



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 20, 2024 – 04:39 AM EST

PDB ID : 4L3A
Title : Crystal structure of Internalin K (InlK) from *Listeria monocytogenes*
Authors : Neves, D.
Deposited on : 2013-06-05
Resolution : 2.59 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)
Xtrriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

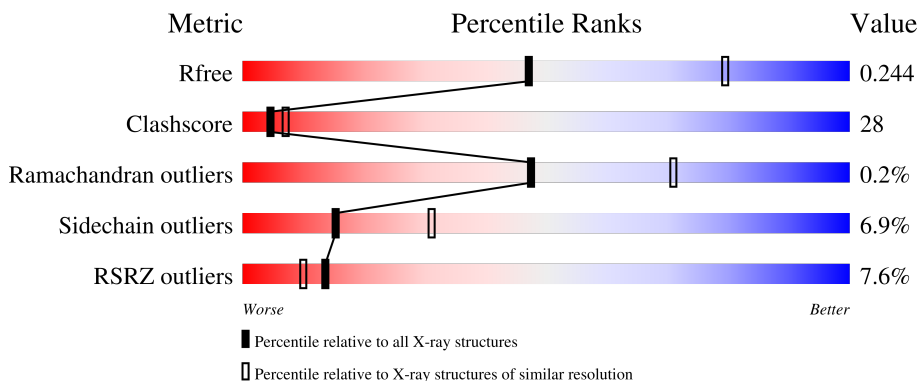
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.59 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 $\leq 5\%$. 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	590	 5% 54% 24% 16% 1%
1	B	590	 6% 48% 16% 16% 14%

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 6832 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 Internalin K.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	469	3631	2275	586	761	9	0	0	0
1	B	395	3070	1919	500	643	8	0	0	0

There are 96 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	expression tag	UNP Q8Y7I7
A	2	GLY	-	expression tag	UNP Q8Y7I7
A	3	SER	-	expression tag	UNP Q8Y7I7
A	4	SER	-	expression tag	UNP Q8Y7I7
A	5	HIS	-	expression tag	UNP Q8Y7I7
A	6	HIS	-	expression tag	UNP Q8Y7I7
A	7	HIS	-	expression tag	UNP Q8Y7I7
A	8	HIS	-	expression tag	UNP Q8Y7I7
A	9	HIS	-	expression tag	UNP Q8Y7I7
A	10	HIS	-	expression tag	UNP Q8Y7I7
A	11	SER	-	expression tag	UNP Q8Y7I7
A	12	SER	-	expression tag	UNP Q8Y7I7
A	13	GLY	-	expression tag	UNP Q8Y7I7
A	14	LEU	-	expression tag	UNP Q8Y7I7
A	15	VAL	-	expression tag	UNP Q8Y7I7
A	16	PRO	-	expression tag	UNP Q8Y7I7
A	17	ARG	-	expression tag	UNP Q8Y7I7
A	18	GLY	-	expression tag	UNP Q8Y7I7
A	19	SER	-	expression tag	UNP Q8Y7I7
A	20	HIS	-	expression tag	UNP Q8Y7I7
A	21	MET	-	expression tag	UNP Q8Y7I7
A	22	ALA	-	expression tag	UNP Q8Y7I7
A	23	SER	-	expression tag	UNP Q8Y7I7
A	24	MET	-	expression tag	UNP Q8Y7I7
A	25	THR	-	expression tag	UNP Q8Y7I7

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Chain	Residue	Modelled	Actual	Comment	Reference
A	26	GLY	-	expression tag	UNP Q8Y7I7
A	27	GLY	-	expression tag	UNP Q8Y7I7
A	28	GLN	-	expression tag	UNP Q8Y7I7
A	29	GLN	-	expression tag	UNP Q8Y7I7
A	30	MET	-	expression tag	UNP Q8Y7I7
A	31	GLY	-	expression tag	UNP Q8Y7I7
A	32	ARG	-	expression tag	UNP Q8Y7I7
A	33	ASP	-	expression tag	UNP Q8Y7I7
A	576	VAL	-	expression tag	UNP Q8Y7I7
A	577	ASP	-	expression tag	UNP Q8Y7I7
A	578	LYS	-	expression tag	UNP Q8Y7I7
A	579	LEU	-	expression tag	UNP Q8Y7I7
A	580	ALA	-	expression tag	UNP Q8Y7I7
A	581	ALA	-	expression tag	UNP Q8Y7I7
A	582	ALA	-	expression tag	UNP Q8Y7I7
A	583	LEU	-	expression tag	UNP Q8Y7I7
A	584	GLU	-	expression tag	UNP Q8Y7I7
A	585	HIS	-	expression tag	UNP Q8Y7I7
A	586	HIS	-	expression tag	UNP Q8Y7I7
A	587	HIS	-	expression tag	UNP Q8Y7I7
A	588	HIS	-	expression tag	UNP Q8Y7I7
A	589	HIS	-	expression tag	UNP Q8Y7I7
A	590	HIS	-	expression tag	UNP Q8Y7I7
B	1	MET	-	expression tag	UNP Q8Y7I7
B	2	GLY	-	expression tag	UNP Q8Y7I7
B	3	SER	-	expression tag	UNP Q8Y7I7
B	4	SER	-	expression tag	UNP Q8Y7I7
B	5	HIS	-	expression tag	UNP Q8Y7I7
B	6	HIS	-	expression tag	UNP Q8Y7I7
B	7	HIS	-	expression tag	UNP Q8Y7I7
B	8	HIS	-	expression tag	UNP Q8Y7I7
B	9	HIS	-	expression tag	UNP Q8Y7I7
B	10	HIS	-	expression tag	UNP Q8Y7I7
B	11	SER	-	expression tag	UNP Q8Y7I7
B	12	SER	-	expression tag	UNP Q8Y7I7
B	13	GLY	-	expression tag	UNP Q8Y7I7
B	14	LEU	-	expression tag	UNP Q8Y7I7
B	15	VAL	-	expression tag	UNP Q8Y7I7
B	16	PRO	-	expression tag	UNP Q8Y7I7
B	17	ARG	-	expression tag	UNP Q8Y7I7
B	18	GLY	-	expression tag	UNP Q8Y7I7
B	19	SER	-	expression tag	UNP Q8Y7I7

