR:CE1	2.50	0.47
1:A:735:VAL:HG13	1:A:789:MSE:SE	2.65	0.47
1:B:298:LEU:O	1:B:302:ILE:HG13	2.15	0.47
1:B:389:PRO:HD2	1:B:833:GLU:OE1	2.14	0.47
1:B:193:SER:O	1:B:197:GLU:CG	2.61	0.46
1:A:314:ILE:HG13	1:A:372:PHE:HE1	1.81	0.46
1:A:1019:ASP:HB3	1:A:1020:PRO:CD	2.45	0.46
1:B:829:LEU:HD22	1:B:830:ASP:H	1.79	0.46
1:B:1104:GLN:OE1	1:B:1104:GLN:HA	2.15	0.46
1:A:298:LEU:HD23	1:A:298:LEU:HA	1.79	0.46
1:A:714:TRP:CD1	1:A:775:ASP:HB3	2.51	0.46
1:B:42:PRO:O	1:B:46:HIS:N	2.36	0.46
1:B:92:PHE:C	1:B:100:ARG:NH2	2.68	0.46
1:B:308:LYS:HD2	1:B:308:LYS:HA	1.57	0.46
1:B:182:SER:O	1:B:186:GLN:HG3	2.15	0.46
1:B:467:LEU:O	1:B:471:ILE:HG13	2.15	0.46
1:B:601:ASN:O	1:B:605:VAL:HG23	2.16	0.46
1:A:400:ILE:HB	1:A:401:PRO:HD3	1.97	0.46
1:B:93:ASN:N	1:B:100:ARG:NH2	2.64	0.46
1:B:707:GLU:CG	1:B:768:MSE:CE	2.92	0.46
1:B:1094:LEU:HB3	1:B:1102:VAL:CG2	2.46	0.46
1:A:58:GLN:O	1:A:62:VAL:HG23	2.15	0.46
1:A:122:GLU:C	1:A:125:PRO:HD2	2.36	0.46
1:A:817:ILE:HG22	1:A:817:ILE:O	2.14	0.46
1:B:45:ILE:HG23	1:B:87:LEU:HD21	1.98	0.46
1:B:484:MSE:CE	1:B:488:PHE:HE2	2.28	0.46
1:A:41:LEU:N	1:A:42:PRO:CD	2.78	0.46
1:A:41:LEU:HD13	1:A:71:HIS:HB2	1.98	0.46
1:B:237:ASN:OD1	1:B:237:ASN:N	2.49	0.46
1:B:400:ILE:HB	1:B:401:PRO:HD3	1.97	0.46
1:B:1090:LEU:HD12	1:B:1094:LEU:HD22	1.98	0.46
1:A:421:CYS:O	1:A:425:LEU:HG	2.16	0.46
1:A:549:LEU:HD12	1:A:549:LEU:O	2.16	0.45
1:B:942:ILE:O	1:B:945:PRO:HD2	2.16	0.45
1:A:1084:LYS:NZ	3:A:1209:HOH:O	2.46	0.45
1:B:441:LEU:HD22	1:B:464:LEU:CD1	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:807:VAL:CG1	1:A:838:LEU:HG	2.47	0.45
1:A:120:TRP:CZ2	1:A:123:LEU:HD13	2.52	0.45
1:B:65:ARG:HD2	1:B:109:SER:OG	2.17	0.45
1:B:882:PHE:HA	2:E:12:GLY:CA	2.47	0.45
1:A:113:GLU:C	1:A:115:LEU:H	2.19	0.45
1:A:43:ALA:O	1:A:47:ILE:HD12	2.17	0.45
1:A:215:SER:O	1:A:219:VAL:HG23	2.17	0.45
1:B:47:ILE:CG2	1:B:60:ALA:HB1	2.46	0.45
1:A:92:PHE:O	1:A:100:ARG:NH1	2.50	0.45
1:A:116:ASP:O	3:A:1201:HOH:O	2.21	0.45
1:A:905:LEU:HA	1:A:931:LEU:HD13	1.99	0.45
1:B:316:VAL:HG22	1:B:413:VAL:HG11	1.99	0.45
1:B:87:LEU:O	1:B:91:ALA:CB	2.65	0.45
1:B:684:PHE:CD2	1:B:684:PHE:O	2.70	0.45
1:B:1092:LYS:CG	1:B:1112:ILE:HD12	2.46	0.45
1:A:49:GLN:NE2	1:A:86:SER:OG	2.50	0.44
1:A:473:HIS:O	1:A:477:ILE:HG12	2.17	0.44
1:A:45:ILE:O	1:A:48:LEU:HB3	2.18	0.44
1:A:137:LYS:HA	1:A:137:LYS:HD2	1.80	0.44
1:A:382:SER:CB	1:A:421:CYS:HA	2.48	0.44
1:B:317:GLU:O	1:B:321:THR:OG1	2.34	0.44
1:B:416:LEU:HB2	1:B:456:ILE:HD11	1.99	0.44
1:B:779:MSE:HE2	1:B:782:LEU:HD12	1.96	0.44
1:A:449:ASP:OD1	1:A:486:LYS:NZ	2.45	0.44
1:A:491:LEU:HA	1:A:491:LEU:HD12	1.73	0.44
1:B:331:GLU:HB3	1:B:333:THR:H	1.82	0.44
1:A:343:SER:CB	1:A:383:VAL:HG13	2.46	0.44
1:A:1100:GLY:O	1:A:1104:GLN:HG2	2.17	0.44
1:B:44:LEU:CD2	1:B:63:GLU:HB3	2.47	0.44
1:B:458:LYS:HE2	1:B:498:LYS:HZ1	1.79	0.44
