



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 05:33 PM UTC

PDB ID : 2GLF / pdb_00002glf
Title : Crystal structure of Aminipeptidase (M18 family) from *Thermotoga Maritima*
Authors : Min, T.; Shapiro, L.; Burley, S.K.; New York SGX Research Center for Structural Genomics (NYSGXRC)
Deposited on : 2006-04-04
Resolution : 2.80 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
Mogul	:	2022.3.0, CSD as543be (2022)
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

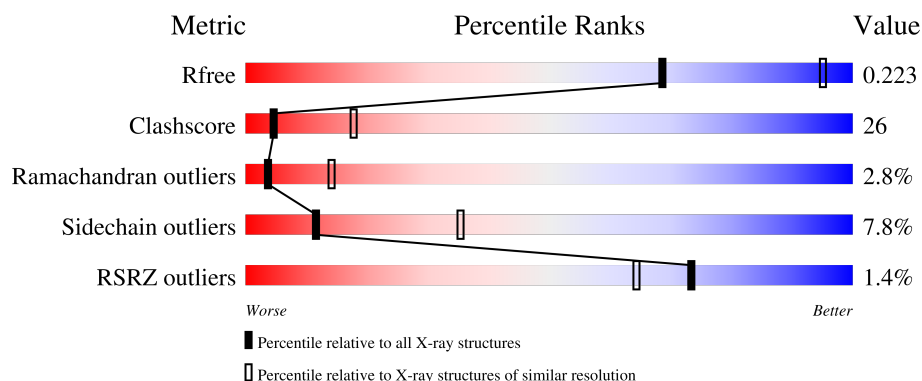
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	450	3% 50% 40% 10%
1	B	450	% 52% 39% 8%
1	C	450	% 54% 39% 7%
1	D	450	% 53% 37% 10%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 14643 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 Probable M18-family aminopeptidase 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	450	Total	C	N	O	S	Se	0	0	0
			3539	2260	596	668	2	13			
1	B	450	Total	C	N	O	S	Se	0	0	0
			3539	2260	596	668	2	13			
1	C	450	Total	C	N	O	S	Se	0	0	0
			3539	2260	596	668	2	13			
1	D	450	Total	C	N	O	S	Se	0	0	0
			3539	2260	596	668	2	13			

There are 52 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	4	MSE	MET	modified residue	UNP Q9WYJ9
A	26	MSE	MET	modified residue	UNP Q9WYJ9
A	29	MSE	MET	modified residue	UNP Q9WYJ9
A	37	MSE	MET	modified residue	UNP Q9WYJ9
A	62	MSE	MET	modified residue	UNP Q9WYJ9
A	64	MSE	MET	modified residue	UNP Q9WYJ9
A	187	MSE	MET	modified residue	UNP Q9WYJ9
A	214	MSE	MET	modified residue	UNP Q9WYJ9
A	240	MSE	MET	modified residue	UNP Q9WYJ9
A	305	MSE	MET	modified residue	UNP Q9WYJ9
A	419	MSE	MET	modified residue	UNP Q9WYJ9
A	426	MSE	MET	modified residue	UNP Q9WYJ9
A	449	MSE	MET	modified residue	UNP Q9WYJ9
B	4	MSE	MET	modified residue	UNP Q9WYJ9
B	26	MSE	MET	modified residue	UNP Q9WYJ9
B	29	MSE	MET	modified residue	UNP Q9WYJ9
B	37	MSE	MET	modified residue	UNP Q9WYJ9
B	62	MSE	MET	modified residue	UNP Q9WYJ9
B	64	MSE	MET	modified residue	UNP Q9WYJ9
B	187	MSE	MET	modified residue	UNP Q9WYJ9
B	214	MSE	MET	modified residue	UNP Q9WYJ9

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Chain	Residue	Modelled	Actual	Comment	Reference
B	240	MSE	MET	modified residue	UNP Q9WYJ9
B	305	MSE	MET	modified residue	UNP Q9WYJ9
B	419	MSE	MET	modified residue	UNP Q9WYJ9
B	426	MSE	MET	modified residue	UNP Q9WYJ9
B	449	MSE	MET	modified residue	UNP Q9WYJ9
C	4	MSE	MET	modified residue	UNP Q9WYJ9
C	26	MSE	MET	modified residue	UNP Q9WYJ9
C	29	MSE	MET	modified residue	UNP Q9WYJ9
C	37	MSE	MET	modified residue	UNP Q9WYJ9
C	62	MSE	MET	modified residue	UNP Q9WYJ9
C	64	MSE	MET	modified residue	UNP Q9WYJ9
C	187	MSE	MET	modified residue	UNP Q9WYJ9
C	214	MSE	MET	modified residue	UNP Q9WYJ9
C	240	MSE	MET	modified residue	UNP Q9WYJ9
C	305	MSE	MET	modified residue	UNP Q9WYJ9
C	419	MSE	MET	modified residue	UNP Q9WYJ9
C	426	MSE	MET	modified residue	UNP Q9WYJ9
C	449	MSE	MET	modified residue	UNP Q9WYJ9
D	4	MSE	MET	modified residue	UNP Q9WYJ9
D	26	MSE	MET	modified residue	UNP Q9WYJ9
D	29	MSE	MET	modified residue	UNP Q9WYJ9
D	37	MSE	MET	modified residue	UNP Q9WYJ9
D	62	MSE	MET	modified residue	UNP Q9WYJ9
D	64	MSE	MET	modified residue	UNP Q9WYJ9
D	187	MSE	MET	modified residue	UNP Q9WYJ9
D	214	MSE	MET	modified residue	UNP Q9WYJ9
D	240	MSE	MET	modified residue	UNP Q9WYJ9
D	305	MSE	MET	modified residue	UNP Q9WYJ9
D	419	MSE	MET	modified residue	UNP Q9WYJ9
D	426	MSE	MET	modified residue	UNP Q9WYJ9
D	449	MSE	MET	modified residue	UNP Q9WYJ9

- Molecule 2 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn).

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

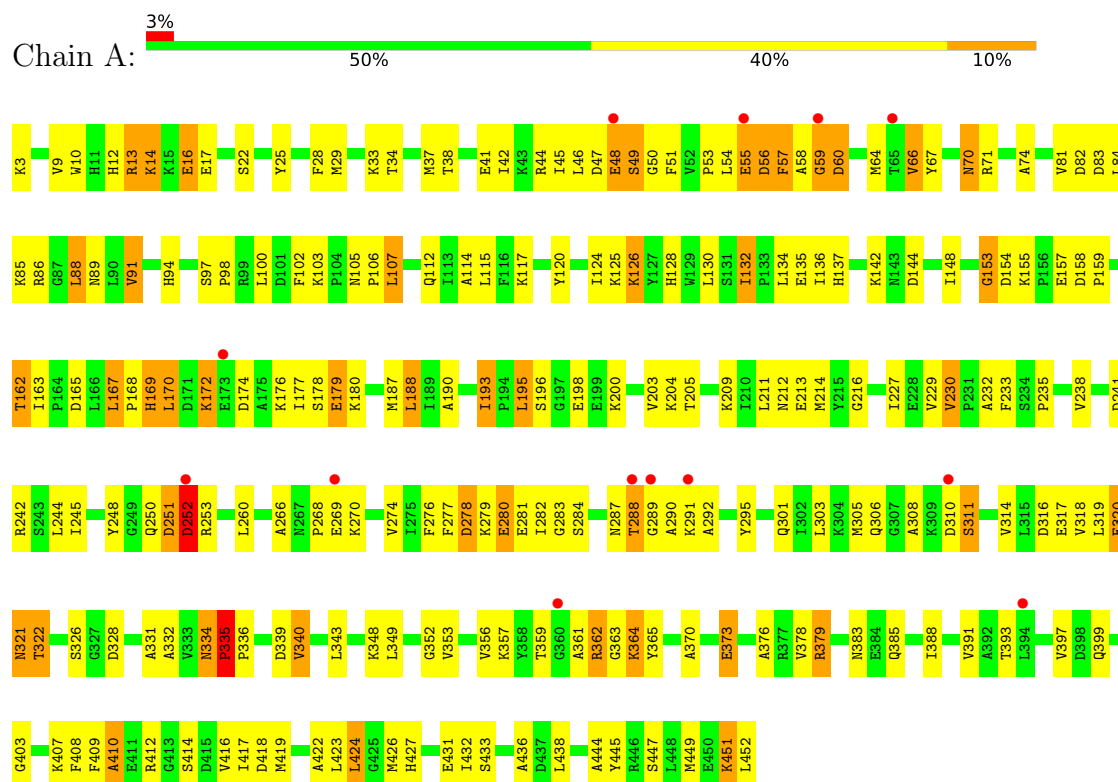
- Molecule 3 is water.

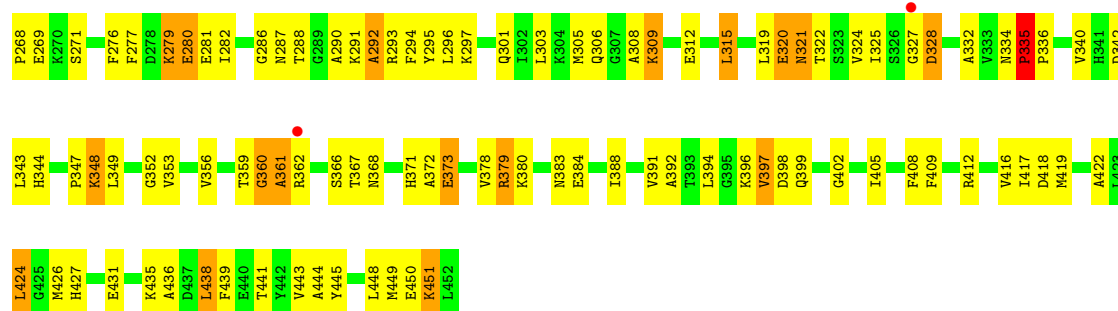
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	121	Total 121	O 121	0	0
3	B	117	Total 117	O 117	0	0
3	C	127	Total 127	O 127	0	0
3	D	114	Total 114	O 114	0	0

