Full wwPDB X-ray Structure Validation Report (i)

Dec 10, 2023 – 09:21 am GMT

PDB ID	:	1GKR
Title	:	L-Hydantoinase (Dihydropyrimidinase) from Arthrobacter aurescens
Authors	:	Abendroth, J.; Niefind, K.; Schomburg, D.
Deposited on	:	2001-08-20
Resolution	:	2.60 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 (1)) were used in the production of this report:

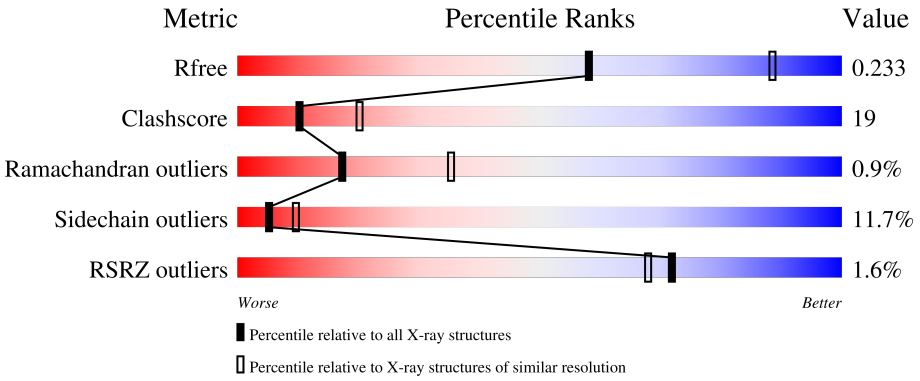
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 2.60 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	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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	458	65% 27% 6%
1	B	458	64% 28% 7%
1	C	458	64% 28% 7%
1	D	458	64% 28% 7%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 14196 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 NON-ATP DEPENDENT L-SELECTIVE HYDANTOINASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	451	Total	C	N	O	S	0	0	0
			3420	2153	580	666	21			
1	B	451	Total	C	N	O	S	0	0	0
			3420	2153	580	666	21			
1	C	451	Total	C	N	O	S	0	0	0
			3420	2153	580	666	21			
1	D	451	Total	C	N	O	S	0	0	0
			3420	2153	580	666	21			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	147	KCX	LYS	modified residue	UNP P81006
B	147	KCX	LYS	modified residue	UNP P81006
C	147	KCX	LYS	modified residue	UNP P81006
D	147	KCX	LYS	modified residue	UNP P81006

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Zn	0	0
			2	2		
2	B	2	Total	Zn	0	0
			2	2		
2	C	2	Total	Zn	0	0
			2	2		
2	D	2	Total	Zn	0	0
			2	2		

- Molecule 3 is water.

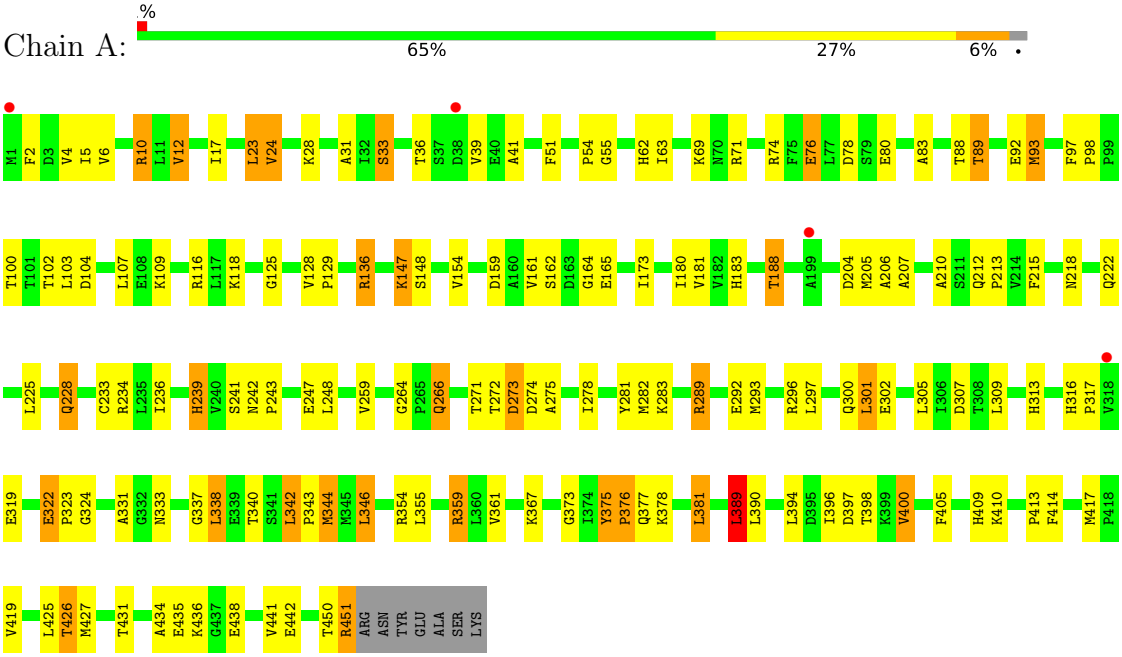
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	124	Total O 124 124	0	0
3	B	129	Total O 129 129	0	0
3	C	128	Total O 128 128	0	0
3	D	127	Total O 127 127	0	0

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.

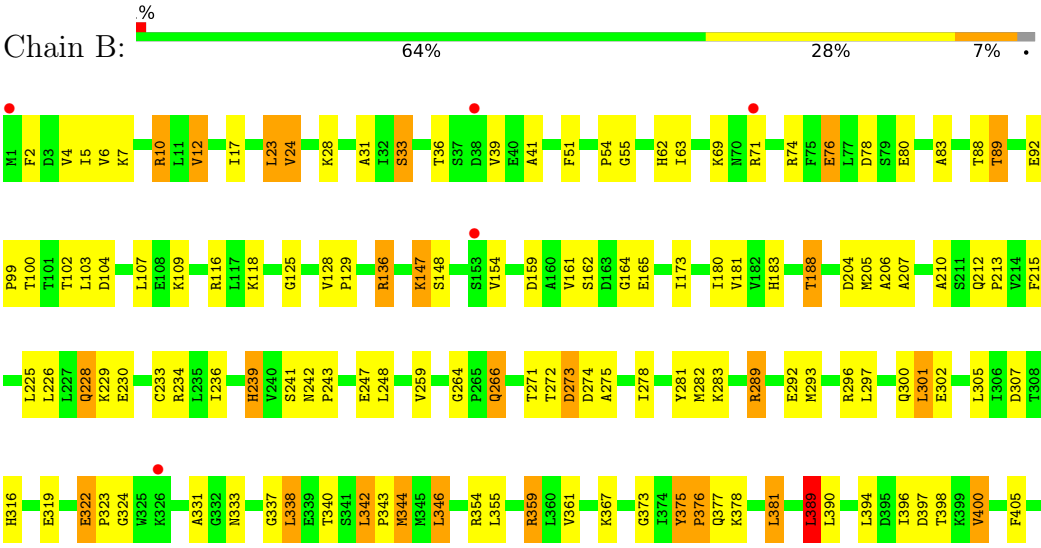
• Molecule 1: NON-ATP DEPENDENT L-SELECTIVE HYDANTOINASE

Chain A:



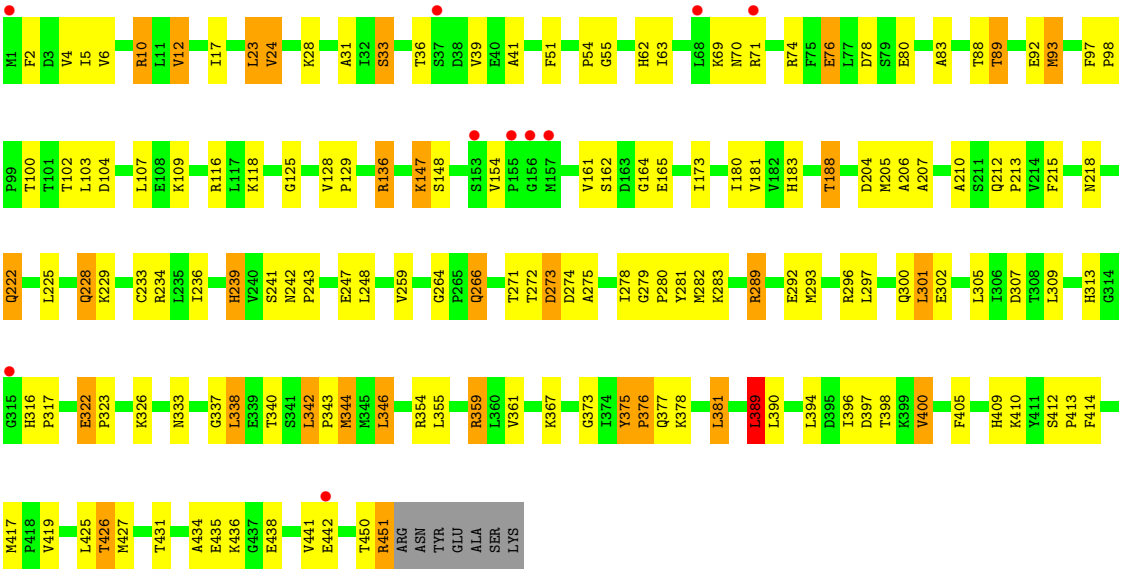
• Molecule 1: NON-ATP DEPENDENT L-SELECTIVE HYDANTOINASE

