



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 15, 2024 – 06:33 PM EST

PDB ID : 3QZ2
Title : The structure of cysteine-free human insulin degrading enzyme
Authors : Guo, Q.; Tang, W.J.
Deposited on : 2011-03-04
Resolution : 3.20 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
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

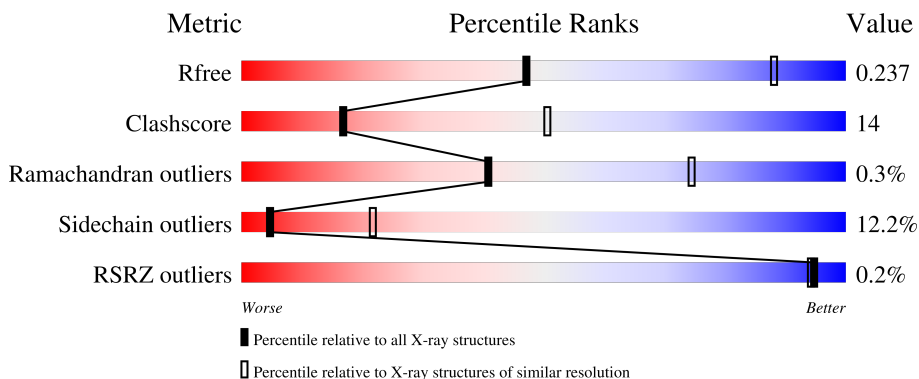
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 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	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)
RSRZ outliers	127900	1095 (3.20-3.20)

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	990	
1	B	990	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 15748 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 Insulin-degrading enzyme.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	953	7790	5019	1308	1441	22	0	0	0
1	B	952	7780	5013	1305	1440	22	0	0	0

There are 50 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	30	MET	-	expression tag	UNP P14735
A	31	HIS	-	expression tag	UNP P14735
A	32	HIS	-	expression tag	UNP P14735
A	33	HIS	-	expression tag	UNP P14735
A	34	HIS	-	expression tag	UNP P14735
A	35	HIS	-	expression tag	UNP P14735
A	36	HIS	-	expression tag	UNP P14735
A	37	ALA	-	expression tag	UNP P14735
A	38	ALA	-	expression tag	UNP P14735
A	39	GLY	-	expression tag	UNP P14735
A	40	ILE	-	expression tag	UNP P14735
A	41	PRO	-	expression tag	UNP P14735
A	110	LEU	CYS	engineered mutation	UNP P14735
A	171	SER	CYS	engineered mutation	UNP P14735
A	178	ALA	CYS	engineered mutation	UNP P14735
A	257	VAL	CYS	engineered mutation	UNP P14735
A	414	LEU	CYS	engineered mutation	UNP P14735
A	573	ASN	CYS	engineered mutation	UNP P14735
A	590	SER	CYS	engineered mutation	UNP P14735
A	789	SER	CYS	engineered mutation	UNP P14735
A	812	ALA	CYS	engineered mutation	UNP P14735
A	819	ALA	CYS	engineered mutation	UNP P14735
A	904	SER	CYS	engineered mutation	UNP P14735
A	966	ASN	CYS	engineered mutation	UNP P14735
A	974	ALA	CYS	engineered mutation	UNP P14735

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Chain	Residue	Modelled	Actual	Comment	Reference
B	30	MET	-	expression tag	UNP P14735
B	31	HIS	-	expression tag	UNP P14735
B	32	HIS	-	expression tag	UNP P14735
B	33	HIS	-	expression tag	UNP P14735
B	34	HIS	-	expression tag	UNP P14735
B	35	HIS	-	expression tag	UNP P14735
B	36	HIS	-	expression tag	UNP P14735
B	37	ALA	-	expression tag	UNP P14735
B	38	ALA	-	expression tag	UNP P14735
B	39	GLY	-	expression tag	UNP P14735
B	40	ILE	-	expression tag	UNP P14735
B	41	PRO	-	expression tag	UNP P14735
B	110	LEU	CYS	engineered mutation	UNP P14735
B	171	SER	CYS	engineered mutation	UNP P14735
B	178	ALA	CYS	engineered mutation	UNP P14735
B	257	VAL	CYS	engineered mutation	UNP P14735
B	414	LEU	CYS	engineered mutation	UNP P14735
B	573	ASN	CYS	engineered mutation	UNP P14735
B	590	SER	CYS	engineered mutation	UNP P14735
B	789	SER	CYS	engineered mutation	UNP P14735
B	812	ALA	CYS	engineered mutation	UNP P14735
B	819	ALA	CYS	engineered mutation	UNP P14735
B	904	SER	CYS	engineered mutation	UNP P14735
B	966	ASN	CYS	engineered mutation	UNP P14735
B	974	ALA	CYS	engineered mutation	UNP P14735

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

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

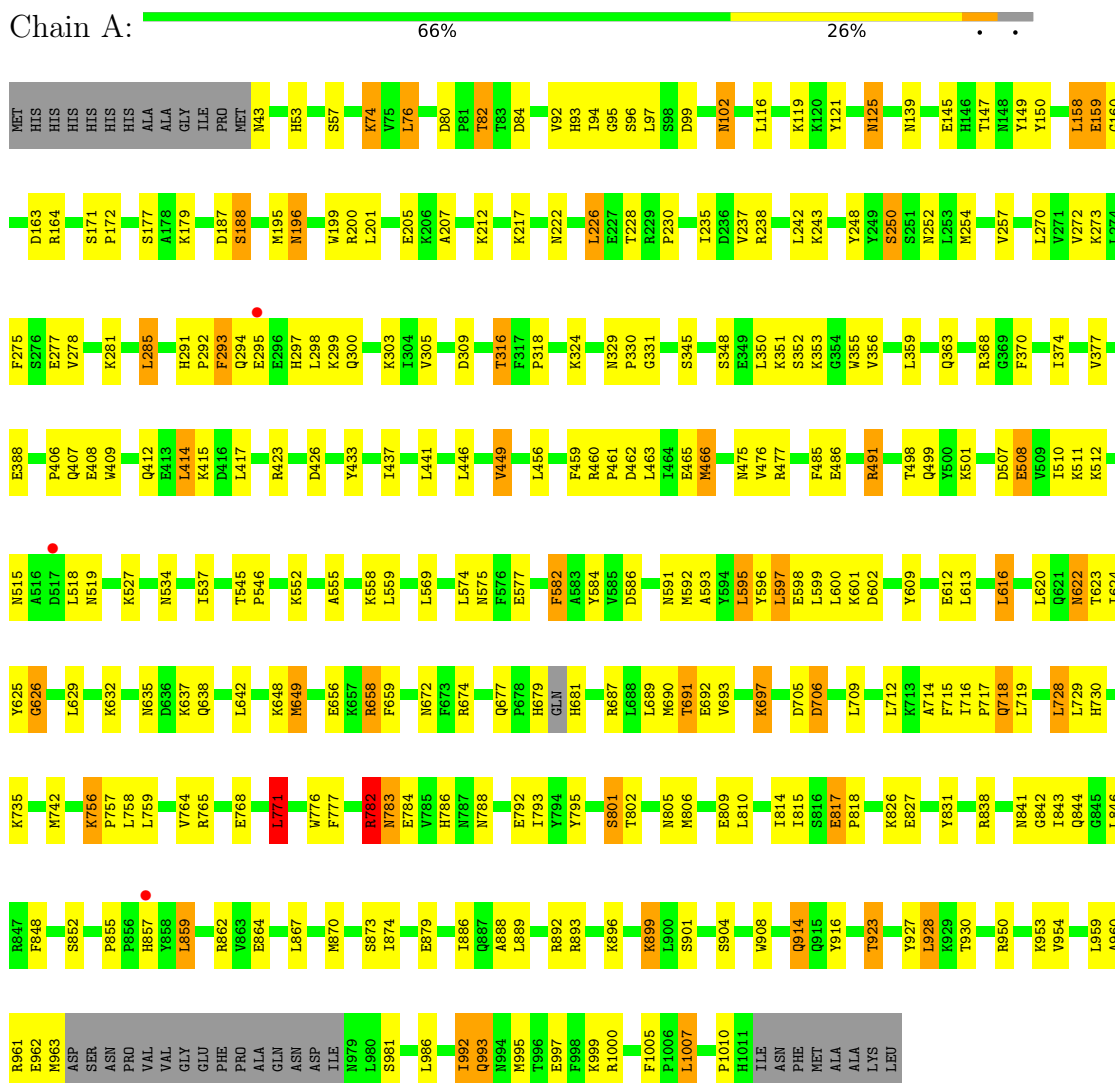
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	94	Total O 94 94	0	0
3	B	82	Total O 82 82	0	0