3 Residue-property plots [i](#)

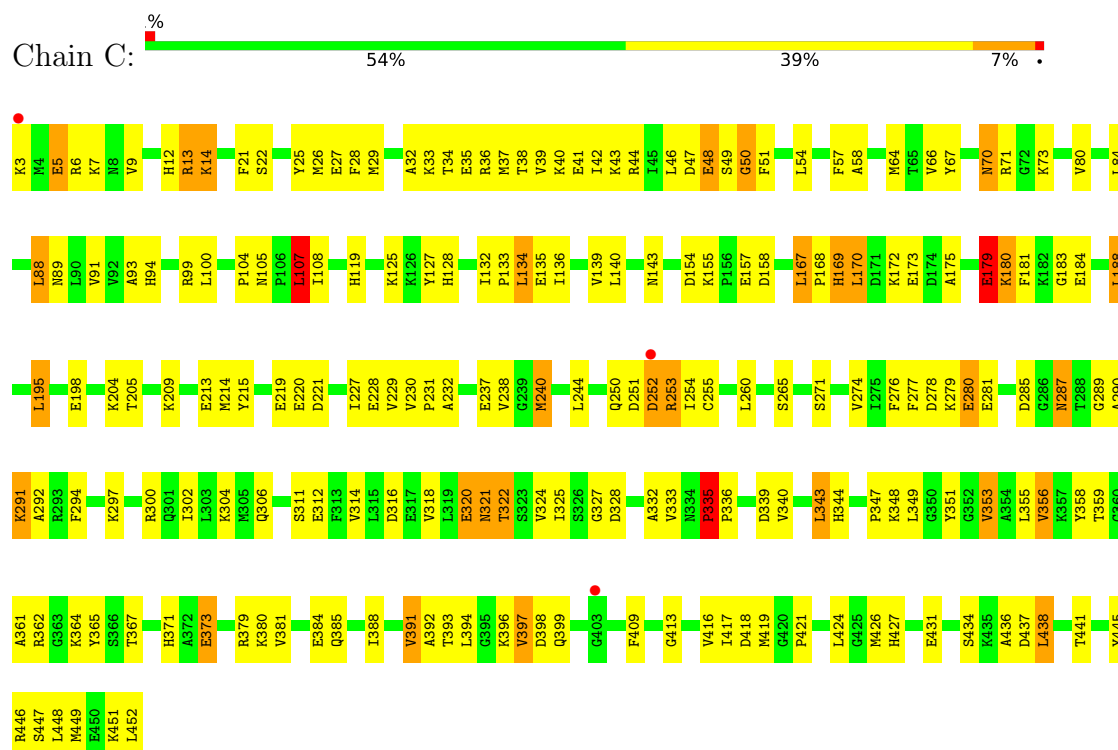
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Probable M18-family aminopeptidase 1

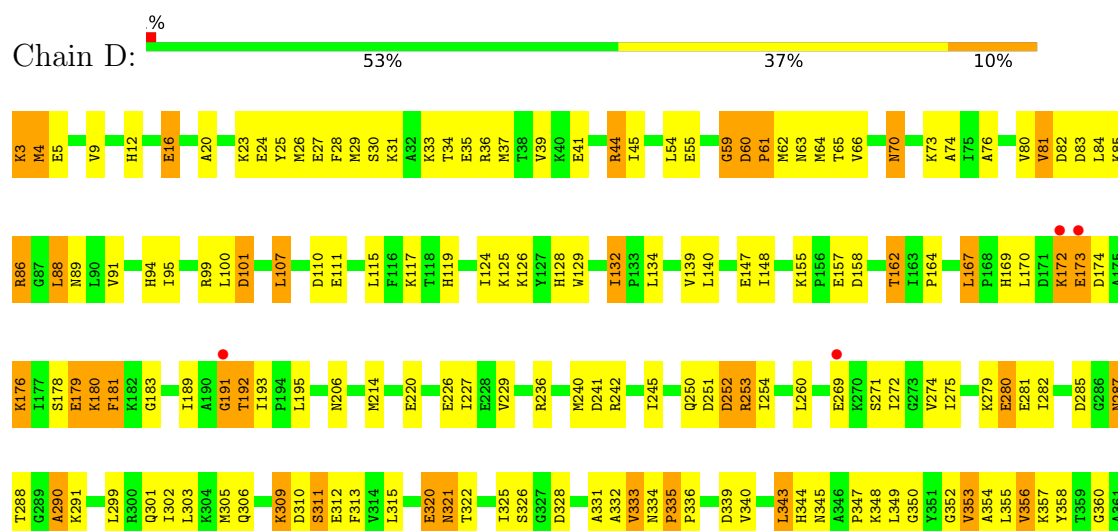


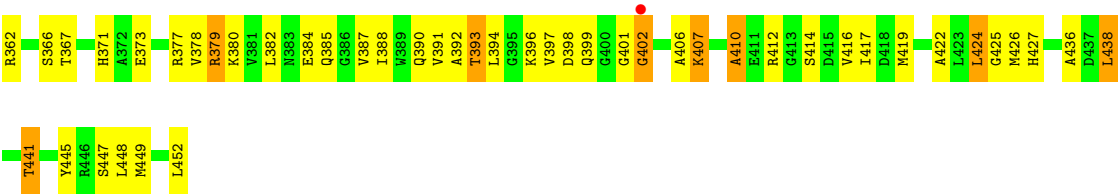


● Molecule 1: Probable M18-family aminopeptidase 1



● Molecule 1: Probable M18-family aminopeptidase 1





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, α , β , γ	191.22Å 191.22Å 191.22Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.83 – 2.80 19.83 – 2.80	Depositor EDS
% Data completeness (in resolution range)	88.8 (19.83-2.80) 97.1 (19.83-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.61 (at 2.79Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.168 , 0.239 0.160 , 0.223	Depositor DCC
R_{free} test set	3372 reflections (3.05%)	wwPDB-VP
Wilson B-factor (Å ²)	27.0	Xtriage
Anisotropy	0.000	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 46.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.013 for l,-k,h	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	14643	wwPDB-VP
Average B, all atoms (Å ²)	22.0	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 36.21 % 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 5.1798e-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 ⓘ

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

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	0.41	0/3598	0.97	15/4829 (0.3%)
1	B	0.41	0/3598	1.01	22/4829 (0.5%)
1	C	0.42	0/3598	0.98	14/4829 (0.3%)
1	D	0.42	0/3598	0.98	15/4829 (0.3%)
All	All	0.42	0/14392	0.99	66/19316 (0.3%)

There are no bond length outliers.

All (66) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	48	GLU	N-CA-C	-10.61	97.04	110.19
1	B	253	ARG	N-CA-C	-9.84	100.41	111.82
1	A	253	ARG	N-CA-C	-8.23	102.69	112.89
1	B	321	ASN	N-CA-C	-7.83	97.73	109.86
1	A	269	GLU	N-CA-C	-7.52	103.67	114.12
1	C	179	GLU	N-CA-C	-7.38	101.33	110.41
1	B	267	ASN	CA-C-N	7.24	127.20	120.03
1	B	267	ASN	C-N-CA	7.24	127.20	120.03
1	A	48	GLU	N-CA-C	-6.97	95.94	110.80
1	D	179	GLU	N-CA-C	-6.96	101.56	110.19
1	D	410	ALA	N-CA-C	-6.90	103.81	111.82
1	D	269	GLU	N-CA-C	-6.79	104.88	113.43
1	D	335	PRO	N-CA-C	6.68	118.85	110.70
1	A	13	ARG	N-CA-C	6.62	122.85	114.31
1	B	352	GLY	N-CA-C	6.61	120.33	112.33
1	A	321	ASN	N-CA-C	-6.59	99.59	109.94
1	D	253	ARG	N-CA-C	-6.56	104.53	112.54
1	B	292	ALA	N-CA-C	6.36	119.71	112.97
1	C	13	ARG	N-CA-C	6.34	123.92	114.09
1	B	237	GLU	N-CA-C	-6.29	102.22	110.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	132	ILE	N-CA-C	-6.27	104.05	109.19
1	C	50	GLY	N-CA-C	6.24	124.69	115.08
1	D	320	GLU	N-CA-C	-6.13	104.51	111.07
1	A	56	ASP	N-CA-C	-6.05	105.95	113.15
1	C	356	VAL	N-CA-C	6.04	115.43	106.85
1	A	153	GLY	N-CA-C	-5.99	107.13	114.92
1	B	269	GLU	N-CA-C	-5.98	106.31	113.97
1	D	290	ALA	N-CA-C	-5.98	102.59	110.43
1	D	352	GLY	N-CA-C	5.90	120.43	112.17
1	D	86	ARG	N-CA-C	-5.89	106.06	113.18
1	B	159	PRO	N-CA-C	-5.86	101.98	111.77
1	A	335	PRO	N-CA-C	5.84	117.82	110.70
1	B	179	GLU	N-CA-C	-5.82	103.25	110.41
1	A	91	VAL	N-CA-C	-5.80	100.00	108.11
1	C	253	ARG	N-CA-C	-5.77	105.34	112.38
1	B	335	PRO	N-CA-C	5.76	117.73	110.70
1	B	157	GLU	N-CA-C	-5.69	98.67	110.80
1	D	321	ASN	N-CA-C	-5.63	98.81	110.80
1	A	364	LYS	N-CA-C	5.60	119.41	112.58
1	C	107	LEU	N-CA-C	5.58	117.79	109.25
1	C	335	PRO	N-CA-C	5.57	117.50	110.70
1	C	237	GLU	N-CA-C	-5.53	102.70	110.50
1	B	252	ASP	N-CA-C	5.51	121.94	113.28
1	B	107	LEU	N-CA-C	5.49	117.65	109.25
1	A	410	ALA	N-CA-C	-5.48	105.85	112.54
1	C	321	ASN	N-CA-C	-5.40	99.29	110.80
1	B	451	LYS	N-CA-C	5.38	121.60	114.12
1	A	252	ASP	N-CA-C	5.37	121.71	113.28
1	B	240	MSE	N-CA-C	-5.25	105.64	111.36
1	D	357	LYS	N-CA-C	-5.21	101.27	109.25
1	B	320	GLU	N-CA-C	-5.20	105.51	111.07
1	B	268	PRO	N-CA-C	5.19	119.20	111.41
1	B	193	ILE	CB-CA-C	-5.18	106.12	110.94
1	D	107	LEU	N-CA-C	5.15	117.16	109.59
1	A	163	ILE	N-CA-C	-5.13	97.80	108.88
1	A	397	VAL	N-CA-C	5.12	120.00	109.34
1	C	413	GLY	N-CA-C	5.12	121.86	115.21
1	C	320	GLU	N-CA-C	-5.11	105.60	111.07
1	B	279	LYS	N-CA-C	5.08	118.77	112.47
1	B	397	VAL	N-CA-C	5.08	119.90	109.34
1	B	233	PHE	N-CA-C	5.07	117.58	110.23
1	A	66	VAL	N-CA-C	5.04	116.45	109.29

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	58	ALA	N-CA-C	5.04	119.01	112.86
1	D	356	VAL	N-CA-C	5.04	114.00	106.85
1	C	291	LYS	N-CA-C	-5.02	107.14	114.12
1	D	441	THR	N-CA-C	-5.01	105.90	111.36

There are no chirality outliers.

There are no planarity outliers.

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	3539	0	3545	220	0
1	B	3539	0	3545	184	0
1	C	3539	0	3545	184	0
1	D	3539	0	3545	212	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
3	A	121	0	0	9	0
3	B	117	0	0	13	0
3	C	127	0	0	12	0
3	D	114	0	0	12	0
All	All	14643	0	14180	738	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 26.