Chain B:



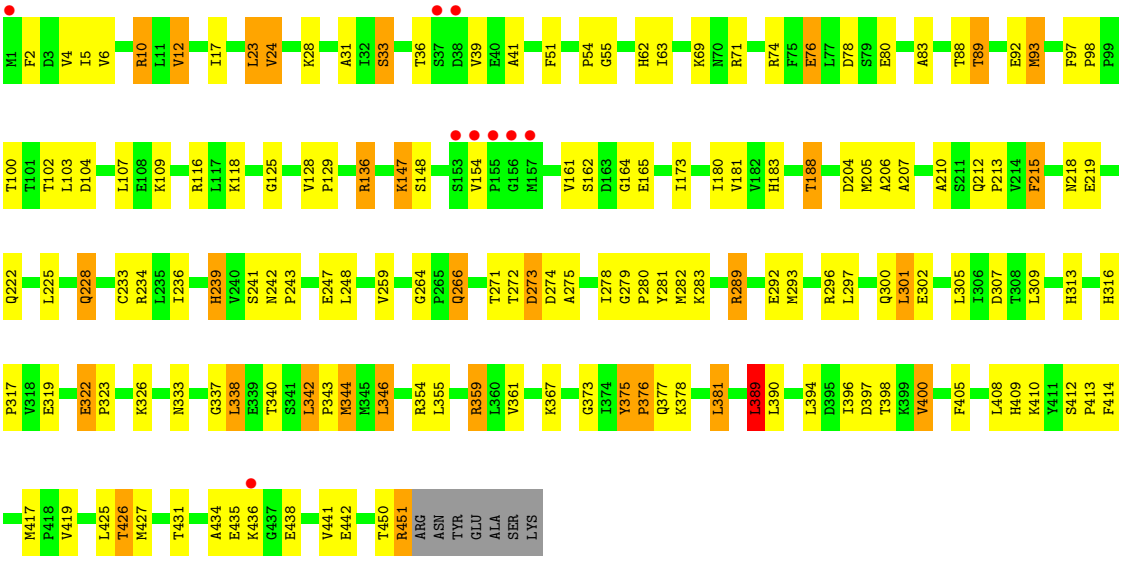
• Molecule 1: NON-ATP DEPENDENT L-SELECTIVE HYDANTOINASE

Chain C:



• Molecule 1: NON-ATP DEPENDENT L-SELECTIVE HYDANTOINASE

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	111.50Å 74.30Å 146.90Å 90.00° 106.57° 90.00°	Depositor
Resolution (Å)	30.00 – 2.60 34.58 – 2.60	Depositor EDS
% Data completeness (in resolution range)	86.3 (30.00-2.60) 86.6 (34.58-2.60)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.95 (at 2.61Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.224 , 0.244 0.214 , 0.233	Depositor DCC
R_{free} test set	3105 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	23.1	Xtriage
Anisotropy	0.033	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 38.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	14196	wwPDB-VP
Average B, all atoms (Å^2)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.83% 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

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.45	0/3466	0.75	4/4689 (0.1%)
1	B	0.45	0/3466	0.75	4/4689 (0.1%)
1	C	0.45	0/3466	0.75	4/4689 (0.1%)
1	D	0.45	0/3466	0.75	4/4689 (0.1%)
All	All	0.45	0/13864	0.75	16/18756 (0.1%)

There are no bond length outliers.

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	389	LEU	CA-CB-CG	7.78	133.18	115.30
1	A	389	LEU	CA-CB-CG	7.76	133.14	115.30
1	D	389	LEU	CA-CB-CG	7.75	133.12	115.30
1	C	389	LEU	CA-CB-CG	7.74	133.11	115.30
1	B	10	ARG	N-CA-C	-5.47	96.24	111.00
1	A	10	ARG	N-CA-C	-5.46	96.27	111.00
1	D	10	ARG	N-CA-C	-5.45	96.28	111.00
1	C	10	ARG	N-CA-C	-5.45	96.28	111.00
1	B	125	GLY	N-CA-C	-5.25	99.98	113.10
1	A	125	GLY	N-CA-C	-5.24	99.99	113.10
1	C	125	GLY	N-CA-C	-5.23	100.01	113.10
1	D	125	GLY	N-CA-C	-5.23	100.02	113.10
1	A	205	MET	N-CA-C	-5.19	96.99	111.00
1	C	205	MET	N-CA-C	-5.19	96.99	111.00
1	B	205	MET	N-CA-C	-5.19	97.00	111.00
1	D	205	MET	N-CA-C	-5.19	97.00	111.00

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	3420	0	3410	130	2
1	B	3420	0	3410	143	5
1	C	3420	0	3410	135	2
1	D	3420	0	3410	138	5
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
3	A	124	0	0	5	0
3	B	129	0	0	6	1
3	C	128	0	0	8	0
3	D	127	0	0	7	1
All	All	14196	0	13640	514	8

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 19.

