



Full wwPDB X-ray Structure Validation Report ⓘ

May 17, 2020 – 01:25 am BST

PDB ID : 1H6K
Title : nuclear Cap Binding Complex
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Deposited on : 2001-06-18
Resolution : 2.00 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 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 : 2.11
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) : 2.11

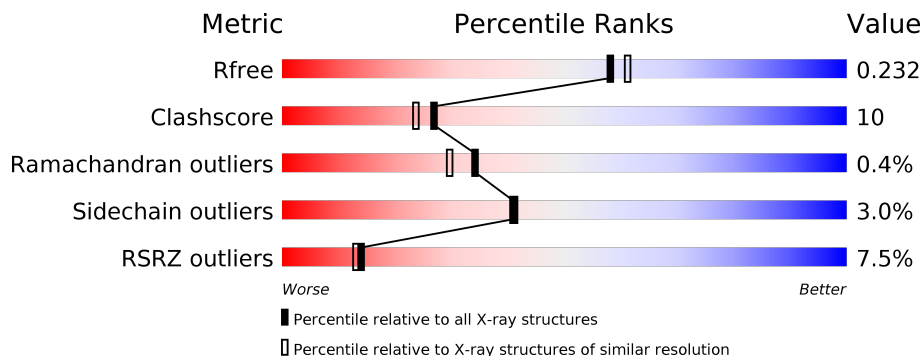
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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 on 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	757	
1	B	757	
1	C	757	
2	X	98	
2	Y	98	
2	Z	98	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 21515 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 CBP80.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	728	Total 5959	C 3842	N 1004	O 1075	S 38	0	0	0
1	B	729	Total 5968	C 3846	N 1004	O 1080	S 38	0	0	0
1	C	733	Total 5998	C 3866	N 1009	O 1085	S 38	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	479	SER	ALA	engineered mutation	UNP Q09161
B	479	SER	ALA	engineered mutation	UNP Q09161
C	479	SER	ALA	engineered mutation	UNP Q09161

- Molecule 2 is a protein called 20 KDA NUCLEAR CAP BINDING PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	X	77	Total 625	C 396	N 102	O 121	S 6	0	0	0
2	Y	76	Total 621	C 394	N 101	O 120	S 6	0	0	0
2	Z	78	Total 634	C 402	N 104	O 122	S 6	0	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	527	Total 527 O 527	0	0
3	B	535	Total 535 O 535	0	0

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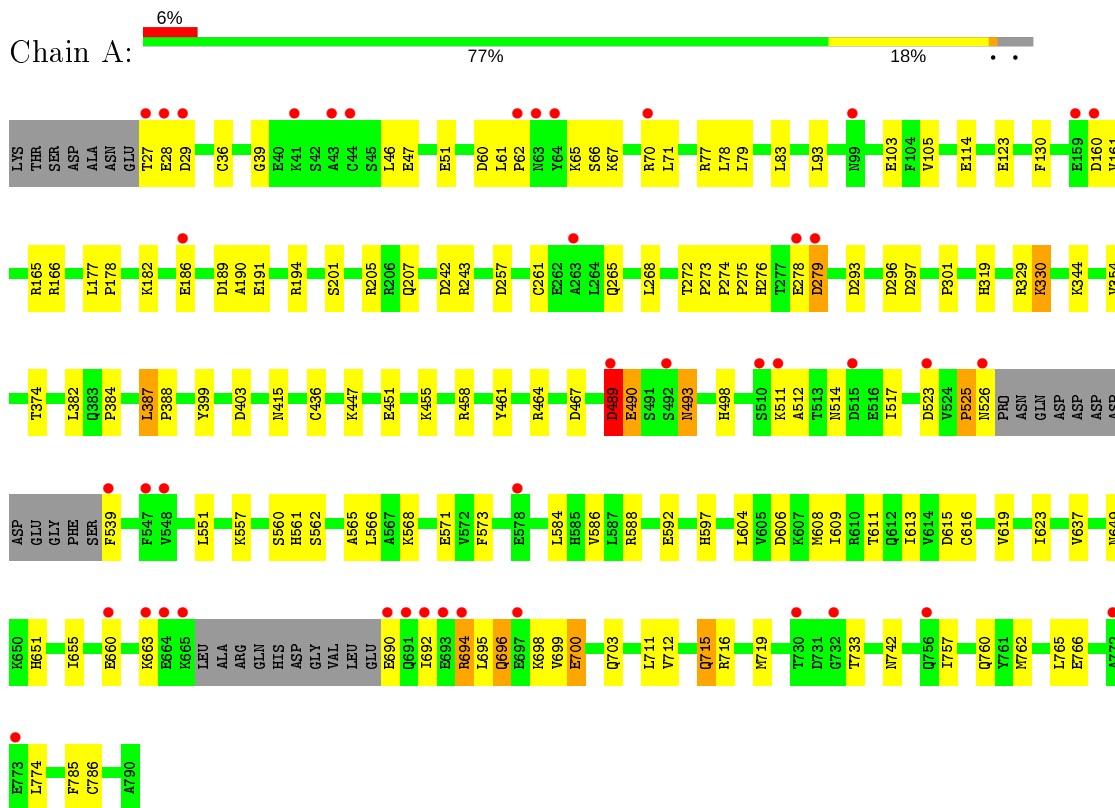
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	435	Total 435	O 435	0	0
3	X	79	Total 79	O 79	0	0
3	Y	63	Total 63	O 63	0	0
3	Z	71	Total 71	O 71	0	0

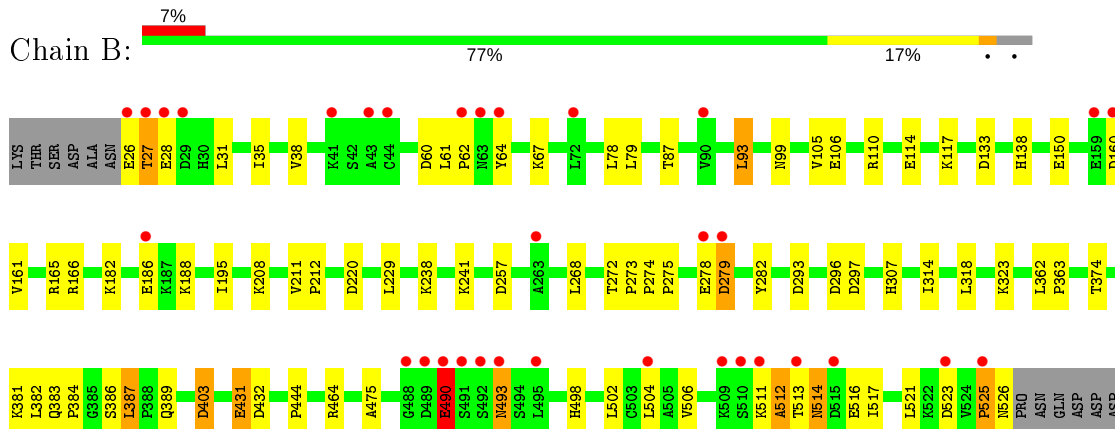
3 Residue-property plots

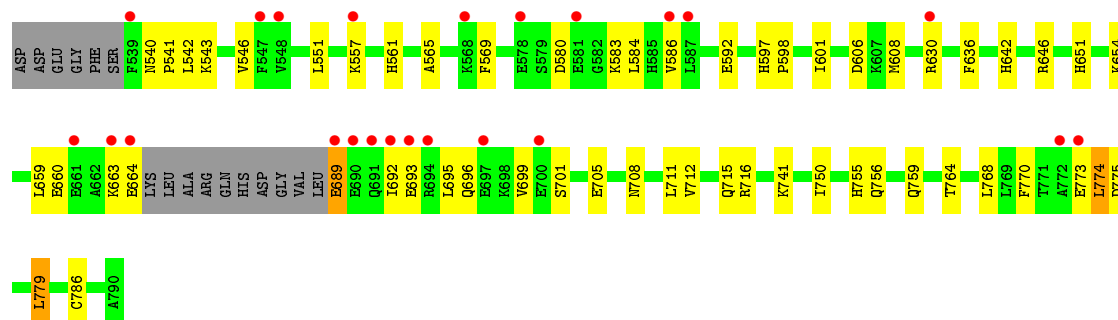
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are 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: CBP80



