



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 05:21 PM UTC

PDB ID : 2B43 / pdb_00002b43
Title : Crystal structure of the Norwalk virus RNA dependent RNA polymerase from strain Hu/NLV/Dresden174/1997/GE
Authors : Hogbom, M.; Rohayem, J.; Unge, T.; Jones, T.A.
Deposited on : 2005-09-22
Resolution : 2.30 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	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

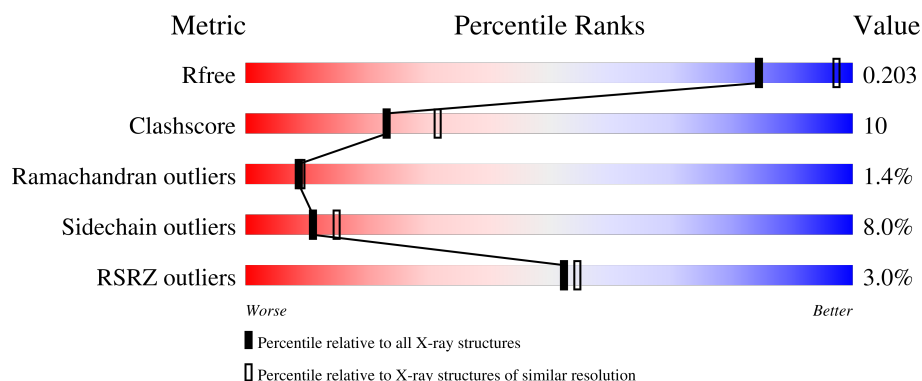
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (2.30-2.30)

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	526	2% 75% 15% 5% 5%
1	B	526	2% 75% 17% • • 5%
1	C	526	2% 71% 19% • • 5%
1	D	526	5% 75% 16% • • 5%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 16838 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called non-structural polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	501	Total	C	N	O	S	0	0	0
			3929	2498	673	736	22			
1	B	501	Total	C	N	O	S	0	0	0
			3929	2498	673	736	22			
1	C	501	Total	C	N	O	S	0	0	0
			3929	2498	673	736	22			
1	D	501	Total	C	N	O	S	0	0	0
			3929	2498	673	736	22			

There are 92 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	MET	-	cloning artifact	UNP Q6REV3
A	34	THR	ALA	SEE REMARK 999	UNP Q6REV3
A	107	THR	ALA	SEE REMARK 999	UNP Q6REV3
A	153	GLY	GLU	SEE REMARK 999	UNP Q6REV3
A	236	LYS	ARG	SEE REMARK 999	UNP Q6REV3
A	257	ALA	SER	SEE REMARK 999	UNP Q6REV3
A	291	LYS	THR	SEE REMARK 999	UNP Q6REV3
A	363	LYS	ARG	SEE REMARK 999	UNP Q6REV3
A	511	VAL	-	cloning artifact	UNP Q6REV3
A	512	ASP	-	cloning artifact	UNP Q6REV3
A	513	LYS	-	cloning artifact	UNP Q6REV3
A	514	LEU	-	cloning artifact	UNP Q6REV3
A	515	ALA	-	cloning artifact	UNP Q6REV3
A	516	ALA	-	cloning artifact	UNP Q6REV3
A	517	ALA	-	cloning artifact	UNP Q6REV3
A	518	LEU	-	cloning artifact	UNP Q6REV3
A	519	GLU	-	cloning artifact	UNP Q6REV3
A	520	HIS	-	expression tag	UNP Q6REV3
A	521	HIS	-	expression tag	UNP Q6REV3
A	522	HIS	-	expression tag	UNP Q6REV3
A	523	HIS	-	expression tag	UNP Q6REV3

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Chain	Residue	Modelled	Actual	Comment	Reference
A	524	HIS	-	expression tag	UNP Q6REV3
A	525	HIS	-	expression tag	UNP Q6REV3
B	0	MET	-	cloning artifact	UNP Q6REV3
B	34	THR	ALA	SEE REMARK 999	UNP Q6REV3
B	107	THR	ALA	SEE REMARK 999	UNP Q6REV3
B	153	GLY	GLU	SEE REMARK 999	UNP Q6REV3
B	236	LYS	ARG	SEE REMARK 999	UNP Q6REV3
B	257	ALA	SER	SEE REMARK 999	UNP Q6REV3
B	291	LYS	THR	SEE REMARK 999	UNP Q6REV3
B	363	LYS	ARG	SEE REMARK 999	UNP Q6REV3
B	511	VAL	-	cloning artifact	UNP Q6REV3
B	512	ASP	-	cloning artifact	UNP Q6REV3
B	513	LYS	-	cloning artifact	UNP Q6REV3
B	514	LEU	-	cloning artifact	UNP Q6REV3
B	515	ALA	-	cloning artifact	UNP Q6REV3
B	516	ALA	-	cloning artifact	UNP Q6REV3
B	517	ALA	-	cloning artifact	UNP Q6REV3
B	518	LEU	-	cloning artifact	UNP Q6REV3
B	519	GLU	-	cloning artifact	UNP Q6REV3
B	520	HIS	-	expression tag	UNP Q6REV3
B	521	HIS	-	expression tag	UNP Q6REV3
B	522	HIS	-	expression tag	UNP Q6REV3
B	523	HIS	-	expression tag	UNP Q6REV3
B	524	HIS	-	expression tag	UNP Q6REV3
B	525	HIS	-	expression tag	UNP Q6REV3
C	0	MET	-	cloning artifact	UNP Q6REV3
C	34	THR	ALA	SEE REMARK 999	UNP Q6REV3
C	107	THR	ALA	SEE REMARK 999	UNP Q6REV3
C	153	GLY	GLU	SEE REMARK 999	UNP Q6REV3
C	236	LYS	ARG	SEE REMARK 999	UNP Q6REV3
C	257	ALA	SER	SEE REMARK 999	UNP Q6REV3
C	291	LYS	THR	SEE REMARK 999	UNP Q6REV3
C	363	LYS	ARG	SEE REMARK 999	UNP Q6REV3
C	511	VAL	-	cloning artifact	UNP Q6REV3
C	512	ASP	-	cloning artifact	UNP Q6REV3
C	513	LYS	-	cloning artifact	UNP Q6REV3
C	514	LEU	-	cloning artifact	UNP Q6REV3
C	515	ALA	-	cloning artifact	UNP Q6REV3
C	516	ALA	-	cloning artifact	UNP Q6REV3
C	517	ALA	-	cloning artifact	UNP Q6REV3
C	518	LEU	-	cloning artifact	UNP Q6REV3
C	519	GLU	-	cloning artifact	UNP Q6REV3