All (514) 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:164:GLY:H	1:D:188:THR:CG2	1.35	1.38
1:D:71:ARG:HD3	3:D:2016:HOH:O	1.24	1.32
1:C:71:ARG:HD3	3:C:2016:HOH:O	1.28	1.29
1:C:70:ASN:HA	3:C:2014:HOH:O	1.46	1.15
1:A:188:THR:CG2	1:C:164:GLY:H	1.61	1.13
1:B:164:GLY:N	1:D:188:THR:CG2	2.09	1.13
1:A:164:GLY:H	1:C:188:THR:CG2	1.61	1.12
1:B:164:GLY:H	1:D:188:THR:HG21	1.15	1.04
1:B:188:THR:CG2	1:D:164:GLY:H	1.70	1.03
1:C:266:GLN:H	1:C:266:GLN:HE21	1.08	0.99
1:A:266:GLN:H	1:A:266:GLN:HE21	1.08	0.97
1:B:7:LYS:NZ	3:B:2003:HOH:O	1.99	0.94
1:D:266:GLN:H	1:D:266:GLN:HE21	1.08	0.93
1:B:266:GLN:HE21	1:B:266:GLN:H	1.08	0.93
1:A:271:THR:HG22	1:A:273:ASP:H	1.35	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:271:THR:HG22	1:B:273:ASP:H	1.36	0.90
1:C:271:THR:HG22	1:C:273:ASP:H	1.36	0.90
1:D:408:LEU:HD11	3:D:2014:HOH:O	1.71	0.90
1:D:271:THR:HG22	1:D:273:ASP:H	1.36	0.89
1:B:164:GLY:N	1:D:188:THR:HG22	1.87	0.88
1:B:266:GLN:H	1:B:266:GLN:NE2	1.71	0.88
1:D:266:GLN:H	1:D:266:GLN:NE2	1.71	0.88
1:C:266:GLN:H	1:C:266:GLN:NE2	1.71	0.86
1:A:266:GLN:H	1:A:266:GLN:NE2	1.71	0.86
1:A:164:GLY:N	1:C:188:THR:CG2	2.41	0.84
1:B:188:THR:HG21	1:D:164:GLY:H	1.39	0.84
1:B:4:VAL:HG13	1:B:24:VAL:HG13	1.60	0.83
1:A:4:VAL:HG13	1:A:24:VAL:HG13	1.61	0.83
1:A:188:THR:CG2	1:C:164:GLY:N	2.41	0.83
1:C:4:VAL:HG13	1:C:24:VAL:HG13	1.60	0.82
1:A:342:LEU:HD22	1:A:346:LEU:HD22	1.61	0.82
1:B:342:LEU:HD22	1:B:346:LEU:HD22	1.61	0.82
1:D:4:VAL:HG13	1:D:24:VAL:HG13	1.60	0.82
1:D:342:LEU:HD22	1:D:346:LEU:HD22	1.61	0.81
1:C:342:LEU:HD22	1:C:346:LEU:HD22	1.61	0.81
1:A:31:ALA:HB2	1:B:33:SER:HB2	1.63	0.80
1:B:188:THR:CG2	1:D:164:GLY:N	2.45	0.79
1:C:71:ARG:CD	3:C:2016:HOH:O	2.02	0.79
1:C:450:THR:O	1:C:451:ARG:HB3	1.82	0.79
1:B:102:THR:HG22	1:B:104:ASP:H	1.49	0.78
1:D:450:THR:O	1:D:451:ARG:HB3	1.82	0.78
1:D:102:THR:HG22	1:D:104:ASP:H	1.49	0.78
1:B:450:THR:O	1:B:451:ARG:HB3	1.82	0.77
1:C:102:THR:HG22	1:C:104:ASP:H	1.49	0.77
1:A:102:THR:HG22	1:A:104:ASP:H	1.49	0.77
1:D:264:GLY:HA3	1:D:266:GLN:HE22	1.50	0.77
1:A:450:THR:O	1:A:451:ARG:HB3	1.82	0.77
1:B:264:GLY:HA3	1:B:266:GLN:HE22	1.50	0.76
1:A:188:THR:HG21	1:C:164:GLY:H	1.50	0.75
1:C:264:GLY:HA3	1:C:266:GLN:HE22	1.50	0.75
1:A:264:GLY:HA3	1:A:266:GLN:HE22	1.50	0.74
1:D:76:GLU:HG3	1:D:116:ARG:HB3	1.70	0.74
1:A:76:GLU:HG3	1:A:116:ARG:HB3	1.70	0.74
1:C:278:ILE:HB	1:C:282:MET:CE	2.18	0.73
1:C:76:GLU:HG3	1:C:116:ARG:HB3	1.70	0.73
1:B:278:ILE:HB	1:B:282:MET:CE	2.18	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:164:GLY:H	1:C:188:THR:HG22	1.51	0.73
1:A:164:GLY:H	1:C:188:THR:HG21	1.50	0.73
1:B:76:GLU:HG3	1:B:116:ARG:HB3	1.70	0.72
1:A:278:ILE:HB	1:A:282:MET:CE	2.18	0.72
1:D:278:ILE:HB	1:D:282:MET:CE	2.18	0.72
1:B:164:GLY:H	1:D:188:THR:HG23	1.50	0.72
1:A:33:SER:HB2	1:B:31:ALA:HB2	1.71	0.71
1:A:188:THR:HG22	1:C:164:GLY:H	1.51	0.70
1:B:93:MET:HA	1:B:93:MET:HE3	1.73	0.70
1:C:93:MET:HE3	1:C:93:MET:HA	1.72	0.70
1:A:164:GLY:N	1:C:188:THR:HG22	2.07	0.69
1:D:451:ARG:HG3	1:D:451:ARG:HH11	1.58	0.69
1:C:242:ASN:HB2	1:C:293:MET:HE1	1.75	0.69
1:A:93:MET:HE3	1:A:93:MET:HA	1.74	0.69
1:A:188:THR:HG22	1:C:164:GLY:N	2.07	0.69
1:D:93:MET:HA	1:D:93:MET:HE3	1.74	0.69
1:D:12:VAL:HG22	1:D:361:VAL:HG21	1.75	0.68
1:A:271:THR:HG22	1:A:273:ASP:N	2.09	0.68
1:B:12:VAL:HG22	1:B:361:VAL:HG21	1.75	0.68
1:A:102:THR:HG22	1:A:104:ASP:N	2.09	0.68
1:A:451:ARG:HG3	1:A:451:ARG:HH11	1.58	0.68
1:A:5:ILE:HG12	1:A:23:LEU:HD13	1.76	0.68
1:B:271:THR:HG22	1:B:273:ASP:N	2.09	0.67
1:C:451:ARG:HG3	1:C:451:ARG:HH11	1.58	0.67
1:A:12:VAL:HG22	1:A:361:VAL:HG21	1.75	0.67
1:C:102:THR:HG22	1:C:104:ASP:N	2.09	0.67
1:B:102:THR:HG22	1:B:104:ASP:N	2.09	0.67
1:B:375:TYR:O	1:B:376:PRO:C	2.31	0.67
1:D:271:THR:HG22	1:D:273:ASP:N	2.09	0.67
1:B:5:ILE:HG12	1:B:23:LEU:HD13	1.76	0.67
1:D:5:ILE:HG12	1:D:23:LEU:HD13	1.76	0.67
1:A:375:TYR:O	1:A:376:PRO:C	2.31	0.67
1:B:451:ARG:HG3	1:B:451:ARG:HH11	1.58	0.67
1:C:5:ILE:HG12	1:C:23:LEU:HD13	1.76	0.67
1:D:102:THR:HG22	1:D:104:ASP:N	2.09	0.66
1:C:12:VAL:HG22	1:C:361:VAL:HG21	1.75	0.66
1:C:375:TYR:O	1:C:376:PRO:C	2.31	0.66
1:C:271:THR:HG22	1:C:273:ASP:N	2.09	0.66
1:B:426:THR:HG23	1:B:434:ALA:HB3	1.79	0.65
1:D:375:TYR:O	1:D:376:PRO:C	2.31	0.65
1:D:426:THR:HG23	1:D:434:ALA:HB3	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:296:ARG:HG3	1:B:296:ARG:HH11	1.62	0.64
1:A:426:THR:HG23	1:A:434:ALA:HB3	1.79	0.64
1:A:162:SER:OG	1:A:165:GLU:HG3	1.98	0.64
1:B:162:SER:OG	1:B:165:GLU:HG3	1.98	0.64
1:C:31:ALA:HB2	1:D:33:SER:HB2	1.80	0.64
1:C:426:THR:HG23	1:C:434:ALA:HB3	1.79	0.63
1:D:296:ARG:HG3	1:D:296:ARG:HH11	1.62	0.63
1:C:162:SER:OG	1:C:165:GLU:HG3	1.98	0.63
1:D:162:SER:OG	1:D:165:GLU:HG3	1.98	0.63
1:C:296:ARG:HG3	1:C:296:ARG:HH11	1.62	0.63
1:A:296:ARG:HG3	1:A:296:ARG:HH11	1.62	0.63
1:B:281:TYR:O	1:B:413:PRO:HG3	1.99	0.63
1:C:10:ARG:HG2	1:C:17:ILE:HG21	1.81	0.63
1:C:281:TYR:O	1:C:413:PRO:HG3	1.99	0.62
1:A:281:TYR:O	1:A:413:PRO:HG3	1.99	0.62
1:C:204:ASP:HB2	1:C:207:ALA:H	1.65	0.62
1:A:10:ARG:HG2	1:A:17:ILE:HG21	1.81	0.62
1:B:204:ASP:HB2	1:B:207:ALA:H	1.65	0.62
1:B:243:PRO:HD2	1:B:293:MET:HE2	1.80	0.62
1:B:373:GLY:O	1:B:451:ARG:HG2	1.99	0.62
1:D:243:PRO:HD2	1:D:293:MET:HE2	1.80	0.62
1:D:69:LYS:HB2	1:D:74:ARG:HD2	1.82	0.62
1:C:69:LYS:HB2	1:C:74:ARG:HD2	1.82	0.62
1:B:10:ARG:HG2	1:B:17:ILE:HG21	1.81	0.61
1:A:242:ASN:HB2	1:A:293:MET:HE1	1.80	0.61
1:A:373:GLY:O	1:A:451:ARG:HG2	1.99	0.61
1:B:188:THR:HG22	1:D:164:GLY:N	2.16	0.61
1:D:373:GLY:O	1:D:451:ARG:HG2	1.99	0.61
1:C:373:GLY:O	1:C:451:ARG:HG2	1.99	0.61
1:D:83:ALA:O	1:D:426:THR:HG21	2.00	0.61
1:D:281:TYR:O	1:D:413:PRO:HG3	1.99	0.61
1:D:10:ARG:HG2	1:D:17:ILE:HG21	1.82	0.61
1:A:69:LYS:HB2	1:A:74:ARG:HD2	1.82	0.61
1:B:83:ALA:O	1:B:426:THR:HG21	2.00	0.61
1:C:83:ALA:O	1:C:426:THR:HG21	2.00	0.61
1:A:83:ALA:O	1:A:426:THR:HG21	2.00	0.61
1:B:69:LYS:HB2	1:B:74:ARG:HD2	1.82	0.61
1:C:33:SER:HB2	1:D:31:ALA:HB2	1.83	0.60
1:A:4:VAL:HG13	1:A:24:VAL:CG1	2.30	0.60
1:A:204:ASP:HB2	1:A:207:ALA:H	1.65	0.60
1:B:36:THR:O	1:B:39:VAL:HG22	2.01	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:164:GLY:CA	1:D:188:THR:CG2	2.79	0.60
1:B:340:THR:O	1:B:344:MET:HB2	2.02	0.60
1:D:340:THR:O	1:D:344:MET:HB2	2.02	0.60
1:A:340:THR:O	1:A:344:MET:HB2	2.02	0.60
1:D:204:ASP:HB2	1:D:207:ALA:H	1.65	0.60
1:A:128:VAL:HB	1:A:129:PRO:HD2	1.84	0.59
1:D:128:VAL:HB	1:D:129:PRO:HD2	1.84	0.59
1:D:4:VAL:HG13	1:D:24:VAL:CG1	2.30	0.59
1:A:36:THR:O	1:A:39:VAL:HG22	2.01	0.59
1:C:36:THR:O	1:C:39:VAL:HG22	2.01	0.59
1:D:36:THR:O	1:D:39:VAL:HG22	2.01	0.59
1:B:128:VAL:HB	1:B:129:PRO:HD2	1.84	0.59
1:C:340:THR:O	1:C:344:MET:HB2	2.02	0.59
1:B:4:VAL:HG13	1:B:24:VAL:CG1	2.30	0.58
1:C:4:VAL:HG13	1:C:24:VAL:CG1	2.30	0.58
1:B:80:GLU:HG2	1:B:118:LYS:HD2	1.86	0.58
1:D:62:HIS:CE1	1:D:93:MET:HG3	2.39	0.58
1:A:62:HIS:CE1	1:A:93:MET:HG3	2.39	0.58
1:C:128:VAL:HB	1:C:129:PRO:HD2	1.84	0.58
1:B:164:GLY:HA3	1:D:188:THR:HG23	1.84	0.58
1:B:242:ASN:HB2	1:B:293:MET:HE1	1.86	0.57
1:C:10:ARG:HG2	1:C:17:ILE:CG2	2.34	0.57
1:D:80:GLU:HG2	1:D:118:LYS:HD2	1.86	0.57
1:B:10:ARG:HG2	1:B:17:ILE:CG2	2.34	0.57
1:A:10:ARG:HG2	1:A:17:ILE:CG2	2.34	0.57
1:A:80:GLU:HG2	1:A:118:LYS:HD2	1.86	0.57
1:B:62:HIS:CE1	1:B:93:MET:HG3	2.39	0.57
1:C:62:HIS:CE1	1:C:93:MET:HG3	2.39	0.56
1:C:80:GLU:HG2	1:C:118:LYS:HD2	1.86	0.56
1:C:212:GLN:O	1:C:289:ARG:NH2	2.38	0.56
1:D:10:ARG:HG2	1:D:17:ILE:CG2	2.34	0.56
1:A:375:TYR:O	1:A:377:GLN:N	2.38	0.56