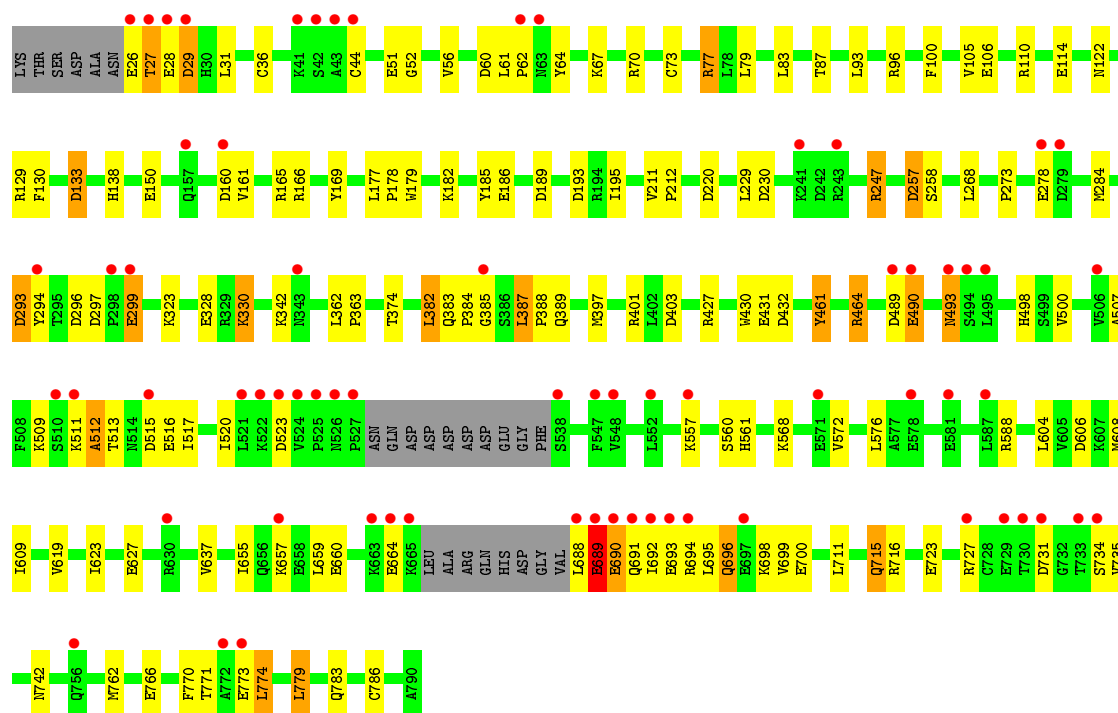
- Molecule 1: CBP80





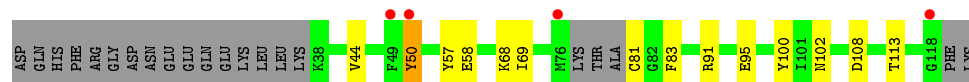
- Molecule 1: CBP80

Chain C: 9% 77% 17%



- Molecule 2: 20 KDA NUCLEAR CAP BINDING PROTEIN

Chain X: 4% 64% 13% 21%



- Molecule 2: 20 KDA NUCLEAR CAP BINDING PROTEIN

Chain Y: 5% 64% 12% 22%



- Molecule 2: 20 KDA NUCLEAR CAP BINDING PROTEIN

Chain Z: 6% 67% 11% 20%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	75.53Å 161.48Å 303.29Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.00 19.90 – 1.90	Depositor EDS
% Data completeness (in resolution range)	83.0 (20.00-2.00) 75.6 (19.90-1.90)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.37 (at 1.90Å)	Xtrriage
Refinement program	REFMAC 5.0	Depositor
R, R_{free}	0.203 , 0.234 0.202 , 0.232	Depositor DCC
R_{free} test set	2291 reflections (1.04%)	wwPDB-VP
Wilson B-factor (Å ²)	32.7	Xtrriage
Anisotropy	0.509	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 42.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	21515	wwPDB-VP
Average B, all atoms (Å ²)	40.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.03% of the height of the origin peak. No significant pseudotranslation is detected.*

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	0.40	0/6111	0.64	16/8291 (0.2%)
1	B	0.39	0/6120	0.64	15/8304 (0.2%)
1	C	0.38	0/6151	0.64	18/8346 (0.2%)
2	X	0.46	0/635	0.79	1/850 (0.1%)
2	Y	0.43	0/631	0.81	2/845 (0.2%)
2	Z	0.44	0/644	0.82	2/861 (0.2%)
All	All	0.40	0/20292	0.66	54/27497 (0.2%)

There are no bond length outliers.

All (54) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	403	ASP	CB-CG-OD2	6.39	124.05	118.30
1	A	293	ASP	CB-CG-OD2	6.38	124.05	118.30
2	Y	108	ASP	CB-CG-OD2	6.12	123.81	118.30
2	Z	114	ASP	CB-CG-OD2	6.12	123.81	118.30
1	B	293	ASP	CB-CG-OD2	6.07	123.77	118.30
2	X	108	ASP	CB-CG-OD2	5.93	123.64	118.30
1	C	133	ASP	CB-CG-OD2	5.92	123.62	118.30
1	C	403	ASP	CB-CG-OD2	5.91	123.62	118.30
1	C	60	ASP	CB-CG-OD2	5.89	123.60	118.30
1	C	606	ASP	CB-CG-OD2	5.80	123.52	118.30
1	B	606	ASP	CB-CG-OD2	5.69	123.42	118.30
1	A	606	ASP	CB-CG-OD2	5.68	123.42	118.30
1	B	523	ASP	CB-CG-OD2	5.67	123.41	118.30
2	Y	116	ASP	CB-CG-OD2	5.64	123.38	118.30
1	B	60	ASP	CB-CG-OD2	5.60	123.34	118.30
1	B	160	ASP	CB-CG-OD2	5.59	123.33	118.30
1	B	220	ASP	CB-CG-OD2	5.57	123.31	118.30
1	B	296	ASP	CB-CG-OD2	5.55	123.30	118.30
1	B	297	ASP	CB-CG-OD2	5.55	123.29	118.30
1	B	775	ASP	CB-CG-OD2	5.50	123.25	118.30
1	C	489	ASP	CB-CG-OD2	5.47	123.23	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	515	ASP	CB-CG-OD2	5.46	123.21	118.30
2	Z	116	ASP	CB-CG-OD2	5.43	123.19	118.30
1	C	296	ASP	CB-CG-OD2	5.40	123.16	118.30
1	C	230	ASP	CB-CG-OD2	5.38	123.14	118.30
1	A	523	ASP	CB-CG-OD2	5.37	123.14	118.30
1	C	297	ASP	CB-CG-OD2	5.36	123.12	118.30
1	A	403	ASP	CB-CG-OD2	5.35	123.11	118.30
1	C	257	ASP	CB-CG-OD2	5.34	123.10	118.30
1	C	160	ASP	CB-CG-OD2	5.33	123.10	118.30
1	A	296	ASP	CB-CG-OD2	5.32	123.09	118.30
1	A	257	ASP	CB-CG-OD2	5.30	123.07	118.30
1	C	220	ASP	CB-CG-OD2	5.26	123.03	118.30
1	A	60	ASP	CB-CG-OD2	5.24	123.02	118.30
1	B	432	ASP	CB-CG-OD2	5.22	123.00	118.30
1	C	293	ASP	CB-CG-OD2	5.20	122.98	118.30
1	A	297	ASP	CB-CG-OD2	5.18	122.97	118.30
1	C	523	ASP	CB-CG-OD2	5.17	122.96	118.30
1	A	489	ASP	CB-CG-OD2	5.14	122.92	118.30
1	C	29	ASP	CB-CG-OD2	5.12	122.91	118.30
1	B	279	ASP	CB-CG-OD2	5.12	122.91	118.30
1	A	160	ASP	CB-CG-OD2	5.11	122.90	118.30
1	C	731	ASP	CB-CG-OD2	5.09	122.89	118.30
1	C	193	ASP	CB-CG-OD2	5.09	122.88	118.30
1	A	467	ASP	CB-CG-OD2	5.08	122.88	118.30
1	A	615	ASP	CB-CG-OD2	5.05	122.85	118.30
1	B	580	ASP	CB-CG-OD2	5.04	122.84	118.30
1	A	29	ASP	CB-CG-OD2	5.03	122.83	118.30
1	B	387	LEU	CA-CB-CG	5.03	126.87	115.30
1	C	432	ASP	CB-CG-OD2	5.03	122.83	118.30
1	A	189	ASP	CB-CG-OD2	5.03	122.83	118.30
1	A	279	ASP	CB-CG-OD2	5.03	122.83	118.30
1	A	242	ASP	CB-CG-OD2	5.01	122.81	118.30
1	B	257	ASP	CB-CG-OD2	5.01	122.81	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	5959	0	5944	127	0
1	B	5968	0	5943	117	0
1	C	5998	0	5979	136	0
2	X	625	0	602	12	0
2	Y	621	0	599	9	0
2	Z	634	0	615	8	0
3	A	527	0	0	44	0
3	B	535	0	0	36	0
3	C	435	0	0	44	0
3	X	79	0	0	5	0
3	Y	63	0	0	4	0
3	Z	71	0	0	1	0
All	All	21515	0	19682	404	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 10.