3 Residue-property plots i

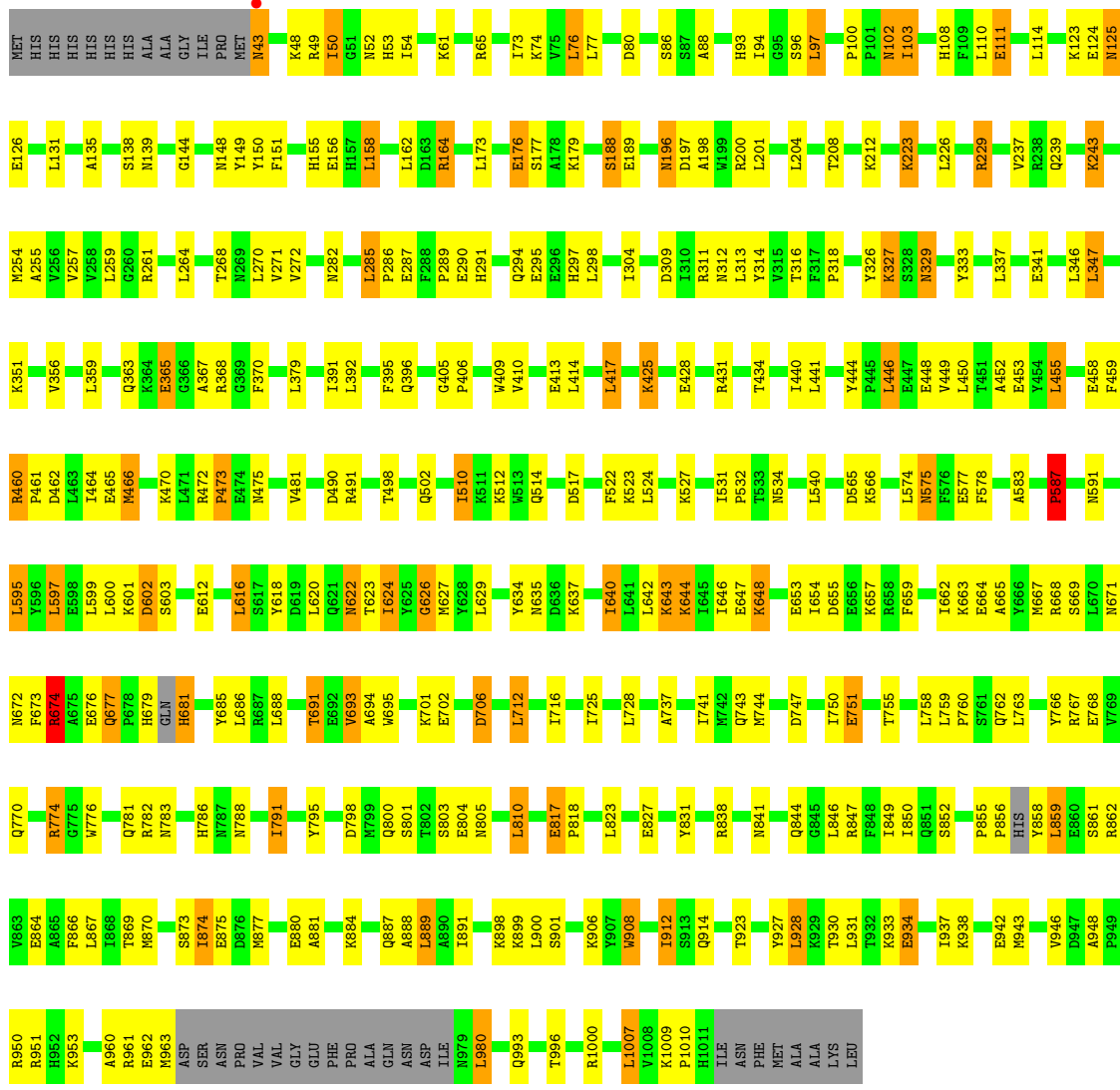
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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



- Molecule 1: Insulin-degrading enzyme





4 Data and refinement statistics i

Property	Value	Source
Space group	P 65	Depositor
Cell constants a, b, c, α , β , γ	262.07Å 262.07Å 90.84Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	50.00 – 3.20 49.53 – 3.21	Depositor EDS
% Data completeness (in resolution range)	99.6 (50.00-3.20) 99.6 (49.53-3.21)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.18 (at 3.19Å)	Xtrriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.172 , 0.241 0.173 , 0.237	Depositor DCC
R_{free} test set	2967 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å ²)	38.4	Xtrriage
Anisotropy	0.094	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 36.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.018 for h,-h-k,-l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	15748	wwPDB-VP
Average B, all atoms (Å ²)	27.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.07% 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:
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	0.84	4/7984 (0.1%)	0.90	13/10800 (0.1%)
1	B	0.81	5/7972 (0.1%)	0.88	8/10782 (0.1%)
All	All	0.82	9/15956 (0.1%)	0.89	21/21582 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	577	GLU	CG-CD	8.82	1.65	1.51
1	B	453	GLU	CB-CG	6.97	1.65	1.52
1	B	577	GLU	CG-CD	6.67	1.61	1.51
1	B	50	ILE	CG1-CD1	6.24	1.93	1.50
1	A	577	GLU	CB-CG	5.81	1.63	1.52
1	A	159	GLU	CG-CD	5.17	1.59	1.51
1	B	176	GLU	CG-CD	5.12	1.59	1.51
1	B	287	GLU	CG-CD	5.05	1.59	1.51
1	A	992	ILE	C-N	-5.05	1.22	1.34

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	365	GLU	CB-CA-C	-8.45	93.50	110.40
1	A	992	ILE	O-C-N	-8.15	109.66	122.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	285	LEU	CA-CB-CG	7.45	132.43	115.30
1	A	993	GLN	N-CA-CB	7.26	123.68	110.60
1	A	626	GLY	N-CA-C	-6.86	95.94	113.10
1	A	293	PHE	N-CA-C	-6.38	93.78	111.00
1	B	626	GLY	N-CA-C	-6.07	97.93	113.10
1	A	226	LEU	CA-CB-CG	5.98	129.05	115.30
1	A	782	ARG	NE-CZ-NH2	-5.84	117.38	120.30
1	A	1010	PRO	CB-CA-C	-5.80	97.49	112.00
1	B	674	ARG	NE-CZ-NH1	5.80	123.20	120.30
1	B	980	LEU	CA-CB-CG	5.51	127.99	115.30
1	A	158	LEU	CA-CB-CG	5.42	127.77	115.30
1	A	728	LEU	CA-CB-CG	5.35	127.61	115.30
1	B	616	LEU	CA-CB-CG	5.28	127.44	115.30
1	A	758	LEU	CA-CB-CG	5.22	127.30	115.30
1	B	758	LEU	CA-CB-CG	5.17	127.18	115.30
1	B	600	LEU	CB-CG-CD1	5.07	119.61	111.00
1	B	173	LEU	CA-CB-CG	5.03	126.87	115.30
1	A	771	LEU	CA-CB-CG	5.01	126.83	115.30
1	A	992	ILE	C-N-CA	5.01	134.22	121.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	992	ILE	Peptide,Mainchain

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7790	0	7724	208	0
1	B	7780	0	7717	231	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	94	0	0	38	0
3	B	82	0	0	20	0
All	All	15748	0	15441	436	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 14.