1:A:116:ASP:OD1	1:A:117:GLU:N	2.46	0.44
1:A:343:SER:CA	1:A:383:VAL:HG13	2.46	0.44
1:A:1091:LEU:HD13	1:A:1108:LEU:HD22	1.99	0.44
1:B:100:ARG:HH11	1:B:141:THR:CG2	2.30	0.44
1:B:262:LEU:HD22	1:B:305:ALA:CB	2.48	0.44
1:B:942:ILE:C	1:B:945:PRO:HD2	2.38	0.44
1:B:94:GLU:H	1:B:100:ARG:HH21	1.66	0.43
1:B:1092:LYS:NZ	1:B:1112:ILE:O	2.51	0.43
1:A:213:ILE:N	1:A:214:PRO:HD2	2.32	0.43
2:E:17:ARG:HH11	2:E:17:ARG:CG	2.30	0.43
1:A:854:VAL:HG12	1:A:855:GLY:H	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:296:ALA:HB3	1:A:298:LEU:HG	2.00	0.43
1:A:382:SER:HB3	1:A:421:CYS:HA	2.00	0.43
1:A:464:LEU:HD11	1:A:468:LEU:HD11	2.00	0.43
1:A:980:ASN:HD21	2:C:14:LYS:HD2	1.83	0.43
1:B:484:MSE:HE3	1:B:488:PHE:HE2	1.82	0.43
1:B:41:LEU:HB2	1:B:71:HIS:HB2	2.00	0.43
1:B:51:SER:CB	1:B:57:LYS:HG3	2.38	0.43
1:B:1019:ASP:HB3	1:B:1020:PRO:CD	2.49	0.43
1:A:41:LEU:CD1	1:A:67:GLN:O	2.65	0.43
1:A:713:MSE:O	1:A:717:VAL:HG23	2.19	0.43
1:B:664:TYR:HB3	2:E:26:ARG:HH11	1.82	0.43
1:B:343:SER:HB2	1:B:383:VAL:HB	2.01	0.43
1:B:1018:TYR:HB3	1:B:1022:PHE:CE2	2.54	0.43
1:A:200:GLU:O	1:A:200:GLU:HG3	2.19	0.43
1:B:47:ILE:HG23	1:B:48:LEU:H	1.84	0.43
1:B:262:LEU:HD22	1:B:305:ALA:HB3	2.00	0.43
1:B:331:GLU:CG	1:B:336:LEU:HD12	2.49	0.43
1:B:950:LEU:HD22	1:B:981:VAL:HG13	2.00	0.42
1:B:1065:THR:HB	1:B:1068:ARG:HG3	2.01	0.42
1:A:254:ILE:HD13	1:A:289:ARG:HD2	2.01	0.42
1:B:47:ILE:HD13	1:B:47:ILE:C	2.40	0.42
1:B:1092:LYS:O	1:B:1095:ASN:N	2.39	0.42
1:B:51:SER:OG	1:B:52:SER:N	2.53	0.42
1:A:430:GLN:H	1:A:430:GLN:HG3	1.56	0.42
1:B:67:GLN:HA	1:B:67:GLN:OE1	2.19	0.42
1:A:233:LYS:HB2	1:A:277:PHE:CE2	2.54	0.42
1:A:872:CYS:SG	1:A:887:LEU:HD12	2.60	0.42
1:A:1112:ILE:HD13	1:A:1112:ILE:HA	1.79	0.42
1:B:513:ALA:HA	1:B:1068:ARG:HH21	1.84	0.42
1:B:92:PHE:CA	1:B:100:ARG:NH2	2.79	0.42
2:C:15:ALA:HA	2:C:16:PRO:HD3	1.88	0.42
1:A:70:LYS:HB2	1:A:70:LYS:NZ	2.34	0.42
1:A:1005:LEU:HD12	1:A:1005:LEU:HA	1.67	0.42
1:A:41:LEU:HD23	1:A:41:LEU:O	2.20	0.42
1:A:104:ALA:HB1	1:A:145:ILE:HG12	2.00	0.42
1:A:219:VAL:O	1:A:223:THR:HG23	2.19	0.42
1:A:518:PHE:HZ	1:A:560:MSE:HE2	1.85	0.42
1:B:43:ALA:O	1:B:47:ILE:N	2.51	0.42
1:B:766:THR:CG2	1:B:814:CYS:HB2	2.45	0.42
1:A:156:ASN:O	1:A:159:LEU:HB2	2.20	0.42
1:A:480:LEU:O	1:A:484:MSE:HB2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:100:ARG:NH1	1:B:141:THR:CG2	2.80	0.42
1:B:1036:ILE:HD12	1:B:1036:ILE:HA	1.89	0.42
1:A:306:ALA:HB2	1:A:341:LEU:HD23	2.02	0.42
1:A:441:LEU:O	1:A:445:ILE:HG12	2.20	0.42
1:A:41:LEU:HD11	1:A:68:VAL:HA	2.01	0.41
1:B:304:LEU:HD21	1:B:361:HIS:CE1	2.55	0.41
1:B:313:GLU:HG3	1:B:372:PHE:CZ	2.55	0.41
1:B:857:PHE:CE2	1:B:861:PHE:HB2	2.55	0.41
1:A:296:ALA:CB	1:A:298:LEU:HG	2.50	0.41
1:A:523:LYS:HB3	1:A:523:LYS:HE3	1.53	0.41
1:B:192:SER:HB3	1:B:209:PHE:CZ	2.55	0.41
