



Full wwPDB X-ray Structure Validation Report ⓘ

May 23, 2020 – 01:40 am BST

PDB ID : 2VUY
Title : Crystal structure of Glycogen Debranching exzyme TreX from Sulfolobus solfatarius
Authors : Song, H.-N.; Yoon, S.-M.; Cha, H.-J.; Park, K.-H.; Woo, E.-J.
Deposited on : 2008-06-02
Resolution : 3.00 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Xtrriage (Phenix) : 1.13
EDS : 2.11
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

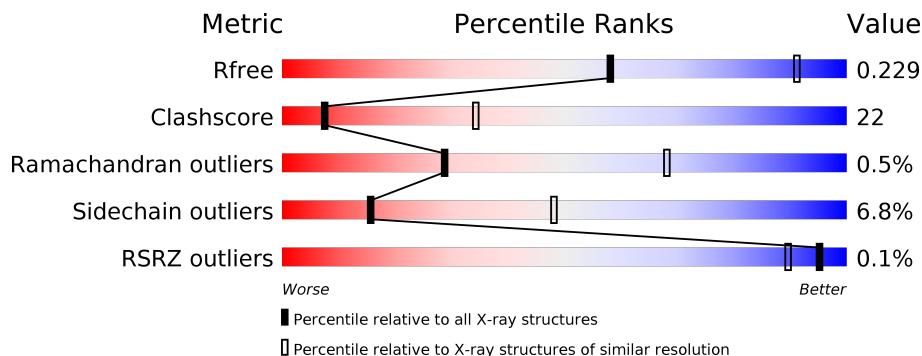
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	718	 63% 32% 5%
1	B	718	 62% 32% 5%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 11634 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.

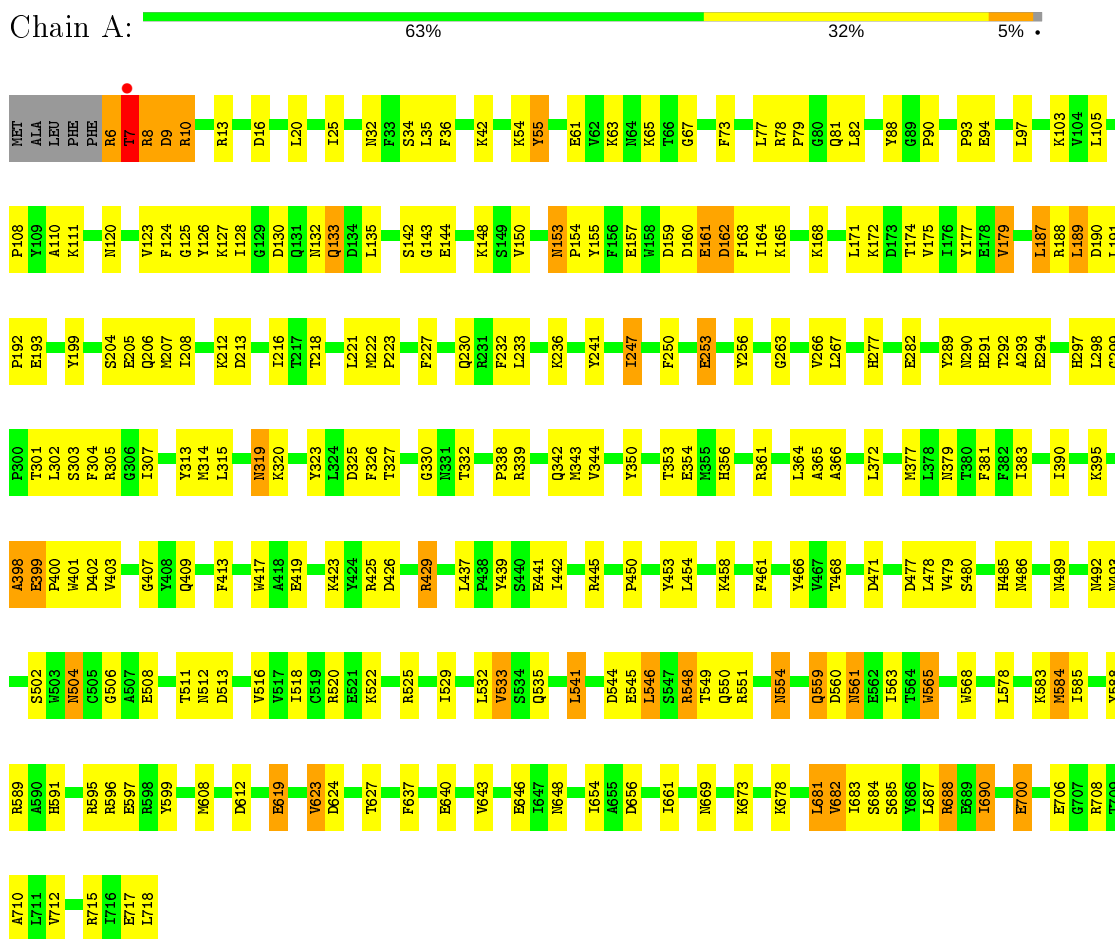
- Molecule 1 is a protein called GLYCOGEN OPERON PROTEIN GLGX.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	713	Total 5826	C 3735	N 983	O 1089	S 19	0	0	0
1	B	711	Total 5808	C 3725	N 978	O 1086	S 19	0	0	0

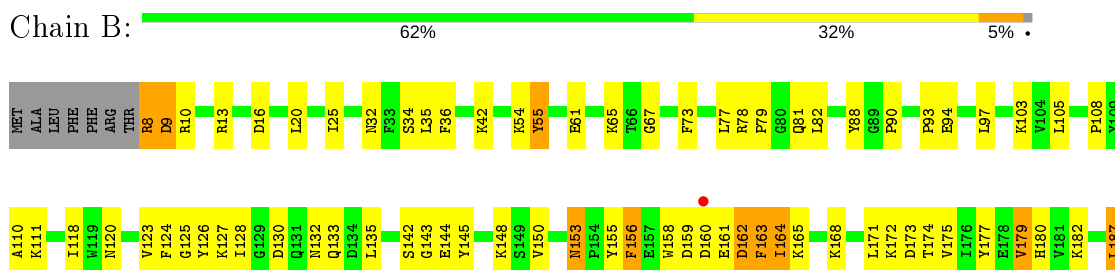
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: GLYCOGEN OPERON PROTEIN GLGX