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Chain	Residue	Modelled	Actual	Comment	Reference
C	520	HIS	-	expression tag	UNP Q6REV3
C	521	HIS	-	expression tag	UNP Q6REV3
C	522	HIS	-	expression tag	UNP Q6REV3
C	523	HIS	-	expression tag	UNP Q6REV3
C	524	HIS	-	expression tag	UNP Q6REV3
C	525	HIS	-	expression tag	UNP Q6REV3
D	0	MET	-	cloning artifact	UNP Q6REV3
D	34	THR	ALA	SEE REMARK 999	UNP Q6REV3
D	107	THR	ALA	SEE REMARK 999	UNP Q6REV3
D	153	GLY	GLU	SEE REMARK 999	UNP Q6REV3
D	236	LYS	ARG	SEE REMARK 999	UNP Q6REV3
D	257	ALA	SER	SEE REMARK 999	UNP Q6REV3
D	291	LYS	THR	SEE REMARK 999	UNP Q6REV3
D	363	LYS	ARG	SEE REMARK 999	UNP Q6REV3
D	511	VAL	-	cloning artifact	UNP Q6REV3
D	512	ASP	-	cloning artifact	UNP Q6REV3
D	513	LYS	-	cloning artifact	UNP Q6REV3
D	514	LEU	-	cloning artifact	UNP Q6REV3
D	515	ALA	-	cloning artifact	UNP Q6REV3
D	516	ALA	-	cloning artifact	UNP Q6REV3
D	517	ALA	-	cloning artifact	UNP Q6REV3
D	518	LEU	-	cloning artifact	UNP Q6REV3
D	519	GLU	-	cloning artifact	UNP Q6REV3
D	520	HIS	-	expression tag	UNP Q6REV3
D	521	HIS	-	expression tag	UNP Q6REV3
D	522	HIS	-	expression tag	UNP Q6REV3
D	523	HIS	-	expression tag	UNP Q6REV3
D	524	HIS	-	expression tag	UNP Q6REV3
D	525	HIS	-	expression tag	UNP Q6REV3

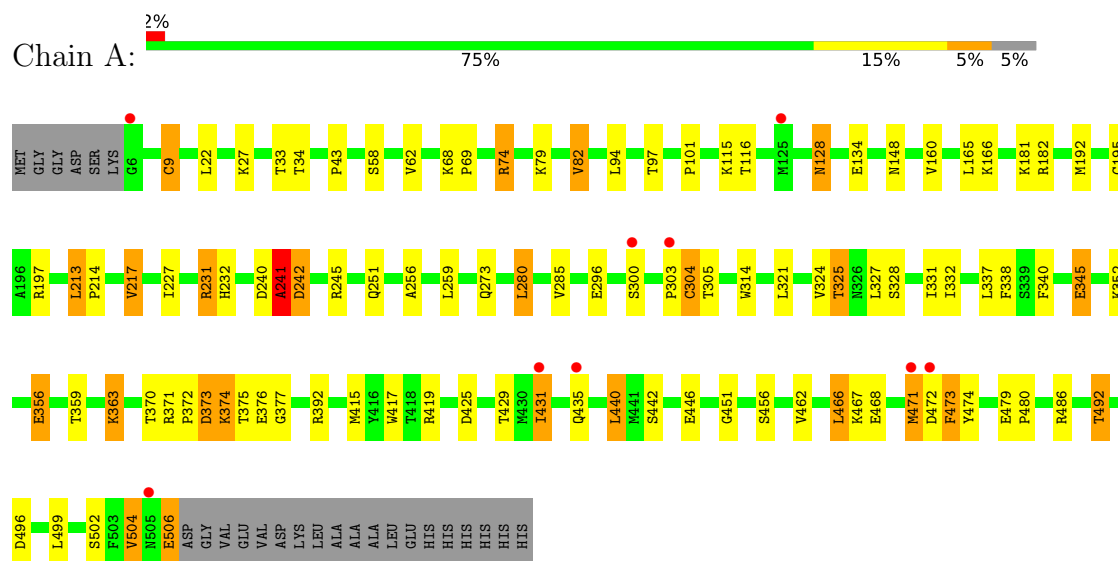
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	274	Total O 274 274	0	0
2	B	251	Total O 251 251	0	0
2	C	334	Total O 334 334	0	0
2	D	263	Total O 263 263	0	0

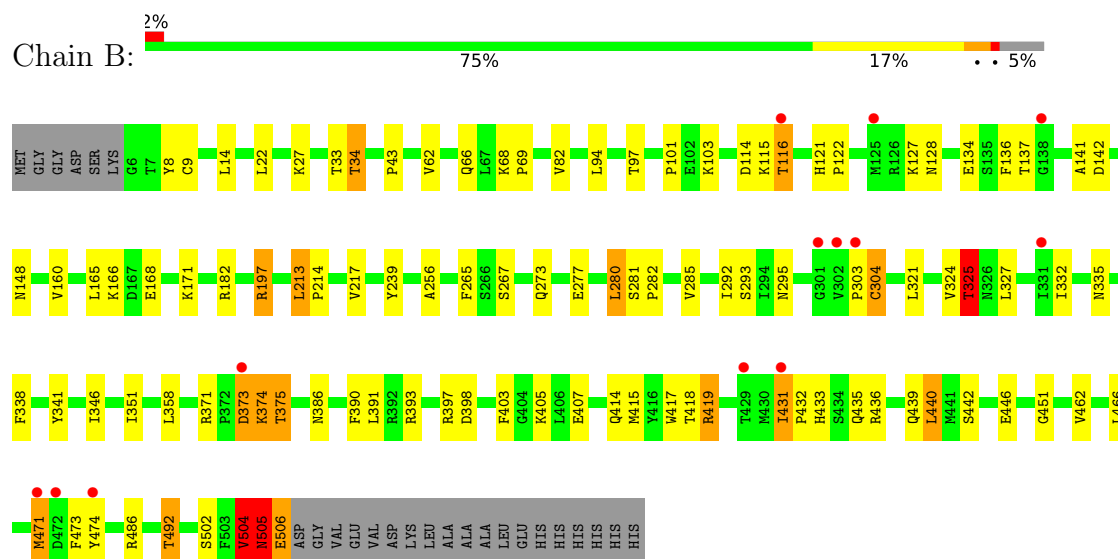
3 Residue-property plots [i](#)

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

- Molecule 1: non-structural polyprotein



- Molecule 1: non-structural polyprotein



- Molecule 1: non-structural polyprotein

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	90.47Å 125.56Å 218.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.30 20.00 – 2.30	Depositor EDS
% Data completeness (in resolution range)	97.2 (20.00-2.30) 97.0 (20.00-2.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.72 (at 2.31Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.192 , 0.257 (Not available) , 0.203	Depositor DCC
R_{free} test set	5401 reflections (4.87%)	wwPDB-VP
Wilson B-factor (Å ²)	29.2	Xtriage
Anisotropy	0.393	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 42.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	16838	wwPDB-VP
Average B, all atoms (Å ²)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 40.63 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 2.6575e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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