All (738) 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:D:29:MSE:HE1	1:D:253:ARG:HB3	1.50	0.92
1:B:94:HIS:CG	1:B:280:GLU:HG2	2.08	0.87
1:A:13:ARG:O	1:A:14:LYS:HB3	1.75	0.86
1:D:100:LEU:HB2	1:D:229:VAL:HB	1.56	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:372:ALA:HB2	1:D:226:GLU:HG3	1.57	0.86
1:D:339:ASP:O	1:D:396:LYS:HE2	1.75	0.85
1:C:94:HIS:CG	1:C:280:GLU:HG2	2.11	0.85
1:C:28:PHE:HD2	1:C:29:MSE:HE2	1.40	0.85
1:A:94:HIS:CD2	1:A:280:GLU:HG2	2.11	0.84
1:D:94:HIS:CG	1:D:280:GLU:HG2	2.12	0.84
1:A:170:LEU:HB3	1:D:340:VAL:HG11	1.57	0.84
1:C:28:PHE:CD2	1:C:29:MSE:HE2	2.13	0.84
1:B:252:ASP:OD1	1:B:328:ASP:HA	1.79	0.83
1:C:29:MSE:HE1	1:C:253:ARG:HB3	1.60	0.82
1:D:195:LEU:HB2	1:D:206:ASN:HB2	1.61	0.81
1:D:28:PHE:HD2	1:D:29:MSE:HE2	1.43	0.81
1:A:125:LYS:HB2	1:A:128:HIS:CD2	2.15	0.80
1:A:426:MSE:HE2	1:D:169:HIS:NE2	1.97	0.80
1:C:252:ASP:OD1	1:C:328:ASP:HA	1.81	0.80
1:B:321:ASN:O	1:B:322:THR:HB	1.81	0.79
1:B:100:LEU:HB2	1:B:229:VAL:HB	1.65	0.78
1:A:278:ASP:OD1	1:A:279:LYS:HD3	1.83	0.78
1:C:125:LYS:HB2	1:C:128:HIS:CD2	2.19	0.77
1:D:252:ASP:OD1	1:D:328:ASP:HA	1.85	0.77
1:A:94:HIS:CG	1:A:280:GLU:HG2	2.19	0.77
1:D:41:GLU:OE2	1:D:44:ARG:NH1	2.18	0.77
1:D:28:PHE:CD2	1:D:29:MSE:HE2	2.20	0.76
1:A:25:TYR:CE1	1:A:29:MSE:HE3	2.21	0.76
1:A:321:ASN:O	1:A:322:THR:HB	1.86	0.76
1:D:349:LEU:HD11	1:D:424:LEU:HD22	1.68	0.76
1:B:309:LYS:HD3	1:B:309:LYS:N	2.01	0.76
1:B:371:HIS:HD1	1:D:73:LYS:NZ	1.84	0.75
1:D:54:LEU:HD13	1:D:66:VAL:HG21	1.69	0.75
1:B:162:THR:HG23	1:B:164:PRO:HD3	1.67	0.75
1:B:367:THR:HG22	1:B:368:ASN:H	1.51	0.74
1:B:367:THR:HG22	1:B:368:ASN:N	2.02	0.74
1:B:70:ASN:HD21	1:B:71:ARG:NH1	1.85	0.74
1:C:13:ARG:O	1:C:14:LYS:HB2	1.87	0.74
1:A:84:LEU:H	1:A:306:GLN:HE22	1.35	0.74
1:A:349:LEU:HD11	1:A:424:LEU:HD22	1.68	0.74
1:B:371:HIS:HD1	1:D:73:LYS:HZ3	1.33	0.73
1:A:70:ASN:C	1:A:70:ASN:HD22	1.96	0.73
1:B:359:THR:H	1:B:367:THR:HG21	1.52	0.73
1:A:100:LEU:HB2	1:A:229:VAL:HB	1.71	0.73
1:B:15:LYS:HD3	1:B:15:LYS:O	1.89	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:94:HIS:CD2	1:C:280:GLU:HG2	2.24	0.72
1:A:378:VAL:HG11	1:A:419:MSE:HE1	1.71	0.72
1:B:119:HIS:HD2	3:C:5042:HOH:O	1.71	0.72
3:B:5010:HOH:O	1:C:393:THR:HG21	1.88	0.72
1:A:288:THR:HG23	3:A:5071:HOH:O	1.88	0.72
1:D:124:ILE:HD11	1:D:129:TRP:CD1	2.26	0.71
1:D:340:VAL:HG13	1:D:399:GLN:OE1	1.89	0.71
1:A:37:MSE:HE1	1:A:137:HIS:HB3	1.71	0.71
1:B:70:ASN:C	1:B:70:ASN:HD22	1.99	0.71
1:A:169:HIS:H	1:A:169:HIS:CD2	2.08	0.70
1:C:219:GLU:HG2	1:D:4:MSE:HG3	1.73	0.70
1:D:23:LYS:HE2	3:D:5065:HOH:O	1.90	0.70
1:B:230:VAL:HG13	1:B:231:PRO:HD2	1.74	0.69
1:C:219:GLU:HB3	1:D:4:MSE:HG3	1.74	0.69
1:B:286:GLY:O	1:B:292:ALA:HB2	1.92	0.69
1:B:309:LYS:HD3	1:B:309:LYS:H	1.57	0.69
1:C:57:PHE:CZ	1:C:64:MSE:HB3	2.26	0.69
1:A:167:LEU:HD21	1:D:331:ALA:HB2	1.75	0.69
1:D:301:GLN:HE21	1:D:305:MSE:HE3	1.57	0.69
1:A:91:VAL:HG12	1:A:449:MSE:HE3	1.75	0.69
1:B:379:ARG:HD3	1:D:220:GLU:OE1	1.91	0.69
1:D:25:TYR:CE1	1:D:29:MSE:HE3	2.26	0.69
1:D:25:TYR:HE1	1:D:29:MSE:HE3	1.56	0.69
1:C:220:GLU:OE2	1:D:379:ARG:HD3	1.91	0.69
1:A:37:MSE:HE1	1:A:137:HIS:CG	2.29	0.68
1:C:209:LYS:O	1:C:213:GLU:HG3	1.93	0.68
1:A:165:ASP:O	1:D:425:GLY:HA2	1.94	0.68
1:B:70:ASN:ND2	1:B:71:ARG:HG3	2.09	0.68
1:B:312:GLU:HG2	1:D:312:GLU:HG2	1.74	0.68
1:D:84:LEU:H	1:D:306:GLN:HE22	1.41	0.68
1:A:48:GLU:C	1:A:50:GLY:H	2.02	0.68
1:B:54:LEU:HD13	1:B:66:VAL:HG21	1.75	0.68
1:C:84:LEU:H	1:C:306:GLN:HE22	1.40	0.68
1:B:332:ALA:HB3	1:B:424:LEU:HD13	1.74	0.67
1:A:130:LEU:HB3	1:A:165:ASP:HB2	1.75	0.67
1:A:252:ASP:OD1	1:A:328:ASP:HA	1.94	0.67
1:B:88:LEU:O	1:B:322:THR:HA	1.94	0.67
1:B:291:LYS:HA	1:B:412:ARG:HH22	1.60	0.67
1:D:64:MSE:HE2	1:D:80:VAL:HG21	1.77	0.67
1:A:174:ASP:OD1	1:D:178:SER:HB2	1.95	0.67
1:C:91:VAL:HG13	1:C:274:VAL:HG13	1.75	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:94:HIS:CD2	1:D:280:GLU:HG2	2.30	0.67
1:B:142:LYS:HE2	1:B:148:ILE:HD11	1.77	0.67
1:C:119:HIS:HD2	3:D:5011:HOH:O	1.77	0.67
1:C:140:LEU:HD21	1:C:227:ILE:HD11	1.76	0.66
1:A:193:ILE:HD13	1:A:193:ILE:C	2.20	0.66
1:C:73:LYS:NZ	1:D:371:HIS:HD1	1.92	0.66
3:C:5025:HOH:O	1:D:393:THR:HG21	1.95	0.66
1:B:209:LYS:O	1:B:213:GLU:HG3	1.93	0.66
1:A:209:LYS:O	1:A:213:GLU:HG3	1.94	0.66
1:A:291:LYS:HA	1:A:412:ARG:HH22	1.60	0.66
1:A:361:ALA:O	1:A:363:GLY:N	2.28	0.66
1:C:219:GLU:CG	1:D:4:MSE:HG3	2.26	0.65
1:A:57:PHE:CD2	1:A:64:MSE:HE3	2.31	0.65
1:C:88:LEU:O	1:C:322:THR:HA	1.97	0.65
1:D:291:LYS:HA	1:D:412:ARG:HH22	1.62	0.65
1:A:128:HIS:O	1:A:132:ILE:HD12	1.96	0.65
1:C:325:ILE:CD1	1:C:448:LEU:HD13	2.26	0.65
1:C:287:ASN:C	1:C:287:ASN:HD22	2.05	0.65
1:A:142:LYS:HE3	1:A:216:GLY:O	1.96	0.65
1:D:16:GLU:CD	1:D:16:GLU:H	2.03	0.65
1:A:70:ASN:HD21	1:A:71:ARG:HH11	1.44	0.64
1:B:359:THR:N	1:B:367:THR:HG21	2.12	0.64
1:B:378:VAL:HG11	1:B:419:MSE:HE1	1.78	0.64
1:A:34:THR:OG1	1:A:37:MSE:HE3	1.97	0.64
1:B:297:LYS:HG3	1:C:316:ASP:HB3	1.80	0.64
1:D:321:ASN:O	1:D:322:THR:HB	1.96	0.64
1:D:325:ILE:CD1	1:D:448:LEU:HD13	2.28	0.63
1:C:169:HIS:H	1:C:169:HIS:CD2	2.16	0.63
1:D:89:ASN:HB2	1:D:272:ILE:HG22	1.80	0.63
1:D:59:GLY:O	1:D:60:ASP:HB3	1.98	0.63
1:D:36:ARG:HG3	3:D:5064:HOH:O	1.98	0.63
1:C:278:ASP:OD2	1:C:279:LYS:N	2.32	0.62
1:D:394:LEU:HD23	1:D:402:GLY:H	1.64	0.62
1:C:169:HIS:CD2	1:C:169:HIS:N	2.67	0.62
1:D:34:THR:HG23	1:D:37:MSE:CE	2.30	0.62
1:D:99:ARG:HD2	1:D:101:ASP:OD1	1.99	0.62
1:A:167:LEU:HD12	1:A:167:LEU:O	1.99	0.62
1:B:104:PRO:HB2	1:C:391:VAL:HG21	1.82	0.62
1:C:380:LYS:O	1:C:384:GLU:HG3	1.99	0.62
1:D:61:PRO:C	1:D:63:ASN:H	2.07	0.62
1:B:94:HIS:CD2	1:B:280:GLU:HG2	2.34	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:25:TYR:CE1	1:C:29:MSE:HE3	2.35	0.62
1:A:445:TYR:O	1:A:449:MSE:HG3	1.99	0.62
1:C:297:LYS:HE3	1:D:320:GLU:OE1	2.00	0.62
1:D:251:ASP:OD2	1:D:426:MSE:HE3	2.00	0.62
1:A:64:MSE:HE2	1:A:66:VAL:HG11	1.80	0.62
1:D:332:ALA:HB3	1:D:424:LEU:HD13	1.81	0.62
1:B:70:ASN:HD21	1:B:71:ARG:HH11	1.46	0.61
3:A:5053:HOH:O	1:D:214:MSE:HG2	1.99	0.61
1:C:321:ASN:O	1:C:322:THR:HB	1.99	0.61
1:D:25:TYR:OH	1:D:250:GLN:HG2	2.01	0.61
1:B:86:ARG:HB3	1:B:86:ARG:NH1	2.15	0.61
1:D:124:ILE:HG12	1:D:125:LYS:N	2.16	0.61
1:B:445:TYR:O	1:B:449:MSE:HG3	1.98	0.61
1:A:291:LYS:H	1:A:412:ARG:NH2	1.99	0.61
1:B:167:LEU:HD22	1:B:169:HIS:HB2	1.82	0.60
1:D:26:MSE:HE1	1:D:236:ARG:C	2.26	0.60
1:A:37:MSE:HE1	1:A:137:HIS:CB	2.31	0.60
1:B:297:LYS:HZ1	1:C:320:GLU:HG3	1.65	0.60
1:A:57:PHE:CE2	1:A:64:MSE:HG2	2.37	0.60
1:A:70:ASN:HD21	1:A:71:ARG:NH1	1.99	0.60
1:C:214:MSE:HA	1:C:214:MSE:HE3	1.81	0.60
1:C:355:LEU:HD11	1:C:417:ILE:HD13	1.83	0.60
1:A:91:VAL:CG1	1:A:274:VAL:HG22	2.32	0.60
1:A:332:ALA:HB3	1:A:424:LEU:HD13	1.84	0.60
1:A:169:HIS:H	1:A:169:HIS:HD2	1.48	0.60
1:B:179:GLU:O	1:B:180:LYS:HB3	2.02	0.60
1:C:279:LYS:HG2	1:C:285:ASP:O	2.00	0.60
1:A:393:THR:HG21	3:A:5029:HOH:O	2.00	0.59
1:A:48:GLU:O	1:A:50:GLY:N	2.35	0.59
1:C:362:ARG:HB2	1:C:365:TYR:CD2	2.37	0.59
1:A:280:GLU:HG3	1:A:281:GLU:N	2.16	0.59
1:A:14:LYS:HG2	1:A:16:GLU:HG2	1.85	0.59
1:D:287:ASN:C	1:D:287:ASN:HD22	2.10	0.59
1:D:132:ILE:O	1:D:134:LEU:HD22	2.02	0.59
1:B:303:LEU:HB3	1:B:308:ALA:HB2	1.84	0.59
1:B:81:VAL:O	1:B:81:VAL:HG12	2.02	0.59
1:C:219:GLU:CB	1:D:4:MSE:HG3	2.32	0.59
1:A:339:ASP:HB2	3:A:5096:HOH:O	2.03	0.59
1:B:439:PHE:O	1:B:443:VAL:HG23	2.01	0.59
1:C:332:ALA:HB3	1:C:424:LEU:HD13	1.85	0.59
1:D:282:ILE:C	1:D:282:ILE:HD12	2.27	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:381:VAL:O	1:C:385:GLN:HG2	2.02	0.58
3:B:5091:HOH:O	1:C:3:LYS:HD2	2.02	0.58
1:A:70:ASN:HB3	1:A:74:ALA:HB3	1.85	0.58
1:A:340:VAL:HG13	1:D:170:LEU:HD23	1.85	0.58
1:A:277:PHE:HB3	1:A:289:GLY:HA2	1.84	0.58
1:A:158:ASP:HA	1:D:242:ARG:NH2	2.19	0.58
1:B:125:LYS:HB2	1:B:128:HIS:CD2	2.38	0.58
1:D:180:LYS:O	1:D:181:PHE:HB2	2.02	0.58
1:A:214:MSE:HG2	3:D:5059:HOH:O	2.03	0.58
1:A:290:ALA:O	1:A:291:LYS:HB3	2.04	0.58
1:A:301:GLN:O	1:A:305:MSE:HG3	2.02	0.58
1:A:361:ALA:C	3:A:5070:HOH:O	2.46	0.58
1:C:22:SER:HB3	1:C:26:MSE:HE2	1.86	0.58
1:C:48:GLU:C	1:C:50:GLY:H	2.11	0.58
1:B:36:ARG:NH2	1:C:373:GLU:OE2	2.37	0.57
1:C:230:VAL:HG13	1:C:231:PRO:HD2	1.84	0.57