• Molecule 1: GLYCOGEN OPERON PROTEIN GLGX



R188	R300	P400	S502	R595	R708
L189	T301	W401	W503	R596	F709
D190	L302	W403	N504	R597	A710
L191	S303	V403	C505	R598	L711
P192	F304	G407	G506	R599	V712
E193	R305	Y408	T511	W603	R715
Y199	C306	Q409	N512	M608	F716
S204	I307	F413	D513	K611	L718
E205	Y313	P414	I518	D612	
Q206	M314	Y415	C519	E619	
M207	L315	Q416	R520	V623	
I208	D318	W417	E521	D624	
K212	N319	K423	K522	T627	
D213	K320	Y424	R525	F637	
I216	Y323	R425	I529	E640	
E217	I324	D426	L532	V643	
T218	D325	R429	V533	E646	
M222	F326	L437	S534	I647	
P223	T327	Y438	Q535	M648	
F227	T332	Y439	L541	I654	
Q230	P338	S440	D544	A655	
R231	R339	E441	E545	D656	
F232	Q342	I442	L546	I661	
L233	M343	R445	S547	M669	
K236	V344	L446	R548	K673	
I247	Y350	L447	T549	K678	
F250	T353	G448	Q550	L681	
E283	E354	W467	R551	V682	
Y256	R361	T468	N554	I683	
G263	L364	D471	Q559	S684	
V286	A365	Y466	D560	S685	
H277	A366	W467	N561	Y686	
E282	L372	T468	E562	L687	
Y289	M377	D471	I563	R688	
N290	N379	D477	T564	E689	
H291	T380	L478	W565	I690	
T292	F381	V479	W568	R695	
A293	I383	S480	L578	E700	
E294	I390	N456	K583	E706	
H297	K395	N489	M584	G707	
L298	L396	N492	A589		
G299	I397	N493	H591		
	E399		P592		

4 Data and refinement statistics

Property	Value	Source
Space group	P 3 2 1	Depositor
Cell constants a, b, c, α , β , γ	203.63 Å 203.63 Å 89.43 Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	29.86 – 3.00 49.12 – 3.00	Depositor EDS
% Data completeness (in resolution range)	(Not available) (29.86-3.00) 92.8 (49.12-3.00)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	9.56 (at 3.01 Å)	Xtrriage
Refinement program		Depositor
R, R_{free}	0.206 , 0.231 0.205 , 0.229	Depositor DCC
R_{free} test set	2004 reflections (4.73%)	wwPDB-VP
Wilson B-factor (Å ²)	39.7	Xtrriage
Anisotropy	0.119	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 28.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.024 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	11634	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.11% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

² Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.33	0/5978	0.57	0/8104
1	B	0.33	0/5960	0.57	0/8080
All	All	0.33	0/11938	0.57	0/16184

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	1	2
1	B	0	3
All	All	1	5

There are no bond length outliers.

There are no bond angle outliers.

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	A	7	THR	CB

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	398	ALA	Peptide
1	A	7	THR	Peptide
1	B	398	ALA	Peptide
1	B	417	TRP	Peptide
1	B	9	ASP	Peptide

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	5826	0	5642	262	0
1	B	5808	0	5622	249	0
All	All	11634	0	11264	507	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 22.