All (404) 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:C:36:CYS:HB3	3:C:2002:HOH:O	1.31	1.25
1:B:689:GLU:HB3	3:B:2475:HOH:O	1.30	1.23
1:C:186:GLU:HB3	3:C:2102:HOH:O	1.43	1.19
1:C:773:GLU:HB2	3:C:2421:HOH:O	1.46	1.16
1:A:526:ASN:HA	3:A:2404:HOH:O	1.47	1.13
1:A:62:PRO:HG2	3:A:2014:HOH:O	1.50	1.09
1:B:186:GLU:HG2	3:B:2125:HOH:O	1.51	1.09
1:C:568:LYS:HE2	3:C:2328:HOH:O	1.52	1.08
1:C:294:TYR:HA	3:C:2175:HOH:O	1.54	1.08
1:A:649:ASN:HB3	3:A:2467:HOH:O	1.50	1.07
1:B:278:GLU:HA	3:B:2218:HOH:O	1.60	1.00
1:A:207:GLN:HG2	3:A:2128:HOH:O	1.60	1.00
1:A:186:GLU:HG2	3:A:2103:HOH:O	1.62	0.98
1:A:278:GLU:HG3	3:A:2193:HOH:O	1.64	0.97
1:C:742:ASN:HB2	3:C:2405:HOH:O	1.66	0.96
1:B:106:GLU:HG2	1:B:110:ARG:HH12	1.31	0.95
1:A:742:ASN:HB2	3:A:2495:HOH:O	1.69	0.93
1:A:592:GLU:HG2	3:A:2425:HOH:O	1.65	0.93
2:Y:76:MET:HG3	3:Y:2035:HOH:O	1.69	0.92