5.1 Standard geometry

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	0.74	1/4031 (0.0%)	0.98	9/5467 (0.2%)
1	B	0.72	0/4031	0.97	4/5467 (0.1%)
1	C	0.78	2/4031 (0.0%)	1.04	7/5467 (0.1%)
1	D	0.71	0/4031	0.96	7/5467 (0.1%)
All	All	0.74	3/16124 (0.0%)	0.99	27/21868 (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	3
1	B	0	1
1	D	0	1
All	All	0	5

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	160	VAL	CA-CB	5.93	1.62	1.54
1	C	285	VAL	CA-CB	5.61	1.61	1.54
1	A	217	VAL	CA-CB	5.48	1.60	1.54

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	505	ASN	N-CA-C	-8.80	103.38	114.56
1	A	241	ALA	N-CA-C	7.26	126.27	110.80
1	B	451	GLY	CA-C-N	6.52	126.29	119.05
1	B	451	GLY	C-N-CA	6.52	126.29	119.05
1	D	241	ALA	N-CA-C	6.16	123.92	110.80
1	A	451	GLY	CA-C-N	6.07	125.78	119.05

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	451	GLY	C-N-CA	6.07	125.78	119.05
1	D	354	ASP	CA-C-N	6.01	125.72	119.05
1	D	354	ASP	C-N-CA	6.01	125.72	119.05
1	C	354	ASP	CA-C-N	5.83	125.52	119.05
1	C	354	ASP	C-N-CA	5.83	125.52	119.05
1	C	160	VAL	CB-CA-C	5.60	117.98	110.42
1	C	241	ALA	N-CA-C	5.58	122.69	110.80
1	A	300	SER	N-CA-C	5.45	119.12	109.96
1	B	325	THR	N-CA-C	-5.40	107.06	113.97
1	A	425	ASP	CA-C-N	5.30	125.11	119.28
1	A	425	ASP	C-N-CA	5.30	125.11	119.28
1	D	500	ALA	CA-C-N	5.28	125.04	119.76
1	D	500	ALA	C-N-CA	5.28	125.04	119.76
1	C	371	ARG	CA-C-N	5.24	126.39	119.84
1	C	371	ARG	C-N-CA	5.24	126.39	119.84
1	D	371	ARG	CA-C-N	5.22	126.37	119.84
1	D	371	ARG	C-N-CA	5.22	126.37	119.84
1	A	377	GLY	CA-C-N	-5.19	115.38	120.52
1	A	377	GLY	C-N-CA	-5.19	115.38	120.52
1	C	376	GLU	N-CA-C	5.11	121.67	110.80
1	A	242	ASP	N-CA-C	5.01	121.47	110.80

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	240	ASP	Peptide
1	A	345	GLU	Peptide
1	A	504	VAL	Peptide
1	B	504	VAL	Peptide
1	D	345	GLU	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	3929	0	3909	79	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	3929	0	3909	81	0
1	C	3929	0	3909	98	0
1	D	3929	0	3909	72	0
2	A	274	0	0	8	0
2	B	251	0	0	5	0
2	C	334	0	0	11	0
2	D	263	0	0	12	0
All	All	16838	0	15636	324	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 10.