1:A:321:ASN:O	1:A:322:THR:CB	2.51	0.57
1:D:325:ILE:HD11	1:D:448:LEU:HD13	1.86	0.57
1:A:125:LYS:O	1:A:126:LYS:CB	2.52	0.57
1:B:31:LYS:O	1:B:37:MSE:HE2	2.04	0.57
1:A:242:ARG:NH2	1:D:157:GLU:O	2.38	0.57
1:A:244:LEU:HD11	1:D:192:THR:HG21	1.87	0.57
1:C:143:ASN:O	1:D:380:LYS:HD2	2.04	0.57
1:D:301:GLN:NE2	1:D:305:MSE:HE3	2.19	0.57
1:A:86:ARG:O	1:A:270:LYS:HE3	2.05	0.57
1:B:9:VAL:HB	1:B:436:ALA:HB1	1.87	0.57
1:B:155:LYS:O	1:B:158:ASP:HB2	2.04	0.57
1:B:91:VAL:HA	1:B:325:ILE:O	2.05	0.57
1:D:380:LYS:O	1:D:384:GLU:HG3	2.04	0.57
1:D:334:ASN:ND2	1:D:336:PRO:HD2	2.20	0.57
1:A:25:TYR:OH	1:A:250:GLN:HG2	2.05	0.56
1:C:64:MSE:HG3	1:C:80:VAL:HB	1.87	0.56
1:A:169:HIS:CD2	1:A:169:HIS:N	2.73	0.56
1:A:153:GLY:HA2	1:A:159:PRO:O	2.05	0.56
1:A:291:LYS:CA	1:A:412:ARG:HH22	2.18	0.56
1:B:172:LYS:HZ3	1:B:172:LYS:HB2	1.70	0.56
1:A:46:LEU:O	1:A:51:PHE:HB2	2.05	0.56
1:C:219:GLU:HG2	1:D:4:MSE:HE2	1.87	0.56
1:D:126:LYS:HB2	3:D:5114:HOH:O	2.04	0.56
1:A:86:ARG:HG2	1:A:86:ARG:HH11	1.70	0.56
1:B:359:THR:H	1:B:367:THR:CG2	2.16	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:100:LEU:O	1:D:101:ASP:HB2	2.05	0.56
1:C:33:LYS:HB2	1:C:37:MSE:CE	2.34	0.56
1:D:29:MSE:CE	1:D:253:ARG:HB3	2.30	0.56
1:B:108:ILE:HD13	1:B:117:LYS:HE2	1.86	0.56
1:B:359:THR:OG1	1:B:367:THR:HG23	2.06	0.56
1:B:450:GLU:O	1:B:451:LYS:HD2	2.05	0.56
1:C:349:LEU:HD11	1:C:424:LEU:HD22	1.88	0.56
1:B:12:HIS:HB2	1:B:388:ILE:HD11	1.88	0.56
1:C:33:LYS:HB2	1:C:37:MSE:HE1	1.87	0.56
1:B:251:ASP:OD2	1:B:426:MSE:HE3	2.06	0.55
1:C:325:ILE:HD13	1:C:448:LEU:HD13	1.88	0.55
1:A:195:LEU:HD12	1:A:205:THR:HG22	1.88	0.55
1:A:277:PHE:CE1	1:A:409:PHE:HZ	2.24	0.55
1:B:321:ASN:O	1:B:322:THR:CB	2.51	0.55
1:D:162:THR:HG22	1:D:164:PRO:HD3	1.87	0.55
1:A:278:ASP:O	1:A:279:LYS:HB2	2.06	0.55
1:B:156:PRO:O	1:B:157:GLU:HB3	2.06	0.55
1:B:312:GLU:OE1	1:C:312:GLU:HG2	2.07	0.55
1:B:349:LEU:HD11	1:B:424:LEU:HD22	1.87	0.55
1:C:184:GLU:HG3	1:D:396:LYS:HD3	1.88	0.55
1:D:334:ASN:HD22	1:D:336:PRO:HD2	1.72	0.55
1:B:127:TYR:HB3	1:B:181:PHE:CE1	2.42	0.55
1:C:41:GLU:OE2	1:C:44:ARG:NH1	2.40	0.55
1:B:380:LYS:O	1:B:384:GLU:HG3	2.07	0.55
1:C:7:LYS:HB2	1:C:388:ILE:HD12	1.88	0.55
1:D:33:LYS:HB2	1:D:37:MSE:CE	2.37	0.55
1:A:136:ILE:HG23	1:A:227:ILE:CG2	2.36	0.55
1:D:287:ASN:ND2	1:D:288:THR:HG23	2.22	0.55
1:A:289:GLY:HA2	3:A:5050:HOH:O	2.07	0.54
1:B:366:SER:HA	1:D:285:ASP:OD2	2.07	0.54
1:D:34:THR:HB	3:D:5064:HOH:O	2.05	0.54
1:A:142:LYS:HD3	1:A:148:ILE:CD1	2.36	0.54
1:B:180:LYS:O	1:B:181:PHE:HB2	2.07	0.54
1:A:266:ALA:O	1:A:268:PRO:HD3	2.07	0.54
1:B:73:LYS:HB2	1:B:288:THR:HG21	1.90	0.54
1:D:350:GLY:HA3	3:D:5033:HOH:O	2.07	0.54
1:C:300:ARG:HG2	1:C:311:SER:HB3	1.90	0.54
1:A:278:ASP:CG	1:A:279:LYS:HD3	2.33	0.54
1:A:70:ASN:ND2	1:A:71:ARG:HG3	2.23	0.54
1:A:179:GLU:O	1:A:180:LYS:HB3	2.07	0.54
1:A:385:GLN:HG3	1:A:447:SER:HB2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:421:PRO:HG3	1:C:441:THR:OG1	2.08	0.54
1:D:124:ILE:HG12	1:D:125:LYS:H	1.71	0.54
1:B:315:LEU:HD22	1:B:319:LEU:CD1	2.38	0.54
1:B:347:PRO:HD3	1:B:392:ALA:HB1	1.90	0.54
1:D:398:ASP:HB2	3:D:5060:HOH:O	2.08	0.54
1:A:356:VAL:HB	1:A:418:ASP:HB2	1.90	0.54
1:C:353:VAL:HG13	1:C:441:THR:HA	1.88	0.54
1:A:193:ILE:HG22	1:D:241:ASP:OD2	2.07	0.54
1:D:448:LEU:O	1:D:452:LEU:HB2	2.08	0.54
1:B:297:LYS:NZ	1:C:320:GLU:HG3	2.23	0.53
1:B:396:LYS:HB2	1:B:399:GLN:HG2	1.90	0.53
1:A:332:ALA:HB2	1:A:422:ALA:HB1	1.90	0.53
1:B:250:GLN:O	1:B:252:ASP:N	2.40	0.53
1:C:277:PHE:CE1	1:C:409:PHE:HZ	2.26	0.53
1:A:288:THR:OG1	1:A:289:GLY:N	2.40	0.53
1:C:325:ILE:HD11	1:C:448:LEU:HD13	1.89	0.53
1:D:355:LEU:HD21	1:D:417:ILE:HD11	1.90	0.53
1:A:13:ARG:O	1:A:14:LYS:CB	2.51	0.53
1:C:134:LEU:HD23	1:C:188:LEU:HD22	1.90	0.53
1:D:326:SER:CB	1:D:406:ALA:HB2	2.39	0.53
1:A:14:LYS:CG	1:A:16:GLU:HG2	2.38	0.53
1:A:332:ALA:HB3	1:A:424:LEU:CD1	2.38	0.53
1:B:32:ALA:HB1	1:B:38:THR:OG1	2.08	0.53
1:C:385:GLN:HG3	1:C:447:SER:HB2	1.91	0.53
1:D:382:LEU:HD22	1:D:387:VAL:HG11	1.90	0.53
1:A:167:LEU:CD2	1:D:331:ALA:HB2	2.39	0.53
1:A:352:GLY:HA3	1:A:388:ILE:HG22	1.91	0.53
1:B:342:ASP:OD1	1:D:117:LYS:HE2	2.09	0.53
1:D:20:ALA:O	1:D:24:GLU:HG3	2.08	0.53
1:C:240:MSE:HE3	1:C:240:MSE:HA	1.91	0.53
1:A:251:ASP:OD2	1:A:426:MSE:HE3	2.09	0.52
1:C:169:HIS:H	1:C:169:HIS:HD2	1.57	0.52
1:B:367:THR:CG2	1:B:368:ASN:H	2.21	0.52
1:B:379:ARG:HD2	1:B:383:ASN:ND2	2.24	0.52
1:C:47:ASP:C	1:C:48:GLU:O	2.47	0.52
1:A:198:GLU:HG3	1:A:205:THR:HG21	1.90	0.52
1:A:326:SER:HB3	1:A:418:ASP:HA	1.92	0.52
1:D:291:LYS:HA	1:D:412:ARG:NH2	2.23	0.52
1:A:48:GLU:C	1:A:50:GLY:N	2.67	0.52
1:B:64:MSE:HG2	1:B:80:VAL:HB	1.92	0.52
1:B:105:ASN:HD21	1:C:391:VAL:HG13	1.75	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:55:GLU:HG2	1:A:56:ASP:N	2.25	0.52
1:C:91:VAL:CG1	1:C:449:MSE:HE2	2.39	0.52
1:D:61:PRO:O	1:D:63:ASN:N	2.43	0.52
1:A:85:LYS:HD2	1:A:317:GLU:OE2	2.10	0.52
1:A:107:LEU:HD22	1:A:204:LYS:HG3	1.92	0.52
1:D:179:GLU:O	1:D:180:LYS:HB3	2.10	0.52
1:D:354:ALA:HB1	1:D:392:ALA:CB	2.40	0.52
1:A:157:GLU:HG2	1:A:158:ASP:N	2.23	0.52
1:A:70:ASN:C	1:A:70:ASN:ND2	2.68	0.52
1:A:88:LEU:HD23	1:A:88:LEU:N	2.25	0.52
1:B:291:LYS:HA	1:B:412:ARG:NH2	2.24	0.52
1:A:188:LEU:N	1:A:188:LEU:HD23	2.24	0.52
1:D:191:GLY:C	1:D:192:THR:HG23	2.35	0.52
1:D:360:GLY:CA	1:D:367:THR:HB	2.39	0.52
1:B:94:HIS:O	1:B:252:ASP:HB3	2.10	0.51
1:C:179:GLU:HG3	3:C:5133:HOH:O	2.10	0.51
1:C:91:VAL:CG1	1:C:274:VAL:HG22	2.40	0.51
1:A:172:LYS:HZ2	1:A:172:LYS:CB	2.24	0.51
1:B:71:ARG:HB3	3:B:5031:HOH:O	2.10	0.51
1:D:83:ASP:OD1	1:D:85:LYS:HB2	2.10	0.51
1:D:394:LEU:CD2	1:D:402:GLY:H	2.22	0.51
1:A:316:ASP:O	1:A:320:GLU:HB2	2.11	0.51
1:B:84:LEU:H	1:B:306:GLN:HE22	1.57	0.51
1:C:155:LYS:O	1:C:158:ASP:HB2	2.10	0.51
1:A:12:HIS:O	1:A:13:ARG:HD2	2.10	0.51
1:A:81:VAL:HG12	1:A:81:VAL:O	2.11	0.51
1:A:176:LYS:HA	1:D:176:LYS:HA	1.90	0.51
1:B:35:GLU:O	1:B:39:VAL:HG23	2.11	0.51
1:D:385:GLN:HG3	1:D:447:SER:HB3	1.91	0.51
1:A:57:PHE:CZ	1:A:64:MSE:HG2	2.45	0.51
1:A:70:ASN:CB	1:A:74:ALA:HB3	2.39	0.51
1:C:88:LEU:HD13	1:C:271:SER:HB2	1.91	0.51
1:C:93:ALA:HB1	1:C:252:ASP:OD2	2.11	0.51
1:D:26:MSE:HE3	1:D:245:ILE:HG23	1.92	0.51
1:A:42:ILE:HD13	1:A:276:PHE:CE1	2.45	0.51
1:B:98:PRO:HB3	1:B:124:ILE:HG22	1.92	0.51
1:C:179:GLU:HA	3:C:5079:HOH:O	2.10	0.51
1:A:44:ARG:NH1	1:A:45:ILE:HG13	2.26	0.51
1:A:10:TRP:CD1	1:D:193:ILE:HG12	2.46	0.51
1:A:14:LYS:HD2	1:A:17:GLU:OE2	2.10	0.51
1:A:407:LYS:HG3	1:A:408:PHE:N	2.26	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:25:TYR:HE1	1:C:29:MSE:HE3	1.73	0.51
1:C:42:ILE:HD13	1:C:276:PHE:CE1	2.46	0.51
1:C:168:PRO:HG2	1:C:169:HIS:CD2	2.45	0.51
1:D:377:ARG:HD3	3:D:5085:HOH:O	2.11	0.51
1:C:91:VAL:HG11	1:C:449:MSE:HE2	1.93	0.51
1:A:115:LEU:HD13	1:A:187:MSE:HE3	1.94	0.50
1:C:70:ASN:C	1:C:70:ASN:HD22	2.18	0.50
1:D:378:VAL:HG11	1:D:419:MSE:HE1	1.93	0.50
1:A:295:TYR:HD2	1:A:412:ARG:HE	1.57	0.50
1:B:367:THR:CG2	1:B:368:ASN:N	2.72	0.50
1:D:41:GLU:O	1:D:45:ILE:HG13	2.11	0.50
1:D:179:GLU:O	1:D:180:LYS:O	2.29	0.50
1:A:278:ASP:HB3	1:A:288:THR:OG1	2.11	0.50
1:C:43:LYS:HE2	1:C:67:TYR:OH	2.11	0.50
1:D:155:LYS:O	1:D:158:ASP:HB2	2.11	0.50
1:A:29:MSE:HB3	1:A:235:PRO:HG2	1.93	0.50
1:A:112:GLN:OE1	1:D:348:LYS:HE2	2.11	0.50
1:A:314:VAL:O	1:A:318:VAL:HG23	2.11	0.50
1:A:348:LYS:HD2	3:D:5036:HOH:O	2.12	0.50
1:B:287:ASN:HB2	1:C:371:HIS:HE2	1.76	0.50
1:B:309:LYS:HG2	3:B:5063:HOH:O	2.12	0.50
1:D:61:PRO:C	1:D:63:ASN:N	2.70	0.50
1:C:183:GLY:HA3	1:D:397:VAL:HG11	1.94	0.50
1:D:64:MSE:HE1	1:D:302:ILE:HG12	1.92	0.50
1:D:73:LYS:O	1:D:95:ILE:HD11	2.12	0.50
1:A:310:ASP:O	1:A:311:SER:HB3	2.11	0.50
1:B:57:PHE:CZ	1:B:64:MSE:HB3	2.47	0.50
1:C:324:VAL:HB	1:C:416:VAL:HG22	1.94	0.50
1:D:345:ASN:O	1:D:393:THR:HB	2.11	0.50
1:D:309:LYS:NZ	1:D:309:LYS:HB2	2.27	0.50
1:A:177:ILE:HB	1:D:174:ASP:HB2	1.94	0.50
1:B:167:LEU:HD11	1:B:170:LEU:HD22	1.94	0.50
1:B:344:HIS:HB2	3:B:5079:HOH:O	2.12	0.50
1:A:319:LEU:O	1:A:414:SER:HB3	2.12	0.49
1:A:335:PRO:HB2	1:A:336:PRO:CD	2.42	0.49
1:B:13:ARG:HB3	1:B:18:ILE:HD11	1.93	0.49
1:B:147:GLU:C	1:B:148:ILE:HD12	2.37	0.49
1:B:362:ARG:HG3	3:B:5113:HOH:O	2.12	0.49