All (507) 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:A:6:ARG:NH1	1:A:7:THR:HG22	1.29	1.43
1:A:6:ARG:HG2	1:A:7:THR:N	1.51	1.18
1:A:6:ARG:CG	1:A:7:THR:H	1.59	1.15
1:A:511:THR:HG22	1:A:513:ASP:H	1.13	1.10
1:B:8:ARG:HG2	1:B:8:ARG:O	1.51	1.10
1:B:292:THR:HG22	1:B:294:GLU:H	1.17	1.08
1:B:511:THR:HG22	1:B:513:ASP:H	1.16	1.07
1:A:292:THR:HG22	1:A:294:GLU:H	1.16	1.06
1:A:6:ARG:NH1	1:A:7:THR:CG2	2.19	1.05
1:A:6:ARG:CZ	1:A:7:THR:HG22	1.85	1.05
1:A:161:GLU:OE2	1:A:356:HIS:ND1	1.95	0.99
1:A:8:ARG:CG	1:A:8:ARG:HH11	1.75	0.99
1:A:549:THR:HG22	1:A:551:ARG:H	1.30	0.97
1:B:549:THR:HG22	1:B:551:ARG:H	1.30	0.96
1:B:400:PRO:HA	1:B:413:PHE:CE1	2.02	0.94
1:B:339:ARG:HH11	1:B:342:GLN:HE22	1.16	0.92
1:A:584:MET:HE1	1:A:683:ILE:HD13	1.53	0.90
1:A:690:ILE:H	1:A:690:ILE:HD13	1.38	0.89
1:B:584:MET:HE1	1:B:683:ILE:HD13	1.55	0.89
1:A:339:ARG:HH11	1:A:342:GLN:HE22	1.16	0.89
1:B:690:ILE:HD13	1:B:690:ILE:H	1.39	0.88
1:A:8:ARG:HH11	1:A:8:ARG:HG3	1.39	0.87
1:A:6:ARG:HG2	1:A:7:THR:H	0.71	0.86
1:B:682:VAL:HG22	1:B:683:ILE:HG13	1.56	0.85
1:A:230:GLN:HB2	1:A:233:LEU:HD23	1.59	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:561:ASN:HD22	1:A:563:ILE:H	1.22	0.84
1:A:161:GLU:OE1	1:A:277:HIS:ND1	2.10	0.83
1:A:682:VAL:HG22	1:A:683:ILE:HG13	1.58	0.83
1:A:623:VAL:HG22	1:A:627:THR:HG23	1.60	0.83
1:B:230:GLN:HB2	1:B:233:LEU:HD23	1.59	0.83
1:B:561:ASN:HD22	1:B:563:ILE:H	1.23	0.82
1:A:584:MET:CE	1:A:683:ILE:HD13	2.10	0.81
1:A:193:GLU:HG2	1:A:193:GLU:O	1.80	0.81
1:A:715:ARG:HD3	1:A:718:LEU:HB2	1.63	0.81
1:B:584:MET:CE	1:B:683:ILE:HD13	2.11	0.80
1:B:715:ARG:HD3	1:B:718:LEU:HB2	1.64	0.80
1:A:16:ASP:H	1:A:32:ASN:HD21	1.27	0.80
1:B:193:GLU:O	1:B:193:GLU:HG2	1.81	0.80
1:B:8:ARG:NH2	1:B:61:GLU:H	1.78	0.80
1:A:338:PRO:HG3	1:B:383:ILE:HD12	1.64	0.80
1:B:623:VAL:HG22	1:B:627:THR:HG23	1.62	0.79
1:B:453:TYR:HB3	1:B:458:LYS:HB2	1.63	0.79
1:B:640:GLU:HB3	1:B:643:VAL:HG22	1.65	0.79
1:A:453:TYR:HB3	1:A:458:LYS:HB2	1.65	0.78
1:A:640:GLU:HB3	1:A:643:VAL:HG22	1.65	0.78
1:B:479:VAL:O	1:B:520:ARG:HD2	1.83	0.78
1:A:511:THR:HG22	1:A:513:ASP:N	1.97	0.78
1:B:222:MET:HB3	1:B:223:PRO:CD	2.14	0.77
1:B:16:ASP:H	1:B:32:ASN:HD21	1.29	0.77
1:A:13:ARG:HB2	1:A:73:PHE:HB3	1.66	0.77
1:A:161:GLU:O	1:A:165:LYS:HG2	1.84	0.77
1:B:13:ARG:HB2	1:B:73:PHE:HB3	1.67	0.77
1:A:383:ILE:HD12	1:B:338:PRO:HG3	1.66	0.77
1:A:400:PRO:HA	1:A:413:PHE:CE1	2.20	0.77
1:A:77:LEU:HD22	1:A:81:GLN:HE21	1.50	0.76
1:A:479:VAL:O	1:A:520:ARG:HD2	1.85	0.76
1:A:8:ARG:NH1	1:A:8:ARG:HG3	1.95	0.76
1:A:477:ASP:OD2	1:A:549:THR:HG23	1.85	0.75
1:A:339:ARG:HH11	1:A:342:GLN:NE2	1.83	0.75
1:B:339:ARG:HH11	1:B:342:GLN:NE2	1.83	0.75
1:A:191:LEU:HB3	1:A:192:PRO:HD2	1.67	0.74
1:A:339:ARG:NH1	1:A:342:GLN:HE22	1.85	0.74
1:B:511:THR:HG22	1:B:513:ASP:N	1.99	0.74
1:B:339:ARG:NH1	1:B:342:GLN:HE22	1.85	0.74
1:A:624:ASP:H	1:A:627:THR:CG2	2.01	0.73
1:B:477:ASP:OD2	1:B:549:THR:HG23	1.88	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:624:ASP:H	1:B:627:THR:CG2	2.02	0.73
1:B:292:THR:HG22	1:B:294:GLU:N	2.00	0.72
1:A:153:ASN:C	1:A:153:ASN:HD22	1.91	0.72
1:A:292:THR:HG22	1:A:294:GLU:N	2.00	0.72
1:A:153:ASN:HD22	1:A:154:PRO:N	1.86	0.72
1:B:77:LEU:HD22	1:B:81:GLN:HE21	1.52	0.72
1:B:222:MET:HB3	1:B:223:PRO:HD2	1.71	0.71
1:B:624:ASP:OD2	1:B:627:THR:HG22	1.89	0.71
1:A:624:ASP:OD2	1:A:627:THR:HG22	1.90	0.71
1:B:585:ILE:O	1:B:589:ARG:HG3	1.89	0.71
1:B:648:ASN:HB3	1:B:654:ILE:HD11	1.73	0.71
1:A:379:ASN:ND2	1:A:381:PHE:HB3	2.06	0.71
1:A:511:THR:HG22	1:A:512:ASN:N	2.06	0.71
1:B:297:HIS:O	1:B:298:LEU:HB2	1.91	0.71
1:B:559:GLN:CG	1:B:563:ILE:HD12	2.21	0.71
1:B:379:ASN:ND2	1:B:381:PHE:HB3	2.06	0.71
1:A:585:ILE:O	1:A:589:ARG:HG3	1.90	0.70
1:B:218:THR:HG22	1:B:282:GLU:HB2	1.74	0.70
1:A:297:HIS:O	1:A:298:LEU:HB2	1.92	0.70
1:A:8:ARG:HH11	1:A:8:ARG:HG2	1.57	0.70
1:B:511:THR:HG22	1:B:512:ASN:N	2.07	0.70
1:B:559:GLN:HG2	1:B:563:ILE:HD12	1.73	0.70
1:A:559:GLN:CG	1:A:563:ILE:HD12	2.21	0.69
1:A:153:ASN:HD22	1:A:154:PRO:CD	2.04	0.69
1:A:648:ASN:HB3	1:A:654:ILE:HD11	1.74	0.69
1:B:398:ALA:HB2	1:B:417:TRP:CE3	2.28	0.68
1:A:6:ARG:NH2	1:A:7:THR:OG1	2.26	0.68
1:B:191:LEU:HB3	1:B:192:PRO:HD2	1.75	0.68
1:A:218:THR:HG22	1:A:282:GLU:HB2	1.75	0.68
1:A:303:SER:O	1:A:307:ILE:HG13	1.93	0.68
1:A:379:ASN:HD21	1:A:381:PHE:HB3	1.59	0.68
1:A:559:GLN:HG2	1:A:563:ILE:HD12	1.75	0.67
1:B:301:THR:HG22	1:B:301:THR:O	1.94	0.67
1:B:326:PHE:O	1:B:403:VAL:HG22	1.94	0.67
1:A:172:LYS:HB3	1:A:461:PHE:CZ	2.30	0.67
1:B:400:PRO:HA	1:B:413:PHE:HE1	1.56	0.67
1:A:6:ARG:C	1:A:7:THR:HG23	2.14	0.67
1:A:222:MET:HB3	1:A:223:PRO:HD2	1.78	0.66
1:B:379:ASN:HD21	1:B:381:PHE:HB3	1.60	0.66
1:B:172:LYS:HB3	1:B:461:PHE:CZ	2.30	0.66
1:A:518:ILE:HG23	1:A:687:LEU:HD12	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:8:ARG:NH1	1:A:8:ARG:CG	2.44	0.66
1:B:518:ILE:HG23	1:B:687:LEU:HD12	1.78	0.65
1:A:153:ASN:HD22	1:A:154:PRO:HD2	1.61	0.65
1:A:511:THR:HG22	1:A:512:ASN:H	1.62	0.65
1:B:511:THR:HG22	1:B:512:ASN:H	1.62	0.65
1:A:468:THR:HG21	1:A:544:ASP:OD2	1.97	0.65
1:A:486:ASN:HB3	1:A:489:ASN:ND2	2.12	0.65
1:A:222:MET:HB3	1:A:223:PRO:CD	2.28	0.64
1:A:301:THR:HG22	1:A:301:THR:O	1.96	0.64
1:A:690:ILE:H	1:A:690:ILE:CD1	2.10	0.63
1:B:303:SER:O	1:B:307:ILE:HG13	1.99	0.63
1:A:425:ARG:O	1:A:429:ARG:HB2	1.98	0.63
1:B:682:VAL:HG13	1:B:712:VAL:O	1.99	0.63
1:B:486:ASN:HB3	1:B:489:ASN:ND2	2.13	0.62
1:A:365:ALA:HB3	1:A:399:GLU:O	1.99	0.62
1:B:425:ARG:O	1:B:429:ARG:HB2	1.98	0.62
1:A:619:GLU:CD	1:A:619:GLU:H	2.02	0.62
1:B:171:LEU:HD23	1:B:395:LYS:HE3	1.82	0.62
1:B:193:GLU:O	1:B:193:GLU:CG	2.47	0.62