All (324) 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:442:SER:HB3	1:B:504:VAL:HG12	1.30	1.10
1:B:492:THR:HG21	2:C:540:HOH:O	1.55	1.07
1:D:415:MET:HE1	1:D:462:VAL:HG23	1.45	0.99
1:C:386:ASN:ND2	1:C:397:ARG:H	1.64	0.95
1:A:492:THR:HG21	2:A:573:HOH:O	1.66	0.93
1:D:474:TYR:HD1	1:D:474:TYR:H	1.15	0.91
1:C:221:MET:HG3	1:C:393:ARG:HH11	1.35	0.91
1:B:442:SER:HB3	1:B:504:VAL:CG1	2.01	0.91
1:B:148:ASN:HD21	1:B:197:ARG:HH11	1.20	0.89
1:C:377:GLY:HA2	2:C:799:HOH:O	1.72	0.88
1:B:321:LEU:O	1:B:325:THR:HB	1.73	0.88
1:D:325:THR:HG21	1:D:332:ILE:HD11	1.56	0.88
1:A:241:ALA:HB3	1:A:345:GLU:OE2	1.74	0.87
1:B:325:THR:HG21	1:B:332:ILE:HD11	1.56	0.86
1:A:192:MET:HG2	2:A:719:HOH:O	1.75	0.85
1:A:431:ILE:HD13	1:A:431:ILE:H	1.43	0.84
1:D:148:ASN:HD21	1:D:197:ARG:HH11	1.24	0.83
1:A:325:THR:HG21	1:A:332:ILE:HD11	1.61	0.81
1:A:415:MET:HE1	1:A:462:VAL:HG23	1.63	0.81
1:D:241:ALA:HB3	1:D:345:GLU:OE2	1.81	0.81
1:C:492:THR:HG21	2:C:533:HOH:O	1.82	0.80
1:C:325:THR:HG21	1:C:332:ILE:HD11	1.62	0.80
1:C:374:LYS:H	1:C:374:LYS:CD	1.95	0.79
1:A:148:ASN:HD21	1:A:197:ARG:HH11	1.31	0.78
1:A:195:CYS:HB3	1:A:304:CYS:SG	2.25	0.77
1:B:386:ASN:ND2	1:B:397:ARG:H	1.82	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:386:ASN:ND2	1:D:397:ARG:H	1.82	0.77
1:D:74:ARG:HG2	1:D:251:GLN:HG2	1.66	0.77
1:C:231:ARG:HD3	2:C:812:HOH:O	1.83	0.77
1:B:433:HIS:CE1	1:B:435:GLN:HB2	2.20	0.76
1:C:374:LYS:H	1:C:374:LYS:HD2	1.49	0.76
1:B:371:ARG:HH11	1:B:374:LYS:HG3	1.52	0.75
1:C:221:MET:HG3	1:C:393:ARG:NH1	2.01	0.75
1:D:321:LEU:O	1:D:325:THR:HB	1.87	0.74
1:D:415:MET:HE1	1:D:462:VAL:CG2	2.16	0.74
1:B:431:ILE:HD13	1:B:431:ILE:H	1.53	0.74
1:A:431:ILE:HG13	1:C:134:GLU:HB2	1.70	0.73
1:C:79:LYS:HB3	1:C:82:VAL:HG13	1.70	0.73
1:A:79:LYS:HB3	1:A:82:VAL:HG13	1.69	0.73
1:A:321:LEU:O	1:A:325:THR:HB	1.89	0.73
1:A:442:SER:HB3	1:A:504:VAL:HG13	1.69	0.73
1:D:148:ASN:ND2	1:D:197:ARG:HH11	1.84	0.73
1:D:492:THR:HG21	2:D:559:HOH:O	1.89	0.72
1:A:303:PRO:O	2:A:753:HOH:O	2.06	0.71
1:C:415:MET:HE1	1:C:462:VAL:HG23	1.72	0.71
1:C:148:ASN:HD21	1:C:197:ARG:HH11	1.37	0.71
1:A:371:ARG:HD3	1:A:374:LYS:HD3	1.73	0.70
1:A:241:ALA:CB	1:A:345:GLU:OE2	2.40	0.70
1:C:466:LEU:HD13	1:C:473:PHE:HB2	1.74	0.70
1:C:386:ASN:HD21	1:C:397:ARG:H	1.40	0.69
1:C:259:LEU:HD12	1:C:280:LEU:HD13	1.75	0.69
1:D:195:CYS:HB3	2:D:753:HOH:O	1.91	0.69
1:B:386:ASN:HD22	1:B:397:ARG:H	1.37	0.69
1:A:97:THR:HG21	1:A:213:LEU:HD13	1.74	0.69
1:C:68:LYS:HB3	1:C:69:PRO:HD3	1.75	0.68
1:C:241:ALA:HB3	1:C:345:GLU:OE2	1.94	0.68
1:D:506:GLU:HA	2:D:652:HOH:O	1.93	0.68
1:A:415:MET:HE1	1:A:462:VAL:CG2	2.23	0.68
1:C:263:VAL:HG11	1:C:273:GLN:HG2	1.75	0.67
1:B:148:ASN:ND2	1:B:197:ARG:HH11	1.92	0.66
1:D:440:LEU:HG	1:D:462:VAL:HG22	1.77	0.66
1:C:98:ILE:HB	1:C:205:GLU:HG3	1.77	0.65
1:C:371:ARG:C	1:C:373:ASP:H	2.05	0.65
1:B:97:THR:HG21	1:B:213:LEU:HD13	1.79	0.64
1:C:442:SER:HB3	1:C:504:VAL:HG12	1.80	0.64
1:A:446:GLU:HG3	1:A:504:VAL:HG22	1.79	0.64
1:C:132:ASN:O	1:C:134:GLU:N	2.27	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:370:THR:O	1:C:372:PRO:HD3	1.98	0.64
1:B:393:ARG:NH2	1:B:446:GLU:OE1	2.31	0.64
1:B:114:ASP:OD1	1:B:116:THR:HB	1.98	0.63
1:D:376:GLU:HG2	2:D:762:HOH:O	1.97	0.63
1:A:148:ASN:ND2	1:A:197:ARG:HH11	1.96	0.62
1:C:148:ASN:ND2	1:C:197:ARG:HH11	1.96	0.62
1:A:27:LYS:HE2	1:A:419:ARG:HG2	1.79	0.62
1:B:256:ALA:HA	1:B:280:LEU:HD21	1.80	0.62
1:C:374:LYS:HD2	1:C:374:LYS:N	2.13	0.62
1:B:134:GLU:HG3	1:D:431:ILE:HG13	1.81	0.62
1:B:442:SER:CB	1:B:504:VAL:HG12	2.17	0.62
1:D:373:ASP:O	1:D:374:LYS:C	2.42	0.62
1:A:374:LYS:H	1:A:374:LYS:CD	2.12	0.62
1:A:166:LYS:HD2	1:A:182:ARG:HE	1.65	0.61
1:A:479:GLU:HB2	1:A:480:PRO:HD3	1.81	0.61
1:D:371:ARG:NH1	1:D:374:LYS:HG3	2.14	0.61
1:D:431:ILE:HD13	1:D:431:ILE:H	1.65	0.61
1:A:227:ILE:O	1:A:231:ARG:HG2	2.00	0.61
1:B:431:ILE:H	1:B:431:ILE:CD1	2.14	0.60
1:B:371:ARG:HD3	1:B:374:LYS:HE2	1.82	0.60
1:A:74:ARG:CG	1:A:251:GLN:HG2	2.32	0.60
1:A:259:LEU:HD12	1:A:280:LEU:HD22	1.84	0.60
1:B:466:LEU:HD22	1:B:471:MET:HE2	1.83	0.59
1:C:203:MET:HE2	2:C:843:HOH:O	2.02	0.59
1:B:166:LYS:HD3	1:B:168:GLU:CD	2.28	0.59
1:C:506:GLU:CD	1:C:506:GLU:N	2.61	0.58
1:A:440:LEU:HG	1:A:462:VAL:HG22	1.86	0.58
1:C:415:MET:HE1	1:C:462:VAL:CG2	2.33	0.58
1:D:259:LEU:CD1	1:D:280:LEU:HD22	2.33	0.58
1:C:259:LEU:CD1	1:C:280:LEU:HD13	2.34	0.58
1:D:386:ASN:HD22	1:D:397:ARG:H	1.50	0.58
1:B:371:ARG:C	1:B:373:ASP:H	2.11	0.58
1:C:103:LYS:HG2	1:C:267:SER:HB2	1.86	0.57
1:D:187:SER:O	1:D:192:MET:HE3	2.04	0.57
1:B:101:PRO:HG3	1:B:265:PHE:O	2.03	0.57
1:D:87:LYS:NZ	1:D:260:GLU:OE1	2.32	0.57
1:B:8:TYR:HB3	1:B:292:ILE:HG21	1.86	0.57
1:B:346:ILE:HD11	1:B:390:PHE:HB2	1.84	0.57
1:C:240:ASP:O	1:C:242:ASP:N	2.36	0.57
1:C:166:LYS:HD2	1:C:182:ARG:HE	1.68	0.57
1:B:431:ILE:HD13	1:B:431:ILE:N	2.20	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:386:ASN:HD22	1:C:397:ARG:H	1.53	0.56