1:B:560:MSE:O	1:B:564:VAL:HG22	2.20	0.41
1:A:45:ILE:HG22	1:A:49:GLN:HE21	1.85	0.41
1:A:53:ASN:ND2	3:A:1212:HOH:O	2.52	0.41
1:A:143:ILE:HD13	1:A:146:ILE:HD12	2.02	0.41
1:A:829:LEU:H	1:A:829:LEU:HG	1.56	0.41
1:A:950:LEU:HD22	1:A:981:VAL:HG13	2.02	0.41
1:A:1096:GLN:H	1:A:1096:GLN:HG2	1.60	0.41
1:B:917:SER:O	1:B:921:ARG:HG3	2.19	0.41
1:B:1002:ILE:HB	1:B:1003:PRO:HD3	2.01	0.41
1:A:905:LEU:O	1:A:909:ILE:HG13	2.21	0.41
1:B:789:MSE:HE3	1:B:789:MSE:HB3	1.78	0.41
1:B:901:ILE:O	1:B:905:LEU:HB2	2.20	0.41
1:B:197:GLU:OE2	1:B:197:GLU:CA	2.67	0.41
1:B:197:GLU:OE2	1:B:197:GLU:HA	2.21	0.41
1:B:722:LEU:HD23	1:B:726:LEU:O	2.20	0.41
1:A:490:MSE:HE2	1:A:503:ILE:HG12	2.02	0.41
1:B:304:LEU:HD23	1:B:304:LEU:HA	1.85	0.41
1:B:382:SER:O	1:B:424:GLN:HG2	2.20	0.41
1:B:564:VAL:O	1:B:564:VAL:CG2	2.68	0.41
1:A:382:SER:O	1:A:385:VAL:HG12	2.21	0.41
1:B:469:GLU:OE2	2:E:23:LYS:CB	2.69	0.41
1:B:710:LEU:CD2	1:B:772:VAL:HG22	2.51	0.41
1:B:922:CYS:SG	1:B:976:ARG:HG2	2.61	0.41
1:B:1108:LEU:O	1:B:1111:VAL:HG13	2.21	0.41
1:A:51:SER:HB2	1:A:57:LYS:HG3	2.03	0.41
1:A:120:TRP:CE3	1:A:123:LEU:HD22	2.55	0.41
1:A:485:ASN:OD1	3:A:1202:HOH:O	2.22	0.41
1:B:45:ILE:O	1:B:49:GLN:N	2.43	0.41
1:B:202:ASN:HB3	1:B:205:TYR:CD2	2.56	0.41
1:B:591:LEU:HD12	1:B:591:LEU:HA	1.92	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:119:LYS:HD2	1:B:119:LYS:O	2.20	0.41
1:B:188:LEU:HA	1:B:188:LEU:HD23	1.81	0.41
1:B:296:ALA:HB3	1:B:298:LEU:HG	2.02	0.41
1:B:631:GLN:O	1:B:657:THR:HG22	2.21	0.41
1:B:714:TRP:CD1	1:B:775:ASP:HB3	2.56	0.41
1:A:115:LEU:HG	1:A:156:ASN:HD22	1.85	0.40
1:A:124:ILE:N	1:A:125:PRO:CD	2.85	0.40
1:A:614:LEU:HD11	1:A:680:SER:HB3	2.03	0.40
1:A:857:PHE:CE2	1:A:861:PHE:HB2	2.56	0.40
1:B:731:TYR:CD2	1:B:785:PRO:HD3	2.57	0.40
1:A:279:VAL:CG1	1:A:337:THR:HG22	2.51	0.40
1:A:872:CYS:O	1:A:880:ARG:HD2	2.20	0.40
1:A:992:HIS:HE1	3:A:1225:HOH:O	2.04	0.40
1:B:78:ALA:O	1:B:82:SER:HB3	2.20	0.40
1:B:84:LYS:HD3	1:B:120:TRP:CD2	2.56	0.40
1:B:275:ARG:NH2	1:B:312:GLU:OE1	2.54	0.40
1:B:539:ILE:HA	1:B:539:ILE:HD12	1.70	0.40
1:A:1097:GLN:O	1:A:1098:PHE:HB2	2.21	0.40
1:B:102:ALA:O	1:B:106:VAL:HG23	2.21	0.40
1:B:378:LEU:HD23	1:B:378:LEU:HA	1.89	0.40
1:B:1091:LEU:HB3	1:B:1112:ILE:HD11	2.02	0.40
1:A:48:LEU:HD12	1:A:57:LYS:O	2.22	0.40
1:B:1092:LYS:O	1:B:1093:HIS:C	2.59	0.40
1:A:854:VAL:HG12	1:A:855:GLY:N	2.37	0.40
1:A:1026:LEU:HD11	1:A:1086:GLN:HB3	2.04	0.40
1:B:165:LEU:HD11	1:B:195:ILE:HD11	2.02	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	1013/1116 (91%)	994 (98%)	18 (2%)	1 (0%)	51 78
1	B	1020/1116 (91%)	1004 (98%)	16 (2%)	0	100 100
2	C	7/28 (25%)	6 (86%)	1 (14%)	0	100 100
2	E	8/28 (29%)	6 (75%)	2 (25%)	0	100 100
All	All	2048/2288 (90%)	2010 (98%)	37 (2%)	1 (0%)	100 100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	854	VAL