All (436) 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:50:ILE:CD1	1:B:50:ILE:CG1	1.93	1.44
1:B:782:ARG:HD2	3:B:1059:HOH:O	1.46	1.12
1:B:679:HIS:O	1:B:681:HIS:N	1.86	1.09
1:A:491:ARG:HG3	1:A:491:ARG:HH11	1.12	1.08
1:B:856:PRO:O	1:B:858:TYR:N	1.88	1.07
1:A:697:LYS:HE2	3:A:1048:HOH:O	1.56	1.04
1:A:855:PRO:HB2	1:A:857:HIS:CD2	1.92	1.04
1:B:53:HIS:CD2	3:B:1043:HOH:O	2.11	1.04
1:A:243:LYS:HG3	3:A:1075:HOH:O	1.57	1.03
1:A:879:GLU:HG3	3:A:1072:HOH:O	1.62	0.98
1:B:455:LEU:HD23	3:B:1046:HOH:O	1.67	0.93
1:B:624:ILE:HD13	1:B:624:ILE:H	1.31	0.93
1:A:623:THR:OG1	1:A:626:GLY:O	1.83	0.93
1:A:53:HIS:HE1	3:A:7:HOH:O	1.52	0.93
1:B:622:ASN:HD22	1:B:622:ASN:H	0.94	0.92
1:A:681:HIS:N	3:A:1090:HOH:O	2.04	0.91
1:B:298:LEU:HD13	1:B:475:ASN:HB2	1.52	0.90
1:A:692:GLU:HG2	1:A:693:VAL:HG23	1.55	0.88
1:B:164:ARG:HG3	1:B:164:ARG:HH11	1.38	0.87
1:B:446:LEU:HD22	1:B:446:LEU:H	1.39	0.87
1:B:601:LYS:HE2	1:B:620:LEU:O	1.72	0.87
1:B:623:THR:OG1	1:B:626:GLY:O	1.92	0.87
1:B:309:ASP:H	1:B:672:ASN:HD21	1.23	0.87
1:A:491:ARG:HG3	1:A:491:ARG:NH1	1.86	0.86
1:B:622:ASN:H	1:B:622:ASN:ND2	1.73	0.86
1:A:679:HIS:O	1:A:681:HIS:N	2.09	0.86
1:B:196:ASN:C	1:B:196:ASN:HD22	1.81	0.84
1:B:309:ASP:H	1:B:672:ASN:ND2	1.77	0.83
1:B:93:HIS:HE1	1:B:368:ARG:HH21	1.27	0.82
1:B:239:GLN:HB3	3:B:1034:HOH:O	1.79	0.81
1:B:50:ILE:CD1	1:B:50:ILE:CG2	2.59	0.81
1:B:599:LEU:HD21	1:B:659:PHE:HA	1.62	0.80
1:B:783:ASN:ND2	1:B:786:HIS:H	1.80	0.78
1:A:805:ASN:HD22	1:A:844:GLN:HE22	1.31	0.77
1:A:622:ASN:HD22	1:A:622:ASN:H	1.32	0.77
1:A:537:ILE:HD11	3:A:3:HOH:O	1.84	0.77
1:B:460:ARG:NH1	1:B:462:ASP:OD1	2.18	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:674:ARG:HD2	3:A:1051:HOH:O	1.85	0.76
1:A:188:SER:HB3	1:A:831:TYR:HB2	1.67	0.76
1:A:575:ASN:HB3	1:A:908:TRP:CZ3	2.21	0.76
1:A:814:ILE:HG21	1:A:874:ILE:HD11	1.66	0.76
1:B:294:GLN:H	1:B:297:HIS:HD2	1.33	0.76
1:A:309:ASP:H	1:A:672:ASN:HD21	1.34	0.75
1:A:656:GLU:OE2	1:A:709:LEU:HD23	1.86	0.74
1:B:624:ILE:H	1:B:624:ILE:CD1	2.00	0.74
1:A:637:LYS:HE3	3:A:1068:HOH:O	1.86	0.73
1:B:674:ARG:HD2	3:B:1040:HOH:O	1.89	0.73
1:A:622:ASN:H	1:A:622:ASN:ND2	1.84	0.72
1:B:365:GLU:HG2	3:B:1071:HOH:O	1.89	0.72
1:A:350:LEU:HB3	1:A:356:VAL:HG22	1.70	0.72
1:B:654:ILE:HD13	1:B:712:LEU:HD13	1.71	0.72
1:B:817:GLU:HG3	1:B:818:PRO:HD3	1.70	0.72
1:B:102:ASN:HD22	1:B:102:ASN:H	1.36	0.72
1:B:50:ILE:CD1	1:B:50:ILE:HG23	2.21	0.71
1:B:441:LEU:HD23	1:B:449:VAL:HG11	1.73	0.70
1:A:716:ILE:HB	1:A:717:PRO:HD3	1.73	0.70
1:B:188:SER:HB3	1:B:831:TYR:HB2	1.73	0.70
1:B:783:ASN:HD22	1:B:786:HIS:H	1.39	0.70
1:A:963:MET:HA	3:A:1097:HOH:O	1.90	0.70
1:B:950:ARG:HD2	3:B:1056:HOH:O	1.93	0.69
1:A:205:GLU:HB3	3:A:1091:HOH:O	1.93	0.69
1:B:827:GLU:OE1	1:B:862:ARG:HD3	1.93	0.69
1:B:43:ASN:HB2	3:B:21:HOH:O	1.92	0.69
1:B:622:ASN:HD22	1:B:622:ASN:N	1.76	0.69
1:B:268:THR:O	1:B:272:VAL:HG23	1.93	0.68
1:B:950:ARG:NE	3:B:1085:HOH:O	2.24	0.68
1:A:805:ASN:O	1:A:809:GLU:HG3	1.94	0.68
1:A:527:LYS:H	1:A:527:LYS:HD2	1.59	0.67
1:B:196:ASN:ND2	1:B:198:ALA:H	1.91	0.67
1:A:783:ASN:ND2	1:A:786:HIS:H	1.93	0.67
1:B:93:HIS:CE1	1:B:368:ARG:HH21	2.11	0.67
1:A:53:HIS:HD2	3:A:1022:HOH:O	1.76	0.66
1:A:886:ILE:HG23	1:A:928:LEU:HD13	1.76	0.66
1:B:86:SER:HB3	1:B:158:LEU:HG	1.76	0.66
1:B:943:MET:HG3	3:B:1090:HOH:O	1.96	0.66
1:B:341:GLU:HG2	1:B:347:LEU:HD12	1.78	0.65
1:A:187:ASP:OD1	1:A:222:ASN:HB2	1.97	0.65
1:B:100:PRO:HG2	1:B:103:ILE:HG13	1.77	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:827:GLU:OE1	1:A:862:ARG:HD3	1.95	0.65
1:B:737:ALA:O	1:B:741:ILE:HG12	1.96	0.65
1:B:587:PRO:HD3	1:B:695:TRP:CE2	2.32	0.65
1:B:578:PHE:CD2	1:B:725:ILE:HG12	2.32	0.64
1:B:50:ILE:CD1	1:B:50:ILE:CB	2.75	0.64
1:B:164:ARG:HH11	1:B:164:ARG:CG	2.08	0.64
1:B:654:ILE:HD11	1:B:716:ILE:HD11	1.80	0.64
1:A:205:GLU:HG3	1:A:293:PHE:HZ	1.63	0.64
1:B:866:PHE:O	1:B:869:THR:HB	1.98	0.64
1:B:679:HIS:C	1:B:681:HIS:N	2.50	0.63
1:A:415:LYS:HG3	1:A:456:LEU:HB2	1.79	0.63
1:B:93:HIS:HE1	1:B:368:ARG:NH2	1.96	0.63
1:B:574:LEU:C	1:B:575:ASN:HD22	2.02	0.63
1:B:587:PRO:HD3	1:B:695:TRP:CD2	2.33	0.63
1:B:304:ILE:HB	1:B:481:VAL:HG22	1.80	0.63
1:A:601:LYS:HD3	1:A:620:LEU:O	1.99	0.63
1:B:583:ALA:HB2	1:B:626:GLY:HA2	1.80	0.63
1:B:204:LEU:O	1:B:208:THR:HG23	1.99	0.62
1:B:179:LYS:HD2	1:B:237:VAL:HG12	1.80	0.62
1:A:817:GLU:HG3	1:A:818:PRO:HD3	1.82	0.62
1:A:294:GLN:O	1:A:298:LEU:HG	2.00	0.62
1:A:765:ARG:HD3	3:A:19:HOH:O	1.99	0.62
1:A:309:ASP:H	1:A:672:ASN:ND2	1.98	0.62
1:A:196:ASN:ND2	1:A:199:TRP:H	1.98	0.61
1:A:826:LYS:CE	3:A:1024:HOH:O	2.48	0.61
1:B:774:ARG:HB2	1:B:774:ARG:HH11	1.65	0.61
1:B:294:GLN:H	1:B:297:HIS:CD2	2.16	0.61
1:A:855:PRO:HB2	1:A:857:HIS:NE2	2.14	0.61
1:B:243:LYS:HE2	3:B:1034:HOH:O	2.00	0.61
1:B:575:ASN:HD22	1:B:575:ASN:N	1.98	0.61
1:A:892:ARG:CD	3:A:1076:HOH:O	2.48	0.61
1:B:583:ALA:CB	1:B:626:GLY:HA2	2.31	0.61