1:D:259:LEU:HD13	1:D:280:LEU:HD22	1.86	0.56
1:D:214:PRO:HB3	1:D:338:PHE:HB2	1.88	0.56
1:A:33:THR:HG23	1:A:468:GLU:OE2	2.05	0.56
1:A:74:ARG:HG3	1:A:251:GLN:HG2	1.88	0.56
1:B:492:THR:HB	2:B:533:HOH:O	2.05	0.56
1:A:506:GLU:CD	1:A:506:GLU:H	2.14	0.55
1:B:27:LYS:HG3	1:B:419:ARG:HG3	1.87	0.55
1:B:471:MET:SD	2:B:669:HOH:O	2.58	0.55
1:C:74:ARG:CG	1:C:251:GLN:HG2	2.37	0.55
1:B:414:GLN:HE21	1:B:439:GLN:HE21	1.55	0.55
1:C:185:TRP:O	1:C:302:VAL:HG13	2.07	0.55
1:C:446:GLU:CG	1:C:504:VAL:HG13	2.36	0.54
1:C:74:ARG:HG2	1:C:251:GLN:HG2	1.90	0.54
1:B:27:LYS:HE2	1:B:419:ARG:CD	2.38	0.54
1:C:130:CYS:HB2	1:C:140:LEU:HD12	1.88	0.54
1:D:463:ILE:HD11	1:D:475:VAL:HG23	1.90	0.54
1:B:505:ASN:ND2	2:B:743:HOH:O	2.41	0.54
1:D:445:GLY:O	1:D:485:MET:HG3	2.08	0.54
1:A:471:MET:SD	1:A:472:ASP:N	2.70	0.54
1:C:187:SER:HB3	1:C:302:VAL:CG1	2.39	0.53
1:C:373:ASP:HB2	1:C:374:LYS:HD2	1.89	0.53
1:B:325:THR:HG22	1:B:327:LEU:H	1.74	0.53
1:B:415:MET:HE1	1:B:462:VAL:CG2	2.38	0.53
1:D:466:LEU:HD13	1:D:473:PHE:HB2	1.90	0.53
1:C:259:LEU:HD12	1:C:280:LEU:CD1	2.39	0.53
1:D:474:TYR:CD1	1:D:474:TYR:N	2.65	0.53
1:A:374:LYS:H	1:A:374:LYS:HD2	1.72	0.53
1:B:303:PRO:O	1:B:304:CYS:HB3	2.10	0.52
1:C:325:THR:CG2	1:C:327:LEU:H	2.23	0.52
1:C:341:TYR:CD2	1:C:391:LEU:HD21	2.44	0.52
1:D:74:ARG:CG	1:D:251:GLN:HG2	2.38	0.52
1:C:7:THR:HG23	1:C:10:GLY:H	1.74	0.52
1:A:431:ILE:HG13	1:C:134:GLU:HG3	1.91	0.52
1:C:9:CYS:SG	1:C:64:ARG:HG2	2.49	0.52
1:C:356:GLU:HG3	2:C:802:HOH:O	2.09	0.52
1:A:166:LYS:CD	1:A:182:ARG:HE	2.23	0.52
1:C:446:GLU:HG3	1:C:504:VAL:HG13	1.92	0.52
1:C:374:LYS:O	1:C:375:THR:OG1	2.17	0.51
1:B:325:THR:HG23	1:B:327:LEU:HG	1.92	0.51
1:A:492:THR:HB	2:A:555:HOH:O	2.09	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:335:ASN:HB2	1:B:351:ILE:HD11	1.90	0.51
1:D:165:LEU:HB3	1:D:181:LYS:HD3	1.91	0.51
1:B:371:ARG:HH11	1:B:374:LYS:CG	2.19	0.51
1:A:372:PRO:HG2	1:A:373:ASP:OD2	2.11	0.51
1:D:325:THR:HG22	1:D:327:LEU:H	1.75	0.51
1:C:214:PRO:HB3	1:C:338:PHE:HB2	1.93	0.51
1:C:393:ARG:NH2	1:C:446:GLU:OE2	2.44	0.51
1:A:506:GLU:HB3	2:A:784:HOH:O	2.10	0.51
1:D:440:LEU:HD23	1:D:466:LEU:HD11	1.94	0.50
1:D:370:THR:O	1:D:372:PRO:HD3	2.11	0.50
1:A:245:ARG:NH2	2:A:529:HOH:O	2.39	0.50
1:C:61:GLN:OE1	1:C:64:ARG:NH1	2.44	0.50
1:C:298:LEU:O	1:C:300:SER:N	2.45	0.50
1:C:477:ARG:HB3	1:C:480:PRO:HD2	1.93	0.50
1:B:415:MET:HE1	1:B:462:VAL:HG23	1.93	0.50
1:D:412:LEU:HD21	1:D:457:LYS:HE3	1.94	0.50
1:D:195:CYS:CB	2:D:753:HOH:O	2.56	0.50
1:C:362:LEU:HD12	1:C:379:LEU:HD11	1.92	0.49
1:B:103:LYS:HG2	1:B:267:SER:HB2	1.94	0.49
1:B:393:ARG:HH22	1:B:446:GLU:CD	2.20	0.49
1:A:101:PRO:HD2	2:A:745:HOH:O	2.12	0.49
1:B:432:PRO:HG2	2:B:669:HOH:O	2.12	0.49
1:C:370:THR:O	1:C:372:PRO:CD	2.61	0.49
1:A:314:TRP:HA	1:A:340:PHE:CE2	2.47	0.49
1:C:466:LEU:HD13	1:C:473:PHE:CB	2.41	0.49
1:A:371:ARG:C	1:A:373:ASP:H	2.20	0.49
1:A:415:MET:CE	1:A:462:VAL:HG23	2.37	0.49
1:C:432:PRO:HG2	1:C:466:LEU:HD23	1.94	0.49
1:C:321:LEU:O	1:C:325:THR:HB	2.13	0.49
1:D:195:CYS:SG	2:D:753:HOH:O	2.60	0.49
1:C:242:ASP:HB2	1:C:372:PRO:HB3	1.93	0.48
1:A:68:LYS:HB3	1:A:69:PRO:HD3	1.95	0.48
1:A:431:ILE:HG13	1:C:134:GLU:CB	2.42	0.48
1:B:214:PRO:HB3	1:B:338:PHE:HB2	1.95	0.48
1:B:148:ASN:HD21	1:B:197:ARG:NH1	1.99	0.48
1:A:74:ARG:HG2	1:A:251:GLN:HG2	1.94	0.48
1:D:393:ARG:NH2	1:D:446:GLU:OE2	2.47	0.48
1:B:68:LYS:HB3	1:B:69:PRO:HD3	1.96	0.48
1:D:148:ASN:HD21	1:D:197:ARG:NH1	2.00	0.48
1:D:442:SER:HB3	1:D:504:VAL:HG12	1.96	0.48
1:D:492:THR:HB	2:D:530:HOH:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:114:ASP:OD1	1:C:116:THR:HB	2.13	0.48
1:C:325:THR:HG23	1:C:327:LEU:H	1.79	0.48
1:C:371:ARG:C	1:C:373:ASP:N	2.70	0.47
1:B:436:ARG:HG3	1:B:440:LEU:HD22	1.95	0.47
1:C:414:GLN:NE2	2:C:852:HOH:O	2.47	0.47
1:A:431:ILE:H	1:A:431:ILE:CD1	2.16	0.47
1:D:231:ARG:HG2	2:D:605:HOH:O	2.14	0.47
1:A:325:THR:CG2	1:A:327:LEU:HB2	2.44	0.47
1:B:14:LEU:HD11	1:B:293:SER:HB2	1.96	0.47
1:C:74:ARG:HD2	1:C:296:GLU:CD	2.40	0.47
1:C:245:ARG:NH2	2:C:553:HOH:O	2.45	0.47
1:B:374:LYS:O	1:B:375:THR:CB	2.63	0.47
1:D:8:TYR:HB3	1:D:292:ILE:HG21	1.96	0.47
1:D:504:VAL:O	1:D:505:ASN:HB2	2.14	0.47
1:B:115:LYS:HA	1:B:127:LYS:HB2	1.97	0.47
1:B:403:PHE:CE2	1:B:405:LYS:HG2	2.49	0.47
1:D:435:GLN:NE2	2:D:741:HOH:O	2.47	0.47
1:B:474:TYR:N	1:B:474:TYR:CD2	2.82	0.46
1:A:27:LYS:NZ	1:A:419:ARG:HE	2.14	0.46
1:D:371:ARG:C	1:D:373:ASP:H	2.20	0.46
1:B:27:LYS:O	1:B:419:ARG:HA	2.15	0.46
1:A:259:LEU:CD1	1:A:280:LEU:HD22	2.45	0.46
1:A:466:LEU:HD13	1:A:473:PHE:HB2	1.97	0.46
1:B:27:LYS:HE2	1:B:419:ARG:HD3	1.98	0.45
1:D:374:LYS:O	1:D:375:THR:CB	2.64	0.45
1:A:74:ARG:HD2	1:A:296:GLU:CD	2.41	0.45
1:D:442:SER:HB3	1:D:504:VAL:CG1	2.46	0.45
1:B:321:LEU:HD23	1:B:358:LEU:HD13	1.98	0.45
1:D:471:MET:HG2	2:D:783:HOH:O	2.16	0.45
1:B:66:GLN:O	1:B:69:PRO:HD2	2.16	0.45