1:B:212:GLN:O	1:B:289:ARG:NH2	2.38	0.56
1:B:164:GLY:CA	1:D:188:THR:HG23	2.36	0.56
1:D:242:ASN:HB2	1:D:293:MET:HE1	1.86	0.56
1:D:375:TYR:O	1:D:377:GLN:N	2.38	0.56
1:A:278:ILE:HB	1:A:282:MET:HE2	1.87	0.56
1:B:100:THR:OG1	1:B:109:LYS:HE3	2.06	0.56
1:B:375:TYR:O	1:B:377:GLN:N	2.38	0.56
1:D:188:THR:HB	3:D:2051:HOH:O	2.06	0.56
1:A:100:THR:OG1	1:A:109:LYS:HE3	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:212:GLN:O	1:A:289:ARG:NH2	2.38	0.56
1:B:188:THR:HB	3:B:2050:HOH:O	2.06	0.56
1:C:375:TYR:O	1:C:377:GLN:N	2.38	0.56
1:D:278:ILE:HB	1:D:282:MET:HE2	1.87	0.55
1:B:164:GLY:N	1:D:188:THR:HG23	2.12	0.55
1:C:210:ALA:O	1:C:213:PRO:HD3	2.07	0.55
1:A:210:ALA:O	1:A:213:PRO:HD3	2.07	0.55
1:B:89:THR:HG21	1:B:378:LYS:HD2	1.89	0.55
1:C:100:THR:OG1	1:C:109:LYS:HE3	2.06	0.55
1:D:210:ALA:O	1:D:213:PRO:HD3	2.07	0.55
1:A:188:THR:HB	3:A:2047:HOH:O	2.06	0.55
1:C:188:THR:HB	3:C:2051:HOH:O	2.06	0.54
1:C:278:ILE:HB	1:C:282:MET:HE2	1.89	0.54
1:D:89:THR:HG21	1:D:378:LYS:HD2	1.89	0.54
1:B:154:VAL:HG23	1:B:154:VAL:O	2.08	0.54
1:D:100:THR:OG1	1:D:109:LYS:HE3	2.06	0.54
1:A:243:PRO:HD2	1:A:293:MET:HE2	1.88	0.54
1:B:278:ILE:HB	1:B:282:MET:HE2	1.90	0.54
1:D:212:GLN:O	1:D:289:ARG:NH2	2.38	0.54
1:A:451:ARG:HG3	1:A:451:ARG:NH1	2.22	0.54
1:B:210:ALA:O	1:B:213:PRO:HD3	2.07	0.54
1:C:274:ASP:C	1:C:282:MET:HE1	2.28	0.54
1:C:451:ARG:HG3	1:C:451:ARG:NH1	2.22	0.54
1:A:89:THR:HG21	1:A:378:LYS:HD2	1.89	0.54
1:C:154:VAL:O	1:C:154:VAL:HG23	2.08	0.54
1:A:435:GLU:HG2	1:A:436:LYS:HG2	1.91	0.53
1:D:136:ARG:HB2	3:D:2034:HOH:O	2.09	0.53
1:D:154:VAL:HG23	1:D:154:VAL:O	2.08	0.53
1:C:89:THR:HG21	1:C:378:LYS:HD2	1.89	0.53
1:C:136:ARG:HB2	3:C:2034:HOH:O	2.09	0.53
1:A:396:ILE:HG22	1:A:397:ASP:N	2.23	0.53
1:C:396:ILE:HG22	1:C:397:ASP:N	2.23	0.53
1:D:204:ASP:CB	1:D:207:ALA:H	2.21	0.53
1:A:154:VAL:HG23	1:A:154:VAL:O	2.08	0.53
1:B:136:ARG:HB2	3:B:2033:HOH:O	2.09	0.53
1:D:296:ARG:HG3	1:D:296:ARG:NH1	2.24	0.53
1:A:296:ARG:HG3	1:A:296:ARG:NH1	2.24	0.53
1:D:282:MET:O	1:D:282:MET:HG2	2.08	0.53
1:D:396:ILE:HG22	1:D:397:ASP:N	2.23	0.53
1:B:282:MET:O	1:B:282:MET:HG2	2.08	0.53
1:C:204:ASP:CB	1:C:207:ALA:H	2.21	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:204:ASP:CB	1:A:207:ALA:H	2.21	0.53
1:C:282:MET:O	1:C:282:MET:HG2	2.08	0.53
1:C:435:GLU:HG2	1:C:436:LYS:HG2	1.91	0.53
1:B:396:ILE:HG22	1:B:397:ASP:N	2.23	0.53
1:B:435:GLU:HG2	1:B:436:LYS:HG2	1.91	0.53
1:C:296:ARG:HG3	1:C:296:ARG:NH1	2.24	0.53
1:B:274:ASP:C	1:B:282:MET:HE1	2.28	0.52
1:B:164:GLY:N	1:D:188:THR:HG21	1.97	0.52
1:D:435:GLU:HG2	1:D:436:LYS:HG2	1.91	0.52
1:C:301:LEU:O	1:C:359:ARG:HD3	2.09	0.52
1:A:282:MET:HG2	1:A:282:MET:O	2.08	0.52
1:D:301:LEU:O	1:D:359:ARG:HD3	2.09	0.52
1:B:301:LEU:O	1:B:359:ARG:HD3	2.09	0.52
1:A:136:ARG:HB2	3:A:2031:HOH:O	2.09	0.52
1:B:204:ASP:CB	1:B:207:ALA:H	2.21	0.52
1:B:10:ARG:HD2	1:B:51:PHE:CE1	2.45	0.52
1:C:147:KCX:HG3	1:C:148:SER:N	2.25	0.52
1:A:301:LEU:O	1:A:359:ARG:HD3	2.09	0.52
1:A:274:ASP:C	1:A:282:MET:HE1	2.31	0.51
1:B:147:KCX:HG3	1:B:148:SER:N	2.25	0.51
1:A:10:ARG:HD2	1:A:51:PHE:CE1	2.45	0.51
1:A:147:KCX:HG3	1:A:148:SER:N	2.25	0.51
1:D:147:KCX:HG3	1:D:148:SER:N	2.25	0.51
1:D:274:ASP:C	1:D:282:MET:HE1	2.31	0.51
1:A:375:TYR:HB3	1:A:376:PRO:CD	2.41	0.51
1:C:10:ARG:HD2	1:C:51:PHE:CE1	2.45	0.51
1:A:400:VAL:HG12	1:A:417:MET:O	2.11	0.51
1:B:296:ARG:HG3	1:B:296:ARG:NH1	2.24	0.51
1:B:400:VAL:CG1	1:B:414:PHE:O	2.59	0.51
1:D:400:VAL:HG12	1:D:417:MET:O	2.11	0.51
1:A:400:VAL:CG1	1:A:414:PHE:O	2.59	0.50
1:C:375:TYR:HB3	1:C:376:PRO:CD	2.41	0.50
1:D:375:TYR:HB3	1:D:376:PRO:CD	2.41	0.50
1:B:302:GLU:OE1	1:B:355:LEU:HA	2.12	0.50
1:B:400:VAL:HG12	1:B:417:MET:O	2.11	0.50
1:C:302:GLU:OE1	1:C:355:LEU:HA	2.12	0.50
1:B:71:ARG:CZ	1:B:71:ARG:HB2	2.41	0.50
1:A:2:PHE:O	1:A:41:ALA:HA	2.12	0.50
1:A:71:ARG:HB2	1:A:71:ARG:CZ	2.41	0.50
1:A:266:GLN:HE21	1:A:266:GLN:N	1.92	0.50
1:B:204:ASP:HB3	1:B:206:ALA:H	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:204:ASP:HB3	1:D:206:ALA:H	1.76	0.50
1:D:10:ARG:HD2	1:D:51:PHE:CE1	2.45	0.50
1:D:451:ARG:HG3	1:D:451:ARG:NH1	2.22	0.50
1:D:71:ARG:HB2	1:D:71:ARG:CZ	2.41	0.50
1:B:23:LEU:HD22	1:B:23:LEU:N	2.27	0.50
1:B:375:TYR:HB3	1:B:376:PRO:CD	2.41	0.50
1:C:400:VAL:HG12	1:C:417:MET:O	2.11	0.50
1:A:63:ILE:N	1:A:92:GLU:OE2	2.34	0.50
1:C:23:LEU:N	1:C:23:LEU:HD22	2.27	0.50
1:A:204:ASP:HB3	1:A:206:ALA:H	1.77	0.49
1:C:71:ARG:HB2	1:C:71:ARG:CZ	2.41	0.49
1:D:23:LEU:N	1:D:23:LEU:HD22	2.27	0.49
1:C:400:VAL:CG1	1:C:414:PHE:O	2.59	0.49
1:D:181:VAL:HG12	1:D:236:ILE:HB	1.94	0.49
1:D:375:TYR:CG	1:D:376:PRO:N	2.79	0.49
1:A:23:LEU:N	1:A:23:LEU:HD22	2.27	0.49
1:C:181:VAL:HG12	1:C:236:ILE:HB	1.94	0.49
1:D:2:PHE:O	1:D:41:ALA:HA	2.12	0.49
1:C:2:PHE:O	1:C:41:ALA:HA	2.12	0.49
1:C:204:ASP:HB3	1:C:206:ALA:H	1.77	0.49
1:D:271:THR:CG2	1:D:273:ASP:H	2.18	0.49
1:D:302:GLU:OE1	1:D:355:LEU:HA	2.12	0.49
1:D:400:VAL:CG1	1:D:414:PHE:O	2.59	0.49
1:A:302:GLU:OE1	1:A:355:LEU:HA	2.12	0.49
1:B:264:GLY:CA	1:B:266:GLN:HE22	2.24	0.49
1:C:161:VAL:HB	1:C:165:GLU:HB2	1.94	0.49
1:D:161:VAL:HB	1:D:165:GLU:HB2	1.94	0.49
1:D:23:LEU:N	1:D:23:LEU:CD2	2.76	0.49
1:A:271:THR:CG2	1:A:273:ASP:H	2.18	0.49
1:C:23:LEU:N	1:C:23:LEU:CD2	2.76	0.49
1:B:2:PHE:O	1:B:41:ALA:HA	2.12	0.49
1:A:181:VAL:HG12	1:A:236:ILE:HB	1.94	0.49
1:D:17:ILE:N	1:D:17:ILE:HD12	2.28	0.49
1:A:161:VAL:HB	1:A:165:GLU:HB2	1.94	0.48
1:B:17:ILE:N	1:B:17:ILE:HD12	2.28	0.48
1:B:23:LEU:N	1:B:23:LEU:CD2	2.76	0.48
1:B:181:VAL:HG12	1:B:236:ILE:HB	1.94	0.48
1:C:292:GLU:HG3	3:C:2086:HOH:O	2.13	0.48
1:B:161:VAL:HB	1:B:165:GLU:HB2	1.94	0.48
1:D:292:GLU:HG3	3:D:2085:HOH:O	2.13	0.48
1:A:17:ILE:N	1:A:17:ILE:HD12	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:23:LEU:N	1:A:23:LEU:CD2	2.76	0.48
1:C:271:THR:CG2	1:C:272:THR:N	2.77	0.48
1:C:17:ILE:HD12	1:C:17:ILE:N	2.28	0.48
1:A:375:TYR:CG	1:A:376:PRO:N	2.79	0.48
1:D:266:GLN:HE21	1:D:266:GLN:N	1.92	0.48
1:B:230:GLU:HG2	1:D:215:PHE:CE2	2.48	0.48
1:B:292:GLU:HG3	3:B:2085:HOH:O	2.13	0.48
1:A:264:GLY:CA	1:A:266:GLN:HE22	2.24	0.48
1:A:292:GLU:HG3	3:A:2082:HOH:O	2.13	0.48
1:B:451:ARG:HG3	1:B:451:ARG:NH1	2.22	0.48
1:B:271:THR:CG2	1:B:272:THR:N	2.77	0.47
1:C:218:ASN:HD21	1:C:242:ASN:HD21	1.63	0.47
1:C:322:GLU:N	1:C:323:PRO:HD2	2.29	0.47
1:D:54:PRO:HG3	1:D:381:LEU:HD22	1.96	0.47
1:D:218:ASN:HD21	1:D:242:ASN:HD21	1.62	0.47
1:C:222:GLN:HE21	1:C:222:GLN:HB2	1.50	0.47
1:A:54:PRO:HG3	1:A:381:LEU:HD22	1.96	0.47
1:B:241:SER:OG	1:B:289:ARG:HD3	2.14	0.47
1:C:241:SER:OG	1:C:289:ARG:HD3	2.14	0.47
1:A:271:THR:CG2	1:A:272:THR:N	2.77	0.47
1:A:283:LYS:HE2	1:A:333:ASN:OD1	2.15	0.47
1:D:283:LYS:HE2	1:D:333:ASN:OD1	2.15	0.47
1:A:322:GLU:N	1:A:323:PRO:HD2	2.29	0.47
1:B:322:GLU:N	1:B:323:PRO:HD2	2.29	0.47
1:C:243:PRO:HD2	1:C:293:MET:HE2	1.97	0.47
1:D:322:GLU:N	1:D:323:PRO:HD2	2.29	0.47
1:A:241:SER:OG	1:A:289:ARG:HD3	2.14	0.47
1:C:54:PRO:HG3	1:C:381:LEU:HD22	1.96	0.47
1:B:218:ASN:HD21	1:B:242:ASN:HD21	1.62	0.47
1:C:283:LYS:HE2	1:C:333:ASN:OD1	2.15	0.47
1:C:375:TYR:CG	1:C:376:PRO:N	2.79	0.47
1:D:271:THR:CG2	1:D:272:THR:N	2.77	0.47
1:D:375:TYR:O	1:D:378:LYS:O	2.33	0.47
1:A:375:TYR:O	1:A:378:LYS:O	2.33	0.47
1:B:375:TYR:O	1:B:378:LYS:O	2.33	0.47
1:C:266:GLN:HE21	1:C:266:GLN:N	1.92	0.47
1:C:173:ILE:HG13	1:C:180:ILE:HB	1.98	0.46
1:C:375:TYR:O	1:C:378:LYS:O	2.33	0.46
1:A:204:ASP:HB3	1:A:206:ALA:N	2.30	0.46
1:C:405:PHE:O	1:C:410:LYS:HE3	2.16	0.46
1:D:241:SER:OG	1:D:289:ARG:HD3	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:54:PRO:HG3	1:B:381:LEU:HD22	1.96	0.46