1:C:167:LEU:HD11	1:C:170:LEU:HD22	1.92	0.49
1:A:283:GLY:O	1:A:284:SER:HB2	2.13	0.49
1:B:398:ASP:HB3	3:B:5113:HOH:O	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:179:GLU:O	1:C:180:LYS:O	2.31	0.49
1:B:277:PHE:CE1	1:B:409:PHE:HZ	2.31	0.49
1:B:416:VAL:HG12	1:B:417:ILE:N	2.27	0.49
1:D:180:LYS:O	1:D:181:PHE:CB	2.59	0.49
1:A:142:LYS:HD3	1:A:148:ILE:HD12	1.95	0.49
1:A:168:PRO:HG2	1:A:169:HIS:HD2	1.77	0.49
1:C:34:THR:HG23	1:C:37:MSE:CE	2.41	0.49
1:C:179:GLU:O	1:C:180:LYS:HB3	2.12	0.49
1:A:37:MSE:CE	1:A:137:HIS:HB3	2.39	0.49
1:B:71:ARG:NH1	1:B:287:ASN:HB3	2.27	0.49
1:D:394:LEU:HD23	1:D:402:GLY:N	2.28	0.49
1:C:180:LYS:O	1:C:181:PHE:HB2	2.13	0.49
1:A:9:VAL:HB	1:A:436:ALA:HB1	1.95	0.49
1:A:55:GLU:C	1:A:57:PHE:H	2.20	0.49
1:B:240:MSE:HE3	1:B:240:MSE:HA	1.94	0.49
3:B:5007:HOH:O	1:D:119:HIS:HD2	1.94	0.49
1:D:61:PRO:HG2	1:D:305:MSE:O	2.12	0.49
1:A:86:ARG:HG2	1:A:86:ARG:NH1	2.28	0.49
1:B:14:LYS:HE2	1:B:17:GLU:OE1	2.13	0.49
1:C:175:ALA:HB1	1:C:179:GLU:HB2	1.94	0.49
1:D:88:LEU:HD23	1:D:88:LEU:N	2.28	0.49
1:C:265:SER:HB3	1:C:446:ARG:NH1	2.28	0.48
1:D:354:ALA:HB1	1:D:392:ALA:HB2	1.93	0.48
1:B:179:GLU:HG2	1:B:180:LYS:N	2.28	0.48
1:B:231:PRO:HB2	1:B:233:PHE:CE1	2.48	0.48
1:B:373:GLU:CD	1:B:373:GLU:H	2.18	0.48
1:D:132:ILE:HG22	3:D:5071:HOH:O	2.13	0.48
1:D:139:VAL:HG23	1:D:148:ILE:O	2.12	0.48
1:D:445:TYR:O	1:D:449:MSE:HG3	2.12	0.48
1:A:134:LEU:CD2	1:A:162:THR:HA	2.43	0.48
1:B:360:GLY:O	1:B:361:ALA:HB2	2.12	0.48
1:B:184:GLU:OE2	1:C:397:VAL:HG23	2.13	0.48
1:C:6:ARG:HH12	1:C:348:LYS:HG3	1.79	0.48
1:D:88:LEU:O	1:D:322:THR:HA	2.13	0.48
1:C:250:GLN:O	1:C:252:ASP:N	2.47	0.48
1:A:424:LEU:HD23	1:D:189:ILE:HD11	1.94	0.48
1:C:70:ASN:HD21	1:C:71:ARG:NH1	2.11	0.48
1:C:344:HIS:HB2	3:C:5064:HOH:O	2.13	0.48
1:D:125:LYS:HB2	1:D:128:HIS:CD2	2.49	0.48
1:A:102:PHE:HB2	1:A:227:ILE:HB	1.95	0.48
1:A:212:ASN:O	1:A:216:GLY:HA2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:238:VAL:HB	1:A:244:LEU:HB2	1.94	0.48
1:B:86:ARG:HB3	1:B:86:ARG:HH11	1.78	0.48
1:B:347:PRO:HD3	1:B:392:ALA:CB	2.44	0.48
1:C:73:LYS:HZ2	1:D:371:HIS:HD1	1.60	0.48
1:C:100:LEU:HB2	1:C:229:VAL:HB	1.95	0.48
1:A:416:VAL:HG12	1:A:417:ILE:N	2.28	0.48
1:C:136:ILE:HD11	1:C:188:LEU:CD1	2.44	0.48
1:D:325:ILE:HD13	1:D:448:LEU:HD13	1.94	0.48
1:D:362:ARG:HA	1:D:398:ASP:OD1	2.13	0.48
1:A:38:THR:O	1:A:42:ILE:HG13	2.14	0.48
1:A:379:ARG:HD2	1:A:383:ASN:ND2	2.28	0.48
1:B:309:LYS:H	1:B:309:LYS:CD	2.19	0.48
1:D:88:LEU:HB2	1:D:271:SER:O	2.14	0.48
1:D:172:LYS:O	1:D:173:GLU:HB2	2.13	0.48
1:D:332:ALA:HB3	1:D:424:LEU:CD1	2.44	0.48
1:A:103:LYS:O	1:A:106:PRO:HD3	2.14	0.48
1:A:200:LYS:HE2	3:A:5051:HOH:O	2.12	0.48
1:A:410:ALA:HA	1:A:414:SER:O	2.14	0.48
1:B:324:VAL:O	1:B:416:VAL:HA	2.14	0.48
1:C:304:LYS:HG3	1:D:313:PHE:CE1	2.49	0.48
1:C:343:LEU:HD22	1:C:343:LEU:H	1.79	0.48
1:D:334:ASN:HD22	1:D:334:ASN:C	2.22	0.48
1:D:355:LEU:CD2	1:D:417:ILE:HD11	2.44	0.48
1:A:168:PRO:HG2	1:A:169:HIS:CD2	2.48	0.47
1:A:193:ILE:HD13	1:A:193:ILE:O	2.14	0.47
1:A:423:LEU:CD2	1:A:433:SER:HB3	2.44	0.47
1:B:61:PRO:C	3:B:5060:HOH:O	2.57	0.47
1:B:379:ARG:NH1	1:D:220:GLU:OE1	2.45	0.47
1:B:335:PRO:HB2	1:B:336:PRO:CD	2.44	0.47
1:C:7:LYS:HE2	1:C:12:HIS:NE2	2.29	0.47
1:A:154:ASP:HB3	1:A:155:LYS:NZ	2.29	0.47
1:A:334:ASN:HD22	1:A:336:PRO:HD2	1.78	0.47
1:C:46:LEU:O	1:C:48:GLU:O	2.32	0.47
1:D:174:ASP:O	1:D:174:ASP:OD2	2.32	0.47
1:A:125:LYS:O	1:A:126:LYS:HB2	2.15	0.47
1:A:144:ASP:OD2	1:A:144:ASP:C	2.58	0.47
1:A:135:GLU:OE2	1:A:232:ALA:HA	2.14	0.47
1:A:417:ILE:HG23	1:A:417:ILE:O	2.14	0.47
1:B:21:PHE:CD2	1:B:438:LEU:HD13	2.48	0.47
1:B:297:LYS:NZ	1:C:320:GLU:CG	2.77	0.47
1:C:40:LYS:HE2	3:C:5106:HOH:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:107:LEU:HD13	1:C:204:LYS:HG3	1.96	0.47
1:A:16:GLU:CD	1:A:16:GLU:H	2.23	0.47
1:A:67:TYR:CD1	1:A:67:TYR:C	2.92	0.47
1:A:214:MSE:O	1:A:214:MSE:HE3	2.15	0.47
1:B:91:VAL:HG12	1:B:449:MSE:HE3	1.97	0.47
1:C:34:THR:HG23	1:C:37:MSE:HE3	1.97	0.47
1:C:38:THR:O	1:C:42:ILE:HG13	2.15	0.47
1:C:64:MSE:CG	1:C:80:VAL:HB	2.45	0.47
1:D:155:LYS:HE2	1:D:158:ASP:OD1	2.15	0.47
1:A:54:LEU:HD13	1:A:66:VAL:HG21	1.96	0.47
1:A:59:GLY:O	1:A:60:ASP:HB3	2.14	0.47
1:A:64:MSE:HE1	1:A:305:MSE:SE	2.65	0.47
1:B:282:ILE:C	1:B:282:ILE:HD12	2.40	0.47
1:A:88:LEU:O	1:A:322:THR:HA	2.15	0.47
1:B:16:GLU:N	1:B:16:GLU:OE1	2.47	0.47
1:A:42:ILE:HD13	1:A:276:PHE:CD1	2.50	0.46
1:B:73:LYS:HZ1	1:B:226:GLU:CD	2.22	0.46
1:B:250:GLN:N	1:B:431:GLU:OE1	2.48	0.46
1:B:332:ALA:HB2	1:B:422:ALA:HB1	1.97	0.46
1:A:54:LEU:O	1:A:55:GLU:HG2	2.15	0.46
1:B:237:GLU:OE2	1:B:435:LYS:NZ	2.46	0.46
1:C:48:GLU:C	1:C:50:GLY:N	2.72	0.46
1:A:169:HIS:HB3	1:D:401:GLY:HA3	1.98	0.46
1:A:250:GLN:NE2	1:A:433:SER:OG	2.49	0.46
1:C:168:PRO:HG2	1:C:169:HIS:HD2	1.80	0.46
1:C:277:PHE:CE2	1:C:290:ALA:HA	2.51	0.46
1:D:353:VAL:HG13	1:D:441:THR:HA	1.98	0.46
1:A:82:ASP:OD1	1:A:83:ASP:N	2.37	0.46
1:A:167:LEU:HD11	1:A:170:LEU:HB2	1.97	0.46
1:C:42:ILE:HD13	1:C:276:PHE:CD1	2.50	0.46
1:B:140:LEU:HG	1:B:150:ILE:CD1	2.46	0.46
1:C:6:ARG:HB3	1:C:351:TYR:HD2	1.81	0.46
1:C:132:ILE:HG13	1:C:134:LEU:CD1	2.45	0.46
1:C:172:LYS:O	1:C:173:GLU:HB3	2.16	0.46
1:C:238:VAL:HB	1:C:244:LEU:HB2	1.97	0.46
1:C:316:ASP:O	1:C:320:GLU:HB2	2.15	0.46
1:D:91:VAL:O	1:D:274:VAL:HG13	2.16	0.46
1:A:303:LEU:HB3	1:A:308:ALA:HB2	1.98	0.46
1:A:105:ASN:HA	3:A:5057:HOH:O	2.15	0.46
1:B:126:LYS:HG2	1:B:186:LEU:HD11	1.98	0.46
1:C:84:LEU:HD11	1:C:302:ILE:HG21	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:285:ASP:OD2	1:D:366:SER:HA	2.15	0.46
1:A:426:MSE:O	1:A:427:HIS:HB2	2.15	0.46
1:C:132:ILE:O	1:C:134:LEU:HD13	2.16	0.46
1:D:76:ALA:HB2	1:D:275:ILE:HG23	1.97	0.46
1:D:426:MSE:O	1:D:427:HIS:HB2	2.15	0.46
1:B:169:HIS:CD2	1:B:169:HIS:H	2.34	0.46
1:D:410:ALA:HA	1:D:414:SER:O	2.16	0.46
1:A:172:LYS:NZ	1:A:172:LYS:HB3	2.31	0.46
1:C:167:LEU:HD11	1:C:170:LEU:CD2	2.46	0.46
1:C:221:ASP:HA	1:D:379:ARG:NH2	2.31	0.46
1:C:353:VAL:CG1	1:C:441:THR:HA	2.46	0.46
1:D:110:ASP:O	1:D:111:GLU:HB2	2.15	0.46
1:D:250:GLN:O	1:D:252:ASP:N	2.49	0.46
1:D:356:VAL:HG22	1:D:392:ALA:HB3	1.97	0.46
1:B:353:VAL:HG21	1:B:444:ALA:HB2	1.98	0.45
1:C:359:THR:O	1:C:367:THR:HG21	2.16	0.45
1:A:291:LYS:N	1:A:412:ARG:HH22	2.15	0.45
1:B:15:LYS:HB3	1:B:16:GLU:OE1	2.17	0.45
1:B:235:PRO:HA	1:B:246:GLY:O	2.17	0.45
1:C:339:ASP:O	1:C:396:LYS:HE3	2.15	0.45
1:C:26:MSE:HE1	3:C:5076:HOH:O	2.16	0.45
1:A:120:TYR:HB2	1:A:124:ILE:HD13	1.98	0.45
1:A:132:ILE:O	1:A:134:LEU:HD22	2.15	0.45
1:C:22:SER:HB3	1:C:26:MSE:CE	2.46	0.45
1:A:91:VAL:CG1	1:A:449:MSE:HE3	2.46	0.45
1:B:41:GLU:OE2	1:B:44:ARG:NH1	2.48	0.45
1:B:348:LYS:NZ	1:B:348:LYS:HB3	2.31	0.45
1:C:128:HIS:HD2	3:C:5010:HOH:O	2.00	0.45
1:D:385:GLN:HB2	1:D:387:VAL:HG23	1.99	0.45
1:A:178:SER:OG	1:D:174:ASP:OD1	2.25	0.45
1:C:385:GLN:HB3	3:C:5122:HOH:O	2.17	0.45
1:D:140:LEU:HD21	1:D:227:ILE:HD11	1.99	0.45
1:D:290:ALA:O	1:D:291:LYS:CB	2.64	0.45
1:A:22:SER:HB2	1:A:245:ILE:HD11	1.99	0.45
1:A:230:VAL:HG22	1:A:248:TYR:CZ	2.52	0.45
1:A:142:LYS:HD3	1:A:148:ILE:HD11	1.99	0.45
1:B:356:VAL:HB	1:B:418:ASP:HB2	1.99	0.45
1:C:99:ARG:HD2	1:C:228:GLU:HB3	1.98	0.45
1:B:325:ILE:HD11	1:B:448:LEU:HB3	1.98	0.45
1:D:179:GLU:HG2	1:D:180:LYS:H	1.82	0.45
1:C:36:ARG:NH2	1:C:139:VAL:HG11	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:46:LEU:O	1:C:51:PHE:HB2	2.17	0.44
1:D:353:VAL:CG1	1:D:441:THR:HA	2.47	0.44
1:B:80:VAL:HA	1:B:271:SER:OG	2.18	0.44
1:B:254:ILE:HG23	1:B:255:CYS:N	2.32	0.44
1:C:361:ALA:HB1	3:C:5014:HOH:O	2.18	0.44
1:B:325:ILE:HD11	1:B:448:LEU:HD13	1.99	0.44
1:C:355:LEU:HD11	1:C:417:ILE:CD1	2.46	0.44
1:D:34:THR:HG23	1:D:37:MSE:HE2	1.98	0.44
1:D:82:ASP:OD1	1:D:83:ASP:N	2.45	0.44
1:A:331:ALA:HB2	1:D:167:LEU:HD21	2.00	0.44
1:B:101:ASP:O	1:B:118:THR:HA	2.17	0.44
1:C:48:GLU:O	1:C:49:SER:HB2	2.18	0.44
1:C:89:ASN:ND2	1:C:452:LEU:HB2	2.33	0.44
1:C:314:VAL:O	1:C:318:VAL:HG23	2.17	0.44
1:D:290:ALA:O	1:D:291:LYS:HG2	2.17	0.44
1:C:347:PRO:HD3	1:C:392:ALA:HB1	2.00	0.44
1:B:63:ASN:N	3:B:5060:HOH:O	2.50	0.44
1:B:129:TRP:N	1:B:129:TRP:CD1	2.86	0.44
1:C:54:LEU:HD13	1:C:66:VAL:HG21	2.00	0.44
1:C:88:LEU:HD13	1:C:271:SER:CB	2.47	0.44