1:A:691:THR:HG23	1:A:841:ASN:HD21	1.65	0.61
1:A:730:HIS:HD2	1:A:904:SER:OG	1.83	0.61
1:B:196:ASN:ND2	1:B:198:ALA:N	2.49	0.61
1:A:559:LEU:HD22	1:A:742:MET:HB2	1.82	0.60
1:B:774:ARG:HB2	1:B:774:ARG:NH1	2.17	0.60
1:A:855:PRO:CB	1:A:857:HIS:NE2	2.65	0.60
1:B:333:TYR:CD2	1:B:464:ILE:HD12	2.38	0.59
1:A:196:ASN:ND2	1:A:196:ASN:C	2.55	0.59
1:B:532:PRO:HG3	1:B:634:TYR:CD2	2.36	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:927:TYR:CE2	1:B:931:LEU:HD11	2.37	0.59
1:B:196:ASN:C	1:B:196:ASN:ND2	2.51	0.59
1:B:847:ARG:NH1	3:B:1063:HOH:O	2.33	0.59
1:A:80:ASP:OD1	1:A:82:THR:HG23	2.03	0.59
1:A:295:GLU:HA	1:A:298:LEU:HD12	1.83	0.59
1:A:102:ASN:H	1:A:102:ASN:HD22	1.51	0.58
1:A:691:THR:O	1:A:999:LYS:HE3	2.02	0.58
1:B:285:LEU:HD22	1:B:286:PRO:HD2	1.85	0.58
1:A:950:ARG:CD	3:A:13:HOH:O	2.52	0.58
1:A:814:ILE:HG21	1:A:874:ILE:CD1	2.33	0.57
1:A:84:ASP:OD2	1:A:896:LYS:HG3	2.03	0.57
1:A:892:ARG:HD3	3:A:1076:HOH:O	2.03	0.57
1:B:908:TRP:HA	1:B:908:TRP:CE3	2.39	0.57
1:A:238:ARG:NH1	1:A:242:LEU:HD11	2.20	0.57
1:B:665:ALA:HA	1:B:668:ARG:HH21	1.70	0.57
1:B:200:ARG:NH2	1:B:498:THR:HA	2.20	0.57
1:A:826:LYS:HE3	3:A:1024:HOH:O	2.04	0.57
1:A:805:ASN:HD22	1:A:844:GLN:NE2	2.00	0.56
1:A:843:ILE:HG12	1:A:1005:PHE:CD1	2.40	0.56
1:A:598:GLU:OE1	1:A:601:LYS:NZ	2.39	0.56
1:A:545:THR:HB	1:A:546:PRO:HD2	1.87	0.56
1:B:102:ASN:H	1:B:102:ASN:ND2	2.03	0.56
1:B:395:PHE:CE2	1:B:473:PRO:HD3	2.41	0.56
1:A:196:ASN:HD21	1:A:199:TRP:H	1.52	0.56
1:A:852:SER:HB3	1:A:859:LEU:HD21	1.88	0.56
1:B:510:ILE:O	1:B:514:GLN:HG3	2.05	0.56
1:B:139:ASN:HB3	1:B:150:TYR:CE1	2.41	0.55
1:A:426:ASP:HB3	1:A:899:LYS:HB3	1.87	0.55
1:B:88:ALA:HB3	1:B:151:PHE:CE2	2.41	0.55
1:B:858:TYR:N	3:B:29:HOH:O	2.38	0.55
1:A:257:VAL:HG21	1:A:437:ILE:HB	1.87	0.55
1:A:674:ARG:CD	3:A:1051:HOH:O	2.51	0.55
1:A:950:ARG:HD2	3:A:13:HOH:O	2.05	0.55
1:B:196:ASN:HD21	1:B:198:ALA:H	1.55	0.55
1:A:879:GLU:CG	3:A:1072:HOH:O	2.35	0.55
1:A:179:LYS:HD2	1:A:237:VAL:HB	1.89	0.54
1:A:914:GLN:HA	1:A:916:TYR:CE1	2.42	0.54
1:A:96:SER:HB3	3:A:14:HOH:O	2.07	0.54
1:A:862:ARG:NH2	1:A:981:SER:O	2.40	0.54
1:B:164:ARG:HG3	1:B:164:ARG:NH1	2.18	0.54
1:B:309:ASP:N	1:B:672:ASN:HD21	2.01	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:491:ARG:HH11	1:A:491:ARG:CG	2.00	0.54
1:A:697:LYS:CE	3:A:1048:HOH:O	2.31	0.54
1:A:599:LEU:HD21	1:A:659:PHE:HA	1.88	0.53
1:B:643:LYS:O	1:B:647:GLU:HB2	2.09	0.53
1:A:892:ARG:HD2	3:A:1076:HOH:O	2.09	0.53
1:A:559:LEU:HD22	1:A:742:MET:CB	2.39	0.53
1:A:776:TRP:NE1	1:A:953:LYS:HE2	2.24	0.53
1:A:230:PRO:HA	1:A:235:ILE:HD12	1.90	0.53
1:B:110:LEU:HD23	1:B:110:LEU:C	2.29	0.53
1:B:176:GLU:HG3	3:B:1075:HOH:O	2.07	0.53
1:B:346:LEU:HA	1:B:522:PHE:CE2	2.43	0.53
1:A:591:ASN:O	1:A:595:LEU:HD23	2.08	0.53
1:A:855:PRO:CG	1:A:857:HIS:NE2	2.72	0.53
1:A:291:HIS:CD2	1:A:370:PHE:HB2	2.44	0.53
1:B:257:VAL:HG12	1:B:434:THR:HG22	1.89	0.53
1:B:881:ALA:O	1:B:884:LYS:HB2	2.08	0.53
1:A:294:GLN:H	1:A:297:HIS:HD2	1.55	0.53
1:B:188:SER:HB3	1:B:831:TYR:CB	2.39	0.53
1:B:743:GLN:HG3	1:B:747:ASP:OD1	2.08	0.53
1:A:407:GLN:HB3	1:A:409:TRP:CD1	2.44	0.53
1:B:490:ASP:OD1	1:B:491:ARG:HG3	2.09	0.53
1:B:164:ARG:CG	1:B:164:ARG:NH1	2.70	0.52
1:B:874:ILE:HA	1:B:877:MET:HG2	1.91	0.52
1:B:326:TYR:CD1	1:B:444:TYR:HE1	2.27	0.52
1:A:406:PRO:HD3	3:A:1095:HOH:O	2.09	0.52
1:A:582:PHE:CE2	1:A:718:GLN:HG3	2.45	0.52
1:A:93:HIS:HE1	1:A:368:ARG:HH21	1.56	0.52
1:B:934:GLU:O	1:B:938:LYS:HG3	2.09	0.52
1:B:131:LEU:CD1	1:B:138:SER:HB2	2.40	0.52
1:A:784:GLU:O	1:A:961:ARG:HG3	2.10	0.51
1:B:654:ILE:HD11	1:B:716:ILE:CD1	2.40	0.51
1:B:329:ASN:HD21	1:B:363:GLN:HE22	1.58	0.51
1:A:164:ARG:HG3	1:A:164:ARG:HH11	1.75	0.51
1:B:50:ILE:HG23	1:B:50:ILE:HD13	1.93	0.51
1:B:791:ILE:O	1:B:791:ILE:HG23	2.10	0.51
1:A:460:ARG:NH1	1:A:462:ASP:OD1	2.44	0.51
1:A:855:PRO:CB	1:A:857:HIS:CD2	2.81	0.51
1:B:795:TYR:CE2	1:B:953:LYS:HD2	2.46	0.51
1:B:125:ASN:HD22	1:B:125:ASN:H	1.58	0.51
1:A:359:LEU:C	1:A:359:LEU:HD23	2.31	0.50
1:B:50:ILE:CG2	1:B:50:ILE:HD12	2.37	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:425:LYS:HD2	1:B:428:GLU:OE2	2.11	0.50
1:B:693:VAL:HG21	1:B:766:TYR:CE2	2.47	0.50
1:A:815:ILE:HA	1:A:870:MET:HE2	1.94	0.50
1:A:888:ALA:O	1:A:892:ARG:HG3	2.11	0.50
1:B:351:LYS:HE3	1:B:602:ASP:OD2	2.12	0.50
1:B:795:TYR:OH	1:B:864:GLU:OE2	2.29	0.50
1:A:316:THR:HB	1:A:374:ILE:HG22	1.92	0.50
1:A:465:GLU:CG	3:A:1095:HOH:O	2.59	0.50
1:A:350:LEU:HB3	1:A:356:VAL:CG2	2.42	0.50
1:B:196:ASN:HD22	1:B:197:ASP:N	2.09	0.50
1:A:207:ALA:HB2	3:A:5:HOH:O	2.11	0.50
1:A:795:TYR:HE2	1:A:953:LYS:HD2	1.77	0.50
1:A:826:LYS:HE2	3:A:1024:HOH:O	2.12	0.50
1:B:298:LEU:HD13	1:B:475:ASN:CB	2.34	0.50
1:B:750:ILE:HD13	1:B:755:THR:O	2.12	0.49
1:B:908:TRP:HA	1:B:908:TRP:HE3	1.77	0.49
1:A:353:LYS:HD3	1:A:355:TRP:CZ3	2.47	0.49
1:B:803:SER:HB2	1:B:927:TYR:OH	2.11	0.49
1:A:1007:LEU:HD23	1:B:1000:ARG:HG2	1.94	0.49