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:99:ASN:HB3	3:B:2035:HOH:O	1.66	0.92
1:A:511:LYS:CE	3:A:2400:HOH:O	2.19	0.90
1:A:51:GLU:HG2	3:A:2013:HOH:O	1.72	0.90
1:C:299:GLU:HG2	3:C:2179:HOH:O	1.70	0.89
1:B:490:GLU:HB2	3:B:2415:HOH:O	1.74	0.86
1:C:299:GLU:CG	3:C:2179:HOH:O	2.21	0.86
1:C:490:GLU:HB3	3:C:2312:HOH:O	1.76	0.86
1:B:241:LYS:HD3	3:B:2187:HOH:O	1.76	0.86
1:A:36:CYS:HB3	3:A:2003:HOH:O	1.74	0.85
1:B:182:LYS:O	1:B:186:GLU:HG3	1.77	0.85
1:C:723:GLU:HG2	3:C:2397:HOH:O	1.75	0.85
1:A:207:GLN:CG	3:A:2128:HOH:O	2.20	0.83
1:C:374:THR:HG21	2:Z:100:TYR:O	1.78	0.82
1:A:191:GLU:HG2	3:A:2116:HOH:O	1.80	0.81
1:A:207:GLN:CD	3:A:2128:HOH:O	2.17	0.81
1:A:586:VAL:HG11	1:A:608:MET:HE3	1.62	0.80
1:C:727:ARG:CZ	3:C:2397:HOH:O	2.29	0.80
1:C:28:GLU:HB3	1:C:67:LYS:HE2	1.63	0.80
1:A:511:LYS:HE2	3:A:2400:HOH:O	1.80	0.79
1:A:786:CYS:SG	3:A:2213:HOH:O	2.40	0.79
1:C:105:VAL:CG1	1:C:268:LEU:HD23	2.12	0.79
1:A:511:LYS:HE3	3:A:2400:HOH:O	1.82	0.77
1:C:61:LEU:N	1:C:62:PRO:HD2	2.00	0.77
1:A:61:LEU:N	1:A:62:PRO:HD2	2.00	0.76
1:C:105:VAL:CG1	1:C:268:LEU:CD2	2.64	0.75
1:A:561:HIS:CE1	3:A:2416:HOH:O	2.39	0.75
1:C:513:THR:HG22	1:C:516:GLU:HG3	1.70	0.74
1:A:757:ILE:HD11	3:A:2467:HOH:O	1.88	0.73
1:C:734:SER:HB2	3:C:2401:HOH:O	1.88	0.73
1:A:588:ARG:HD2	3:A:2449:HOH:O	1.89	0.73
1:B:431:GLU:CD	1:B:431:GLU:H	1.93	0.73
1:C:110:ARG:HD2	3:C:2044:HOH:O	1.89	0.72
1:A:561:HIS:CE1	3:A:2413:HOH:O	2.42	0.72
1:B:61:LEU:N	1:B:62:PRO:HD2	2.04	0.72
1:B:278:GLU:CA	3:B:2218:HOH:O	2.25	0.72
1:A:696:GLN:O	1:A:700:GLU:HG2	1.90	0.71
1:B:651:HIS:HA	1:B:654:LYS:HE3	1.73	0.71
1:A:51:GLU:CG	3:A:2013:HOH:O	2.36	0.71
1:B:186:GLU:HB3	3:B:2129:HOH:O	1.89	0.71
1:C:278:GLU:HG3	3:C:2161:HOH:O	1.92	0.70
2:Z:81:CYS:N	3:Z:2045:HOH:O	2.22	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:105:VAL:HG11	1:C:268:LEU:HD23	1.75	0.69
1:B:741:LYS:NZ	3:B:2501:HOH:O	2.25	0.69
1:A:655:ILE:HG22	1:A:699:VAL:HG12	1.74	0.69
1:C:689:GLU:HA	1:C:692:ILE:HG22	1.75	0.69
1:A:557:LYS:HD3	1:A:561:HIS:CD2	2.28	0.68
1:A:586:VAL:HG11	1:A:608:MET:CE	2.24	0.68
1:C:427:ARG:HG3	1:C:427:ARG:HH11	1.58	0.68
1:B:692:ILE:HD13	3:B:2473:HOH:O	1.94	0.68
1:C:26:GLU:HG3	1:C:27:THR:H	1.58	0.68
1:C:385:GLY:O	1:C:389:GLN:NE2	2.27	0.68
1:A:766:GLU:CD	3:A:2509:HOH:O	2.32	0.67
1:A:243:ARG:NE	3:A:2163:HOH:O	2.27	0.67
1:B:278:GLU:N	3:B:2218:HOH:O	2.26	0.67
1:A:243:ARG:CZ	3:A:2163:HOH:O	2.42	0.67
1:C:427:ARG:CG	1:C:427:ARG:HH11	2.07	0.67
1:B:764:THR:HG23	1:B:768:LEU:HD12	1.76	0.67
1:B:106:GLU:HG2	1:B:110:ARG:NH1	2.05	0.67
1:C:93:LEU:HD23	1:C:100:PHE:CE2	2.29	0.66
1:A:568:LYS:NZ	3:A:2419:HOH:O	2.21	0.66
1:C:284:MET:HE1	1:C:363:PRO:HG2	1.78	0.65
1:B:708:ASN:HD22	1:B:711:LEU:HD22	1.62	0.65
1:C:786:CYS:SG	3:C:2418:HOH:O	2.29	0.65
1:C:105:VAL:HG13	1:C:268:LEU:CD2	2.26	0.65
1:C:604:LEU:O	1:C:608:MET:HG3	1.97	0.65
2:Y:117:ALA:C	3:Y:2063:HOH:O	2.35	0.65
1:B:161:VAL:HG23	1:B:166:ARG:HE	1.62	0.64
1:A:105:VAL:HG11	1:A:268:LEU:HD23	1.80	0.63
1:B:166:ARG:CZ	3:B:2105:HOH:O	2.46	0.63
1:C:511:LYS:O	1:C:512:ALA:HB2	1.99	0.62
2:Y:57:TYR:CD2	2:Y:69:ILE:HD12	2.33	0.62
1:B:278:GLU:HG3	3:B:2219:HOH:O	1.99	0.62
1:A:261:CYS:HB3	3:A:2184:HOH:O	1.97	0.62
1:B:186:GLU:CG	3:B:2125:HOH:O	2.20	0.62
1:A:330:LYS:HD2	3:X:2032:HOH:O	1.99	0.61
1:B:663:LYS:HE2	1:B:692:ILE:HD11	1.82	0.61
1:B:105:VAL:HG13	1:B:268:LEU:CD2	2.29	0.61
1:A:757:ILE:O	1:A:760:GLN:HG2	2.00	0.61
1:B:381:LYS:HE2	3:B:2324:HOH:O	1.98	0.61
1:C:138:HIS:HB2	3:C:2064:HOH:O	2.00	0.61
1:A:28:GLU:HG2	1:A:67:LYS:HG2	1.83	0.61
1:C:284:MET:CE	1:C:363:PRO:HG2	2.30	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:660:GLU:O	1:B:664:GLU:HG3	2.00	0.60
1:B:78:LEU:C	1:B:79:LEU:HD12	2.21	0.60
1:C:700:GLU:CG	3:C:2384:HOH:O	2.50	0.60
1:C:166:ARG:NE	3:C:2086:HOH:O	2.35	0.59
1:A:551:LEU:HD11	1:A:565:ALA:HB1	1.84	0.59
1:B:374:THR:HG21	2:Y:100:TYR:O	2.01	0.59
1:A:105:VAL:CG1	1:A:268:LEU:CD2	2.80	0.59
1:C:660:GLU:O	1:C:664:GLU:HG3	2.01	0.59
1:B:105:VAL:CG1	1:B:268:LEU:HD23	2.33	0.59
1:C:161:VAL:HG23	1:C:166:ARG:HE	1.67	0.59
1:A:525:PRO:O	1:A:526:ASN:HB2	2.03	0.59
1:B:583:LYS:NZ	3:B:2425:HOH:O	2.35	0.59
1:B:161:VAL:CG2	1:B:166:ARG:HE	2.16	0.59
1:A:330:LYS:H	1:A:330:LYS:HD3	1.68	0.58
1:A:699:VAL:HG23	1:A:703:GLN:NE2	2.17	0.58
1:B:592:GLU:HG2	3:B:2428:HOH:O	2.03	0.58
1:A:655:ILE:HD13	1:A:698:LYS:HE2	1.84	0.58
1:C:431:GLU:H	1:C:431:GLU:CD	2.06	0.58
1:B:386:SER:HA	1:B:389:GLN:HE22	1.67	0.58
1:C:689:GLU:C	1:C:691:GLN:H	2.07	0.58
1:B:150:GLU:HG3	1:B:195:ILE:HD11	1.84	0.58
1:B:586:VAL:HG11	1:B:608:MET:HE3	1.84	0.58
1:A:660:GLU:O	1:A:663:LYS:HB3	2.04	0.57
1:B:138:HIS:HB2	3:B:2073:HOH:O	2.04	0.57
1:C:464:ARG:HD3	3:C:2299:HOH:O	2.04	0.57
1:B:166:ARG:NH1	3:B:2105:HOH:O	2.38	0.57
1:C:330:LYS:NZ	3:C:2205:HOH:O	2.38	0.57
1:C:659:LEU:HD12	1:C:692:ILE:HD12	1.86	0.57
1:C:105:VAL:HG13	1:C:268:LEU:HD21	1.85	0.57
1:B:646:ARG:HD3	3:B:2466:HOH:O	2.05	0.56
1:B:383:GLN:OE1	3:B:2327:HOH:O	2.18	0.56
2:X:50:TYR:N	2:X:50:TYR:CD2	2.73	0.56
1:A:374:THR:HG21	2:X:100:TYR:O	2.05	0.56
2:X:81:CYS:N	3:X:2050:HOH:O	2.38	0.56
1:C:73:CYS:O	1:C:77:ARG:HG2	2.05	0.56
2:Z:50:TYR:CD2	2:Z:50:TYR:N	2.72	0.56
1:C:770:PHE:HA	1:C:774:LEU:HD12	1.87	0.56
1:A:651:HIS:CE1	1:A:655:ILE:HD11	2.41	0.55
2:Z:57:TYR:CD2	2:Z:69:ILE:HD12	2.42	0.55
1:A:586:VAL:CG1	1:A:608:MET:CE	2.84	0.55
1:C:211:VAL:HB	1:C:212:PRO:HD3	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:689:GLU:O	1:C:691:GLN:N	2.40	0.55
1:A:611:THR:HG21	3:A:2440:HOH:O	2.07	0.54
1:A:265:GLN:NE2	3:A:2187:HOH:O	2.40	0.54
1:A:539:PHE:N	3:A:2405:HOH:O	2.41	0.54
1:B:557:LYS:HB3	1:B:561:HIS:CD2	2.42	0.54
1:C:182:LYS:O	1:C:186:GLU:HG3	2.05	0.54
2:X:81:CYS:HA	3:X:2050:HOH:O	2.07	0.54