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	876/946 (93%)	818 (93%)	58 (7%)	16 38
1	B	885/946 (94%)	826 (93%)	59 (7%)	16 37
2	C	5/20 (25%)	3 (60%)	2 (40%)	0 0
2	E	6/20 (30%)	5 (83%)	1 (17%)	2 5
All	All	1772/1932 (92%)	1652 (93%)	120 (7%)	16 36

All (120) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	52	SER
1	A	59	LEU
1	A	65	ARG
1	A	67	GLN
1	A	70	LYS
1	A	115	LEU
1	A	118	LYS
1	A	119	LYS
1	A	159	LEU
1	A	170	GLN

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Mol	Chain	Res	Type
1	A	195	ILE
1	A	221	ASP
1	A	249	LEU
1	A	268	SER
1	A	284	SER
1	A	289	ARG
1	A	307	LEU
1	A	322	ASN
1	A	323	GLU
1	A	330	GLU
1	A	340	ARG
1	A	350	SER
1	A	383	VAL
1	A	413	VAL
1	A	431	ASP
1	A	435	ARG
1	A	456	ILE
1	A	458	LYS
1	A	462	LEU
1	A	483	LEU
1	A	538	GLN
1	A	539	ILE
1	A	587	ASP
1	A	658	VAL
1	A	667	GLU
1	A	692	LEU
1	A	725	ASN
1	A	741	VAL
1	A	806	SER
1	A	817	ILE
1	A	828	ASP
1	A	829	LEU
1	A	830	ASP
1	A	863	THR
1	A	902	GLN
1	A	904	LEU
1	A	956	VAL
1	A	959	GLU
1	A	968	GLU
1	A	976	ARG
1	A	1000	HIS
1	A	1005	LEU