1:B:80:ASP:O	1:B:261:ARG:HA	2.13	0.49
1:A:305:VAL:HB	1:A:499:GLN:HB2	1.95	0.49
3:A:1033:HOH:O	1:B:706:ASP:HB2	2.12	0.49
1:B:346:LEU:HA	1:B:522:PHE:HE2	1.77	0.49
1:A:714:ALA:O	1:A:717:PRO:HD2	2.12	0.49
1:B:108:HIS:CE1	1:B:189:GLU:OE1	2.65	0.49
1:A:331:GLY:HA3	1:A:363:GLN:OE1	2.13	0.49
1:A:195:MET:HB2	1:A:786:HIS:CE1	2.48	0.49
1:A:559:LEU:HD11	1:A:729:LEU:HG	1.95	0.49
1:A:584:TYR:CZ	1:A:624:ILE:HG22	2.48	0.49
1:A:927:TYR:O	1:A:930:THR:HB	2.13	0.49
1:A:465:GLU:HG3	3:A:1095:HOH:O	2.13	0.48
1:A:476:VAL:HG22	1:A:477:ARG:N	2.27	0.48
1:A:806:MET:HE3	1:A:928:LEU:HG	1.95	0.48
1:B:100:PRO:CG	1:B:103:ILE:HG13	2.44	0.48
1:B:856:PRO:HA	1:B:859:LEU:HB2	1.95	0.48
1:A:303:LYS:HG2	1:A:485:PHE:CE2	2.49	0.48
1:A:777:PHE:N	1:A:777:PHE:CD1	2.82	0.48
1:A:788:ASN:O	1:A:960:ALA:HA	2.13	0.48
1:B:259:LEU:HD23	1:B:259:LEU:C	2.34	0.48
1:B:599:LEU:HD23	1:B:662:ILE:HD12	1.96	0.48
1:A:76:LEU:HB2	1:A:441:LEU:HD11	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:188:SER:HB3	1:A:831:TYR:CB	2.39	0.48
1:B:446:LEU:H	1:B:446:LEU:CD2	2.19	0.48
1:B:677:GLN:HE21	1:B:786:HIS:CE1	2.31	0.48
1:A:600:LEU:HD22	1:A:649:MET:HB2	1.96	0.48
1:A:689:LEU:HD21	1:A:995:MET:HG2	1.96	0.48
1:A:706:ASP:OD1	1:A:706:ASP:N	2.47	0.48
1:B:595:LEU:HD12	1:B:662:ILE:HG22	1.96	0.48
1:B:644:LYS:O	1:B:648:LYS:HB2	2.13	0.48
1:B:870:MET:O	1:B:874:ILE:HG12	2.14	0.48
1:B:108:HIS:O	1:B:111:GLU:HB3	2.14	0.47
1:A:771:LEU:HD21	1:A:954:VAL:HG23	1.97	0.47
1:A:923:THR:HG21	3:A:1040:HOH:O	2.14	0.47
1:B:135:ALA:HB2	1:B:888:ALA:HA	1.95	0.47
1:B:597:LEU:HD21	1:B:627:MET:HG2	1.95	0.47
1:A:53:HIS:CE1	3:A:7:HOH:O	2.40	0.47
1:B:77:LEU:HD21	1:B:271:VAL:HG21	1.95	0.47
1:A:298:LEU:HD13	1:A:475:ASN:CB	2.44	0.47
1:A:491:ARG:HD3	3:A:1053:HOH:O	2.14	0.47
1:B:97:LEU:HB2	1:B:144:GLY:O	2.14	0.47
1:B:930:THR:O	1:B:930:THR:HG22	2.15	0.47
1:A:855:PRO:HB2	1:A:857:HIS:HD2	1.69	0.47
1:A:94:ILE:CG2	1:A:95:GLY:N	2.78	0.47
1:A:586:ASP:HB2	1:B:762:GLN:NE2	2.30	0.47
1:A:462:ASP:O	1:A:466:MET:HB2	2.15	0.46
1:B:312:ASN:HB3	1:B:314:TYR:CE2	2.50	0.46
1:A:298:LEU:HD21	1:A:318:PRO:HG3	1.97	0.46
1:B:295:GLU:OE2	1:B:295:GLU:HA	2.14	0.46
1:A:508:GLU:HA	1:A:511:LYS:HB2	1.97	0.46
1:A:591:ASN:O	1:A:595:LEU:CD2	2.62	0.46
1:A:795:TYR:CE2	1:A:953:LYS:HD2	2.50	0.46
1:B:76:LEU:HB3	1:B:257:VAL:HG22	1.97	0.46
1:B:667:MET:SD	1:B:701:LYS:HG3	2.55	0.46
1:A:345:SER:OG	1:A:348:SER:HB2	2.16	0.46
1:B:810:LEU:HG	1:B:928:LEU:HD21	1.97	0.46
1:B:347:LEU:HD13	3:B:18:HOH:O	2.15	0.46
1:A:552:LYS:HB3	1:A:559:LEU:HB3	1.97	0.46
1:A:597:LEU:HD12	1:A:597:LEU:HA	1.54	0.46
1:A:776:TRP:CE2	1:A:953:LYS:HE2	2.51	0.46
1:B:417:LEU:HD11	1:B:531:ILE:HD12	1.98	0.46
1:B:459:PHE:CE2	1:B:461:PRO:HG3	2.50	0.46
1:A:125:ASN:H	1:A:125:ASN:HD22	1.63	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:196:ASN:HD21	1:B:198:ALA:HB3	1.80	0.46
1:B:852:SER:CB	1:B:859:LEU:HD21	2.46	0.46
1:A:842:GLY:C	1:A:843:ILE:HD12	2.37	0.46
1:A:92:VAL:HG22	1:A:254:MET:HG2	1.97	0.45
1:B:311:ARG:NH2	1:B:664:GLU:OE1	2.43	0.45
1:A:792:GLU:HA	1:A:848:PHE:O	2.16	0.45
1:A:827:GLU:CD	1:A:862:ARG:HH11	2.20	0.45
1:A:870:MET:O	1:A:874:ILE:HG12	2.17	0.45
1:B:309:ASP:O	1:B:668:ARG:HD2	2.16	0.45
1:B:693:VAL:CG2	1:B:766:TYR:CE2	3.00	0.45
1:A:329:ASN:N	1:A:330:PRO:CD	2.79	0.45
1:A:446:LEU:O	1:A:449:VAL:HG22	2.15	0.45
1:A:815:ILE:HG22	1:A:870:MET:CE	2.46	0.45
1:B:200:ARG:HH21	1:B:498:THR:HA	1.81	0.45
1:A:759:LEU:HD11	1:B:702:GLU:HG2	1.97	0.45
1:B:674:ARG:CD	3:B:1040:HOH:O	2.55	0.45
1:A:433:TYR:O	1:A:437:ILE:HG12	2.17	0.45
1:A:793:ILE:HG21	1:A:795:TYR:CZ	2.52	0.45
1:B:53:HIS:HD2	3:B:1043:HOH:O	1.73	0.45
1:A:250:SER:HB2	1:A:281:LYS:HB2	1.98	0.45
1:A:291:HIS:ND1	1:A:292:PRO:HD2	2.32	0.45
3:A:1033:HOH:O	1:B:706:ASP:CB	2.65	0.44
1:B:413:GLU:OE2	1:B:527:LYS:HD2	2.17	0.44
1:B:889:LEU:HB3	1:B:928:LEU:HD11	1.99	0.44
1:B:229:ARG:HA	1:B:229:ARG:HD3	1.90	0.44
1:B:313:LEU:HD11	1:B:391:ILE:HD11	1.99	0.44
1:A:147:THR:HG22	1:A:149:TYR:CE1	2.51	0.44
1:A:415:LYS:HA	1:A:456:LEU:HD12	1.98	0.44
1:A:609:TYR:CE2	1:A:613:LEU:HD11	2.52	0.44
1:B:665:ALA:HA	1:B:668:ARG:NH2	2.33	0.44
1:B:933:LYS:O	1:B:937:ILE:HG12	2.18	0.44
1:A:584:TYR:CE2	1:A:624:ILE:HG22	2.53	0.44
1:A:756:LYS:HB2	1:A:757:PRO:HD2	1.99	0.44
1:B:50:ILE:HD12	1:B:50:ILE:HG21	2.00	0.44
1:B:685:TYR:CZ	1:B:781:GLN:HG3	2.52	0.44
1:A:121:TYR:OH	1:A:163:ASP:OD1	2.25	0.44
1:B:782:ARG:NH1	1:B:961:ARG:O	2.51	0.44
1:A:99:ASP:O	1:A:217:LYS:NZ	2.49	0.43
1:A:597:LEU:O	1:A:601:LYS:HG3	2.18	0.43
1:A:715:PHE:CZ	1:A:719:LEU:HD22	2.53	0.43
1:B:162:LEU:HD23	1:B:270:LEU:HD11	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:655:ASP:OD1	1:B:655:ASP:C	2.56	0.43
1:B:688:LEU:HD23	1:B:694:ALA:HB1	2.00	0.43
1:B:805:ASN:HD22	1:B:844:GLN:HE22	1.66	0.43
1:A:687:ARG:O	1:A:691:THR:OG1	2.36	0.43
1:A:74:LYS:NZ	3:A:28:HOH:O	2.50	0.43
1:A:782:ARG:HG2	1:A:959:LEU:HD12	2.00	0.43