1:B:8:ARG:CG	1:B:8:ARG:O	2.34	0.62
1:A:193:GLU:CG	1:A:193:GLU:O	2.47	0.62
1:A:6:ARG:CG	1:A:7:THR:N	2.31	0.61
1:A:171:LEU:HD23	1:A:395:LYS:HE3	1.83	0.61
1:B:468:THR:HG21	1:B:544:ASP:OD2	2.00	0.61
1:A:54:LYS:C	1:A:55:TYR:HD2	2.04	0.61
1:A:153:ASN:ND2	1:A:153:ASN:C	2.54	0.60
1:B:305:ARG:HD3	1:B:323:TYR:OH	2.02	0.60
1:A:338:PRO:HG3	1:B:383:ILE:CD1	2.31	0.60
1:A:398:ALA:HB2	1:A:417:TRP:CZ3	2.37	0.60
1:B:365:ALA:HB3	1:B:399:GLU:O	2.01	0.60
1:B:54:LYS:C	1:B:55:TYR:HD2	2.05	0.60
1:A:561:ASN:ND2	1:A:563:ILE:H	1.96	0.60
1:B:619:GLU:CD	1:B:619:GLU:H	2.03	0.60
1:A:247:ILE:H	1:A:247:ILE:HD12	1.66	0.59
1:A:624:ASP:H	1:A:627:THR:HG22	1.67	0.59
1:A:6:ARG:CZ	1:A:7:THR:CG2	2.69	0.59
1:B:105:LEU:HD12	1:B:302:LEU:O	2.02	0.59
1:B:450:PRO:HG3	1:B:599:TYR:CD2	2.38	0.59
1:B:164:ILE:O	1:B:164:ILE:HG12	2.02	0.59
1:A:560:ASP:OD2	1:A:565:TRP:HH2	1.86	0.59
1:B:425:ARG:HD2	1:B:466:TYR:CE2	2.38	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:624:ASP:H	1:B:627:THR:HG22	1.68	0.59
1:B:105:LEU:HA	1:B:302:LEU:O	2.02	0.59
1:B:153:ASN:C	1:B:153:ASN:HD22	2.07	0.58
1:A:682:VAL:HG13	1:A:712:VAL:O	2.03	0.58
1:B:8:ARG:HH22	1:B:61:GLU:H	1.49	0.58
1:A:105:LEU:HA	1:A:302:LEU:O	2.02	0.58
1:A:560:ASP:OD2	1:A:565:TRP:CH2	2.56	0.58
1:A:690:ILE:N	1:A:690:ILE:HD13	2.14	0.58
1:B:608:MET:HG3	1:B:643:VAL:HG12	1.85	0.58
1:B:247:ILE:HD12	1:B:247:ILE:H	1.69	0.58
1:B:561:ASN:ND2	1:B:563:ILE:H	1.97	0.58
1:A:305:ARG:HD3	1:A:323:TYR:OH	2.04	0.58
1:B:690:ILE:HD13	1:B:690:ILE:N	2.16	0.58
1:B:461:PHE:CE2	1:B:597:GLU:HG3	2.39	0.58
1:A:36:PHE:CE1	1:A:339:ARG:HG3	2.39	0.57
1:B:560:ASP:OD2	1:B:565:TRP:CH2	2.57	0.57
1:A:153:ASN:ND2	1:A:154:PRO:HD2	2.20	0.57
1:A:6:ARG:HH11	1:A:7:THR:HG22	1.54	0.57
1:B:126:TYR:CZ	1:B:298:LEU:HA	2.40	0.57
1:A:398:ALA:HB2	1:A:417:TRP:CE3	2.40	0.57
1:A:126:TYR:CZ	1:A:298:LEU:HA	2.39	0.57
1:A:36:PHE:CD1	1:A:339:ARG:HG3	2.40	0.57
1:A:425:ARG:NH1	1:A:426:ASP:OD2	2.38	0.57
1:A:450:PRO:HG3	1:A:599:TYR:CD2	2.40	0.57
1:A:292:THR:HG21	1:A:313:TYR:OH	2.05	0.57
1:A:326:PHE:O	1:A:403:VAL:HG22	2.05	0.57
1:B:158:TRP:HB3	1:B:161:GLU:HB3	1.87	0.57
1:A:608:MET:HG3	1:A:643:VAL:HG12	1.86	0.56
1:A:425:ARG:HD2	1:A:466:TYR:CE2	2.40	0.56
1:B:36:PHE:CD1	1:B:339:ARG:HG3	2.40	0.56
1:A:461:PHE:CE2	1:A:597:GLU:HG3	2.40	0.56
1:B:554:ASN:C	1:B:554:ASN:ND2	2.58	0.56
1:B:690:ILE:CD1	1:B:690:ILE:H	2.11	0.56
1:A:6:ARG:HH22	1:A:63:LYS:NZ	2.04	0.56
1:B:160:ASP:O	1:B:163:PHE:HB2	2.05	0.56
1:B:425:ARG:NH1	1:B:426:ASP:OD2	2.39	0.56
1:B:437:LEU:HB2	1:B:442:ILE:HD11	1.88	0.55
1:B:560:ASP:OD2	1:B:565:TRP:HH2	1.87	0.55
1:B:554:ASN:C	1:B:554:ASN:HD22	2.09	0.55
1:A:188:ARG:HG3	1:A:190:ASP:HB3	1.88	0.55
1:B:416:GLN:HG2	1:B:416:GLN:O	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:127:LYS:HB2	1:A:130:ASP:HB2	1.89	0.55
1:B:189:LEU:HD22	1:B:189:LEU:H	1.72	0.55
1:B:36:PHE:CE1	1:B:339:ARG:HG3	2.42	0.55
1:A:120:ASN:O	1:A:123:VAL:HG22	2.07	0.55
1:B:216:ILE:O	1:B:216:ILE:HD12	2.07	0.54
1:B:486:ASN:HD21	1:B:554:ASN:ND2	2.05	0.54
1:A:486:ASN:HD21	1:A:554:ASN:ND2	2.05	0.54
1:A:161:GLU:CD	1:A:356:HIS:HD1	2.04	0.54
1:A:16:ASP:N	1:A:32:ASN:HD21	2.02	0.54
1:A:640:GLU:HB3	1:A:643:VAL:CG2	2.36	0.54
1:A:189:LEU:HD22	1:A:189:LEU:H	1.73	0.53
1:A:437:LEU:HB2	1:A:442:ILE:HD11	1.89	0.53
1:A:294:GLU:O	1:A:305:ARG:NH2	2.41	0.53
1:A:105:LEU:HD12	1:A:302:LEU:O	2.08	0.53
1:B:163:PHE:C	1:B:165:LYS:H	2.12	0.53
1:B:400:PRO:CA	1:B:413:PHE:CE1	2.85	0.53
1:B:681:LEU:HD22	1:B:682:VAL:H	1.74	0.53
1:A:93:PRO:HB2	1:A:135:LEU:HD23	1.91	0.53
1:A:55:TYR:N	1:A:55:TYR:CD2	2.76	0.53
1:B:54:LYS:HG3	1:B:144:GLU:HB2	1.90	0.53
1:B:640:GLU:HB3	1:B:643:VAL:CG2	2.37	0.53
1:A:216:ILE:HD12	1:A:216:ILE:O	2.10	0.52
1:A:681:LEU:HD22	1:A:682:VAL:H	1.74	0.52
1:B:127:LYS:HB2	1:B:130:ASP:HB2	1.91	0.52
1:A:554:ASN:C	1:A:554:ASN:HD22	2.13	0.52
1:B:478:LEU:HD12	1:B:502:SER:HB3	1.90	0.52
1:B:529:ILE:O	1:B:533:VAL:HB	2.10	0.52
1:A:366:ALA:HB3	1:A:402:ASP:N	2.25	0.52
1:B:55:TYR:CD2	1:B:55:TYR:N	2.77	0.52
1:A:208:ILE:O	1:A:212:LYS:HG2	2.10	0.52
1:A:554:ASN:C	1:A:554:ASN:ND2	2.61	0.52
1:B:619:GLU:O	1:B:673:LYS:HB3	2.10	0.52
1:B:16:ASP:N	1:B:32:ASN:HD21	2.04	0.52
1:B:400:PRO:CA	1:B:413:PHE:HE1	2.21	0.52
1:B:164:ILE:O	1:B:168:LYS:HE2	2.10	0.52
1:A:504:ASN:ND2	1:A:506:GLY:H	2.08	0.51
1:B:93:PRO:HB2	1:B:135:LEU:HD23	1.92	0.51
1:A:161:GLU:O	1:A:165:LYS:CG	2.56	0.51
1:A:161:GLU:OE2	1:A:356:HIS:CE1	2.60	0.51
1:A:478:LEU:HD12	1:A:502:SER:HB3	1.92	0.51
1:B:208:ILE:O	1:B:212:LYS:HG2	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:227:PHE:CE2	1:A:253:GLU:HG3	2.46	0.51
1:A:304:PHE:HE2	1:A:343:MET:HE1	1.75	0.51
1:A:678:LYS:HB3	1:A:717:GLU:HB3	1.93	0.51
1:A:164:ILE:O	1:A:164:ILE:HG12	2.10	0.51
1:B:504:ASN:ND2	1:B:506:GLY:H	2.08	0.51
1:B:596:ARG:NE	1:B:646:GLU:HG2	2.26	0.51
1:B:133:GLN:O	1:B:135:LEU:N	2.43	0.51
1:A:383:ILE:CD1	1:B:338:PRO:HG3	2.37	0.51
1:A:205:GLU:OE1	1:A:205:GLU:N	2.44	0.51
1:A:619:GLU:O	1:A:673:LYS:HB3	2.10	0.51
1:B:294:GLU:O	1:B:305:ARG:NH2	2.43	0.51
1:A:511:THR:CG2	1:A:512:ASN:N	2.74	0.51
1:B:216:ILE:HD12	1:B:216:ILE:C	2.31	0.51
1:A:160:ASP:O	1:A:162:ASP:N	2.37	0.50
1:A:314:MET:CE	1:A:332:THR:HG21	2.41	0.50
1:B:292:THR:HG21	1:B:313:TYR:OH	2.11	0.50
1:A:353:THR:CG2	1:A:390:ILE:HD13	2.40	0.50
1:B:504:ASN:HD22	1:B:504:ASN:C	2.15	0.50
1:A:529:ILE:O	1:A:533:VAL:HB	2.11	0.50
1:B:353:THR:CG2	1:B:390:ILE:HD13	2.42	0.50
1:B:398:ALA:HB2	1:B:417:TRP:HE3	1.72	0.50
1:B:304:PHE:HE2	1:B:343:MET:HE1	1.76	0.50
1:B:398:ALA:HB2	1:B:417:TRP:CZ3	2.47	0.50
1:A:290:ASN:OD1	1:A:291:HIS:HD2	1.95	0.50
1:A:6:ARG:HH22	1:A:63:LYS:HZ3	1.59	0.50