1:A:78:LEU:C	1:A:79:LEU:HD12	2.27	0.54
2:X:81:CYS:CA	3:X:2050:HOH:O	2.55	0.54
2:Y:74:ASP:O	3:Y:2034:HOH:O	2.18	0.54
1:A:182:LYS:O	1:A:186:GLU:HG3	2.08	0.54
1:A:712:VAL:O	1:A:716:ARG:HG2	2.07	0.54
1:A:609:ILE:HD11	1:A:619:VAL:HG21	1.90	0.54
1:B:27:THR:HG21	1:B:64:TYR:OH	2.07	0.54
1:A:243:ARG:HD3	3:A:2163:HOH:O	2.07	0.54
1:A:616:CYS:HB3	3:A:2462:HOH:O	2.07	0.54
1:B:165:ARG:HD2	1:B:282:TYR:OH	2.08	0.54
1:B:708:ASN:O	1:B:712:VAL:HG23	2.07	0.54
1:B:659:LEU:HD13	1:B:695:LEU:HB3	1.90	0.54
1:C:727:ARG:NH2	3:C:2397:HOH:O	2.39	0.54
1:C:328:GLU:HB3	3:C:2205:HOH:O	2.08	0.53
1:B:490:GLU:O	1:B:490:GLU:HG2	2.07	0.53
1:C:61:LEU:N	1:C:62:PRO:CD	2.71	0.53
1:A:786:CYS:CB	3:A:2213:HOH:O	2.56	0.53
2:Y:117:ALA:O	3:Y:2063:HOH:O	2.18	0.53
1:C:110:ARG:HG3	3:C:2043:HOH:O	2.09	0.53
1:C:328:GLU:HG2	3:C:2202:HOH:O	2.08	0.53
1:A:715:GLN:NE2	3:A:2485:HOH:O	2.42	0.53
1:B:557:LYS:HD3	1:B:561:HIS:NE2	2.24	0.53
1:C:689:GLU:C	1:C:691:GLN:N	2.62	0.53
1:A:514:ASN:HD22	1:A:514:ASN:N	2.06	0.53
1:A:586:VAL:CG1	1:A:608:MET:HE3	2.36	0.52
1:C:27:THR:HG21	1:C:64:TYR:OH	2.08	0.52
1:C:430:TRP:NE1	3:C:2275:HOH:O	2.24	0.52
1:A:161:VAL:CG2	1:A:166:ARG:HE	2.21	0.52
1:A:514:ASN:OD1	1:A:571:GLU:HB2	2.10	0.52
1:B:773:GLU:HB2	3:B:2521:HOH:O	2.07	0.52
1:A:61:LEU:O	1:A:65:LYS:HB2	2.09	0.52
1:C:185:TYR:O	1:C:189:ASP:HB3	2.09	0.52
1:C:762:MET:O	1:C:766:GLU:HG3	2.10	0.52
1:B:663:LYS:HA	3:B:2473:HOH:O	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:716:ARG:HH12	1:A:719:MET:CE	2.23	0.52
1:A:105:VAL:HG13	1:A:268:LEU:CD2	2.39	0.52
1:A:105:VAL:CG1	1:A:268:LEU:HD23	2.39	0.52
1:A:568:LYS:CE	3:A:2419:HOH:O	2.58	0.52
1:C:493:ASN:HA	1:C:498:HIS:CG	2.45	0.52
1:A:161:VAL:HG23	1:A:166:ARG:HE	1.73	0.51
1:B:314:ILE:O	1:B:318:LEU:HG	2.11	0.51
1:C:67:LYS:HD2	1:C:70:ARG:NH1	2.26	0.51
1:B:642:HIS:CE1	1:B:750:ILE:HD13	2.45	0.51
1:B:586:VAL:HG11	1:B:608:MET:CE	2.41	0.51
1:B:598:PRO:HA	1:B:601:ILE:HD12	1.91	0.51
1:B:381:LYS:HG3	3:B:2322:HOH:O	2.09	0.51
2:Z:50:TYR:HD2	2:Z:50:TYR:H	1.56	0.51
1:A:243:ARG:CD	3:A:2163:HOH:O	2.58	0.51
1:A:301:PRO:HG3	1:A:344:LYS:HG2	1.92	0.51
1:B:511:LYS:O	1:B:512:ALA:HB2	2.11	0.51
1:C:700:GLU:CD	3:C:2384:HOH:O	2.48	0.51
1:A:651:HIS:NE2	1:A:655:ILE:HD11	2.26	0.51
1:B:764:THR:CG2	1:B:768:LEU:HD12	2.41	0.51
1:C:427:ARG:CG	1:C:427:ARG:NH1	2.71	0.51
1:C:387:LEU:HB3	1:C:388:PRO:HD3	1.92	0.50
1:A:382:LEU:C	1:A:384:PRO:HD3	2.31	0.50
1:A:489:ASP:O	1:A:490:GLU:HB2	2.12	0.50
1:B:78:LEU:O	1:B:79:LEU:HD12	2.12	0.50
1:B:362:LEU:HA	1:B:363:PRO:C	2.32	0.50
1:B:513:THR:HG23	1:B:516:GLU:H	1.75	0.50
1:B:659:LEU:HD22	1:B:699:VAL:HG21	1.92	0.50
1:C:257:ASP:CB	3:C:2150:HOH:O	2.59	0.50
2:X:91:ARG:O	2:X:95:GLU:HG3	2.12	0.50
1:A:191:GLU:CG	3:A:2116:HOH:O	2.50	0.50
1:B:701:SER:O	1:B:705:GLU:HG3	2.11	0.50
1:A:79:LEU:N	1:A:79:LEU:HD12	2.27	0.49
1:B:513:THR:HG22	1:B:516:GLU:HG3	1.93	0.49
1:B:770:PHE:HA	1:B:774:LEU:HD12	1.94	0.49
1:C:609:ILE:HD11	1:C:619:VAL:HG21	1.93	0.49
1:B:161:VAL:HG22	1:B:166:ARG:HH21	1.77	0.49
1:C:166:ARG:CZ	3:C:2086:HOH:O	2.59	0.49
1:B:208:LYS:NZ	3:B:2148:HOH:O	2.20	0.49
1:A:699:VAL:HG23	1:A:703:GLN:HE21	1.76	0.49
1:A:557:LYS:HD3	1:A:561:HIS:HD2	1.76	0.49
1:B:87:THR:HG21	1:B:133:ASP:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:122:ASN:ND2	3:C:2048:HOH:O	2.46	0.49
1:A:461:TYR:HH	2:X:50:TYR:HD1	1.61	0.49
1:A:490:GLU:HB3	3:A:2399:HOH:O	2.13	0.49
1:C:735:VAL:N	3:C:2401:HOH:O	2.45	0.49
1:B:150:GLU:CG	1:B:195:ILE:HD11	2.43	0.49
1:B:28:GLU:HB3	1:B:67:LYS:HG2	1.94	0.49
1:B:517:ILE:HD13	1:B:569:PHE:HE2	1.78	0.48
1:C:397:MET:HE3	1:C:401:ARG:NH2	2.27	0.48
1:A:592:GLU:OE2	3:A:2428:HOH:O	2.19	0.48
1:A:103:GLU:OE1	3:A:2034:HOH:O	2.19	0.48
1:C:572:VAL:O	1:C:576:LEU:HB2	2.13	0.48
1:A:562:SER:O	1:A:566:LEU:HG	2.13	0.48
2:X:57:TYR:CD2	2:X:69:ILE:HD12	2.48	0.48
1:C:387:LEU:N	1:C:388:PRO:CD	2.77	0.48
1:C:588:ARG:HD3	1:C:627:GLU:OE2	2.15	0.47
1:C:87:THR:HG21	1:C:133:ASP:HB3	1.96	0.47
1:B:659:LEU:HA	1:B:695:LEU:HD13	1.96	0.47
1:B:755:HIS:O	1:B:759:GLN:HG3	2.15	0.47
1:C:52:GLY:O	1:C:56:VAL:HG23	2.14	0.47
1:C:727:ARG:NH1	3:C:2398:HOH:O	2.46	0.47
1:B:323:LYS:NZ	3:B:2277:HOH:O	2.39	0.47
1:C:51:GLU:OE2	1:C:96:ARG:NH2	2.41	0.47
1:A:66:SER:HB3	3:A:2018:HOH:O	2.14	0.47
1:C:382:LEU:C	1:C:384:PRO:HD3	2.35	0.47
1:B:514:ASN:HD22	1:B:514:ASN:N	2.12	0.47
1:B:659:LEU:HD11	1:B:696:GLN:HG3	1.96	0.47
1:B:786:CYS:SG	3:B:2518:HOH:O	2.61	0.47
1:B:161:VAL:H	1:B:166:ARG:HH21	1.63	0.47
1:B:381:LYS:NZ	3:B:2324:HOH:O	2.48	0.47
1:C:655:ILE:HD13	1:C:698:LYS:HG2	1.96	0.47
1:A:329:ARG:HG2	1:A:330:LYS:HD3	1.97	0.47
1:B:663:LYS:HG2	3:B:2473:HOH:O	2.15	0.47
1:B:105:VAL:CG1	1:B:268:LEU:CD2	2.92	0.46
1:B:26:GLU:HG3	1:B:27:THR:H	1.80	0.46
1:C:688:LEU:HD12	1:C:688:LEU:O	2.14	0.46
1:C:323:LYS:HD3	3:C:2055:HOH:O	2.15	0.46
1:C:660:GLU:HG2	1:C:664:GLU:OE1	2.15	0.46
1:C:70:ARG:HD2	3:C:2017:HOH:O	2.14	0.46
1:A:319:HIS:CE1	1:A:354:VAL:HG13	2.50	0.46
1:B:551:LEU:HD11	1:B:565:ALA:HB1	1.98	0.46
1:C:557:LYS:HD3	1:C:561:HIS:CD2	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:690:GLU:O	1:C:694:ARG:HG3	2.16	0.46
2:Y:49:PHE:HD2	2:Y:50:TYR:CD1	2.34	0.46
1:C:461:TYR:CD2	1:C:464:ARG:HB2	2.50	0.46
1:C:490:GLU:O	1:C:490:GLU:HG2	2.15	0.46
1:A:83:LEU:HD11	1:A:130:PHE:HA	1.98	0.46
1:A:207:GLN:OE1	3:A:2128:HOH:O	2.20	0.46
1:C:727:ARG:NH2	3:C:2399:HOH:O	2.48	0.46
1:B:504:LEU:HD11	1:B:521:LEU:HD21	1.97	0.46
1:C:517:ILE:HD12	1:C:517:ILE:H	1.81	0.46
1:A:694:ARG:CZ	1:A:694:ARG:HB3	2.46	0.45
1:B:403:ASP:HA	1:B:444:PRO:HG2	1.99	0.45
1:C:659:LEU:HD11	1:C:696:GLN:HG3	1.97	0.45
1:C:513:THR:HG23	1:C:516:GLU:H	1.81	0.45
1:A:623:ILE:HD12	1:A:637:VAL:HG13	1.98	0.45
1:B:381:LYS:CE	3:B:2324:HOH:O	2.61	0.45
1:B:493:ASN:HA	1:B:498:HIS:CG	2.52	0.45