1:C:187:SER:HB3	1:C:302:VAL:HG12	1.97	0.45
1:D:146:LYS:O	1:D:150:MET:HG2	2.16	0.45
1:A:371:ARG:HD3	1:A:374:LYS:CD	2.42	0.45
1:D:146:LYS:NZ	2:D:723:HOH:O	2.49	0.45
1:A:259:LEU:HD12	1:A:280:LEU:CD2	2.47	0.45
1:D:259:LEU:CD1	1:D:280:LEU:CD2	2.95	0.45
1:B:165:LEU:HA	1:B:182:ARG:O	2.17	0.45
1:B:239:TYR:CZ	1:B:358:LEU:HD21	2.52	0.44
1:B:282:PRO:HA	1:B:295:ASN:HA	1.98	0.44
1:C:492:THR:HB	2:C:580:HOH:O	2.17	0.44
1:A:74:ARG:HD2	1:A:296:GLU:HG3	1.97	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:373:ASP:HB2	1:B:374:LYS:H	1.53	0.44
1:D:98:ILE:HB	1:D:205:GLU:HG3	1.99	0.44
1:B:281:SER:O	1:B:282:PRO:C	2.61	0.44
1:C:101:PRO:HG3	1:C:265:PHE:O	2.17	0.44
1:C:374:LYS:HG2	1:C:375:THR:H	1.82	0.44
1:D:259:LEU:HD12	1:D:280:LEU:CD2	2.47	0.44
1:A:214:PRO:HB3	1:A:338:PHE:HB2	1.98	0.44
1:D:100:PRO:HA	1:D:101:PRO:HD3	1.74	0.44
1:B:440:LEU:HG	1:B:462:VAL:HG22	2.00	0.44
1:A:256:ALA:HA	1:A:280:LEU:HD21	2.00	0.43
1:A:328:SER:OG	1:A:331:ILE:HG12	2.18	0.43
1:D:237:TYR:O	1:D:348:SER:HA	2.18	0.43
1:D:214:PRO:HG2	1:D:314:TRP:CE2	2.54	0.43
1:A:241:ALA:O	1:A:370:THR:O	2.37	0.43
1:B:43:PRO:HD3	1:B:417:TRP:CZ2	2.53	0.43
1:C:14:LEU:HD11	1:C:293:SER:HB2	2.00	0.43
1:C:371:ARG:NH1	1:C:374:LYS:HE2	2.34	0.43
1:D:506:GLU:OE1	1:D:506:GLU:N	2.51	0.43
1:A:43:PRO:HD3	1:A:417:TRP:CZ2	2.54	0.43
1:B:325:THR:HG21	1:B:332:ILE:CD1	2.39	0.43
1:D:376:GLU:OE1	1:D:376:GLU:HA	2.18	0.43
1:B:341:TYR:CD2	1:B:391:LEU:HD21	2.53	0.43
1:B:397:ARG:HD2	1:B:398:ASP:O	2.19	0.43
1:C:187:SER:HB3	1:C:302:VAL:HG11	2.01	0.43
1:A:74:ARG:HD2	1:A:296:GLU:CG	2.49	0.43
1:A:359:THR:HG22	1:A:363:LYS:HD2	2.01	0.43
1:C:433:HIS:CE1	1:C:435:GLN:HB2	2.53	0.43
1:A:371:ARG:C	1:A:373:ASP:N	2.76	0.43
1:D:371:ARG:O	1:D:373:ASP:N	2.36	0.43
1:B:303:PRO:HA	2:B:771:HOH:O	2.18	0.42
1:A:325:THR:HG23	1:A:327:LEU:CG	2.50	0.42
1:B:136:PHE:O	1:B:141:ALA:HB2	2.19	0.42
1:D:74:ARG:HD2	1:D:296:GLU:CD	2.43	0.42
1:A:496:ASP:HA	1:C:222:ASN:HD21	1.83	0.42
1:B:440:LEU:HD12	1:B:440:LEU:HA	1.87	0.42
1:C:371:ARG:O	1:C:373:ASP:N	2.52	0.42
1:D:303:PRO:O	1:D:304:CYS:HB3	2.19	0.42
1:C:25:LYS:HD3	1:C:424:GLU:HG3	2.02	0.42
1:C:37:PRO:HA	1:C:38:PRO:HD3	1.90	0.42
1:C:217:VAL:HA	1:C:341:TYR:CE2	2.55	0.42
1:A:373:ASP:HB2	1:A:374:LYS:H	1.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:148:ASN:ND2	1:B:197:ARG:HD3	2.34	0.42
1:C:371:ARG:HH21	1:C:378:PRO:HD2	1.85	0.42
1:C:442:SER:HA	1:C:501:PRO:HB2	2.01	0.42
1:D:59:LEU:HA	1:D:62:VAL:HG13	2.01	0.42
1:A:115:LYS:O	1:A:128:ASN:HB2	2.20	0.42
1:A:363:LYS:HE2	2:A:795:HOH:O	2.19	0.42
1:B:371:ARG:NH1	1:B:374:LYS:HG3	2.27	0.42
1:C:166:LYS:CD	1:C:182:ARG:HE	2.32	0.42
1:D:371:ARG:HA	1:D:372:PRO:HD2	1.92	0.42
1:A:148:ASN:HD21	1:A:197:ARG:NH1	2.09	0.42
1:B:506:GLU:HA	1:B:506:GLU:OE1	2.19	0.42
1:C:332:ILE:HD13	1:C:351:ILE:HD13	2.01	0.42
1:A:446:GLU:HG3	1:A:504:VAL:CG2	2.48	0.42
1:B:303:PRO:O	1:B:304:CYS:CB	2.67	0.42
1:A:472:ASP:O	1:A:473:PHE:O	2.38	0.41
1:D:166:LYS:HB3	1:D:182:ARG:HB3	2.02	0.41
1:D:231:ARG:HG3	2:D:688:HOH:O	2.19	0.41
1:A:446:GLU:CG	1:A:504:VAL:HG22	2.49	0.41
1:B:33:THR:O	1:B:34:THR:C	2.63	0.41
1:C:242:ASP:CB	1:C:372:PRO:HB3	2.49	0.41
1:B:418:THR:O	1:B:419:ARG:CB	2.66	0.41
1:C:303:PRO:O	1:C:304:CYS:HB3	2.20	0.41
1:A:325:THR:HG23	1:A:327:LEU:HG	2.01	0.41
1:A:356:GLU:H	1:A:356:GLU:HG2	1.71	0.41
1:C:199:PHE:O	1:C:200:GLY:C	2.62	0.41
1:D:78:PRO:O	1:D:79:LYS:C	2.63	0.41
1:B:121:HIS:HA	1:B:122:PRO:HA	1.87	0.41
1:A:232:HIS:CD2	1:A:337:LEU:HD23	2.55	0.41
1:C:74:ARG:HG3	1:C:251:GLN:HG2	2.02	0.41
1:C:436:ARG:HG3	1:C:440:LEU:HD22	2.02	0.41
1:D:341:TYR:CD2	1:D:391:LEU:HD21	2.56	0.41
1:B:431:ILE:HG13	1:D:134:GLU:HB2	2.03	0.41
1:C:62:VAL:CG2	1:C:165:LEU:HD13	2.50	0.41
1:A:58:SER:O	1:A:62:VAL:HG13	2.20	0.41
1:B:273:GLN:O	1:B:277:GLU:HG3	2.21	0.41
1:C:479:GLU:HB2	1:C:480:PRO:HD3	2.03	0.41
1:D:240:ASP:O	1:D:242:ASP:N	2.54	0.41
1:A:474:TYR:HE1	1:A:499:LEU:HD22	1.86	0.41
1:B:474:TYR:O	1:B:474:TYR:CD1	2.74	0.41
1:C:161:TYR:HA	1:C:186:GLY:O	2.20	0.41
1:C:415:MET:HE3	2:C:601:HOH:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:77:PRO:CA	1:D:251:GLN:HE22	2.34	0.41
1:A:165:LEU:HA	1:A:182:ARG:O	2.21	0.41
1:C:273:GLN:O	1:C:277:GLU:HG2	2.21	0.41
1:C:433:HIS:HE1	1:C:435:GLN:HB2	1.86	0.41
1:A:325:THR:HG23	1:A:327:LEU:CB	2.51	0.40
1:B:371:ARG:C	1:B:373:ASP:N	2.73	0.40
1:B:136:PHE:C	1:B:141:ALA:HB2	2.46	0.40
1:D:324:VAL:HG21	1:D:358:LEU:HA	2.03	0.40
1:C:371:ARG:HB3	1:C:373:ASP:OD1	2.22	0.40
1:C:483:ARG:HD2	2:C:723:HOH:O	2.20	0.40
1:A:165:LEU:HB3	1:A:181:LYS:HG2	2.03	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	499/526 (95%)	478 (96%)	16 (3%)	5 (1%)	12	15
1	B	499/526 (95%)	479 (96%)	17 (3%)	3 (1%)	21	27
1	C	499/526 (95%)	473 (95%)	15 (3%)	11 (2%)	5	4
1	D	499/526 (95%)	472 (95%)	18 (4%)	9 (2%)	6	6
All	All	1996/2104 (95%)	1902 (95%)	66 (3%)	28 (1%)	9	9