1:B:226:LEU:HD23	1:D:219:GLU:HA	1.96	0.46
1:C:204:ASP:HB3	1:C:206:ALA:N	2.30	0.46
1:D:204:ASP:HB3	1:D:206:ALA:N	2.30	0.46
1:B:283:LYS:HE2	1:B:333:ASN:OD1	2.15	0.46
1:A:173:ILE:HG13	1:A:180:ILE:HB	1.98	0.46
1:D:405:PHE:O	1:D:410:LYS:HE3	2.15	0.46
1:B:102:THR:CG2	1:B:103:LEU:N	2.79	0.46
1:D:338:LEU:HD12	1:D:338:LEU:HA	1.83	0.46
1:A:405:PHE:O	1:A:410:LYS:HE3	2.15	0.45
1:D:305:LEU:HD12	1:D:305:LEU:N	2.31	0.45
1:B:173:ILE:HG13	1:B:180:ILE:HB	1.98	0.45
1:B:405:PHE:O	1:B:410:LYS:HE3	2.16	0.45
1:D:228:GLN:HG2	1:D:259:VAL:CG1	2.46	0.45
1:B:204:ASP:HB3	1:B:206:ALA:N	2.30	0.45
1:B:342:LEU:HB3	1:B:343:PRO:CD	2.47	0.45
1:B:375:TYR:CG	1:B:376:PRO:N	2.79	0.45
1:C:305:LEU:N	1:C:305:LEU:HD12	2.31	0.45
1:C:234:ARG:HG3	1:C:234:ARG:HH11	1.82	0.45
1:C:271:THR:CG2	1:C:273:ASP:H	2.18	0.45
1:A:228:GLN:HG2	1:A:259:VAL:CG1	2.46	0.45
1:A:342:LEU:HB3	1:A:343:PRO:CD	2.47	0.45
1:B:228:GLN:HG2	1:B:259:VAL:CG1	2.46	0.45
1:D:264:GLY:CA	1:D:266:GLN:HE22	2.24	0.45
1:A:31:ALA:CB	1:B:33:SER:HB2	2.38	0.45
1:C:342:LEU:HB3	1:C:343:PRO:CD	2.47	0.45
1:D:296:ARG:O	1:D:300:GLN:HG3	2.17	0.45
1:A:271:THR:HB	3:A:2076:HOH:O	2.16	0.45
1:B:305:LEU:N	1:B:305:LEU:HD12	2.31	0.45
1:D:342:LEU:HB3	1:D:343:PRO:CD	2.47	0.45
1:A:218:ASN:HD21	1:A:242:ASN:HD21	1.62	0.45
1:B:63:ILE:N	1:B:92:GLU:OE2	2.34	0.45
1:C:264:GLY:CA	1:C:266:GLN:HE22	2.24	0.45
1:D:390:LEU:HD22	1:D:426:THR:HB	1.99	0.45
1:A:296:ARG:O	1:A:300:GLN:HG3	2.17	0.44
1:A:390:LEU:CD2	1:A:426:THR:HB	2.47	0.44
1:B:266:GLN:HE21	1:B:266:GLN:N	1.92	0.44
1:B:271:THR:HB	3:B:2079:HOH:O	2.16	0.44
1:B:390:LEU:CD2	1:B:426:THR:HB	2.47	0.44
1:C:102:THR:CG2	1:C:103:LEU:N	2.79	0.44
1:C:296:ARG:O	1:C:300:GLN:HG3	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:390:LEU:HD22	1:C:426:THR:HB	1.99	0.44
1:D:173:ILE:HG13	1:D:180:ILE:HB	1.98	0.44
1:A:275:ALA:HA	1:A:282:MET:CE	2.47	0.44
1:C:228:GLN:HG2	1:C:259:VAL:CG1	2.46	0.44
1:C:390:LEU:CD2	1:C:426:THR:HB	2.47	0.44
1:D:390:LEU:CD2	1:D:426:THR:HB	2.47	0.44
1:A:102:THR:CG2	1:A:103:LEU:N	2.79	0.44
1:A:234:ARG:HG3	1:A:234:ARG:HH11	1.82	0.44
1:A:400:VAL:HG11	1:A:414:PHE:O	2.18	0.44
1:D:396:ILE:CG2	1:D:397:ASP:N	2.81	0.44
1:D:434:ALA:HA	1:D:438:GLU:O	2.17	0.44
1:A:305:LEU:HD12	1:A:305:LEU:N	2.31	0.44
1:B:400:VAL:HG11	1:B:414:PHE:O	2.18	0.44
1:C:400:VAL:HG11	1:C:414:PHE:O	2.18	0.44
1:C:434:ALA:HA	1:C:438:GLU:O	2.18	0.44
1:D:234:ARG:HH11	1:D:234:ARG:HG3	1.82	0.44
1:B:275:ALA:HA	1:B:282:MET:CE	2.47	0.44
1:D:271:THR:HB	3:D:2079:HOH:O	2.16	0.44
1:A:396:ILE:CG2	1:A:397:ASP:N	2.81	0.44
1:B:296:ARG:O	1:B:300:GLN:HG3	2.17	0.44
1:B:390:LEU:HD22	1:B:426:THR:HB	1.99	0.44
1:C:271:THR:HB	3:C:2080:HOH:O	2.16	0.44
1:A:434:ALA:HA	1:A:438:GLU:O	2.17	0.44
1:B:264:GLY:C	1:B:266:GLN:NE2	2.72	0.44
1:C:63:ILE:N	1:C:92:GLU:OE2	2.34	0.44
1:C:313:HIS:CD2	1:C:338:LEU:HD22	2.53	0.43
1:C:396:ILE:CG2	1:C:397:ASP:N	2.81	0.43
1:D:275:ALA:HA	1:D:282:MET:CE	2.47	0.43
1:B:234:ARG:HG3	1:B:234:ARG:HH11	1.82	0.43
1:D:400:VAL:HG11	1:D:414:PHE:O	2.18	0.43
1:A:55:GLY:HA3	1:A:88:THR:OG1	2.19	0.43
1:C:243:PRO:HD3	1:C:293:MET:HB3	2.00	0.43
1:D:313:HIS:CD2	1:D:338:LEU:HD22	2.54	0.43
1:A:264:GLY:C	1:A:266:GLN:NE2	2.72	0.43
1:C:97:PHE:HA	1:C:98:PRO:C	2.39	0.43
1:A:243:PRO:HD3	1:A:293:MET:HB3	2.00	0.43
1:A:398:THR:HG23	1:A:419:VAL:HB	2.01	0.43
1:A:390:LEU:HD22	1:A:426:THR:HB	1.99	0.43
1:C:55:GLY:HA3	1:C:88:THR:OG1	2.19	0.43
1:D:102:THR:CG2	1:D:103:LEU:N	2.79	0.43
1:A:129:PRO:HB3	1:A:165:GLU:OE1	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:313:HIS:CD2	1:A:338:LEU:HD22	2.54	0.43
1:B:147:KCX:OQ1	1:B:183:HIS:HB2	2.19	0.43
1:B:313:HIS:CD2	1:B:338:LEU:HD22	2.53	0.43
1:C:147:KCX:OQ1	1:C:183:HIS:HB2	2.19	0.43
1:B:97:PHE:HA	1:B:98:PRO:C	2.39	0.43
1:B:434:ALA:HA	1:B:438:GLU:O	2.17	0.43
1:C:275:ALA:HA	1:C:282:MET:CE	2.47	0.43
1:D:55:GLY:HA3	1:D:88:THR:OG1	2.19	0.43
1:D:147:KCX:OQ1	1:D:183:HIS:HB2	2.19	0.43
1:B:55:GLY:HA3	1:B:88:THR:OG1	2.19	0.43
1:B:396:ILE:CG2	1:B:397:ASP:N	2.81	0.43
1:D:264:GLY:C	1:D:266:GLN:NE2	2.72	0.43
1:A:147:KCX:OQ1	1:A:183:HIS:HB2	2.19	0.42
1:A:389:LEU:HD22	1:A:427:MET:HG2	2.01	0.42
1:D:97:PHE:HA	1:D:98:PRO:C	2.39	0.42
1:B:222:GLN:HE21	1:B:222:GLN:HB2	1.50	0.42
1:C:264:GLY:C	1:C:266:GLN:NE2	2.72	0.42
1:D:129:PRO:HB3	1:D:165:GLU:OE1	2.19	0.42
1:D:243:PRO:HD3	1:D:293:MET:HB3	2.00	0.42
1:C:322:GLU:OE1	1:C:322:GLU:HA	2.20	0.42
1:D:228:GLN:NE2	1:D:233:CYS:O	2.53	0.42
1:C:89:THR:CG2	3:C:2022:HOH:O	2.68	0.42
1:C:129:PRO:HB3	1:C:165:GLU:OE1	2.19	0.42
1:D:89:THR:CG2	3:D:2021:HOH:O	2.68	0.42
1:B:243:PRO:HD3	1:B:293:MET:HB3	2.00	0.42
1:C:389:LEU:HD22	1:C:427:MET:HG2	2.00	0.42
1:C:398:THR:HG23	1:C:419:VAL:HB	2.01	0.42
1:D:63:ILE:N	1:D:92:GLU:OE2	2.34	0.42
1:A:6:VAL:HG21	1:A:389:LEU:HD21	2.02	0.42
1:B:129:PRO:HB3	1:B:165:GLU:OE1	2.19	0.42
1:B:398:THR:HG23	1:B:419:VAL:HB	2.01	0.42
1:C:102:THR:HG22	1:C:103:LEU:N	2.35	0.42
1:A:89:THR:HG21	1:A:378:LYS:CD	2.50	0.42
1:A:97:PHE:HA	1:A:98:PRO:C	2.39	0.42
1:A:307:ASP:O	1:A:367:LYS:HD3	2.20	0.42
1:B:375:TYR:CB	1:B:376:PRO:CD	2.98	0.42
1:B:389:LEU:HD22	1:B:427:MET:HG2	2.01	0.42
1:D:398:THR:HG23	1:D:419:VAL:HB	2.01	0.42
1:A:33:SER:HB2	1:B:31:ALA:CB	2.46	0.42
1:A:228:GLN:NE2	1:A:233:CYS:O	2.53	0.41
1:A:375:TYR:CB	1:A:376:PRO:CD	2.98	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:PRO:HA	1:B:99:PRO:HD3	1.92	0.41
1:C:412:SER:HA	1:C:413:PRO:HD3	1.93	0.41
1:B:234:ARG:HG3	1:B:234:ARG:NH1	2.36	0.41
1:D:89:THR:HG21	1:D:378:LYS:CD	2.50	0.41
1:A:234:ARG:HG3	1:A:234:ARG:NH1	2.36	0.41
1:B:6:VAL:HG21	1:B:389:LEU:HD21	2.02	0.41
1:B:412:SER:HA	1:B:413:PRO:HD3	1.93	0.41
1:D:102:THR:HG22	1:D:103:LEU:N	2.35	0.41
1:D:322:GLU:HA	1:D:322:GLU:OE1	2.19	0.41
1:B:89:THR:CG2	3:B:2021:HOH:O	2.68	0.41
1:C:6:VAL:HG21	1:C:389:LEU:HD21	2.02	0.41
1:C:89:THR:HG21	1:C:378:LYS:CD	2.50	0.41
1:D:6:VAL:HG21	1:D:389:LEU:HD21	2.02	0.41
1:D:307:ASP:O	1:D:367:LYS:HD3	2.20	0.41
1:A:102:THR:HG22	1:A:103:LEU:N	2.35	0.41
1:A:322:GLU:OE1	1:A:322:GLU:HA	2.20	0.41
1:B:271:THR:CG2	1:B:273:ASP:H	2.18	0.41
1:A:89:THR:CG2	3:A:2017:HOH:O	2.68	0.41
1:B:102:THR:HG22	1:B:103:LEU:N	2.35	0.41
1:B:338:LEU:HD12	1:B:338:LEU:HA	1.83	0.41
1:D:389:LEU:HD22	1:D:427:MET:HG2	2.01	0.41
1:A:317:PRO:HA	1:A:409:HIS:CE1	2.56	0.41
1:B:243:PRO:HB2	1:B:296:ARG:NH2	2.36	0.41
1:B:307:ASP:O	1:B:367:LYS:HD3	2.20	0.41
1:C:307:ASP:O	1:C:367:LYS:HD3	2.20	0.41
1:C:317:PRO:HA	1:C:409:HIS:CE1	2.56	0.41
1:D:279:GLY:HA3	1:D:280:PRO:HD2	1.91	0.41
1:D:389:LEU:N	1:D:389:LEU:HD13	2.36	0.41
1:B:228:GLN:NE2	1:B:233:CYS:O	2.53	0.41
1:B:322:GLU:HA	1:B:322:GLU:OE1	2.20	0.41
1:C:228:GLN:NE2	1:C:233:CYS:O	2.53	0.41
1:C:279:GLY:HA3	1:C:280:PRO:HD2	1.92	0.41
1:C:375:TYR:CB	1:C:376:PRO:CD	2.98	0.41
1:B:274:ASP:O	1:B:282:MET:HE1	2.21	0.40
1:B:389:LEU:HD13	1:B:389:LEU:N	2.36	0.40
1:C:338:LEU:HD12	1:C:338:LEU:HA	1.83	0.40
1:B:89:THR:HG21	1:B:378:LYS:CD	2.50	0.40
1:C:234:ARG:HG3	1:C:234:ARG:NH1	2.36	0.40
1:C:450:THR:OG1	1:C:451:ARG:N	2.52	0.40
1:D:451:ARG:NH1	1:D:451:ARG:CG	2.84	0.40
1:D:412:SER:HA	1:D:413:PRO:HD3	1.93	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:389:LEU:HD13	1:A:389:LEU:N	2.36	0.40
1:D:234:ARG:HG3	1:D:234:ARG:NH1	2.36	0.40
1:A:324:GLY:HA3	1:A:331:ALA:HB2	2.04	0.40
1:B:228:GLN:HG3	1:B:229:LYS:N	2.37	0.40
1:B:324:GLY:HA3	1:B:331:ALA:HB2	2.04	0.40
1:C:228:GLN:HG3	1:C:229:LYS:N	2.37	0.40
1:D:317:PRO:HA	1:D:409:HIS:CE1	2.56	0.40