1:A:961:ARG:HD2	1:A:962:GLU:OE1	2.18	0.43
1:A:275:PHE:O	1:A:278:VAL:HG23	2.18	0.43
1:A:351:LYS:HE3	1:A:602:ASP:OD2	2.18	0.43
1:B:73:ILE:HG12	1:B:254:MET:HB2	2.00	0.43
1:B:646:ILE:O	1:B:647:GLU:C	2.56	0.43
1:B:747:ASP:O	1:B:751:GLU:HB2	2.18	0.43
1:B:782:ARG:HH12	1:B:961:ARG:HA	1.84	0.43
1:B:798:ASP:HB3	1:B:804:GLU:HG2	2.00	0.43
1:B:849:ILE:O	1:B:850:ILE:HG13	2.18	0.43
1:A:801:SER:O	1:A:802:THR:C	2.57	0.43
1:B:686:LEU:HD12	1:B:686:LEU:HA	1.84	0.43
1:B:311:ARG:HB3	1:B:379:LEU:HB2	2.01	0.43
1:B:943:MET:CG	3:B:1090:HOH:O	2.63	0.43
1:A:534:ASN:C	1:A:534:ASN:OD1	2.57	0.43
1:A:574:LEU:HD22	1:A:729:LEU:HD22	2.00	0.43
1:A:756:LYS:HE2	1:A:756:LYS:HB3	1.76	0.43
1:A:893:ARG:HD2	1:A:893:ARG:HA	1.78	0.43
1:A:596:TYR:OH	1:A:649:MET:O	2.37	0.43
1:B:441:LEU:CD2	1:B:449:VAL:HG11	2.43	0.43
1:B:776:TRP:NE1	1:B:953:LYS:HE2	2.34	0.43
1:A:248:TYR:O	1:A:250:SER:N	2.52	0.42
1:A:950:ARG:HD3	3:A:13:HOH:O	2.15	0.42
1:B:367:ALA:HB3	1:B:370:PHE:CE2	2.54	0.42
1:A:299:LYS:HG2	1:A:510:ILE:HD11	2.01	0.42
1:B:960:ALA:HB3	1:B:963:MET:HG3	2.00	0.42
1:B:298:LEU:HD21	1:B:318:PRO:HG3	2.01	0.42
1:A:53:HIS:CD2	3:A:1022:HOH:O	2.59	0.42
1:B:674:ARG:NE	3:B:1040:HOH:O	2.50	0.42
1:B:855:PRO:O	1:B:858:TYR:HB3	2.20	0.42
1:A:602:ASP:OD2	1:A:658:ARG:NH1	2.53	0.42
1:B:591:ASN:O	1:B:595:LEU:HD22	2.19	0.42
1:A:329:ASN:N	1:A:330:PRO:HD2	2.35	0.42
1:A:415:LYS:HE2	1:A:415:LYS:HB3	1.86	0.42
1:B:74:LYS:O	1:B:255:ALA:HA	2.20	0.42
1:B:162:LEU:HD23	1:B:270:LEU:CD1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:291:HIS:CD2	1:B:370:PHE:HB2	2.54	0.42
1:B:392:LEU:O	1:B:396:GLN:HG3	2.20	0.42
1:B:673:PHE:CD1	1:B:676:GLU:HG3	2.55	0.42
1:B:767:ARG:HG3	1:B:1007:LEU:CD1	2.49	0.42
1:A:356:VAL:HG11	1:A:377:VAL:HG11	2.02	0.42
1:B:852:SER:HB2	1:B:859:LEU:HD21	2.02	0.42
1:B:948:ALA:HB3	1:B:951:ARG:HB2	2.02	0.42
1:A:205:GLU:HG3	1:A:293:PHE:CZ	2.50	0.42
1:B:341:GLU:HG2	1:B:347:LEU:CD1	2.48	0.42
1:B:701:LYS:HE3	1:B:701:LYS:HB3	1.82	0.42
1:A:160:GLY:O	1:A:164:ARG:HG3	2.19	0.42
1:A:616:LEU:HD21	1:A:638:GLN:HG3	2.01	0.42
1:A:622:ASN:HD22	1:A:622:ASN:N	2.10	0.42
1:A:843:ILE:HG12	1:A:1005:PHE:CG	2.55	0.42
1:A:864:GLU:HG3	1:A:986:LEU:HD11	2.01	0.42
1:B:409:TRP:CE2	1:B:410:VAL:HG23	2.55	0.42
1:A:298:LEU:O	1:A:300:GLN:HG2	2.20	0.41
1:A:612:GLU:HA	1:A:616:LEU:O	2.20	0.41
1:B:597:LEU:HD12	1:B:597:LEU:HA	1.92	0.41
1:B:867:LEU:HD12	1:B:867:LEU:HA	1.90	0.41
1:B:86:SER:CB	1:B:158:LEU:HG	2.48	0.41
1:B:289:PRO:HD2	1:B:290:GLU:H	1.85	0.41
1:A:414:LEU:HD12	1:A:414:LEU:HA	1.89	0.41
1:B:65:ARG:HB3	1:B:264:LEU:HD22	2.02	0.41
1:B:102:ASN:C	1:B:103:ILE:HG12	2.38	0.41
1:B:425:LYS:NZ	1:B:425:LYS:HB3	2.35	0.41
1:B:760:PRO:O	1:B:763:LEU:HB2	2.21	0.41
1:A:139:ASN:HB3	1:A:150:TYR:OH	2.21	0.41
1:A:690:MET:O	1:A:768:GLU:HA	2.20	0.41
1:A:756:LYS:HB2	1:A:757:PRO:CD	2.50	0.41
1:B:838:ARG:HG3	1:B:847:ARG:HD3	2.03	0.41
1:A:272:VAL:O	1:A:273:LYS:C	2.59	0.41
1:A:997:GLU:HG2	1:A:1000:ARG:NH1	2.36	0.41
1:B:49:ARG:HG2	1:B:49:ARG:NH1	2.36	0.41
1:B:800:GLN:HB3	1:B:805:ASN:HD21	1.86	0.41
1:A:527:LYS:HD2	1:A:527:LYS:N	2.33	0.41
1:A:555:ALA:HB1	1:A:757:PRO:HB3	2.03	0.41
1:A:600:LEU:CD2	1:A:649:MET:HB2	2.50	0.41
1:B:53:HIS:CG	1:B:54:ILE:N	2.89	0.41
1:B:223:LYS:HB2	1:B:223:LYS:HE3	1.86	0.41
1:B:1009:LYS:HA	1:B:1010:PRO:HD3	1.82	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:632:LYS:HE2	3:A:1086:HOH:O	2.20	0.41
1:A:171:SER:O	1:A:172:PRO:C	2.59	0.41
1:A:459:PHE:CE2	1:A:461:PRO:HG3	2.55	0.41
1:A:592:MET:O	1:A:593:ALA:C	2.60	0.41
1:B:327:LYS:HG3	3:B:1032:HOH:O	2.21	0.41
1:B:359:LEU:C	1:B:359:LEU:HD23	2.41	0.41
1:B:691:THR:HG23	1:B:841:ASN:HD21	1.85	0.41
1:B:887:GLN:HE21	1:B:891:ILE:HD11	1.86	0.41
1:B:912:ILE:C	1:B:914:GLN:H	2.23	0.41
1:A:463:LEU:HD23	1:A:463:LEU:HA	1.90	0.40
1:B:77:LEU:CD2	1:B:271:VAL:HG21	2.51	0.40
1:B:466:MET:O	1:B:466:MET:HG2	2.20	0.40
1:B:671:ASN:O	1:B:674:ARG:HG2	2.20	0.40
1:A:119:LYS:HB2	1:A:171:SER:HB3	2.04	0.40
1:A:350:LEU:CB	1:A:356:VAL:HG22	2.47	0.40
1:B:196:ASN:HD22	1:B:198:ALA:N	2.19	0.40
1:B:565:ASP:OD2	1:B:566:LYS:HG3	2.21	0.40
1:B:624:ILE:HD13	1:B:624:ILE:N	2.15	0.40
1:B:767:ARG:CG	1:B:1007:LEU:HD13	2.52	0.40
1:B:801:SER:O	1:B:805:ASN:CG	2.59	0.40
1:B:575:ASN:N	1:B:575:ASN:ND2	2.67	0.40
1:A:569:LEU:HD12	3:A:1030:HOH:O	2.20	0.40
1:B:114:LEU:HD12	1:B:149:TYR:CZ	2.56	0.40
1:B:448:GLU:O	1:B:452:ALA:HB2	2.21	0.40
1:A:200:ARG:NH2	1:A:498:THR:HA	2.36	0.40
1:B:123:LYS:HB3	1:B:126:GLU:HB2	2.02	0.40
1:B:155:HIS:CE1	1:B:156:GLU:HG2	2.56	0.40
1:B:311:ARG:HA	1:B:481:VAL:O	2.22	0.40
1:B:640:ILE:H	1:B:640:ILE:HG12	1.69	0.40
1:B:776:TRP:CD1	1:B:953:LYS:HG2	2.57	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	947/990 (96%)	881 (93%)	65 (7%)	1 (0%)	51	83
1	B	944/990 (95%)	876 (93%)	63 (7%)	5 (0%)	29	67
All	All	1891/1980 (96%)	1757 (93%)	128 (7%)	6 (0%)	41	74