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Chain	Residue	Modelled	Actual	Comment	Reference
B	20	HIS	-	expression tag	UNP Q8Y7I7
B	21	MET	-	expression tag	UNP Q8Y7I7
B	22	ALA	-	expression tag	UNP Q8Y7I7
B	23	SER	-	expression tag	UNP Q8Y7I7
B	24	MET	-	expression tag	UNP Q8Y7I7
B	25	THR	-	expression tag	UNP Q8Y7I7
B	26	GLY	-	expression tag	UNP Q8Y7I7
B	27	GLY	-	expression tag	UNP Q8Y7I7
B	28	GLN	-	expression tag	UNP Q8Y7I7
B	29	GLN	-	expression tag	UNP Q8Y7I7
B	30	MET	-	expression tag	UNP Q8Y7I7
B	31	GLY	-	expression tag	UNP Q8Y7I7
B	32	ARG	-	expression tag	UNP Q8Y7I7
B	33	ASP	-	expression tag	UNP Q8Y7I7
B	576	VAL	-	expression tag	UNP Q8Y7I7
B	577	ASP	-	expression tag	UNP Q8Y7I7
B	578	LYS	-	expression tag	UNP Q8Y7I7
B	579	LEU	-	expression tag	UNP Q8Y7I7
B	580	ALA	-	expression tag	UNP Q8Y7I7
B	581	ALA	-	expression tag	UNP Q8Y7I7
B	582	ALA	-	expression tag	UNP Q8Y7I7
B	583	LEU	-	expression tag	UNP Q8Y7I7
B	584	GLU	-	expression tag	UNP Q8Y7I7
B	585	HIS	-	expression tag	UNP Q8Y7I7
B	586	HIS	-	expression tag	UNP Q8Y7I7
B	587	HIS	-	expression tag	UNP Q8Y7I7
B	588	HIS	-	expression tag	UNP Q8Y7I7
B	589	HIS	-	expression tag	UNP Q8Y7I7
B	590	HIS	-	expression tag	UNP Q8Y7I7

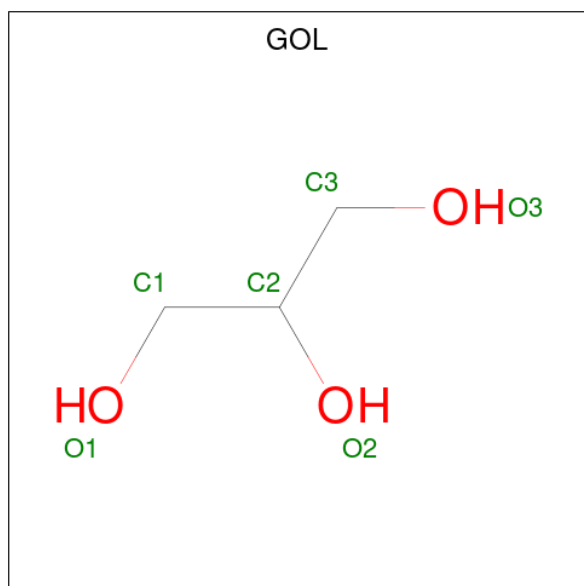
- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Mg 2 2	0	0
2	B	1	Total Mg 1 1	0	0

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Na 1 1	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 6 3 3	0	0

- Molecule 5 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total K 1 1	0	0

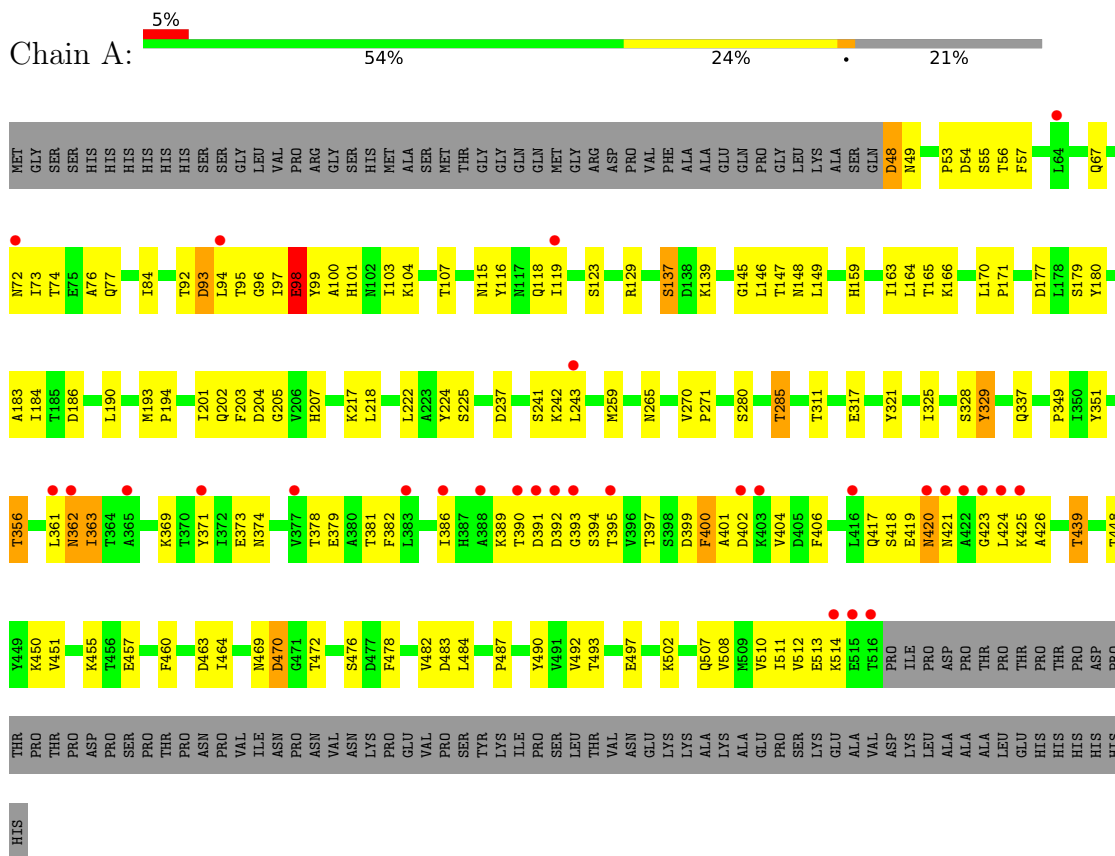
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	46	Total O 46 46	0	0
6	B	74	Total O 74 74	0	0