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Mol	Chain	Res	Type
1	A	1030	GLN
1	A	1038	ASN
1	A	1059	GLU
1	A	1061	GLU
1	A	1069	GLU
1	A	1111	VAL
1	B	47	ILE
1	B	49	GLN
1	B	50	ASN
1	B	59	LEU
1	B	63	GLU
1	B	69	SER
1	B	76	ASP
1	B	85	GLN
1	B	86	SER
1	B	96	LYS
1	B	115	LEU
1	B	117	GLU
1	B	137	LYS
1	B	147	LEU
1	B	175	SER
1	B	197	GLU
1	B	211	SER
1	B	260	LEU
1	B	284	SER
1	B	291	SER
1	B	292	LYS
1	B	307	LEU
1	B	322	ASN
1	B	331	GLU
1	B	332	ASN
1	B	435	ARG
1	B	438	GLU
1	B	539	ILE
1	B	586	THR
1	B	587	ASP
1	B	616	THR
1	B	631	GLN
1	B	657	THR
1	B	686	GLU
1	B	689	GLU
1	B	693	LYS

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Mol	Chain	Res	Type
1	B	777	SER
1	B	789	MSE
1	B	802	ARG
1	B	829	LEU
1	B	853	LEU
1	B	860	VAL
1	B	863	THR
1	B	873	GLN
1	B	875	LYS
1	B	892	LEU
1	B	905	LEU
1	B	911	SER
1	B	943	TYR
1	B	970	THR
1	B	1005	LEU
1	B	1059	GLU
1	B	1072	LEU
1	B	1090	LEU
1	B	1097	GLN
1	B	1098	PHE
1	B	1099	ASN
1	B	1104	GLN
1	B	1111	VAL
2	C	14	LYS
2	C	17	ARG
2	E	17	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	156	ASN
1	B	322	ASN
1	B	332	ASN
1	B	430	GLN
1	B	1063	ASN

5.3.3 RNA

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

6.1 Protein, DNA and RNA chains

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, 95^{th} 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	1014/1116 (90%)	-0.02	32 (3%) 47 48	37, 63, 110, 140	0
1	B	1019/1116 (91%)	-0.03	21 (2%) 63 65	32, 63, 108, 130	0
2	C	11/28 (39%)	0.46	2 (18%) 1 1	47, 64, 88, 88	0
2	E	12/28 (42%)	0.57	1 (8%) 11 9	49, 64, 80, 85	0
All	All	2056/2288 (89%)	-0.02	56 (2%) 54 55	32, 63, 108, 140	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	41	LEU	5.2
1	B	45	ILE	5.0
1	A	52	SER	4.8
1	A	83	VAL	4.6
1	A	45	ILE	4.2
1	A	43	ALA	4.2
1	A	48	LEU	3.9
1	A	703	TYR	3.8
1	B	249	LEU	3.6
1	A	54	ASP	3.6
1	A	44	LEU	3.5
1	B	632	PHE	3.2
1	B	49	GLN	3.2
1	A	87	LEU	3.2
1	A	46	HIS	3.2
1	A	80	GLN	3.1
1	A	62	VAL	3.1
1	A	42	PRO	3.1
1	B	330	GLU	2.9
1	A	108	ALA	2.9
1	B	44	LEU	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	118	LYS	2.8
1	A	53	ASN	2.8
2	E	21	ALA	2.8
1	B	54	ASP	2.7
1	B	53	ASN	2.7
1	B	703	TYR	2.7
1	A	51	SER	2.7
1	B	631	GLN	2.6
1	A	56	ILE	2.5
1	A	244	LEU	2.5
1	B	55	GLY	2.4
1	A	65	ARG	2.4
1	A	200	GLU	2.4
1	B	41	LEU	2.3
1	A	59	LEU	2.3
1	B	57	LYS	2.3
2	C	21	ALA	2.3
1	A	630	TYR	2.3
1	A	195	ILE	2.3
1	B	250	THR	2.2
1	A	50	ASN	2.2
1	A	61	GLY	2.2
1	A	47	ILE	2.2
1	B	73	GLY	2.2
1	B	71	HIS	2.1
1	A	201	ILE	2.1
1	A	330	GLU	2.1
1	B	72	TRP	2.1
1	A	69	SER	2.1
1	B	153	PHE	2.1
1	A	71	HIS	2.0
2	C	25	ALA	2.0
1	B	196	GLU	2.0
1	B	331	GLU	2.0
1	B	956	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.