1:C:500:VAL:HG13	1:C:520:ILE:HG22	1.99	0.45
1:A:586:VAL:CG1	1:A:608:MET:HE1	2.47	0.45
1:B:502:LEU:O	1:B:506:VAL:HG23	2.15	0.45
1:C:27:THR:HG21	1:C:64:TYR:CZ	2.52	0.45
1:C:161:VAL:HB	1:C:165:ARG:HD3	1.98	0.45
1:C:299:GLU:HG3	3:C:2179:HOH:O	1.99	0.45
1:A:61:LEU:N	1:A:62:PRO:CD	2.73	0.45
1:C:383:GLN:N	1:C:384:PRO:HD3	2.31	0.45
1:C:493:ASN:HD22	1:C:493:ASN:N	2.15	0.45
1:C:83:LEU:HD11	1:C:130:PHE:HA	1.99	0.45
1:B:493:ASN:N	1:B:493:ASN:HD22	2.13	0.45
1:C:716:ARG:HH11	1:C:716:ARG:HA	1.82	0.45
1:A:490:GLU:HG2	1:A:490:GLU:O	2.17	0.44
1:B:93:LEU:HD12	1:B:93:LEU:HA	1.75	0.44
1:C:169:TYR:CE1	1:C:273:PRO:HB3	2.52	0.44
1:B:630:ARG:HG2	1:B:630:ARG:HH11	1.83	0.44
1:C:257:ASP:HB3	3:C:2150:HOH:O	2.17	0.44
1:A:415:ASN:OD1	1:A:455:LYS:HE3	2.18	0.44
1:A:690:GLU:O	1:A:690:GLU:HG2	2.17	0.44
1:C:715:GLN:HB3	1:C:715:GLN:HE21	1.60	0.44
1:A:47:GLU:CD	1:A:47:GLU:H	2.19	0.44
1:B:61:LEU:N	1:B:62:PRO:CD	2.77	0.44
1:B:630:ARG:NH1	3:B:2457:HOH:O	2.51	0.44
1:C:694:ARG:HG3	1:C:694:ARG:HH11	1.82	0.44
1:A:493:ASN:C	1:A:493:ASN:HD22	2.20	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:330:LYS:HD3	1:A:330:LYS:N	2.31	0.44
1:B:779:LEU:HA	1:B:779:LEU:HD22	1.65	0.44
1:A:77:ARG:HD2	1:A:123:GLU:OE1	2.17	0.44
1:A:177:LEU:N	1:A:178:PRO:CD	2.81	0.43
1:C:106:GLU:HG2	1:C:110:ARG:NH1	2.33	0.43
2:X:102:ASN:HB2	2:X:113:THR:OG1	2.18	0.43
1:A:733:THR:HG22	3:A:2492:HOH:O	2.17	0.43
1:B:642:HIS:HE1	1:B:750:ILE:HD13	1.83	0.43
1:C:490:GLU:CB	3:C:2312:HOH:O	2.51	0.43
2:Z:44:VAL:O	2:Z:83:PHE:HA	2.17	0.43
1:B:26:GLU:HG3	1:B:27:THR:N	2.34	0.43
1:B:382:LEU:C	1:B:384:PRO:HD3	2.38	0.43
1:B:773:GLU:CB	3:B:2521:HOH:O	2.66	0.43
1:C:129:ARG:HD3	1:C:179:TRP:CZ3	2.54	0.43
1:A:592:GLU:CD	3:A:2428:HOH:O	2.57	0.43
1:B:105:VAL:HG11	1:B:268:LEU:HD23	1.99	0.43
1:C:294:TYR:CA	3:C:2175:HOH:O	2.35	0.43
1:C:511:LYS:O	1:C:512:ALA:CB	2.64	0.43
1:A:182:LYS:O	1:A:186:GLU:CG	2.67	0.43
1:B:475:ALA:HB3	3:B:2405:HOH:O	2.19	0.43
1:B:493:ASN:ND2	1:B:493:ASN:N	2.67	0.43
1:A:201:SER:O	1:A:205:ARG:HG2	2.19	0.43
1:A:447:LYS:NZ	1:A:451:GLU:OE2	2.52	0.43
1:A:715:GLN:NE2	1:A:716:ARG:HD2	2.34	0.43
1:C:507:ALA:O	1:C:511:LYS:O	2.37	0.43
1:A:458:ARG:HD3	2:X:58:GLU:OE1	2.19	0.42
1:A:493:ASN:HA	1:A:498:HIS:CG	2.54	0.42
1:C:342:LYS:NZ	3:C:2215:HOH:O	2.51	0.42
1:C:657:LYS:HD2	3:C:2376:HOH:O	2.18	0.42
1:B:117:LYS:HE3	3:B:2049:HOH:O	2.19	0.42
1:B:540:ASN:ND2	1:B:543:LYS:HG3	2.34	0.42
1:A:762:MET:HE2	1:A:765:LEU:HD12	2.02	0.42
1:A:651:HIS:CE1	1:A:655:ILE:CD1	3.02	0.42
1:C:688:LEU:HA	3:C:2381:HOH:O	2.20	0.42
1:C:734:SER:CB	3:C:2401:HOH:O	2.55	0.42
1:A:274:PRO:HA	1:A:275:PRO:HD3	1.90	0.42
1:B:386:SER:HA	1:B:389:GLN:NE2	2.33	0.42
1:C:106:GLU:HG2	3:C:2043:HOH:O	2.18	0.42
1:C:93:LEU:HD12	1:C:93:LEU:HA	1.91	0.42
1:A:330:LYS:H	1:A:330:LYS:CD	2.31	0.42
1:C:293:ASP:OD2	1:C:293:ASP:C	2.57	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:X:44:VAL:O	2:X:83:PHE:HA	2.20	0.42
2:Y:41:THR:OG1	2:Y:87:GLU:HG3	2.20	0.42
1:A:190:ALA:O	1:A:194:ARG:HG3	2.20	0.42
1:A:387:LEU:N	1:A:388:PRO:CD	2.83	0.42
1:B:238:LYS:HD3	1:B:307:HIS:O	2.20	0.42
2:Z:50:TYR:CE1	2:Z:107:ASP:OD2	2.73	0.42
1:A:39:GLY:HA2	1:A:46:LEU:HD13	2.02	0.42
1:B:663:LYS:HG2	1:B:692:ILE:HD13	2.01	0.42
1:C:247:ARG:O	1:C:342:LYS:HB3	2.20	0.42
1:C:493:ASN:ND2	1:C:493:ASN:N	2.68	0.42
1:C:509:LYS:C	1:C:511:LYS:H	2.23	0.42
1:A:165:ARG:HD2	1:A:276:HIS:HB2	2.01	0.41
1:C:229:LEU:HA	1:C:229:LEU:HD23	1.91	0.41
1:B:664:GLU:O	3:B:2474:HOH:O	2.22	0.41
1:C:67:LYS:CD	1:C:70:ARG:NH1	2.83	0.41
1:A:71:LEU:HD23	1:A:71:LEU:HA	1.88	0.41
1:B:540:ASN:HA	1:B:541:PRO:HD2	1.85	0.41
1:C:397:MET:CE	1:C:401:ARG:NH2	2.83	0.41
1:C:516:GLU:O	1:C:520:ILE:HG13	2.20	0.41
1:C:696:GLN:HB2	1:C:696:GLN:HE21	1.59	0.41
2:X:68:LYS:CD	3:X:2038:HOH:O	2.68	0.41
1:A:272:THR:HA	1:A:273:PRO:HD2	1.86	0.41
1:B:229:LEU:HA	1:B:229:LEU:HD23	1.82	0.41
1:C:362:LEU:HA	1:C:363:PRO:C	2.40	0.41
1:C:557:LYS:HD3	1:C:561:HIS:NE2	2.35	0.41
2:Z:102:ASN:HB2	2:Z:113:THR:OG1	2.20	0.41
1:A:698:LYS:HE2	1:A:698:LYS:HB3	1.83	0.41
1:B:542:LEU:O	1:B:546:VAL:HG22	2.19	0.41
1:B:716:ARG:HH11	1:B:716:ARG:HA	1.85	0.41
1:C:330:LYS:NZ	1:C:330:LYS:H	2.19	0.41
1:C:695:LEU:O	1:C:699:VAL:HG23	2.21	0.41
1:A:762:MET:HE1	1:A:785:PHE:CE2	2.56	0.41
1:B:272:THR:HA	1:B:273:PRO:HD2	1.87	0.41
1:A:715:GLN:HE22	1:A:716:ARG:HD2	1.85	0.41
1:B:188:LYS:NZ	3:B:2131:HOH:O	2.49	0.41
1:B:35:ILE:O	1:B:38:VAL:HG12	2.21	0.41
1:C:150:GLU:HG3	1:C:195:ILE:HD11	2.03	0.41
1:C:779:LEU:HD12	1:C:783:GLN:NE2	2.35	0.41
1:B:598:PRO:HB3	1:B:636:PHE:CG	2.55	0.41
1:B:211:VAL:HB	1:B:212:PRO:HD3	2.03	0.41
1:B:274:PRO:HA	1:B:275:PRO:HD3	1.87	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Y:49:PHE:HD2	2:Y:50:TYR:CE1	2.39	0.41
1:A:399:TYR:OH	1:A:436:CYS:HB3	2.21	0.40
1:A:573:PHE:HB3	1:A:613:ILE:HG23	2.03	0.40
1:A:586:VAL:HG12	1:A:608:MET:HE1	2.03	0.40
1:A:695:LEU:O	1:A:699:VAL:HG13	2.20	0.40
1:B:774:LEU:HB3	1:B:779:LEU:HD23	2.03	0.40
1:C:771:THR:O	1:C:774:LEU:HB2	2.22	0.40
1:A:694:ARG:HH11	1:A:694:ARG:HG3	1.85	0.40
1:C:690:GLU:O	1:C:690:GLU:HG2	2.21	0.40
1:A:604:LEU:HA	1:A:604:LEU:HD23	1.86	0.40
1:C:734:SER:CA	3:C:2401:HOH:O	2.69	0.40
1:B:525:PRO:O	1:B:526:ASN:HB2	2.22	0.40
1:A:512:ALA:HB3	1:A:517:ILE:HD11	2.04	0.40
1:C:177:LEU:N	1:C:178:PRO:CD	2.85	0.40
1:C:623:ILE:HD12	1:C:637:VAL:HG13	2.04	0.40
1:C:67:LYS:CD	1:C:70:ARG:HH12	2.35	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	722/757 (95%)	704 (98%)	15 (2%)	3 (0%)	34	30
1	B	723/757 (96%)	702 (97%)	18 (2%)	3 (0%)	34	30
1	C	727/757 (96%)	709 (98%)	14 (2%)	4 (1%)	25	19
2	X	73/98 (74%)	72 (99%)	1 (1%)	0	100	100
2	Y	72/98 (74%)	72 (100%)	0	0	100	100
2	Z	74/98 (76%)	74 (100%)	0	0	100	100
All	All	2391/2565 (93%)	2333 (98%)	48 (2%)	10 (0%)	34	30