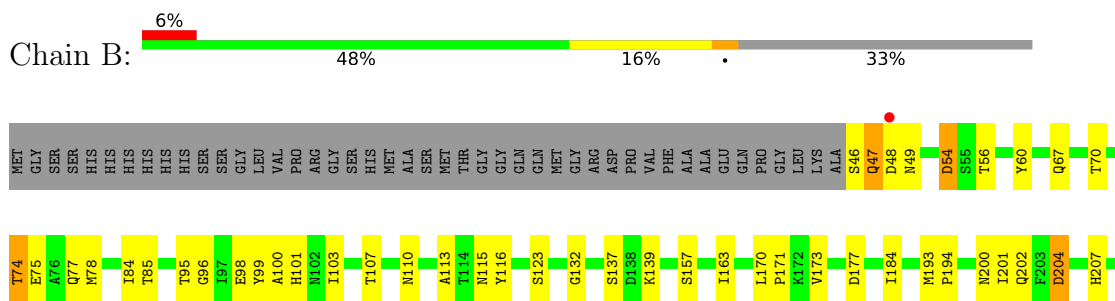
3 Residue-property plots i

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: Internalin K



- Molecule 1: Internalin K



4 Data and refinement statistics i

Property	Value	Source
Space group	P 32 1 2	Depositor
Cell constants a, b, c, α , β , γ	115.34Å 115.34Å 190.71Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.35 – 2.59 49.35 – 2.59	Depositor EDS
% Data completeness (in resolution range)	85.4 (49.35-2.59) 85.4 (49.35-2.59)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.64 (at 2.58Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.8_1069)	Depositor
R, R_{free}	0.228 , 0.243 0.230 , 0.244	Depositor DCC
R_{free} test set	3810 reflections (9.83%)	wwPDB-VP
Wilson B-factor (Å ²)	49.4	Xtrriage
Anisotropy	0.063	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 34.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.037 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6832	wwPDB-VP
Average B, all atoms (Å ²)	70.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.85% 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: K, GOL, MG, NA

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	0.58	0/3688	0.75	0/5026
1	B	0.67	0/3121	0.81	2/4252 (0.0%)
All	All	0.62	0/6809	0.78	2/9278 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	222	LEU	CB-CG-CD1	-5.45	101.73	111.00
1	B	204	ASP	C-N-CA	-5.28	111.22	122.30

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	3631	0	3568	243	0
1	B	3070	0	2986	131	0
2	A	2	0	0	0	0
2	B	1	0	0	0	0
3	A	1	0	0	0	0
4	B	6	0	8	2	1
5	B	1	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	A	46	0	0	40	0
6	B	74	0	0	10	0
All	All	6832	0	6562	374	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 28.

All (374) 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:372:ILE:HD11	1:B:438:LYS:CD	1.37	1.52
1:B:372:ILE:CD1	1:B:438:LYS:HD2	1.48	1.42
1:A:418:SER:O	1:A:424:LEU:HG	1.30	1.28
1:A:390:THR:CG2	1:A:392:ASP:OD1	1.81	1.28
1:A:418:SER:O	1:A:424:LEU:CG	1.81	1.27
1:B:372:ILE:HD11	1:B:438:LYS:CG	1.63	1.27
1:A:424:LEU:HD21	1:A:426:ALA:CB	1.63	1.26
1:A:424:LEU:CD2	1:A:426:ALA:HB2	1.67	1.24
1:B:372:ILE:CG1	1:B:438:LYS:HG3	1.73	1.19
1:A:390:THR:HG23	1:A:392:ASP:OD1	1.40	1.18
1:A:421:ASN:CB	1:A:423:GLY:O	1.91	1.18
1:B:405:ASP:O	1:B:435:ILE:HD12	1.44	1.17
1:A:418:SER:O	1:A:424:LEU:CD2	1.94	1.13
1:A:424:LEU:CD2	1:A:426:ALA:CB	2.24	1.13
1:A:400:PHE:HD2	1:A:401:ALA:N	1.46	1.13
1:A:116:TYR:CE2	6:A:707:HOH:O	2.03	1.11
1:A:421:ASN:HB2	1:A:423:GLY:O	0.96	1.11
1:A:373:GLU:O	1:A:406:PHE:O	1.64	1.11
1:A:96:GLY:N	1:A:98:GLU:OE1	1.82	1.11
1:A:94:LEU:HB3	1:A:97:ILE:HD12	1.34	1.09
1:A:207:HIS:ND1	6:A:719:HOH:O	1.84	1.09
1:A:424:LEU:HD11	1:A:426:ALA:HB3	1.32	1.08
1:A:493:THR:HG22	1:A:507:GLN:HG2	1.33	1.08
1:B:372:ILE:CD1	1:B:438:LYS:HG3	1.83	1.07
1:B:372:ILE:CD1	1:B:438:LYS:CD	2.17	1.05
1:B:372:ILE:HD13	1:B:438:LYS:HD2	1.39	1.05
1:A:492:VAL:HG23	1:A:508:VAL:HG23	1.37	1.05
1:A:424:LEU:CD1	1:A:426:ALA:HB3	1.86	1.04
1:B:48:ASP:O	1:B:75:GLU:N	1.90	1.03
1:B:372:ILE:CD1	1:B:438:LYS:CG	2.37	1.03
1:A:390:THR:HG21	1:A:392:ASP:OD1	1.56	1.01