1:B:227:PHE:CE2	1:B:253:GLU:HG3	2.46	0.50
1:B:377:MET:HE3	1:B:409:GLN:HB3	1.94	0.50
1:B:511:THR:CG2	1:B:512:ASN:N	2.75	0.50
1:A:216:ILE:C	1:A:216:ILE:HD12	2.32	0.49
1:B:678:LYS:HB3	1:B:717:GLU:HB3	1.94	0.49
1:B:103:LYS:HE3	1:B:125:GLY:H	1.76	0.49
1:B:290:ASN:OD1	1:B:291:HIS:HD2	1.94	0.49
1:A:504:ASN:C	1:A:504:ASN:HD22	2.14	0.49
1:B:205:GLU:N	1:B:205:GLU:OE1	2.46	0.49
1:A:188:ARG:C	1:A:190:ASP:H	2.16	0.49
1:A:353:THR:HG21	1:A:390:ILE:HD13	1.94	0.49
1:B:290:ASN:ND2	1:B:364:LEU:HB2	2.28	0.49
1:B:55:TYR:N	1:B:55:TYR:HD2	2.10	0.49
1:B:684:SER:HA	1:B:710:ALA:O	2.12	0.49
1:A:164:ILE:O	1:A:168:LYS:HE2	2.13	0.49
1:B:546:LEU:HD21	1:B:568:TRP:CZ3	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:126:TYR:CE2	1:A:298:LEU:HA	2.48	0.49
1:B:222:MET:CB	1:B:223:PRO:CD	2.88	0.49
1:A:42:LYS:HB3	1:A:88:TYR:HB2	1.95	0.48
1:B:681:LEU:HD22	1:B:682:VAL:N	2.28	0.48
1:A:681:LEU:HD22	1:A:682:VAL:N	2.28	0.48
1:B:120:ASN:O	1:B:123:VAL:HG22	2.12	0.48
1:A:20:LEU:HD23	1:A:34:SER:OG	2.14	0.48
1:A:290:ASN:ND2	1:A:364:LEU:HB2	2.28	0.48
1:A:669:ASN:HD22	1:A:669:ASN:N	2.11	0.48
1:A:6:ARG:HH12	1:A:7:THR:CG2	2.20	0.48
1:A:441:GLU:O	1:A:445:ARG:HG2	2.13	0.48
1:A:596:ARG:NE	1:A:646:GLU:HG2	2.28	0.48
1:B:159:ASP:C	1:B:161:GLU:H	2.17	0.48
1:B:108:PRO:HB3	1:B:343:MET:CE	2.43	0.48
1:A:132:ASN:O	1:A:133:GLN:C	2.52	0.48
1:A:108:PRO:HB3	1:A:343:MET:CE	2.42	0.48
1:A:189:LEU:N	1:A:189:LEU:HD13	2.26	0.48
1:A:400:PRO:HA	1:A:413:PHE:HE1	1.75	0.48
1:A:468:THR:HG23	1:A:541:LEU:CB	2.43	0.48
1:A:177:TYR:CE2	1:A:179:VAL:HG13	2.48	0.48
1:B:161:GLU:C	1:B:163:PHE:H	2.15	0.48
1:B:315:LEU:HB3	1:B:320:LYS:HA	1.95	0.48
1:B:365:ALA:CB	1:B:398:ALA:HB1	2.44	0.48
1:A:319:ASN:O	1:A:320:LYS:HB2	2.13	0.48
1:B:468:THR:HG23	1:B:541:LEU:CB	2.44	0.48
1:A:315:LEU:HB3	1:A:320:LYS:HA	1.95	0.48
1:B:155:TYR:O	1:B:156:PHE:HB2	2.12	0.48
1:B:162:ASP:C	1:B:165:LYS:HG2	2.34	0.48
1:B:177:TYR:CE2	1:B:179:VAL:HG13	2.49	0.48
1:A:103:LYS:HE3	1:A:125:GLY:H	1.79	0.48
1:A:54:LYS:HG3	1:A:144:GLU:HB2	1.96	0.48
1:A:546:LEU:HD21	1:A:568:TRP:CZ3	2.49	0.47
1:B:204:SER:OG	1:B:207:MET:HG2	2.14	0.47
1:A:637:PHE:CE1	1:A:661:ILE:HD12	2.49	0.47
1:B:297:HIS:O	1:B:298:LEU:CB	2.59	0.47
1:B:289:TYR:CD2	1:B:344:VAL:HG13	2.49	0.47
1:B:441:GLU:O	1:B:445:ARG:HG2	2.15	0.47
1:A:8:ARG:C	1:A:10:ARG:H	2.17	0.47
1:A:684:SER:HA	1:A:710:ALA:O	2.15	0.47
1:A:688:ARG:NH1	1:A:706:GLU:OE2	2.44	0.47
1:B:290:ASN:OD1	1:B:291:HIS:CD2	2.67	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:292:THR:CG2	1:B:293:ALA:N	2.78	0.47
1:A:6:ARG:O	1:A:7:THR:HG23	2.15	0.47
1:A:204:SER:OG	1:A:207:MET:HG2	2.14	0.47
1:A:365:ALA:CB	1:A:398:ALA:HB1	2.45	0.47
1:A:6:ARG:C	1:A:7:THR:CG2	2.82	0.47
1:B:230:GLN:HB2	1:B:233:LEU:CD2	2.40	0.47
1:A:174:THR:HG22	1:A:175:VAL:N	2.29	0.47
1:B:20:LEU:HD23	1:B:34:SER:OG	2.15	0.47
1:B:314:MET:CE	1:B:332:THR:HG21	2.44	0.47
1:B:174:THR:HG22	1:B:175:VAL:N	2.30	0.47
1:B:669:ASN:HD22	1:B:669:ASN:N	2.13	0.47
1:B:42:LYS:HB3	1:B:88:TYR:HB2	1.97	0.47
1:A:8:ARG:NH2	1:A:61:GLU:H	2.12	0.47
1:B:353:THR:HG21	1:B:390:ILE:HD13	1.96	0.47
1:A:133:GLN:O	1:A:135:LEU:N	2.47	0.46
1:A:172:LYS:HB3	1:A:461:PHE:HZ	1.79	0.46
1:A:222:MET:O	1:A:223:PRO:C	2.53	0.46
1:A:377:MET:HE3	1:A:409:GLN:HB3	1.96	0.46
1:B:189:LEU:HD13	1:B:189:LEU:N	2.30	0.46
1:B:511:THR:CG2	1:B:512:ASN:H	2.27	0.46
1:A:559:GLN:HG3	1:A:561:ASN:HD21	1.80	0.46
1:B:65:LYS:HE2	1:B:67:GLY:O	2.16	0.46
1:A:292:THR:CG2	1:A:293:ALA:N	2.78	0.46
1:B:126:TYR:CE2	1:B:298:LEU:HA	2.50	0.46
1:A:468:THR:HG23	1:A:541:LEU:HB2	1.97	0.46
1:B:182:LYS:HZ3	1:B:565:TRP:HH2	1.63	0.46
1:A:105:LEU:HD12	1:A:302:LEU:C	2.35	0.46
1:A:612:ASP:HA	1:A:643:VAL:HG23	1.97	0.46
1:B:522:LYS:HG3	1:B:685:SER:O	2.16	0.46
1:A:290:ASN:OD1	1:A:291:HIS:CD2	2.67	0.46
1:A:55:TYR:N	1:A:55:TYR:HD2	2.11	0.46
1:A:325:ASP:OD2	1:A:330:GLY:N	2.39	0.46
1:B:82:LEU:HD23	1:B:150:VAL:HG22	1.98	0.46
1:A:511:THR:CG2	1:A:512:ASN:H	2.27	0.46
1:B:263:GLY:O	1:B:266:VAL:HG12	2.16	0.46
1:A:187:LEU:HD22	1:A:565:TRP:CB	2.46	0.46
1:B:103:LYS:HA	1:B:142:SER:OG	2.16	0.46
1:A:413:PHE:HB2	1:A:419:GLU:OE2	2.16	0.45
1:B:319:ASN:O	1:B:320:LYS:HB2	2.16	0.45
1:B:172:LYS:HB3	1:B:461:PHE:CE1	2.51	0.45
1:A:199:TYR:CZ	1:A:256:TYR:HB2	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:230:GLN:HB2	1:A:233:LEU:CD2	2.40	0.45
1:A:522:LYS:HG3	1:A:685:SER:O	2.16	0.45
1:B:591:HIS:HB3	1:B:656:ASP:OD1	2.16	0.45
1:B:199:TYR:CZ	1:B:256:TYR:HB2	2.51	0.45
1:A:164:ILE:HG21	1:A:277:HIS:HB3	1.98	0.45
1:A:535:GLN:NE2	1:A:596:ARG:HB2	2.32	0.45
1:B:187:LEU:HD22	1:B:565:TRP:CB	2.47	0.45
1:A:187:LEU:HD22	1:A:565:TRP:HB3	1.99	0.45
1:B:297:HIS:C	1:B:299:GLY:H	2.20	0.45
1:B:437:LEU:N	1:B:437:LEU:HD12	2.32	0.45
1:B:559:GLN:HG3	1:B:561:ASN:HD21	1.82	0.45
1:A:103:LYS:HA	1:A:142:SER:OG	2.17	0.45
1:A:513:ASP:O	1:A:516:VAL:N	2.47	0.45
1:A:177:TYR:CE2	1:A:179:VAL:CG1	3.00	0.45
1:B:105:LEU:HD12	1:B:302:LEU:C	2.36	0.45
1:A:172:LYS:HB3	1:A:461:PHE:CE1	2.51	0.45
1:B:612:ASP:HA	1:B:643:VAL:HG23	1.98	0.45
1:A:297:HIS:O	1:A:298:LEU:CB	2.59	0.45
1:A:578:LEU:HD12	1:A:578:LEU:O	2.17	0.45
1:A:172:LYS:O	1:A:595:ARG:HB3	2.17	0.45
1:A:153:ASN:ND2	1:A:155:TYR:H	2.15	0.44
1:B:549:THR:HG22	1:B:551:ARG:N	2.13	0.44
1:A:289:TYR:CD2	1:A:344:VAL:HG13	2.52	0.44
1:B:132:ASN:O	1:B:133:GLN:C	2.55	0.44
1:B:480:SER:HA	1:B:520:ARG:NH1	2.30	0.44
1:A:437:LEU:HD12	1:A:437:LEU:N	2.33	0.44
1:A:7:THR:HB	1:A:8:ARG:H	1.69	0.44
1:B:177:TYR:CE2	1:B:179:VAL:CG1	3.00	0.44
1:A:263:GLY:O	1:A:266:VAL:HG12	2.18	0.44
1:A:65:LYS:HE2	1:A:67:GLY:O	2.17	0.44
1:B:603:LYS:HA	1:B:611:LYS:HG2	2.00	0.44