All (28) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	473	PHE
1	B	473	PHE
1	C	241	ALA
1	C	303	PRO

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Mol	Chain	Res	Type
1	C	473	PHE
1	D	241	ALA
1	D	374	LYS
1	D	375	THR
1	A	242	ASP
1	B	9	CYS
1	C	133	GLY
1	C	375	THR
1	C	376	GLU
1	A	376	GLU
1	B	304	CYS
1	C	300	SER
1	C	505	ASN
1	D	9	CYS
1	D	372	PRO
1	D	505	ASN
1	A	241	ALA
1	C	299	PRO
1	D	376	GLU
1	A	9	CYS
1	C	374	LYS
1	C	371	ARG
1	D	133	GLY
1	D	299	PRO

5.3.2 Protein sidechains ⓘ

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	432/451 (96%)	393 (91%)	39 (9%)	9	12
1	B	432/451 (96%)	400 (93%)	32 (7%)	13	17
1	C	432/451 (96%)	400 (93%)	32 (7%)	13	17
1	D	432/451 (96%)	397 (92%)	35 (8%)	11	14
All	All	1728/1804 (96%)	1590 (92%)	138 (8%)	11	15

All (138) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	CYS
1	A	22	LEU
1	A	34	THR
1	A	74	ARG
1	A	82	VAL
1	A	94	LEU
1	A	116	THR
1	A	128	ASN
1	A	134	GLU
1	A	160	VAL
1	A	213	LEU
1	A	217	VAL
1	A	231	ARG
1	A	273	GLN
1	A	280	LEU
1	A	285	VAL
1	A	304	CYS
1	A	305	THR
1	A	324	VAL
1	A	325	THR
1	A	352	LYS
1	A	356	GLU
1	A	363	LYS
1	A	373	ASP
1	A	374	LYS
1	A	375	THR
1	A	392	ARG
1	A	429	THR
1	A	431	ILE
1	A	435	GLN
1	A	440	LEU
1	A	456	SER
1	A	466	LEU
1	A	467	LYS
1	A	471	MET
1	A	486	ARG
1	A	492	THR
1	A	502	SER
1	A	506	GLU
1	B	22	LEU
1	B	34	THR
1	B	62	VAL