1:D:63:ASN:HA	1:D:80:VAL:O	2.17	0.44
1:A:250:GLN:O	1:A:252:ASP:N	2.51	0.44
1:A:353:VAL:HG21	1:A:444:ALA:HB2	2.00	0.44
1:B:132:ILE:HG13	1:B:134:LEU:HD13	2.00	0.44
1:C:125:LYS:HD3	1:C:127:TYR:OH	2.18	0.44
1:C:250:GLN:N	1:C:431:GLU:OE1	2.51	0.44
1:C:356:VAL:HB	1:C:418:ASP:HB2	2.00	0.44
1:D:129:TRP:CD1	1:D:129:TRP:N	2.86	0.44
1:D:280:GLU:HG3	1:D:281:GLU:N	2.32	0.44
1:A:125:LYS:HB2	1:A:128:HIS:HD2	1.78	0.43
1:A:279:LYS:HE2	3:A:5090:HOH:O	2.18	0.43
1:B:70:ASN:HD22	1:B:71:ARG:HG3	1.81	0.43
1:B:353:VAL:HG21	1:B:444:ALA:CB	2.48	0.43
1:C:73:LYS:HZ1	1:D:371:HIS:HD1	1.63	0.43
1:D:310:ASP:O	1:D:311:SER:C	2.61	0.43
1:A:162:THR:O	1:A:188:LEU:HA	2.18	0.43
1:B:83:ASP:OD2	1:B:85:LYS:HB2	2.19	0.43
1:B:87:GLY:HA3	1:B:321:ASN:HB2	2.00	0.43
1:D:360:GLY:HA3	1:D:367:THR:HB	1.99	0.43
1:A:28:PHE:HD2	1:A:29:MSE:CE	2.32	0.43
1:B:64:MSE:N	3:B:5060:HOH:O	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:301:GLN:O	1:D:305:MSE:HG3	2.18	0.43
1:D:332:ALA:HB2	1:D:422:ALA:HB1	2.00	0.43
1:B:105:ASN:HD21	1:C:391:VAL:CG1	2.32	0.43
1:B:110:ASP:OD1	1:B:111:GLU:HG2	2.19	0.43
1:D:33:LYS:HB2	1:D:37:MSE:HE1	1.98	0.43
1:B:75:ILE:O	1:B:276:PHE:HD1	2.02	0.43
1:C:335:PRO:HB2	1:C:336:PRO:CD	2.49	0.43
1:D:94:HIS:O	1:D:252:ASP:HB3	2.19	0.43
1:A:295:TYR:HD2	1:A:412:ARG:NE	2.16	0.43
1:B:7:LYS:HB3	1:B:12:HIS:NE2	2.34	0.43
1:C:179:GLU:C	1:C:180:LYS:O	2.61	0.43
1:A:89:ASN:ND2	1:A:452:LEU:HB2	2.33	0.43
1:B:240:MSE:HE2	3:B:5075:HOH:O	2.18	0.43
1:B:325:ILE:CD1	1:B:448:LEU:HD13	2.48	0.43
1:C:332:ALA:HA	1:C:347:PRO:HG2	2.01	0.43
1:D:254:ILE:CG1	1:D:438:LEU:HD23	2.49	0.43
1:A:28:PHE:HD2	1:A:29:MSE:HE1	1.83	0.43
1:A:114:ALA:HB2	1:A:203:VAL:HG12	2.01	0.43
1:A:158:ASP:HB2	1:A:159:PRO:HD2	2.01	0.43
1:A:357:LYS:HE2	1:A:370:ALA:O	2.18	0.43
1:B:125:LYS:HD3	1:B:127:TYR:OH	2.19	0.43
1:B:172:LYS:HZ3	1:B:172:LYS:CB	2.32	0.43
1:B:416:VAL:HG12	1:B:417:ILE:H	1.83	0.43
1:C:32:ALA:HB1	1:C:38:THR:OG1	2.19	0.43
1:C:280:GLU:HG3	1:C:281:GLU:N	2.33	0.43
1:C:289:GLY:C	1:C:291:LYS:H	2.26	0.43
1:D:3:LYS:O	1:D:4:MSE:C	2.62	0.43
1:D:27:GLU:O	1:D:30:SER:HB2	2.18	0.43
1:D:70:ASN:HB2	1:D:74:ALA:HB3	2.01	0.43
1:A:97:SER:O	1:A:98:PRO:C	2.62	0.43
1:A:317:GLU:HA	1:A:320:GLU:HB2	2.00	0.43
1:C:220:GLU:O	1:C:220:GLU:HG2	2.18	0.43
1:D:35:GLU:O	1:D:39:VAL:HG23	2.18	0.43
1:D:81:VAL:O	1:D:81:VAL:CG1	2.66	0.43
1:A:451:LYS:HE3	1:A:451:LYS:HA	2.00	0.42
1:B:142:LYS:NZ	1:B:215:TYR:O	2.48	0.42
1:B:179:GLU:HG2	1:B:180:LYS:H	1.84	0.42
1:C:40:LYS:HD2	3:C:5102:HOH:O	2.19	0.42
1:C:214:MSE:HB3	1:C:215:TYR:CD1	2.54	0.42
1:D:174:ASP:O	1:D:174:ASP:CG	2.61	0.42
1:B:320:GLU:OE1	1:B:320:GLU:HA	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:88:LEU:HD23	1:D:322:THR:OG1	2.19	0.42
1:D:195:LEU:HB2	1:D:206:ASN:CB	2.40	0.42
1:A:172:LYS:CB	1:A:172:LYS:NZ	2.82	0.42
1:A:233:PHE:N	1:A:233:PHE:CD2	2.81	0.42
1:B:22:SER:OG	1:B:245:ILE:HD11	2.18	0.42
1:B:67:TYR:CD1	1:B:67:TYR:C	2.96	0.42
1:C:133:PRO:HB2	1:C:232:ALA:HB3	2.01	0.42
1:C:195:LEU:HD12	1:C:205:THR:HG22	2.01	0.42
1:C:252:ASP:C	1:C:254:ILE:N	2.75	0.42
1:D:100:LEU:O	1:D:119:HIS:O	2.37	0.42
1:D:169:HIS:C	1:D:170:LEU:HD12	2.45	0.42
1:D:340:VAL:HG12	1:D:340:VAL:O	2.19	0.42
1:A:54:LEU:O	1:A:55:GLU:CB	2.68	0.42
1:A:282:ILE:HD12	1:A:282:ILE:C	2.44	0.42
1:B:81:VAL:O	1:B:81:VAL:CG1	2.67	0.42
1:B:253:ARG:HG3	1:B:253:ARG:HH11	1.84	0.42
1:C:327:GLY:HA2	1:C:419:MSE:O	2.20	0.42
1:D:12:HIS:HB2	1:D:388:ILE:HD11	2.02	0.42
1:D:340:VAL:HG13	1:D:399:GLN:CD	2.44	0.42
1:A:44:ARG:HH12	1:A:45:ILE:CG1	2.33	0.42
1:A:48:GLU:O	1:A:49:SER:HB2	2.20	0.42
1:A:426:MSE:HB3	1:D:167:LEU:HB3	2.02	0.42
1:B:277:PHE:CD2	1:B:290:ALA:HA	2.54	0.42
1:C:21:PHE:HE2	1:C:438:LEU:HD22	1.84	0.42
1:D:9:VAL:HB	1:D:436:ALA:HB1	2.02	0.42
1:D:407:LYS:HE2	3:D:5112:HOH:O	2.19	0.42
1:B:280:GLU:HG3	1:B:281:GLU:N	2.35	0.42
1:A:41:GLU:OE2	1:A:44:ARG:NH1	2.53	0.42
1:A:47:ASP:C	1:A:48:GLU:O	2.56	0.42
1:A:195:LEU:O	1:A:196:SER:C	2.63	0.42
1:B:26:MSE:HE3	1:B:235:PRO:C	2.45	0.42
1:B:179:GLU:O	1:B:180:LYS:CB	2.66	0.42
1:D:86:ARG:HA	1:D:86:ARG:HD2	1.88	0.42
1:D:124:ILE:HD11	1:D:129:TRP:NE1	2.35	0.42
1:A:136:ILE:HG23	1:A:227:ILE:HG23	2.02	0.42
1:A:378:VAL:CG1	1:A:419:MSE:HE1	2.45	0.42
1:A:3:LYS:HE3	1:A:3:LYS:HB2	1.80	0.41
1:A:174:ASP:CG	1:D:178:SER:HB2	2.44	0.41
1:B:211:LEU:HB3	1:B:217:ILE:HD11	2.01	0.41
1:B:254:ILE:CG2	1:B:255:CYS:N	2.83	0.41
1:C:394:LEU:HD12	1:C:394:LEU:HA	1.90	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:355:LEU:C	1:D:355:LEU:HD23	2.45	0.41
1:A:53:PRO:O	1:A:54:LEU:C	2.64	0.41
1:A:114:ALA:CB	1:A:190:ALA:HB3	2.50	0.41
1:A:356:VAL:HG11	1:A:359:THR:CG2	2.50	0.41
1:B:165:ASP:OD1	1:B:166:LEU:N	2.49	0.41
1:B:296:LEU:HD11	1:B:412:ARG:HD3	2.02	0.41
1:B:301:GLN:O	1:B:305:MSE:HG3	2.20	0.41
3:B:5090:HOH:O	1:D:279:LYS:HE3	2.19	0.41
1:C:28:PHE:CE2	1:C:29:MSE:HE2	2.54	0.41
1:C:70:ASN:ND2	1:C:71:ARG:HG3	2.36	0.41
1:C:108:ILE:C	1:C:108:ILE:HD12	2.45	0.41
1:D:416:VAL:HG12	1:D:417:ILE:N	2.35	0.41
1:A:25:TYR:CD1	1:A:29:MSE:HE3	2.54	0.41
1:A:251:ASP:N	1:A:431:GLU:OE1	2.54	0.41
1:B:238:VAL:HB	1:B:244:LEU:HB2	2.03	0.41
1:B:295:TYR:HE2	1:B:412:ARG:HD2	1.84	0.41
1:B:394:LEU:HD23	1:B:402:GLY:HA3	2.02	0.41
1:B:397:VAL:HG11	1:D:183:GLY:HA3	2.02	0.41
1:C:155:LYS:HD2	1:C:157:GLU:OE1	2.20	0.41
1:C:426:MSE:O	1:C:427:HIS:HB2	2.20	0.41
1:D:139:VAL:HG21	1:D:147:GLU:HG3	2.02	0.41
1:D:287:ASN:HD22	1:D:288:THR:HG23	1.84	0.41
1:A:44:ARG:HH12	1:A:45:ILE:HG13	1.86	0.41
1:B:291:LYS:HD3	1:B:408:PHE:CE1	2.55	0.41
1:B:292:ALA:C	1:B:294:PHE:H	2.29	0.41
1:B:312:GLU:HG2	1:D:312:GLU:CG	2.45	0.41
1:B:405:ILE:H	1:B:405:ILE:HG12	1.69	0.41
1:D:299:LEU:O	1:D:303:LEU:HG	2.20	0.41
1:D:333:VAL:HG12	1:D:347:PRO:O	2.21	0.41
1:C:9:VAL:HB	1:C:436:ALA:HB1	2.02	0.41
1:C:254:ILE:HG23	1:C:255:CYS:N	2.35	0.41
1:D:167:LEU:HD12	1:D:167:LEU:N	2.36	0.41
1:D:180:LYS:HG2	1:D:181:PHE:CD1	2.56	0.41
1:A:362:ARG:HB2	1:A:365:TYR:CE2	2.56	0.41
1:B:295:TYR:CE2	1:B:412:ARG:HD2	2.55	0.41
1:B:353:VAL:HG22	1:B:441:THR:HA	2.01	0.41
1:C:94:HIS:O	1:C:252:ASP:HB3	2.21	0.41
1:C:105:ASN:HB3	1:D:344:HIS:CD2	2.56	0.41
1:D:115:LEU:HD23	1:D:189:ILE:HA	2.02	0.41
1:C:198:GLU:HG3	1:C:205:THR:HG21	2.02	0.41
1:C:445:TYR:HB3	1:C:449:MSE:HE3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:447:SER:O	1:C:451:LYS:HG2	2.21	0.41
1:A:241:ASP:O	1:A:242:ARG:C	2.64	0.41
1:B:132:ILE:HG13	1:B:134:LEU:CD1	2.50	0.41
1:B:206:ASN:O	1:B:210:ILE:HG13	2.20	0.41
1:B:276:PHE:CD1	1:B:276:PHE:N	2.89	0.41
1:C:5:GLU:OE1	1:C:5:GLU:O	2.39	0.41
1:C:35:GLU:O	1:C:39:VAL:HG23	2.21	0.41
1:D:60:ASP:C	1:D:61:PRO:O	2.61	0.41
1:D:287:ASN:C	1:D:287:ASN:ND2	2.77	0.41
1:A:88:LEU:O	1:A:322:THR:HG23	2.21	0.41
1:B:88:LEU:N	1:B:88:LEU:HD23	2.36	0.41
1:B:156:PRO:O	1:B:157:GLU:CB	2.66	0.41
1:B:309:LYS:N	1:B:309:LYS:CD	2.72	0.41
1:C:434:SER:HB3	1:C:437:ASP:OD2	2.21	0.41
1:D:82:ASP:CG	1:D:83:ASP:H	2.27	0.41
1:A:10:TRP:CE2	1:A:436:ALA:HB2	2.56	0.40
1:A:211:LEU:CD2	1:D:240:MSE:HE2	2.51	0.40
1:A:287:ASN:O	1:A:292:ALA:HB1	2.21	0.40
1:C:91:VAL:O	1:C:274:VAL:HG13	2.21	0.40
1:C:184:GLU:CG	1:D:396:LYS:HB3	2.50	0.40
1:A:57:PHE:O	1:A:58:ALA:HB3	2.21	0.40
1:C:362:ARG:HA	1:C:398:ASP:OD1	2.20	0.40
1:B:15:LYS:HD3	1:B:15:LYS:C	2.46	0.40
1:B:426:MSE:O	1:B:427:HIS:HB2	2.20	0.40
1:C:292:ALA:HB1	3:C:5071:HOH:O	2.20	0.40
1:A:117:LYS:HB3	1:A:117:LYS:NZ	2.36	0.40
1:B:292:ALA:O	1:B:293:ARG:HB3	2.20	0.40
1:B:334:ASN:O	1:B:335:PRO:C	2.63	0.40
1:C:3:LYS:N	1:C:3:LYS:HD3	2.36	0.40
1:C:91:VAL:HG12	1:C:274:VAL:HG22	2.02	0.40
1:C:135:GLU:OE1	1:C:154:ASP:HB3	2.21	0.40
1:D:140:LEU:HD21	1:D:227:ILE:CD1	2.52	0.40
1:D:176:LYS:C	1:D:178:SER:N	2.79	0.40
1:D:354:ALA:HA	1:D:390:GLN:O	2.21	0.40
1:A:115:LEU:HD13	1:A:187:MSE:CE	2.50	0.40
1:A:373:GLU:O	1:A:376:ALA:HB3	2.22	0.40
1:C:104:PRO:HB2	1:D:391:VAL:HG11	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	448/450 (100%)	395 (88%)	40 (9%)	13 (3%)	3	13
1	B	448/450 (100%)	409 (91%)	28 (6%)	11 (2%)	4	16
1	C	448/450 (100%)	405 (90%)	33 (7%)	10 (2%)	5	19
1	D	448/450 (100%)	401 (90%)	31 (7%)	16 (4%)	2	10
All	All	1792/1800 (100%)	1610 (90%)	132 (7%)	50 (3%)	4	14