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	946	VAL
1	A	228	THR
1	B	406	PRO
1	B	405	GLY
1	B	587	PRO
1	B	791	ILE

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	847/879 (96%)	761 (90%)	86 (10%)	7	29
1	B	846/879 (96%)	725 (86%)	121 (14%)	3	15
All	All	1693/1758 (96%)	1486 (88%)	207 (12%)	5	22

All (207) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	43	ASN
1	A	57	SER
1	A	74	LYS
1	A	76	LEU
1	A	82	THR
1	A	97	LEU
1	A	102	ASN

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Mol	Chain	Res	Type
1	A	116	LEU
1	A	125	ASN
1	A	145	GLU
1	A	158	LEU
1	A	159	GLU
1	A	177	SER
1	A	188	SER
1	A	196	ASN
1	A	201	LEU
1	A	212	LYS
1	A	226	LEU
1	A	250	SER
1	A	252	ASN
1	A	270	LEU
1	A	277	GLU
1	A	285	LEU
1	A	316	THR
1	A	324	LYS
1	A	352	SER
1	A	388	GLU
1	A	408	GLU
1	A	412	GLN
1	A	414	LEU
1	A	417	LEU
1	A	423	ARG
1	A	449	VAL
1	A	466	MET
1	A	486	GLU
1	A	491	ARG
1	A	501	LYS
1	A	507	ASP
1	A	508	GLU
1	A	512	LYS
1	A	515	ASN
1	A	518	LEU
1	A	519	ASN
1	A	558	LYS
1	A	582	PHE
1	A	595	LEU
1	A	597	LEU
1	A	616	LEU
1	A	622	ASN