All (8) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:319:GLU:OE2	1:D:71:ARG:NH2[2_645]	1.40	0.80
1:A:319:GLU:OE2	1:C:71:ARG:NH2[2_554]	1.48	0.72
1:B:159:ASP:OD2	1:D:326:LYS:NZ[2_645]	1.50	0.70
1:A:159:ASP:OD2	1:C:326:LYS:NZ[2_554]	1.92	0.28
3:B:2014:HOH:O	3:D:2114:HOH:O[2_645]	1.93	0.27
1:B:319:GLU:CD	1:D:71:ARG:NH2[2_645]	1.99	0.21
1:B:71:ARG:CD	1:D:319:GLU:OE2[2_645]	2.17	0.03
1:B:319:GLU:CG	1:D:71:ARG:NH2[2_645]	2.18	0.02

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	448/458 (98%)	418 (93%)	26 (6%)	4 (1%)	17	35
1	B	448/458 (98%)	418 (93%)	26 (6%)	4 (1%)	17	35
1	C	448/458 (98%)	418 (93%)	26 (6%)	4 (1%)	17	35
1	D	448/458 (98%)	418 (93%)	26 (6%)	4 (1%)	17	35
All	All	1792/1832 (98%)	1672 (93%)	104 (6%)	16 (1%)	17	35