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	490	GLU
1	B	490	GLU
1	B	525	PRO
1	C	490	GLU
1	C	512	ALA
1	C	690	GLU
1	A	525	PRO
1	B	512	ALA
1	C	689	GLU
1	A	489	ASP

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	669/694 (96%)	650 (97%)	19 (3%)	43	44
1	B	670/694 (96%)	651 (97%)	19 (3%)	43	44
1	C	674/694 (97%)	650 (96%)	24 (4%)	35	34
2	X	67/86 (78%)	66 (98%)	1 (2%)	65	69
2	Y	67/86 (78%)	65 (97%)	2 (3%)	41	41
2	Z	68/86 (79%)	67 (98%)	1 (2%)	65	69
All	All	2215/2340 (95%)	2149 (97%)	66 (3%)	41	41

All (66) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	THR
1	A	70	ARG
1	A	93	LEU
1	A	114	GLU
1	A	279	ASP
1	A	330	LYS
1	A	387	LEU

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Mol	Chain	Res	Type
1	A	464	ARG
1	A	493	ASN
1	A	560	SER
1	A	584	LEU
1	A	597	HIS
1	A	692	ILE
1	A	694	ARG
1	A	696	GLN
1	A	700	GLU
1	A	711	LEU
1	A	715	GLN
1	A	774	LEU
1	B	27	THR
1	B	31	LEU
1	B	93	LEU
1	B	114	GLU
1	B	279	ASP
1	B	387	LEU
1	B	431	GLU
1	B	464	ARG
1	B	490	GLU
1	B	493	ASN
1	B	514	ASN
1	B	584	LEU
1	B	597	HIS
1	B	689	GLU
1	B	693	GLU
1	B	715	GLN
1	B	756	GLN
1	B	774	LEU
1	B	779	LEU
1	C	27	THR
1	C	29	ASP
1	C	31	LEU
1	C	44	CYS
1	C	77	ARG
1	C	79	LEU
1	C	114	GLU
1	C	247	ARG
1	C	258	SER
1	C	299	GLU
1	C	330	LYS

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Mol	Chain	Res	Type
1	C	382	LEU
1	C	387	LEU
1	C	461	TYR
1	C	464	ARG
1	C	493	ASN
1	C	560	SER
1	C	689	GLU
1	C	693	GLU
1	C	696	GLN
1	C	711	LEU
1	C	715	GLN
1	C	774	LEU
1	C	779	LEU
2	X	50	TYR
2	Y	57	TYR
2	Y	84	CYS
2	Z	50	TYR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	198	ASN
1	A	493	ASN
1	A	498	HIS
1	A	553	HIS
1	A	561	HIS
1	A	596	ASN
1	A	649	ASN
1	A	656	GLN
1	A	696	GLN
1	A	703	GLN
1	A	706	GLN
1	A	708	ASN
1	A	715	GLN
1	A	753	GLN
1	A	756	GLN
1	B	49	ASN
1	B	63	ASN
1	B	198	ASN
1	B	493	ASN
1	B	498	HIS
1	B	553	HIS