All (50) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	126	LYS
1	A	362	ARG
1	B	157	GLU
1	B	328	ASP
1	B	361	ALA
1	C	358	TYR
1	D	358	TYR
1	A	57	PHE
1	B	59	GLY
1	B	251	ASP
1	B	327	GLY
1	B	360	GLY
1	C	251	ASP
1	C	397	VAL
1	D	4	MSE
1	D	70	ASN
1	D	402	GLY
1	A	59	GLY
1	A	70	ASN
1	C	70	ASN
1	C	180	LYS
1	D	61	PRO

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Mol	Chain	Res	Type
1	D	62	MSE
1	D	173	GLU
1	D	180	LYS
1	D	343	LEU
1	A	14	LYS
1	A	49	SER
1	A	251	ASP
1	A	322	THR
1	A	335	PRO
1	B	177	ILE
1	B	180	LYS
1	B	279	LYS
1	C	343	LEU
1	D	60	ASP
1	D	311	SER
1	A	60	ASP
1	A	311	SER
1	B	335	PRO
1	C	14	LYS
1	C	294	PHE
1	C	322	THR
1	D	101	ASP
1	D	181	PHE
1	D	191	GLY
1	A	403	GLY
1	C	335	PRO
1	D	59	GLY
1	D	335	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	378/365 (104%)	344 (91%)	34 (9%)	9	28
1	B	378/365 (104%)	349 (92%)	29 (8%)	12	36
1	C	378/365 (104%)	353 (93%)	25 (7%)	15	43