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:110:ASN:N	6:B:710:HOH:O	1.91	1.00
1:B:400:PHE:O	1:B:404:VAL:HG12	1.60	1.00
1:A:129:ARG:NH2	6:A:727:HOH:O	1.93	0.99
1:A:96:GLY:O	1:A:99:TYR:HB2	1.64	0.98
1:A:424:LEU:HD21	1:A:426:ALA:HB2	1.23	0.98
1:A:55:SER:OG	6:A:716:HOH:O	1.82	0.97
1:B:372:ILE:HD11	1:B:438:LYS:HG3	1.40	0.96
1:A:424:LEU:HD13	1:A:426:ALA:H	1.29	0.96
1:A:424:LEU:HD13	1:A:424:LEU:O	1.66	0.95
1:A:400:PHE:CD2	1:A:401:ALA:N	2.35	0.95
1:B:372:ILE:HD11	1:B:438:LYS:HD2	1.06	0.94
1:A:242:LYS:O	6:A:730:HOH:O	1.86	0.93
1:A:400:PHE:CD2	1:A:400:PHE:C	2.42	0.93
1:A:49:ASN:HD21	1:A:72:ASN:HB3	1.33	0.92
1:B:382:PHE:CZ	1:B:400:PHE:CE2	2.58	0.91
1:A:390:THR:CG2	1:A:394:SER:H	1.82	0.91
1:A:424:LEU:HD22	1:A:426:ALA:HB2	1.50	0.91
1:A:159:HIS:O	6:A:708:HOH:O	1.88	0.91
1:A:424:LEU:HD21	1:A:426:ALA:HB3	1.53	0.90
1:A:99:TYR:O	1:A:101:HIS:CD2	2.25	0.90
1:A:74:THR:HG22	1:A:76:ALA:H	1.34	0.90
1:A:425:LYS:HG2	1:A:425:LYS:O	1.71	0.90
1:A:107:THR:HG21	6:A:740:HOH:O	1.70	0.89
1:B:382:PHE:CZ	1:B:400:PHE:CZ	2.60	0.89
1:B:405:ASP:OD2	1:B:408:THR:N	2.00	0.89
1:B:405:ASP:O	1:B:435:ILE:CD1	2.20	0.89
1:A:492:VAL:HG23	1:A:508:VAL:CG2	2.02	0.89
1:A:418:SER:O	1:A:424:LEU:HD21	1.71	0.88
1:B:214:ASP:O	6:B:741:HOH:O	1.91	0.88
1:A:392:ASP:OD2	1:A:420:ASN:ND2	2.07	0.87
1:A:241:SER:N	6:A:718:HOH:O	2.04	0.87
1:A:424:LEU:CD2	1:A:426:ALA:HB3	2.05	0.86
1:B:372:ILE:HG12	1:B:438:LYS:HG3	1.55	0.86
1:B:382:PHE:CE2	1:B:400:PHE:CZ	2.64	0.85
1:B:406:PHE:CD2	1:B:407:ASN:OD1	2.29	0.85
1:A:492:VAL:CG2	1:A:508:VAL:HG23	2.07	0.85
1:B:406:PHE:CG	1:B:407:ASN:OD1	2.30	0.85
1:B:406:PHE:O	1:B:406:PHE:CD1	2.30	0.85
1:A:74:THR:HG22	1:A:76:ALA:N	1.91	0.85
1:B:361:LEU:HG	1:B:426:ALA:HB2	1.57	0.85
1:B:435:ILE:HG12	1:B:435:ILE:O	1.76	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:382:PHE:CE1	1:B:400:PHE:CE2	2.65	0.84
1:A:96:GLY:H	1:A:98:GLU:CD	1.80	0.83
1:A:97:ILE:O	1:A:99:TYR:N	2.11	0.83
1:A:317:GLU:OE1	6:A:738:HOH:O	1.95	0.83
1:A:97:ILE:C	1:A:99:TYR:N	2.26	0.83
1:A:382:PHE:CD2	1:A:400:PHE:CD1	2.67	0.83
1:B:382:PHE:CE1	1:B:400:PHE:CZ	2.67	0.83
1:A:418:SER:C	1:A:424:LEU:HG	1.99	0.81
1:A:97:ILE:C	1:A:99:TYR:H	1.84	0.81
1:A:179:SER:HG	1:A:180:TYR:HD2	1.26	0.80
1:B:47:GLN:CG	1:B:47:GLN:O	2.29	0.80
1:A:390:THR:HG23	1:A:393:GLY:H	1.47	0.79
1:A:337:GLN:OE1	6:A:742:HOH:O	1.99	0.79
1:A:99:TYR:O	1:A:101:HIS:HD2	1.65	0.79
1:A:202:GLN:HG2	1:A:224:TYR:CZ	2.18	0.78
1:A:116:TYR:HE2	6:A:707:HOH:O	1.55	0.77
1:A:337:GLN:CD	6:A:742:HOH:O	2.22	0.77
1:B:382:PHE:CD2	1:B:400:PHE:CZ	2.73	0.76
1:A:205:GLY:O	6:A:744:HOH:O	2.04	0.76
1:A:400:PHE:O	1:A:404:VAL:HG13	1.85	0.76
1:A:337:GLN:O	6:A:737:HOH:O	2.04	0.76
1:B:67:GLN:NE2	1:B:77:GLN:HE22	1.84	0.76
1:B:237:ASP:HA	1:B:356:THR:HG22	1.68	0.76
1:A:439:THR:HG23	1:A:470:ASP:OD1	1.87	0.75
1:B:374:ASN:HA	1:B:406:PHE:HD1	1.49	0.75
1:A:369:LYS:HE3	1:A:371:TYR:CE1	2.21	0.74
1:A:424:LEU:HD13	1:A:426:ALA:N	2.01	0.74
1:B:382:PHE:CD1	1:B:400:PHE:HZ	2.05	0.74
1:B:263:THR:OG1	6:B:702:HOH:O	2.04	0.74
1:A:74:THR:CG2	1:A:76:ALA:H	1.99	0.74
1:B:312:ASP:OD2	4:B:602:GOL:H12	1.88	0.74
1:B:406:PHE:CE2	1:B:407:ASN:OD1	2.41	0.74
1:B:406:PHE:CD1	1:B:407:ASN:OD1	2.41	0.74
1:A:392:ASP:OD2	1:A:394:SER:HB3	1.88	0.73
1:B:382:PHE:CD1	1:B:400:PHE:CZ	2.76	0.73
1:B:78:MET:HB3	1:B:99:TYR:O	1.89	0.73
5:B:603:K:K	6:B:709:HOH:O	2.00	0.73
1:A:390:THR:HG21	1:A:394:SER:H	1.52	0.72
1:B:47:GLN:O	1:B:47:GLN:CD	2.28	0.72
1:A:311:THR:OG1	6:A:728:HOH:O	2.06	0.72
1:A:493:THR:HG22	1:A:507:GLN:CG	2.16	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:392:ASP:OD1	1:A:394:SER:N	2.22	0.71
1:A:55:SER:CB	6:A:716:HOH:O	2.38	0.71
1:A:321:TYR:OH	6:A:702:HOH:O	2.07	0.71