1:B:108:PRO:HB3	1:B:343:MET:HE2	1.98	0.44
1:B:450:PRO:O	1:B:454:LEU:HB3	2.18	0.44
1:B:637:PHE:CE1	1:B:661:ILE:HD12	2.52	0.44
1:A:157:GLU:HG3	1:A:157:GLU:O	2.18	0.44
1:B:190:ASP:C	1:B:190:ASP:OD1	2.56	0.44
1:B:588:TYR:CZ	1:B:595:ARG:HG2	2.53	0.44
1:A:143:GLY:O	1:A:148:LYS:NZ	2.51	0.44
1:A:398:ALA:O	1:A:400:PRO:HD3	2.17	0.44
1:A:82:LEU:HD23	1:A:150:VAL:HG22	1.99	0.44
1:B:103:LYS:O	1:B:105:LEU:HD22	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:111:LYS:HD2	1:A:350:TYR:CZ	2.53	0.43
1:B:297:HIS:CD2	1:B:298:LEU:HG	2.52	0.43
1:B:525:ARG:O	1:B:529:ILE:HG13	2.18	0.43
1:B:591:HIS:HA	1:B:592:PRO:HD3	1.82	0.43
1:A:35:LEU:HD11	1:A:307:ILE:HD13	1.99	0.43
1:A:297:HIS:CD2	1:A:298:LEU:HG	2.53	0.43
1:B:164:ILE:HG21	1:B:277:HIS:HB3	2.00	0.43
1:B:103:LYS:HE3	1:B:125:GLY:N	2.33	0.43
1:B:133:GLN:C	1:B:135:LEU:H	2.21	0.43
1:B:172:LYS:HB3	1:B:461:PHE:HZ	1.79	0.43
1:B:187:LEU:HD22	1:B:565:TRP:HB3	1.99	0.43
1:B:673:LYS:HE2	1:B:700:GLU:HB2	1.99	0.43
1:A:673:LYS:HE2	1:A:700:GLU:HB2	2.01	0.43
1:A:682:VAL:C	1:A:683:ILE:HG13	2.38	0.43
1:A:78:ARG:HB3	1:A:79:PRO:CD	2.49	0.43
1:A:16:ASP:H	1:A:32:ASN:ND2	2.06	0.43
1:B:111:LYS:HD2	1:B:350:TYR:CZ	2.54	0.43
1:B:372:LEU:HD12	1:B:372:LEU:HA	1.77	0.43
1:A:191:LEU:CD2	1:A:206:GLN:OE1	2.67	0.43
1:A:297:HIS:C	1:A:299:GLY:H	2.21	0.43
1:B:398:ALA:O	1:B:400:PRO:HD3	2.18	0.43
1:B:695:ARG:HH11	1:B:695:ARG:HG2	1.83	0.43
1:A:450:PRO:O	1:A:454:LEU:HB3	2.18	0.43
1:A:480:SER:HA	1:A:520:ARG:NH1	2.33	0.43
1:A:13:ARG:HD2	1:A:73:PHE:CD2	2.54	0.43
1:B:25:ILE:HG22	1:B:25:ILE:O	2.18	0.43
1:B:401:TRP:HA	1:B:407:GLY:O	2.19	0.43
1:B:688:ARG:NH1	1:B:706:GLU:OE2	2.46	0.43
1:A:108:PRO:HB3	1:A:343:MET:HE2	2.00	0.43
1:B:232:PHE:CE1	1:B:233:LEU:HD22	2.54	0.43
1:B:688:ARG:HH11	1:B:688:ARG:HG2	1.83	0.43
1:B:291:HIS:HB3	1:B:327:THR:HG21	2.01	0.43
1:B:35:LEU:HD11	1:B:307:ILE:HD13	2.00	0.42
1:A:103:LYS:O	1:A:105:LEU:HD22	2.19	0.42
1:B:468:THR:HG23	1:B:541:LEU:HB2	1.99	0.42
1:B:535:GLN:NE2	1:B:596:ARG:HB2	2.34	0.42
1:B:78:ARG:HB3	1:B:79:PRO:CD	2.49	0.42
1:B:8:ARG:HH21	1:B:61:GLU:HB3	1.84	0.42
1:B:90:PRO:HB2	1:B:97:LEU:HD13	2.01	0.42
1:B:143:GLY:O	1:B:148:LYS:NZ	2.49	0.42
1:B:118:ILE:O	1:B:145:TYR:HB3	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:549:THR:HG22	1:A:551:ARG:N	2.13	0.42
1:A:532:LEU:HD12	1:A:584:MET:HB3	2.02	0.42
1:B:13:ARG:HD2	1:B:73:PHE:CD2	2.55	0.42
1:B:172:LYS:O	1:B:595:ARG:HB3	2.19	0.42
1:B:437:LEU:CD1	1:B:437:LEU:N	2.83	0.42
1:A:377:MET:CE	1:A:409:GLN:HB3	2.49	0.42
1:B:361:ARG:HA	1:B:397:ILE:O	2.20	0.42
1:A:232:PHE:CE1	1:A:233:LEU:HD22	2.54	0.42
1:B:148:LYS:N	1:B:148:LYS:HD2	2.35	0.42
1:B:173:ASP:HA	1:B:595:ARG:HD2	2.02	0.42
1:B:110:ALA:O	1:B:250:PHE:HB2	2.20	0.42
1:A:103:LYS:HE3	1:A:125:GLY:HA2	2.00	0.42
1:B:124:PHE:CG	1:B:128:ILE:HD11	2.55	0.42
1:B:105:LEU:CD1	1:B:302:LEU:O	2.68	0.42
1:B:366:ALA:HB3	1:B:402:ASP:N	2.35	0.42
1:A:423:LYS:HB2	1:A:423:LYS:HE2	1.85	0.41
1:A:504:ASN:ND2	1:A:504:ASN:C	2.74	0.41
1:B:153:ASN:C	1:B:153:ASN:ND2	2.73	0.41
1:A:525:ARG:O	1:A:529:ILE:HG13	2.21	0.41
1:A:401:TRP:HA	1:A:407:GLY:O	2.20	0.41
1:B:159:ASP:OD2	1:B:159:ASP:O	2.38	0.41
1:B:708:ARG:HH11	1:B:708:ARG:HG2	1.84	0.41
1:A:437:LEU:CD1	1:A:437:LEU:N	2.83	0.41
1:A:588:TYR:CZ	1:A:595:ARG:HG2	2.54	0.41
1:A:708:ARG:HG2	1:A:708:ARG:HH11	1.84	0.41
1:B:103:LYS:HE3	1:B:125:GLY:HA2	2.02	0.41
1:B:153:ASN:ND2	1:B:155:TYR:H	2.18	0.41
1:B:163:PHE:C	1:B:165:LYS:N	2.73	0.41
1:A:168:LYS:HB2	1:A:168:LYS:HE3	1.77	0.41
1:A:221:LEU:N	1:A:221:LEU:HD12	2.35	0.41
1:B:16:ASP:H	1:B:32:ASN:ND2	2.07	0.41
1:A:124:PHE:CG	1:A:128:ILE:HD11	2.56	0.41
1:B:413:PHE:O	1:B:414:PRO:O	2.38	0.41
1:B:423:LYS:HE2	1:B:423:LYS:HB2	1.84	0.41
1:B:532:LEU:HD12	1:B:584:MET:HB3	2.01	0.41
1:A:624:ASP:H	1:A:627:THR:HG21	1.84	0.41
1:B:377:MET:CE	1:B:409:GLN:HB3	2.51	0.41
1:B:479:VAL:HG23	1:B:520:ARG:HG3	2.01	0.41
1:B:682:VAL:C	1:B:683:ILE:HG13	2.39	0.41
1:A:372:LEU:HD12	1:A:372:LEU:HA	1.78	0.41
1:B:126:TYR:OH	1:B:298:LEU:HA	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:591:HIS:HB3	1:A:656:ASP:OD1	2.21	0.41
1:A:688:ARG:HG2	1:A:688:ARG:HH11	1.86	0.41
1:A:161:GLU:C	1:A:163:PHE:H	2.23	0.41
1:A:110:ALA:O	1:A:250:PHE:HB2	2.21	0.41
1:A:485:HIS:HE1	1:A:508:GLU:OE2	2.04	0.41
1:A:561:ASN:ND2	1:A:563:ILE:HG13	2.36	0.41
1:B:361:ARG:HD3	1:B:361:ARG:C	2.41	0.41
1:B:447:LEU:C	1:B:535:GLN:HB2	2.40	0.41
1:A:291:HIS:HB3	1:A:327:THR:HG21	2.03	0.41
1:A:559:GLN:HG3	1:A:563:ILE:HD12	2.01	0.41
1:B:559:GLN:HG3	1:B:563:ILE:HD12	2.03	0.41
1:A:583:LYS:HE2	1:A:583:LYS:HB3	1.86	0.40
1:A:90:PRO:HB2	1:A:97:LEU:HD13	2.02	0.40
1:B:449:SER:N	1:B:450:PRO:HD3	2.37	0.40
1:B:453:TYR:HB3	1:B:458:LYS:CB	2.41	0.40
1:A:163:PHE:C	1:A:165:LYS:H	2.24	0.40
1:A:218:THR:CG2	1:A:282:GLU:HB2	2.46	0.40
1:B:187:LEU:HA	1:B:187:LEU:HD12	1.81	0.40
1:B:325:ASP:OD1	1:B:325:ASP:C	2.59	0.40
1:B:583:LYS:HE2	1:B:583:LYS:HB3	1.87	0.40
1:A:148:LYS:N	1:A:148:LYS:HD2	2.36	0.40
1:A:25:ILE:O	1:A:25:ILE:HG22	2.19	0.40
1:B:180:HIS:CE1	1:B:182:LYS:HB3	2.57	0.40
1:B:314:MET:HE2	1:B:332:THR:CG2	2.52	0.40
1:B:578:LEU:O	1:B:578:LEU:HD12	2.21	0.40
1:A:191:LEU:CB	1:A:192:PRO:HD2	2.37	0.40
1:A:361:ARG:C	1:A:361:ARG:HD3	2.42	0.40
1:A:548:ARG:NH1	1:A:550:GLN:HE21	2.20	0.40
1:A:241:TYR:CE1	1:A:565:TRP:HZ3	2.39	0.40
1:B:188:ARG:C	1:B:190:ASP:H	2.23	0.40
1:B:504:ASN:C	1:B:504:ASN:ND2	2.74	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	711/718 (99%)	644 (91%)	64 (9%)	3 (0%)	34	72
1	B	709/718 (99%)	643 (91%)	62 (9%)	4 (1%)	25	64
All	All	1420/1436 (99%)	1287 (91%)	126 (9%)	7 (0%)	29	68