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Mol	Chain	Res	Type
1	B	82	VAL
1	B	94	LEU
1	B	116	THR
1	B	128	ASN
1	B	137	THR
1	B	142	ASP
1	B	160	VAL
1	B	171	LYS
1	B	197	ARG
1	B	213	LEU
1	B	217	VAL
1	B	280	LEU
1	B	285	VAL
1	B	324	VAL
1	B	325	THR
1	B	373	ASP
1	B	374	LYS
1	B	375	THR
1	B	407	GLU
1	B	419	ARG
1	B	431	ILE
1	B	440	LEU
1	B	471	MET
1	B	486	ARG
1	B	492	THR
1	B	502	SER
1	B	504	VAL
1	B	505	ASN
1	B	506	GLU
1	C	7	THR
1	C	9	CYS
1	C	22	LEU
1	C	27	LYS
1	C	62	VAL
1	C	74	ARG
1	C	82	VAL
1	C	94	LEU
1	C	107	THR
1	C	128	ASN
1	C	135	SER
1	C	160	VAL
1	C	213	LEU

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Mol	Chain	Res	Type
1	C	217	VAL
1	C	273	GLN
1	C	280	LEU
1	C	285	VAL
1	C	302	VAL
1	C	324	VAL
1	C	325	THR
1	C	326	ASN
1	C	373	ASP
1	C	374	LYS
1	C	429	THR
1	C	431	ILE
1	C	440	LEU
1	C	456	SER
1	C	477	ARG
1	C	486	ARG
1	C	492	THR
1	C	504	VAL
1	C	506	GLU
1	D	7	THR
1	D	22	LEU
1	D	62	VAL
1	D	74	ARG
1	D	76	LYS
1	D	82	VAL
1	D	94	LEU
1	D	116	THR
1	D	128	ASN
1	D	137	THR
1	D	160	VAL
1	D	213	LEU
1	D	217	VAL
1	D	231	ARG
1	D	245	ARG
1	D	273	GLN
1	D	280	LEU
1	D	281	SER
1	D	285	VAL
1	D	300	SER
1	D	324	VAL
1	D	325	THR
1	D	326	ASN

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Mol	Chain	Res	Type
1	D	373	ASP
1	D	374	LYS
1	D	376	GLU
1	D	429	THR
1	D	431	ILE
1	D	435	GLN
1	D	440	LEU
1	D	474	TYR
1	D	477	ARG
1	D	486	ARG
1	D	492	THR
1	D	506	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (51) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	92	ASN
1	A	96	GLN
1	A	148	ASN
1	A	156	ASN
1	A	222	ASN
1	A	251	GLN
1	A	386	ASN
1	A	414	GLN
1	A	422	ASN
1	A	435	GLN
1	B	60	GLN
1	B	96	GLN
1	B	121	HIS
1	B	124	HIS
1	B	128	ASN
1	B	148	ASN
1	B	156	ASN
1	B	209	HIS
1	B	251	GLN
1	B	386	ASN
1	B	414	GLN
1	B	422	ASN
1	B	433	HIS
1	C	121	HIS
1	C	128	ASN
1	C	143	GLN

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Mol	Chain	Res	Type
1	C	148	ASN
1	C	156	ASN
1	C	209	HIS
1	C	222	ASN
1	C	251	GLN
1	C	273	GLN
1	C	386	ASN
1	C	414	GLN
1	C	422	ASN
1	D	96	GLN
1	D	121	HIS
1	D	128	ASN
1	D	143	GLN
1	D	148	ASN
1	D	156	ASN
1	D	209	HIS
1	D	222	ASN
1	D	251	GLN
1	D	326	ASN
1	D	386	ASN
1	D	414	GLN
1	D	422	ASN
1	D	423	HIS
1	D	433	HIS
1	D	435	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	501/526 (95%)	-0.01	9 (1%) 67 69	19, 30, 49, 58	0
1	B	501/526 (95%)	0.09	13 (2%) 57 59	19, 30, 49, 57	0
1	C	501/526 (95%)	-0.05	13 (2%) 57 59	19, 30, 49, 58	0
1	D	501/526 (95%)	0.30	25 (4%) 34 35	19, 30, 49, 58	0
All	All	2004/2104 (95%)	0.08	60 (2%) 52 54	19, 30, 49, 58	0

All (60) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	303	PRO	4.4
1	B	472	ASP	4.2
1	C	472	ASP	3.7
1	D	240	ASP	3.6
1	A	300	SER	3.6
1	B	301	GLY	3.6
1	C	302	VAL	3.5
1	C	240	ASP	3.5
1	D	6	GLY	3.4
1	A	472	ASP	3.3
1	C	372	PRO	3.2
1	D	372	PRO	3.0
1	C	301	GLY	3.0
1	B	125	MET	2.9
1	A	125	MET	2.9
1	C	125	MET	2.9
1	D	125	MET	2.9
1	D	290	PHE	2.9
1	D	471	MET	2.9
1	C	474	TYR	2.8
1	D	300	SER	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	303	PRO	2.7
1	B	429	THR	2.7
1	D	302	VAL	2.7
1	A	6	GLY	2.7
1	C	126	ARG	2.6
1	B	373	ASP	2.6
1	B	116	THR	2.6
1	D	9	CYS	2.5
1	B	471	MET	2.5
1	D	64	ARG	2.4
1	B	138	GLY	2.4
1	C	133	GLY	2.4
1	B	331	ILE	2.4
1	D	485	MET	2.4
1	B	474	TYR	2.3
1	D	472	ASP	2.3
1	D	474	TYR	2.3
1	A	431	ILE	2.3
1	D	492	THR	2.3
1	B	302	VAL	2.3
1	D	473	PHE	2.3
1	A	471	MET	2.3
1	D	375	THR	2.3
1	D	438	ILE	2.3
1	D	303	PRO	2.2
1	C	375	THR	2.2
1	A	303	PRO	2.2
1	B	431	ILE	2.1
1	D	376	GLU	2.1
1	D	487	PHE	2.1
1	D	482	PHE	2.1
1	C	138	GLY	2.1
1	D	430	MET	2.1
1	C	134	GLU	2.1
1	A	505	ASN	2.1
1	A	435	GLN	2.1
1	D	431	ILE	2.1
1	D	429	THR	2.0
1	D	501	PRO	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 oligosaccharides 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.