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Mol	Chain	Res	Type
1	A	625	TYR
1	A	629	LEU
1	A	635	ASN
1	A	642	LEU
1	A	648	LYS
1	A	649	MET
1	A	658	ARG
1	A	677	GLN
1	A	691	THR
1	A	697	LYS
1	A	705	ASP
1	A	706	ASP
1	A	712	LEU
1	A	718	GLN
1	A	728	LEU
1	A	735	LYS
1	A	756	LYS
1	A	764	VAL
1	A	771	LEU
1	A	782	ARG
1	A	783	ASN
1	A	801	SER
1	A	810	LEU
1	A	817	GLU
1	A	838	ARG
1	A	846	LEU
1	A	859	LEU
1	A	867	LEU
1	A	873	SER
1	A	889	LEU
1	A	899	LYS
1	A	901	SER
1	A	914	GLN
1	A	923	THR
1	A	928	LEU
1	A	993	GLN
1	A	1007	LEU
1	B	43	ASN
1	B	48	LYS
1	B	52	ASN
1	B	61	LYS
1	B	76	LEU

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Mol	Chain	Res	Type
1	B	94	ILE
1	B	96	SER
1	B	97	LEU
1	B	102	ASN
1	B	103	ILE
1	B	111	GLU
1	B	124	GLU
1	B	125	ASN
1	B	148	ASN
1	B	158	LEU
1	B	164	ARG
1	B	177	SER
1	B	188	SER
1	B	196	ASN
1	B	201	LEU
1	B	212	LYS
1	B	223	LYS
1	B	226	LEU
1	B	229	ARG
1	B	243	LYS
1	B	282	ASN
1	B	285	LEU
1	B	316	THR
1	B	327	LYS
1	B	329	ASN
1	B	337	LEU
1	B	347	LEU
1	B	356	VAL
1	B	414	LEU
1	B	417	LEU
1	B	425	LYS
1	B	431	ARG
1	B	440	ILE
1	B	446	LEU
1	B	450	LEU
1	B	455	LEU
1	B	458	GLU
1	B	460	ARG
1	B	465	GLU
1	B	466	MET
1	B	470	LYS
1	B	472	ARG

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Mol	Chain	Res	Type
1	B	473	PRO
1	B	502	GLN
1	B	510	ILE
1	B	512	LYS
1	B	517	ASP
1	B	523	LYS
1	B	524	LEU
1	B	534	ASN
1	B	540	LEU
1	B	575	ASN
1	B	587	PRO
1	B	595	LEU
1	B	597	LEU
1	B	602	ASP
1	B	603	SER
1	B	612	GLU
1	B	616	LEU
1	B	618	TYR
1	B	622	ASN
1	B	624	ILE
1	B	629	LEU
1	B	635	ASN
1	B	637	LYS
1	B	640	ILE
1	B	642	LEU
1	B	643	LYS
1	B	644	LYS
1	B	648	LYS
1	B	653	GLU
1	B	657	LYS
1	B	663	LYS
1	B	669	SER
1	B	674	ARG
1	B	677	GLN
1	B	681	HIS
1	B	691	THR
1	B	693	VAL
1	B	706	ASP
1	B	712	LEU
1	B	728	LEU
1	B	744	MET
1	B	751	GLU

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Mol	Chain	Res	Type
1	B	759	LEU
1	B	768	GLU
1	B	770	GLN
1	B	774	ARG
1	B	788	ASN
1	B	810	LEU
1	B	817	GLU
1	B	823	LEU
1	B	846	LEU
1	B	859	LEU
1	B	861	SER
1	B	873	SER
1	B	874	ILE
1	B	875	GLU
1	B	880	GLU
1	B	889	LEU
1	B	898	LYS
1	B	899	LYS
1	B	900	LEU
1	B	901	SER
1	B	906	LYS
1	B	908	TRP
1	B	912	ILE
1	B	923	THR
1	B	928	LEU
1	B	934	GLU
1	B	942	GLU
1	B	962	GLU
1	B	980	LEU
1	B	993	GLN
1	B	996	THR
1	B	1007	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (63) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	43	ASN
1	A	53	HIS
1	A	93	HIS
1	A	102	ASN
1	A	125	ASN
1	A	148	ASN

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Mol	Chain	Res	Type
1	A	157	HIS
1	A	196	ASN
1	A	231	ASN
1	A	232	GLN
1	A	297	HIS
1	A	300	GLN
1	A	329	ASN
1	A	336	HIS
1	A	376	ASN
1	A	393	HIS
1	A	475	ASN
1	A	502	GLN
1	A	575	ASN
1	A	605	ASN
1	A	622	ASN
1	A	672	ASN
1	A	718	GLN
1	A	730	HIS
1	A	783	ASN
1	A	786	HIS
1	A	805	ASN
1	A	821	ASN
1	A	828	GLN
1	A	841	ASN
1	A	957	HIS
1	A	988	GLN
1	B	52	ASN
1	B	53	HIS
1	B	93	HIS
1	B	102	ASN
1	B	125	ASN
1	B	129	GLN
1	B	134	HIS
1	B	148	ASN
1	B	157	HIS
1	B	184	ASN
1	B	196	ASN
1	B	231	ASN
1	B	297	HIS
1	B	300	GLN
1	B	329	ASN
1	B	386	HIS

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Mol	Chain	Res	Type
1	B	475	ASN
1	B	502	GLN
1	B	575	ASN
1	B	622	ASN
1	B	672	ASN
1	B	730	HIS
1	B	743	GLN
1	B	783	ASN
1	B	786	HIS
1	B	805	ASN
1	B	821	ASN
1	B	828	GLN
1	B	841	ASN
1	B	887	GLN
1	B	957	HIS

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 2 ligands modelled in this entry, 2 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 [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	953/990 (96%)	-0.34	3 (0%) 94 92	11, 25, 40, 60	0
1	B	952/990 (96%)	-0.30	1 (0%) 95 95	14, 27, 41, 61	0
All	All	1905/1980 (96%)	-0.32	4 (0%) 95 94	11, 26, 41, 61	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	857	HIS	2.7
1	B	43	ASN	2.4
1	A	295	GLU	2.2
1	A	517	ASP	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	ZN	B	2	1/1	0.97	0.12	28,28,28,28	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	ZN	A	1	1/1	0.98	0.10	27,27,27,27	0

6.5 Other polymers [i](#)

There are no such residues in this entry.