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	375	TYR
1	B	375	TYR
1	C	375	TYR
1	D	375	TYR
1	A	239	HIS
1	B	239	HIS
1	C	239	HIS
1	D	239	HIS
1	A	337	GLY
1	B	337	GLY
1	C	337	GLY
1	D	337	GLY
1	A	376	PRO
1	B	376	PRO
1	C	376	PRO
1	D	376	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	367/373 (98%)	324 (88%)	43 (12%)	5	10
1	B	367/373 (98%)	324 (88%)	43 (12%)	5	10
1	C	367/373 (98%)	324 (88%)	43 (12%)	5	10
1	D	367/373 (98%)	324 (88%)	43 (12%)	5	10
All	All	1468/1492 (98%)	1296 (88%)	172 (12%)	5	10

All (172) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	VAL
1	A	23	LEU
1	A	24	VAL
1	A	28	LYS

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Mol	Chain	Res	Type
1	A	33	SER
1	A	76	GLU
1	A	78	ASP
1	A	89	THR
1	A	93	MET
1	A	107	LEU
1	A	136	ARG
1	A	188	THR
1	A	215	PHE
1	A	222	GLN
1	A	225	LEU
1	A	228	GLN
1	A	239	HIS
1	A	247	GLU
1	A	248	LEU
1	A	266	GLN
1	A	273	ASP
1	A	289	ARG
1	A	297	LEU
1	A	301	LEU
1	A	309	LEU
1	A	316	HIS
1	A	322	GLU
1	A	338	LEU
1	A	342	LEU
1	A	344	MET
1	A	346	LEU
1	A	354	ARG
1	A	359	ARG
1	A	381	LEU
1	A	389	LEU
1	A	394	LEU
1	A	400	VAL
1	A	425	LEU
1	A	426	THR
1	A	431	THR
1	A	441	VAL
1	A	442	GLU
1	A	451	ARG
1	B	12	VAL
1	B	23	LEU
1	B	24	VAL