1:A:419:GLU:HA	1:A:424:LEU:HB2	1.72	0.71
1:A:424:LEU:CD1	1:A:424:LEU:O	2.38	0.71
1:B:407:ASN:O	1:B:408:THR:C	2.30	0.71
1:A:329:TYR:OH	1:B:330:GLN:NE2	2.23	0.70
1:A:487:PRO:HA	1:A:512:VAL:HG23	1.73	0.70
1:B:382:PHE:CG	1:B:400:PHE:CZ	2.79	0.70
1:A:390:THR:CG2	1:A:394:SER:N	2.54	0.70
1:B:372:ILE:HD11	1:B:438:LYS:CE	2.21	0.70
1:A:183:ALA:HB3	6:A:708:HOH:O	1.91	0.69
1:B:382:PHE:CG	1:B:400:PHE:HZ	2.10	0.69
1:B:405:ASP:C	1:B:435:ILE:HD12	2.13	0.69
1:B:47:GLN:O	1:B:47:GLN:HG3	1.93	0.69
1:B:400:PHE:CD1	1:B:401:ALA:N	2.61	0.68
1:B:409:PRO:HA	1:B:435:ILE:O	1.93	0.68
1:A:373:GLU:OE2	6:A:733:HOH:O	2.10	0.68
1:A:49:ASN:OD1	1:A:73:ILE:O	2.11	0.68
1:B:202:GLN:HG2	1:B:224:TYR:CZ	2.29	0.67
1:B:382:PHE:CE2	1:B:400:PHE:CE1	2.83	0.67
1:A:382:PHE:CE1	1:A:386:ILE:HD13	2.30	0.67
1:A:94:LEU:HD22	1:A:97:ILE:HD11	1.75	0.67
1:A:361:LEU:HD11	1:A:392:ASP:H	1.58	0.66
1:A:382:PHE:CD2	1:A:400:PHE:HD1	2.11	0.66
1:B:400:PHE:CD2	1:B:433:VAL:HG11	2.31	0.66
1:A:392:ASP:OD1	1:A:393:GLY:N	2.27	0.66
1:A:424:LEU:CD1	1:A:426:ALA:CB	2.70	0.66
1:B:201:ILE:O	1:B:204:ASP:HB2	1.95	0.66
1:A:424:LEU:CG	1:A:426:ALA:HB3	2.24	0.66
1:A:419:GLU:HA	1:A:424:LEU:CG	2.26	0.66
1:A:107:THR:CG2	6:A:740:HOH:O	2.37	0.65
1:A:420:ASN:OD1	1:A:420:ASN:C	2.35	0.65
1:A:57:PHE:HZ	1:A:97:ILE:HG12	1.61	0.65
1:A:394:SER:CB	1:A:420:ASN:HB2	2.26	0.65
1:B:366:ASP:HB2	1:B:386:ILE:HG13	1.78	0.65
1:B:408:THR:HB	1:B:412:TYR:OH	1.97	0.64
1:A:96:GLY:CA	1:A:98:GLU:OE1	2.45	0.64
1:B:372:ILE:HG13	1:B:438:LYS:HG3	1.76	0.64
1:B:407:ASN:O	1:B:409:PRO:HD3	1.97	0.64
1:B:47:GLN:O	1:B:47:GLN:NE2	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:382:PHE:CD2	1:B:400:PHE:CE1	2.85	0.64
1:A:337:GLN:HG3	6:A:715:HOH:O	1.97	0.64
1:A:116:TYR:CZ	6:A:707:HOH:O	2.17	0.64
1:B:374:ASN:CA	1:B:406:PHE:HD1	2.11	0.63
1:B:406:PHE:CZ	1:B:407:ASN:OD1	2.52	0.63
1:A:217:LYS:N	6:A:722:HOH:O	1.98	0.63
1:A:165:THR:OG1	6:A:725:HOH:O	2.16	0.63
1:A:424:LEU:C	1:A:426:ALA:H	2.02	0.63
1:A:54:ASP:OD1	1:A:56:THR:OG1	2.16	0.62
1:A:425:LYS:O	1:A:425:LYS:CG	2.43	0.62
1:B:400:PHE:CD1	1:B:400:PHE:C	2.72	0.62
1:B:372:ILE:CG1	1:B:438:LYS:CG	2.63	0.62
1:B:406:PHE:CE1	1:B:407:ASN:OD1	2.52	0.62
1:A:74:THR:O	1:A:77:GLN:N	2.32	0.62
1:A:218:LEU:N	6:A:722:HOH:O	2.32	0.62
1:B:312:ASP:OD2	4:B:602:GOL:C1	2.47	0.62
1:B:100:ALA:O	1:B:103:ILE:HG12	2.00	0.61
1:B:420:ASN:O	1:B:421:ASN:C	2.37	0.61
1:A:237:ASP:HA	1:A:356:THR:HG22	1.82	0.61
1:A:470:ASP:O	1:A:472:THR:N	2.32	0.61
1:A:378:THR:CG2	1:A:381:THR:HG23	2.30	0.61
1:A:74:THR:HB	1:A:77:GLN:HG3	1.82	0.61
1:B:110:ASN:CA	6:B:710:HOH:O	2.42	0.60
1:A:54:ASP:HB3	1:A:57:PHE:HB3	1.83	0.60
1:A:107:THR:HG23	1:A:129:ARG:HD2	1.84	0.60
1:B:406:PHE:HA	1:B:435:ILE:HD12	1.82	0.60
1:B:407:ASN:N	1:B:435:ILE:HD11	2.17	0.60
1:B:214:ASP:HB3	6:B:741:HOH:O	2.00	0.60
1:A:202:GLN:NE2	1:A:222:LEU:HB3	2.17	0.60
1:B:54:ASP:OD1	6:B:715:HOH:O	2.16	0.59
1:A:439:THR:CG2	1:A:470:ASP:OD1	2.49	0.59
1:A:285:THR:HG22	1:A:285:THR:O	2.01	0.59
1:A:241:SER:CB	6:A:718:HOH:O	2.50	0.59
1:A:57:PHE:CZ	1:A:97:ILE:CG1	2.86	0.59
1:A:497:GLU:HG2	1:A:502:LYS:HG3	1.85	0.59
1:B:407:ASN:O	1:B:409:PRO:CD	2.50	0.59
1:B:67:GLN:HE22	1:B:77:GLN:HE22	1.51	0.59
1:A:98:GLU:OE1	1:A:98:GLU:N	2.34	0.58
1:B:372:ILE:HG12	1:B:438:LYS:CG	2.31	0.58
1:A:392:ASP:OD2	1:A:394:SER:CB	2.51	0.58
1:A:457:GLU:OE2	1:A:476:SER:HB3	2.04	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:184:ILE:O	1:A:204:ASP:O	2.22	0.58
1:A:483:ASP:O	1:A:484:LEU:HB2	2.03	0.58
1:A:93:ASP:OD1	1:A:95:THR:HG23	2.04	0.58
1:A:93:ASP:OD1	1:A:94:LEU:N	2.36	0.58
1:A:94:LEU:O	1:A:97:ILE:HG13	2.04	0.58
1:B:48:ASP:O	1:B:74:THR:HA	2.03	0.58
1:A:93:ASP:OD1	1:A:93:ASP:C	2.43	0.57