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Mol	Chain	Res	Type
1	B	561	HIS
1	B	649	ASN
1	B	656	GLN
1	B	691	GLN
1	B	696	GLN
1	B	706	GLN
1	B	708	ASN
1	B	715	GLN
1	B	753	GLN
1	B	756	GLN
1	C	63	ASN
1	C	198	ASN
1	C	223	HIS
1	C	343	ASN
1	C	493	ASN
1	C	553	HIS
1	C	561	HIS
1	C	649	ASN
1	C	656	GLN
1	C	696	GLN
1	C	703	GLN
1	C	706	GLN
1	C	708	ASN
1	C	715	GLN
1	C	756	GLN
1	C	760	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates 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, 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	728/757 (96%)	0.16	43 (5%) 22 21	22, 35, 67, 81	0
1	B	729/757 (96%)	0.19	56 (7%) 13 12	22, 36, 70, 82	0
1	C	733/757 (96%)	0.28	68 (9%) 8 8	24, 39, 69, 81	0
2	X	77/98 (78%)	0.09	4 (5%) 27 26	27, 34, 47, 54	0
2	Y	76/98 (77%)	0.13	5 (6%) 18 17	28, 35, 51, 61	0
2	Z	78/98 (79%)	0.05	6 (7%) 13 12	27, 35, 52, 66	0
All	All	2421/2565 (94%)	0.20	182 (7%) 14 13	22, 37, 67, 82	0

All (182) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	688	LEU	7.0
1	C	690	GLU	6.4
1	A	691	GLN	6.2
1	B	27	THR	6.1
1	A	526	ASN	5.8
1	C	692	ILE	5.7
2	X	49	PHE	5.7
1	A	27	THR	5.6
2	Y	117	ALA	5.4
1	B	511	LYS	5.4
1	A	693	GLU	5.4
1	A	664	GLU	5.3
1	B	28	GLU	5.3
1	A	692	ILE	5.2
2	Z	49	PHE	5.2
2	Y	76	MET	5.2
1	C	489	ASP	5.1
1	C	689	GLU	5.1
1	A	690	GLU	5.0

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Mol	Chain	Res	Type	RSRZ
1	C	43	ALA	4.9
1	A	43	ALA	4.8
1	A	489	ASP	4.7
1	B	694	ARG	4.7
1	B	690	GLU	4.7
2	X	50	TYR	4.7
1	B	693	GLU	4.7
1	C	664	GLU	4.7
1	B	278	GLU	4.5
1	A	694	ARG	4.5
1	B	29	ASP	4.5
1	C	27	THR	4.4
1	C	41	LYS	4.3
1	B	26	GLU	4.3
1	B	689	GLU	4.3
1	A	28	GLU	4.3
2	Y	50	TYR	4.3
2	Z	50	TYR	4.2
1	B	510	SER	4.1
1	B	772	ALA	3.9
1	C	538	SER	3.9
1	C	299	GLU	3.9
1	A	578	GLU	3.7
2	Y	49	PHE	3.7
1	C	26	GLU	3.7
1	B	523	ASP	3.6
1	A	663	LYS	3.6
2	Z	76	MET	3.6
1	C	510	SER	3.6
1	C	294	TYR	3.5
1	B	279	ASP	3.5
1	A	548	VAL	3.5
1	C	278	GLU	3.5
1	B	691	GLN	3.5
1	B	773	GLU	3.5
1	A	511	LYS	3.4
1	C	44	CYS	3.4
1	A	29	ASP	3.4
2	Z	77	LYS	3.4
1	A	64	TYR	3.3
1	C	773	GLU	3.3
1	C	523	ASP	3.3

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Mol	Chain	Res	Type	RSRZ
1	C	694	ARG	3.3
1	C	691	GLN	3.3
1	B	661	GLU	3.3
1	C	495	LEU	3.3
1	B	43	ALA	3.3
1	B	62	PRO	3.2
2	X	118	GLY	3.2
1	A	278	GLU	3.2
1	C	734	SER	3.2
1	B	495	LEU	3.2
1	C	527	PRO	3.2
1	C	693	GLU	3.1
1	B	488	GLY	3.1
1	B	664	GLU	3.1
1	A	523	ASP	3.1
1	A	732	GLY	3.0
1	B	539	PHE	3.0
1	B	64	TYR	3.0
1	C	298	PRO	3.0
1	A	730	THR	3.0
1	C	506	VAL	3.0
1	A	44	CYS	3.0
1	B	90	VAL	3.0
1	C	729	GLU	2.9
1	A	63	ASN	2.9
1	C	733	THR	2.9
1	B	160	ASP	2.9
1	B	525	PRO	2.9
1	C	29	ASP	2.8
1	A	41	LYS	2.8
1	B	586	VAL	2.8
1	C	241	LYS	2.8
1	A	510	SER	2.8
1	A	160	ASP	2.8
1	B	490	GLU	2.8
1	A	263	ALA	2.7
1	C	493	ASN	2.7
1	B	44	CYS	2.7
1	A	279	ASP	2.7
1	B	489	ASP	2.7
1	B	557	LYS	2.7
1	B	63	ASN	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	587	LEU	2.7
1	C	279	ASP	2.7
2	X	76	MET	2.7
1	B	630	ARG	2.7
1	C	28	GLU	2.7
1	C	571	GLU	2.7
1	B	547	PHE	2.7
1	A	159	GLU	2.6
1	B	41	LYS	2.6
1	C	243	ARG	2.6
1	C	511	LYS	2.6
1	C	557	LYS	2.6
1	C	630	ARG	2.6
1	B	548	VAL	2.6
1	A	70	ARG	2.6
1	B	700	GLU	2.6
1	A	665	LYS	2.6
1	C	578	GLU	2.6
1	B	492	SER	2.6
1	C	524	VAL	2.5
1	B	581	GLU	2.5
1	B	72	LEU	2.5
1	C	490	GLU	2.5
2	Z	118	GLY	2.5
1	C	157	GLN	2.5
1	C	160	ASP	2.5
1	A	660	GLU	2.5
2	Y	38	LYS	2.5
1	A	697	GLU	2.5
1	A	772	ALA	2.4
1	C	526	ASN	2.4
1	A	773	GLU	2.4
1	C	522	LYS	2.4
1	C	665	LYS	2.4
1	B	663	LYS	2.4
1	B	692	ILE	2.4
1	A	539	PHE	2.3
1	C	525	PRO	2.3
1	C	663	LYS	2.3
1	C	42	SER	2.3
1	B	263	ALA	2.3
1	C	727	ARG	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	509	LYS	2.3
1	A	547	PHE	2.3
1	C	62	PRO	2.3
1	C	697	GLU	2.3
1	C	730	THR	2.2
1	B	493	ASN	2.2
1	C	343	ASN	2.2
1	C	521	LEU	2.2
1	B	578	GLU	2.2
1	C	63	ASN	2.2
1	A	62	PRO	2.2
1	C	548	VAL	2.2
1	B	186	GLU	2.2
1	C	385	GLY	2.2
1	C	581	GLU	2.2
1	C	587	LEU	2.2
1	A	492	SER	2.2
1	C	657	LYS	2.2
1	C	547	PHE	2.1
1	A	515	ASP	2.1
1	C	494	SER	2.1
1	B	504	LEU	2.1
1	B	491	SER	2.1
1	A	186	GLU	2.1
1	C	772	ALA	2.1
1	B	568	LYS	2.1
1	A	756	GLN	2.1
1	B	515	ASP	2.1
1	B	697	GLU	2.1
1	C	515	ASP	2.1
1	C	731	ASP	2.1
1	A	99	ASN	2.0
1	B	159	GLU	2.0
1	B	513	THR	2.0
1	C	756	GLN	2.0
1	C	552	LEU	2.0
2	Z	38	LYS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates [i](#)

There are no carbohydrates 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.