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Mol	Chain	Res	Type
1	B	28	LYS
1	B	33	SER
1	B	76	GLU
1	B	78	ASP
1	B	89	THR
1	B	93	MET
1	B	107	LEU
1	B	136	ARG
1	B	188	THR
1	B	215	PHE
1	B	222	GLN
1	B	225	LEU
1	B	228	GLN
1	B	239	HIS
1	B	247	GLU
1	B	248	LEU
1	B	266	GLN
1	B	273	ASP
1	B	289	ARG
1	B	297	LEU
1	B	301	LEU
1	B	309	LEU
1	B	316	HIS
1	B	322	GLU
1	B	338	LEU
1	B	342	LEU
1	B	344	MET
1	B	346	LEU
1	B	354	ARG
1	B	359	ARG
1	B	381	LEU
1	B	389	LEU
1	B	394	LEU
1	B	400	VAL
1	B	425	LEU
1	B	426	THR
1	B	431	THR
1	B	441	VAL
1	B	442	GLU
1	B	451	ARG
1	C	12	VAL
1	C	23	LEU

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Mol	Chain	Res	Type
1	C	24	VAL
1	C	28	LYS
1	C	33	SER
1	C	76	GLU
1	C	78	ASP
1	C	89	THR
1	C	93	MET
1	C	107	LEU
1	C	136	ARG
1	C	188	THR
1	C	215	PHE
1	C	222	GLN
1	C	225	LEU
1	C	228	GLN
1	C	239	HIS
1	C	247	GLU
1	C	248	LEU
1	C	266	GLN
1	C	273	ASP
1	C	289	ARG
1	C	297	LEU
1	C	301	LEU
1	C	309	LEU
1	C	316	HIS
1	C	322	GLU
1	C	338	LEU
1	C	342	LEU
1	C	344	MET
1	C	346	LEU
1	C	354	ARG
1	C	359	ARG
1	C	381	LEU
1	C	389	LEU
1	C	394	LEU
1	C	400	VAL
1	C	425	LEU
1	C	426	THR
1	C	431	THR
1	C	441	VAL
1	C	442	GLU
1	C	451	ARG
1	D	12	VAL

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Mol	Chain	Res	Type
1	D	23	LEU
1	D	24	VAL
1	D	28	LYS
1	D	33	SER
1	D	76	GLU
1	D	78	ASP
1	D	89	THR
1	D	93	MET
1	D	107	LEU
1	D	136	ARG
1	D	188	THR
1	D	215	PHE
1	D	222	GLN
1	D	225	LEU
1	D	228	GLN
1	D	239	HIS
1	D	247	GLU
1	D	248	LEU
1	D	266	GLN
1	D	273	ASP
1	D	289	ARG
1	D	297	LEU
1	D	301	LEU
1	D	309	LEU
1	D	316	HIS
1	D	322	GLU
1	D	338	LEU
1	D	342	LEU
1	D	344	MET
1	D	346	LEU
1	D	354	ARG
1	D	359	ARG
1	D	381	LEU
1	D	389	LEU
1	D	394	LEU
1	D	400	VAL
1	D	425	LEU
1	D	426	THR
1	D	431	THR
1	D	441	VAL
1	D	442	GLU
1	D	451	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	115	GLN
1	A	191	GLN
1	A	194	GLN
1	A	212	GLN
1	A	218	ASN
1	A	228	GLN
1	A	257	GLN
1	A	266	GLN
1	A	294	ASN
1	A	382	GLN
1	B	115	GLN
1	B	191	GLN
1	B	194	GLN
1	B	212	GLN
1	B	218	ASN
1	B	228	GLN
1	B	257	GLN
1	B	266	GLN
1	B	294	ASN
1	B	382	GLN
1	C	115	GLN
1	C	191	GLN
1	C	194	GLN
1	C	212	GLN
1	C	218	ASN
1	C	222	GLN
1	C	228	GLN
1	C	257	GLN
1	C	266	GLN
1	C	294	ASN
1	C	382	GLN
1	D	115	GLN
1	D	191	GLN
1	D	194	GLN
1	D	212	GLN
1	D	218	ASN
1	D	222	GLN
1	D	228	GLN
1	D	257	GLN
1	D	266	GLN
1	D	294	ASN

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Mol	Chain	Res	Type
1	D	382	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
1	KCX	B	147	1,2	9,11,12	1.03	0	5,12,14	2.30	1 (20%)
1	KCX	D	147	1,2	9,11,12	1.04	0	5,12,14	2.31	1 (20%)
1	KCX	A	147	1,2	9,11,12	1.04	1 (11%)	5,12,14	2.31	1 (20%)
1	KCX	C	147	1,2	9,11,12	1.04	0	5,12,14	2.30	1 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	KCX	B	147	1,2	-	3/9/10/12	-
1	KCX	D	147	1,2	-	3/9/10/12	-
1	KCX	A	147	1,2	-	3/9/10/12	-
1	KCX	C	147	1,2	-	3/9/10/12	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	147	KCX	OQ1-CX	2.00	1.25	1.21

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	147	KCX	OQ1-CX-NZ	-4.81	117.50	124.96
1	A	147	KCX	OQ1-CX-NZ	-4.80	117.52	124.96
1	B	147	KCX	OQ1-CX-NZ	-4.78	117.54	124.96
1	C	147	KCX	OQ1-CX-NZ	-4.78	117.55	124.96

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	147	KCX	O-C-CA-CB
1	B	147	KCX	O-C-CA-CB
1	C	147	KCX	O-C-CA-CB
1	D	147	KCX	O-C-CA-CB
1	A	147	KCX	CE-CD-CG-CB
1	B	147	KCX	CE-CD-CG-CB
1	C	147	KCX	CE-CD-CG-CB
1	D	147	KCX	CE-CD-CG-CB
1	A	147	KCX	CG-CD-CE-NZ
1	B	147	KCX	CG-CD-CE-NZ
1	C	147	KCX	CG-CD-CE-NZ
1	D	147	KCX	CG-CD-CE-NZ

There are no ring outliers.

4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	B	147	KCX	2	0
1	D	147	KCX	2	0
1	A	147	KCX	2	0
1	C	147	KCX	2	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 8 ligands modelled in this entry, 8 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	450/458 (98%)	-0.17	4 (0%)	84 82	5, 20, 44, 76	0
1	B	450/458 (98%)	-0.19	5 (1%)	80 78	5, 20, 44, 76	0
1	C	450/458 (98%)	-0.20	10 (2%)	62 56	5, 20, 44, 76	0
1	D	450/458 (98%)	-0.17	9 (2%)	65 60	5, 20, 44, 76	0
All	All	1800/1832 (98%)	-0.18	28 (1%)	72 68	5, 20, 45, 76	0

All (28) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	155	PRO	6.9
1	C	156	GLY	6.5
1	D	153	SER	5.2
1	D	156	GLY	5.0
1	C	153	SER	5.0
1	D	155	PRO	4.6
1	A	318	VAL	3.9
1	C	157	MET	3.8
1	D	1	MET	3.5
1	D	157	MET	3.4
1	C	315	GLY	3.4
1	C	68	LEU	3.4
1	C	1	MET	3.3
1	D	38	ASP	2.9
1	A	1	MET	2.5
1	A	38	ASP	2.4
1	B	1	MET	2.4
1	B	71	ARG	2.4
1	B	153	SER	2.3
1	A	199	ALA	2.3
1	C	71	ARG	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	37	SER	2.3
1	C	37	SER	2.2
1	B	38	ASP	2.2
1	B	326	LYS	2.2
1	D	154	VAL	2.1
1	D	436	LYS	2.1
1	C	442	GLU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (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, 95^{th} 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
1	KCX	D	147	12/13	0.94	0.16	5,9,12,15	0
1	KCX	C	147	12/13	0.95	0.17	5,9,12,15	0
1	KCX	A	147	12/13	0.95	0.18	5,9,12,15	0
1	KCX	B	147	12/13	0.96	0.14	5,9,12,15	0

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, 95^{th} 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	ZN	B	1453	1/1	0.92	0.09	17,17,17,17	0
2	ZN	A	1452	1/1	0.95	0.11	19,19,19,19	0
2	ZN	C	1452	1/1	0.96	0.06	19,19,19,19	0
2	ZN	B	1452	1/1	0.97	0.08	19,19,19,19	0
2	ZN	D	1452	1/1	0.98	0.05	19,19,19,19	0
2	ZN	C	1453	1/1	0.99	0.07	17,17,17,17	0
2	ZN	A	1453	1/1	0.99	0.11	17,17,17,17	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	ZN	D	1453	1/1	0.99	0.04	17,17,17,17	0

6.5 Other polymers (i)

There are no such residues in this entry.