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	9	ASP
1	A	700	GLU
1	B	156	PHE
1	B	414	PRO
1	B	700	GLU
1	A	133	GLN
1	B	164	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	629/636 (99%)	585 (93%)	44 (7%)	15	47
1	B	627/636 (99%)	586 (94%)	41 (6%)	17	50
All	All	1256/1272 (99%)	1171 (93%)	85 (7%)	16	48

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	ARG
1	A	7	THR
1	A	8	ARG
1	A	9	ASP
1	A	10	ARG
1	A	55	TYR

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Mol	Chain	Res	Type
1	A	94	GLU
1	A	153	ASN
1	A	159	ASP
1	A	161	GLU
1	A	162	ASP
1	A	179	VAL
1	A	187	LEU
1	A	189	LEU
1	A	213	ASP
1	A	236	LYS
1	A	247	ILE
1	A	253	GLU
1	A	267	LEU
1	A	319	ASN
1	A	354	GLU
1	A	399	GLU
1	A	429	ARG
1	A	439	TYR
1	A	471	ASP
1	A	492	ASN
1	A	493	ASN
1	A	504	ASN
1	A	533	VAL
1	A	541	LEU
1	A	545	GLU
1	A	546	LEU
1	A	548	ARG
1	A	554	ASN
1	A	559	GLN
1	A	561	ASN
1	A	565	TRP
1	A	584	MET
1	A	619	GLU
1	A	623	VAL
1	A	681	LEU
1	A	682	VAL
1	A	688	ARG
1	A	690	ILE
1	B	8	ARG
1	B	9	ASP
1	B	10	ARG
1	B	55	TYR