1:A:362:ASN:N	1:A:362:ASN:OD1	2.36	0.57
1:A:419:GLU:HA	1:A:424:LEU:CB	2.35	0.57
1:A:394:SER:OG	1:A:395:THR:N	2.36	0.57
1:B:408:THR:O	1:B:435:ILE:CD1	2.53	0.57
1:A:378:THR:HG23	1:A:381:THR:H	1.70	0.56
1:B:60:TYR:OH	6:B:723:HOH:O	2.17	0.56
1:A:98:GLU:HG3	1:A:118:GLN:HB3	1.86	0.56
1:A:177:ASP:OD1	1:A:179:SER:HB3	2.06	0.56
1:B:374:ASN:HA	1:B:406:PHE:O	2.06	0.56
1:A:74:THR:HG22	1:A:77:GLN:H	1.70	0.55
1:B:194:PRO:O	1:B:217:LYS:HD2	2.06	0.55
1:A:116:TYR:O	1:A:119:ILE:HG12	2.06	0.55
1:A:207:HIS:CB	6:A:719:HOH:O	2.54	0.55
1:A:194:PRO:O	1:A:217:LYS:HD2	2.05	0.55
1:A:94:LEU:CB	1:A:97:ILE:HD12	2.23	0.55
1:B:419:GLU:OE2	1:B:423:GLY:HA2	2.07	0.55
1:A:478:PHE:CE1	1:A:482:VAL:HG21	2.42	0.55
1:A:57:PHE:CZ	1:A:97:ILE:HD11	2.43	0.54
1:A:450:LYS:NZ	1:A:513:GLU:OE2	2.40	0.54
1:B:202:GLN:HG2	1:B:224:TYR:CE2	2.42	0.54
1:A:363:ILE:HG12	1:A:363:ILE:O	2.07	0.54
1:A:53:PRO:HD2	1:A:95:THR:OG1	2.08	0.54
1:A:400:PHE:HD2	1:A:401:ALA:CA	2.20	0.54
1:A:97:ILE:O	1:A:98:GLU:C	2.46	0.54
1:A:57:PHE:CE2	1:A:97:ILE:HG13	2.43	0.54
1:B:85:THR:HG23	1:B:107:THR:HB	1.90	0.54
1:B:400:PHE:CE2	1:B:433:VAL:HG11	2.44	0.54
1:B:405:ASP:C	1:B:435:ILE:CD1	2.73	0.53
1:A:419:GLU:HA	1:A:424:LEU:HG	1.91	0.53
1:A:201:ILE:O	1:A:204:ASP:HB2	2.08	0.53
1:A:337:GLN:NE2	6:A:742:HOH:O	2.40	0.53
1:A:186:ASP:C	1:A:186:ASP:OD1	2.47	0.53
1:A:397:THR:HG23	1:A:417:GLN:HB2	1.90	0.53
1:A:207:HIS:HB3	6:A:719:HOH:O	2.08	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:67:GLN:NE2	1:B:77:GLN:NE2	2.55	0.52
1:B:184:ILE:O	1:B:204:ASP:O	2.27	0.52
1:B:368:GLU:HA	1:B:432:ASN:O	2.09	0.52
1:B:400:PHE:HD1	1:B:401:ALA:N	2.03	0.52
1:A:217:LYS:CA	6:A:722:HOH:O	2.52	0.52
1:A:390:THR:HG23	1:A:393:GLY:N	2.21	0.52
1:A:48:ASP:CG	1:A:48:ASP:O	2.48	0.52
1:A:439:THR:HG23	1:A:470:ASP:CG	2.29	0.52
1:A:94:LEU:HD22	1:A:97:ILE:CD1	2.39	0.52
1:B:402:ASP:C	1:B:402:ASP:OD2	2.48	0.52
1:A:55:SER:N	6:A:716:HOH:O	2.32	0.52
1:A:116:TYR:OH	6:A:707:HOH:O	1.82	0.52
1:A:57:PHE:HE2	1:A:97:ILE:HG13	1.74	0.51
1:A:97:ILE:O	1:A:100:ALA:N	2.43	0.51
1:A:490:TYR:HB2	1:A:510:VAL:HG13	1.91	0.51
1:B:207:HIS:O	1:B:263:THR:HA	2.11	0.51
1:A:404:VAL:CG2	1:A:406:PHE:CE2	2.94	0.51
1:A:166:LYS:HG3	6:A:725:HOH:O	2.11	0.51
1:A:378:THR:HG22	1:A:381:THR:HG23	1.91	0.51
1:B:406:PHE:CA	1:B:435:ILE:HD12	2.41	0.51
1:A:418:SER:O	1:A:424:LEU:CD1	2.55	0.51
1:A:241:SER:HB3	6:A:718:HOH:O	2.09	0.51
1:A:97:ILE:N	1:A:98:GLU:OE1	2.44	0.51
1:A:424:LEU:C	1:A:426:ALA:N	2.63	0.51
1:A:115:ASN:HA	1:A:139:LYS:HB3	1.92	0.50
1:A:177:ASP:OD1	1:A:179:SER:CB	2.59	0.50
1:A:379:GLU:O	1:A:382:PHE:HB3	2.11	0.50
1:A:460:PHE:CZ	1:A:492:VAL:HG21	2.47	0.50
1:A:455:LYS:HE2	1:A:463:ASP:OD2	2.10	0.50
1:B:96:GLY:N	1:B:98:GLU:OE1	2.34	0.50
1:B:115:ASN:HA	1:B:139:LYS:HB3	1.92	0.50
1:A:419:GLU:CA	1:A:424:LEU:HB2	2.42	0.50
1:B:372:ILE:C	1:B:436:LYS:O	2.50	0.50
1:B:374:ASN:CA	1:B:406:PHE:CD1	2.95	0.49
1:B:171:PRO:HD2	6:B:752:HOH:O	2.12	0.49
1:A:464:ILE:HD12	1:A:508:VAL:HG11	1.94	0.49
1:A:404:VAL:CG2	1:A:404:VAL:O	2.60	0.49
1:A:382:PHE:CE2	1:A:400:PHE:HB2	2.48	0.49
1:A:57:PHE:CZ	1:A:97:ILE:HG12	2.43	0.48
1:A:96:GLY:C	1:A:98:GLU:OE1	2.51	0.48
1:A:394:SER:OG	1:A:420:ASN:HB2	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:390:THR:HG21	1:A:394:SER:N	2.23	0.48
1:A:421:ASN:C	1:A:423:GLY:N	2.65	0.48
1:A:148:ASN:N	6:A:709:HOH:O	2.20	0.48
1:A:419:GLU:HA	1:A:424:LEU:HD23	1.96	0.47
1:B:177:ASP:HA	1:B:200:ASN:HB2	1.95	0.47
1:B:337:GLN:HG3	1:B:338:PHE:CE2	2.49	0.47
1:B:406:PHE:CD1	1:B:406:PHE:C	2.88	0.47
1:B:373:GLU:CD	1:B:375:GLN:HB3	2.35	0.47
1:A:361:LEU:C	1:A:362:ASN:OD1	2.53	0.47
1:A:57:PHE:CE2	1:A:97:ILE:CG1	2.98	0.47
1:A:451:VAL:HG11	1:A:514:LYS:HD2	1.95	0.47
1:B:48:ASP:O	1:B:74:THR:CA	2.63	0.47