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Mol	Chain	Res	Type
1	B	94	GLU
1	B	153	ASN
1	B	162	ASP
1	B	163	PHE
1	B	179	VAL
1	B	187	LEU
1	B	189	LEU
1	B	213	ASP
1	B	236	LYS
1	B	247	ILE
1	B	253	GLU
1	B	318	ASP
1	B	319	ASN
1	B	354	GLU
1	B	399	GLU
1	B	429	ARG
1	B	439	TYR
1	B	471	ASP
1	B	492	ASN
1	B	493	ASN
1	B	504	ASN
1	B	533	VAL
1	B	541	LEU
1	B	545	GLU
1	B	546	LEU
1	B	548	ARG
1	B	554	ASN
1	B	559	GLN
1	B	561	ASN
1	B	565	TRP
1	B	584	MET
1	B	619	GLU
1	B	623	VAL
1	B	681	LEU
1	B	682	VAL
1	B	688	ARG
1	B	690	ILE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (58) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	ASN

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Mol	Chain	Res	Type
1	A	53	GLN
1	A	102	ASN
1	A	114	ASN
1	A	131	GLN
1	A	153	ASN
1	A	274	ASN
1	A	278	ASN
1	A	291	HIS
1	A	319	ASN
1	A	334	ASN
1	A	342	GLN
1	A	376	ASN
1	A	379	ASN
1	A	412	ASN
1	A	485	HIS
1	A	492	ASN
1	A	493	ASN
1	A	500	ASN
1	A	504	ASN
1	A	523	GLN
1	A	535	GLN
1	A	550	GLN
1	A	554	ASN
1	A	555	ASN
1	A	559	GLN
1	A	561	ASN
1	A	601	GLN
1	A	668	ASN
1	A	669	ASN
1	B	32	ASN
1	B	53	GLN
1	B	102	ASN
1	B	114	ASN
1	B	131	GLN
1	B	153	ASN
1	B	274	ASN
1	B	278	ASN
1	B	291	HIS
1	B	319	ASN
1	B	334	ASN
1	B	342	GLN
1	B	376	ASN

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Mol	Chain	Res	Type
1	B	379	ASN
1	B	412	ASN
1	B	492	ASN
1	B	493	ASN
1	B	500	ASN
1	B	504	ASN
1	B	523	GLN
1	B	550	GLN
1	B	554	ASN
1	B	555	ASN
1	B	559	GLN
1	B	561	ASN
1	B	601	GLN
1	B	668	ASN
1	B	669	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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [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	713/718 (99%)	-0.57	1 (0%) 95 89	16, 32, 53, 100	0
1	B	711/718 (99%)	-0.50	1 (0%) 95 89	13, 34, 58, 83	0
All	All	1424/1436 (99%)	-0.54	2 (0%) 95 89	13, 33, 55, 100	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	7	THR	4.1
1	B	160	ASP	2.5

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 carbohydrates in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.