1:A:145:GLY:O	1:A:147:THR:HG23	2.15	0.47
1:A:361:LEU:HD21	1:A:392:ASP:CG	2.34	0.47
1:B:84:ILE:HD12	1:B:103:ILE:HD13	1.97	0.47
1:A:57:PHE:HZ	1:A:97:ILE:CG1	2.24	0.46
1:A:67:GLN:NE2	1:A:77:GLN:HE22	2.13	0.46
1:A:73:ILE:HA	1:A:77:GLN:OE1	2.15	0.46
1:B:377:VAL:HG12	1:B:378:THR:H	1.79	0.46
1:A:74:THR:HG22	1:A:74:THR:O	2.14	0.46
1:B:439:THR:HG23	1:B:439:THR:O	2.15	0.46
1:A:424:LEU:HD22	1:A:426:ALA:CB	2.22	0.46
1:B:113:ALA:HB3	1:B:116:TYR:CZ	2.50	0.46
1:B:406:PHE:C	1:B:407:ASN:OD1	2.54	0.46
1:A:404:VAL:HG21	1:A:406:PHE:CE2	2.51	0.46
1:A:146:LEU:HD23	1:A:149:LEU:HD22	1.98	0.46
1:A:202:GLN:HG2	1:A:224:TYR:CE1	2.50	0.46
1:B:421:ASN:OD1	1:B:421:ASN:N	2.48	0.46
1:A:94:LEU:O	1:A:97:ILE:CG1	2.64	0.46
1:A:193:MET:HA	1:A:194:PRO:HD3	1.83	0.46
1:A:207:HIS:CG	6:A:719:HOH:O	2.46	0.46
1:B:374:ASN:HA	1:B:406:PHE:CD1	2.40	0.46
1:A:84:ILE:HD12	1:A:103:ILE:HD13	1.98	0.45
1:A:391:ASP:OD1	1:A:392:ASP:N	2.49	0.45
1:A:390:THR:HG22	1:A:394:SER:N	2.31	0.45
1:B:137:SER:OG	1:B:163:ILE:HB	2.17	0.45
1:A:487:PRO:HG2	1:A:514:LYS:HB2	1.98	0.45
1:A:49:ASN:HD21	1:A:72:ASN:CB	2.18	0.44
1:A:325:ILE:HB	1:A:349:PRO:HG2	1.99	0.44
1:B:46:SER:C	1:B:48:ASP:H	2.21	0.44
1:A:170:LEU:HA	1:A:171:PRO:HD3	1.66	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:164:LEU:HD22	1:A:190:LEU:HD21	1.98	0.44
1:A:92:THR:HG22	1:A:92:THR:O	2.18	0.44
1:A:361:LEU:HD23	1:A:420:ASN:HB3	1.98	0.44
1:A:382:PHE:CD1	1:A:382:PHE:C	2.90	0.44
1:A:179:SER:OG	1:A:180:TYR:CD2	2.70	0.44
1:A:395:THR:O	1:A:418:SER:OG	2.21	0.44
1:A:270:VAL:HA	1:A:271:PRO:HD2	1.82	0.44
1:A:478:PHE:CD1	1:A:482:VAL:HG21	2.53	0.44
1:B:193:MET:HA	1:B:194:PRO:HD3	1.91	0.44
1:A:165:THR:C	6:A:725:HOH:O	2.56	0.43
1:B:408:THR:O	1:B:435:ILE:HD13	2.17	0.43
1:A:439:THR:HG23	1:A:470:ASP:OD2	2.18	0.43
1:A:149:LEU:N	6:A:709:HOH:O	2.50	0.43
1:A:243:LEU:HA	6:A:730:HOH:O	2.18	0.43
1:B:369:LYS:HB2	1:B:386:ILE:HD13	2.00	0.43
1:B:399:ASP:OD1	1:B:400:PHE:N	2.51	0.43
1:A:49:ASN:ND2	1:A:72:ASN:HB3	2.16	0.43
1:B:270:VAL:HA	1:B:271:PRO:HD2	1.94	0.43
1:A:478:PHE:O	1:A:482:VAL:HG23	2.19	0.43
1:A:419:GLU:HA	1:A:424:LEU:CD2	2.49	0.43
1:A:487:PRO:CG	1:A:514:LYS:HB2	2.49	0.43
1:A:57:PHE:CE2	1:A:97:ILE:HD11	2.54	0.42
1:A:390:THR:HG21	1:A:394:SER:HB3	2.00	0.42
1:B:99:TYR:HA	1:B:101:HIS:NE2	2.34	0.42
1:B:170:LEU:HA	1:B:171:PRO:HD3	1.78	0.42
1:B:200:ASN:HB3	1:B:202:GLN:OE1	2.19	0.42
1:A:397:THR:CG2	1:A:417:GLN:HB2	2.48	0.42
1:A:419:GLU:CA	1:A:424:LEU:HG	2.49	0.42
1:B:170:LEU:HD13	1:B:173:VAL:HG21	2.01	0.42
1:A:265:ASN:ND2	6:A:712:HOH:O	2.38	0.42
1:B:132:GLY:O	1:B:157:SER:HA	2.19	0.42
1:A:96:GLY:O	1:A:99:TYR:CB	2.50	0.42
1:A:400:PHE:CD2	1:A:401:ALA:CA	3.01	0.42
1:B:420:ASN:ND2	1:B:422:ALA:HB3	2.34	0.42
1:A:145:GLY:O	1:A:147:THR:N	2.53	0.42
1:B:366:ASP:HB2	1:B:386:ILE:CG1	2.49	0.42
1:A:259:MET:HB3	1:A:351:TYR:CE2	2.54	0.42
1:A:448:THR:HA	1:A:511:ILE:O	2.20	0.41
1:B:400:PHE:H	1:B:414:VAL:HG13	1.85	0.41
1:A:424:LEU:O	1:A:426:ALA:N	2.49	0.41
1:A:361:LEU:HD11	1:A:390:THR:OG1	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:424:LEU:CD1	1:A:426:ALA:H	2.15	0.41
1:A:202:GLN:HB3	1:A:203:PHE:CD2	2.56	0.41
1:A:137:SER:OG	1:A:163:ILE:HB	2.20	0.41
1:A:419:GLU:CB	1:A:424:LEU:HB2	2.51	0.41
1:A:373:GLU:O	1:A:374:ASN:OD1	2.38	0.41
1:B:382:PHE:CE1	1:B:400:PHE:HE2	2.34	0.41
1:A:399:ASP:O	1:A:402:ASP:N	2.44	0.41
1:A:469:ASN:OD1	1:A:469:ASN:N	2.48	0.41
1:A:419:GLU:O	1:A:419:GLU:CG	2.67	0.41
1:B:263:THR:CG2	6:B:702:HOH:O	2.69	0.40
1:B:363:ILE:HD11	1:B:416:LEU:HB3	2.03	0.40
1:B:404:VAL:CG2	1:B:405:ASP:N	2.84	0.40
1:B:420:ASN:O	1:B:422:ALA:N	2.54	0.40
1:B:285:THR:HB	1:B:320:GLU:HB3	2.03	0.40
1:A:378:THR:HG22	1:A:381:THR:CG2	2.51	0.40

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:602:GOL:O2	4:B:602:GOL:O2[5_554]	1.99	0.21

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	467/590 (79%)	434 (93%)	32 (7%)	1 (0%)	47 71
1	B	393/590 (67%)	361 (92%)	31 (8%)	1 (0%)	41 64
All	All	860/1180 (73%)	795 (92%)	63 (7%)	2 (0%)	47 71

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	98	GLU
1	B	409	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	418/522 (80%)	399 (96%)	19 (4%)	27 52
1	B	354/522 (68%)	320 (90%)	34 (10%)	8 16
All	All	772/1044 (74%)	719 (93%)	53 (7%)	15 31

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	48	ASP
1	A	93	ASP
1	A	98	GLU
1	A	104	LYS
1	A	123	SER
1	A	137	SER
1	A	225	SER
1	A	280	SER
1	A	285	THR
1	A	328	SER
1	A	329	TYR
1	A	356	THR
1	A	362	ASN
1	A	363	ILE
1	A	389	LYS
1	A	400	PHE
1	A	420	ASN
1	A	439	THR
1	A	470	ASP
1	B	47	GLN
1	B	49	ASN
1	B	54	ASP

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Mol	Chain	Res	Type
1	B	56	THR
1	B	70	THR
1	B	74	THR
1	B	95	THR
1	B	123	SER
1	B	227	THR
1	B	233	LEU
1	B	248	GLU
1	B	285	THR
1	B	328	SER
1	B	336	GLU
1	B	345	THR
1	B	348	MET
1	B	356	THR
1	B	363	ILE
1	B	373	GLU
1	B	376	LEU
1	B	395	THR
1	B	400	PHE
1	B	402	ASP
1	B	403	LYS
1	B	404	VAL
1	B	406	PHE
1	B	407	ASN
1	B	408	THR
1	B	413	THR
1	B	415	THR
1	B	427	THR
1	B	433	VAL
1	B	435	ILE
1	B	438	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	49	ASN
1	A	67	GLN
1	A	101	HIS
1	A	337	GLN
1	B	67	GLN
1	B	330	GLN
1	B	374	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 5 are monoatomic - leaving 1 for Mogul analysis.

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
4	GOL	B	602	-	5,5,5	0.50	0	5,5,5	0.53	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	GOL	B	602	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	602	GOL	O1-C1-C2-C3
4	B	602	GOL	O1-C1-C2-O2

There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	602	GOL	2	1

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	469/590 (79%)	0.44	30 (6%) 19 14	45, 74, 108, 143	0
1	B	395/590 (66%)	0.45	36 (9%) 9 6	38, 53, 122, 147	0
All	All	864/1180 (73%)	0.45	66 (7%) 13 10	38, 65, 115, 147	0

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	400	PHE	13.2
1	B	372	ILE	10.0
1	A	516	THR	8.1
1	B	404	VAL	7.9
1	B	401	ALA	6.5
1	A	424	LEU	6.4
1	B	376	LEU	6.4
1	B	422	ALA	6.4
1	A	514	LYS	5.9
1	B	371	TYR	5.3
1	B	374	ASN	4.6
1	A	371	TYR	4.6
1	B	412	TYR	4.5
1	A	425	LYS	4.5
1	A	421	ASN	4.2
1	B	406	PHE	4.1
1	A	393	GLY	4.1
1	B	370	THR	4.0
1	A	391	ASP	3.8
1	A	377	VAL	3.7
1	A	365	ALA	3.7
1	B	409	PRO	3.6
1	A	423	GLY	3.6
1	A	362	ASN	3.6

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Mol	Chain	Res	Type	RSRZ
1	B	424	LEU	3.5
1	B	421	ASN	3.4
1	A	395	THR	3.3
1	A	361	LEU	3.3
1	B	414	VAL	3.3
1	B	48	ASP	3.3
1	B	413	THR	3.2
1	B	435	ILE	3.1
1	A	390	THR	3.1
1	A	64	LEU	3.0
1	A	416	LEU	3.0
1	B	416	LEU	2.9
1	A	388	ALA	2.9
1	B	407	ASN	2.8
1	B	415	THR	2.7
1	A	422	ALA	2.7
1	B	399	ASP	2.7
1	B	408	THR	2.7
1	B	375	GLN	2.7
1	B	437	ALA	2.7
1	B	410	GLY	2.6
1	A	420	ASN	2.6
1	A	94	LEU	2.6
1	A	243	LEU	2.5
1	B	378	THR	2.5
1	B	402	ASP	2.5
1	B	405	ASP	2.5
1	B	439	THR	2.5
1	A	386	ILE	2.5
1	B	440	THR	2.5
1	A	383	LEU	2.4
1	A	515	GLU	2.3
1	A	119	ILE	2.3
1	B	361	LEU	2.2
1	A	72	ASN	2.2
1	B	373	GLU	2.2
1	B	377	VAL	2.2
1	B	423	GLY	2.1
1	A	403	LYS	2.1
1	B	436	LYS	2.1
1	A	392	ASP	2.1
1	A	402	ASP	2.1

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	MG	B	601	1/1	0.81	0.47	58,58,58,58	1
5	K	B	603	1/1	0.91	0.11	81,81,81,81	0
2	MG	A	601	1/1	0.93	0.42	54,54,54,54	0
4	GOL	B	602	6/6	0.94	0.22	63,68,71,75	0
2	MG	A	602	1/1	0.94	0.29	66,66,66,66	0
3	NA	A	603	1/1	0.99	0.35	64,64,64,64	0

6.5 Other polymers [i](#)

There are no such residues in this entry.