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	378/365 (104%)	348 (92%)	30 (8%)	11	35
All	All	1512/1460 (104%)	1394 (92%)	118 (8%)	11	35

All (118) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	16	GLU
1	A	33	LYS
1	A	55	GLU
1	A	88	LEU
1	A	107	LEU
1	A	132	ILE
1	A	162	THR
1	A	167	LEU
1	A	169	HIS
1	A	170	LEU
1	A	172	LYS
1	A	179	GLU
1	A	188	LEU
1	A	193	ILE
1	A	195	LEU
1	A	230	VAL
1	A	252	ASP
1	A	260	LEU
1	A	278	ASP
1	A	280	GLU
1	A	288	THR
1	A	320	GLU
1	A	334	ASN
1	A	340	VAL
1	A	343	LEU
1	A	364	LYS
1	A	373	GLU
1	A	379	ARG
1	A	391	VAL
1	A	399	GLN
1	A	424	LEU
1	A	432	ILE
1	A	438	LEU
1	A	451	LYS
1	B	4	MSE
1	B	13	ARG

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Mol	Chain	Res	Type
1	B	15	LYS
1	B	16	GLU
1	B	22	SER
1	B	70	ASN
1	B	83	ASP
1	B	88	LEU
1	B	91	VAL
1	B	106	PRO
1	B	107	LEU
1	B	134	LEU
1	B	167	LEU
1	B	170	LEU
1	B	172	LYS
1	B	195	LEU
1	B	252	ASP
1	B	260	LEU
1	B	280	GLU
1	B	309	LYS
1	B	315	LEU
1	B	340	VAL
1	B	343	LEU
1	B	348	LYS
1	B	373	GLU
1	B	379	ARG
1	B	391	VAL
1	B	424	LEU
1	B	438	LEU
1	C	5	GLU
1	C	27	GLU
1	C	88	LEU
1	C	107	LEU
1	C	134	LEU
1	C	167	LEU
1	C	169	HIS
1	C	170	LEU
1	C	179	GLU
1	C	188	LEU
1	C	195	LEU
1	C	240	MSE
1	C	252	ASP
1	C	260	LEU
1	C	280	GLU

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Mol	Chain	Res	Type
1	C	287	ASN
1	C	333	VAL
1	C	340	VAL
1	C	353	VAL
1	C	364	LYS
1	C	373	GLU
1	C	379	ARG
1	C	391	VAL
1	C	399	GLN
1	C	438	LEU
1	D	3	LYS
1	D	5	GLU
1	D	16	GLU
1	D	31	LYS
1	D	44	ARG
1	D	55	GLU
1	D	65	THR
1	D	81	VAL
1	D	88	LEU
1	D	107	LEU
1	D	162	THR
1	D	167	LEU
1	D	172	LYS
1	D	176	LYS
1	D	192	THR
1	D	252	ASP
1	D	260	LEU
1	D	280	GLU
1	D	287	ASN
1	D	309	LYS
1	D	315	LEU
1	D	333	VAL
1	D	343	LEU
1	D	353	VAL
1	D	373	GLU
1	D	379	ARG
1	D	393	THR
1	D	407	LYS
1	D	424	LEU
1	D	438	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (41) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	70	ASN
1	A	89	ASN
1	A	128	HIS
1	A	143	ASN
1	A	169	HIS
1	A	250	GLN
1	A	306	GLN
1	A	334	ASN
1	A	399	GLN
1	B	70	ASN
1	B	105	ASN
1	B	112	GLN
1	B	119	HIS
1	B	169	HIS
1	B	306	GLN
1	B	321	ASN
1	B	334	ASN
1	B	368	ASN
1	B	383	ASN
1	C	70	ASN
1	C	119	HIS
1	C	128	HIS
1	C	143	ASN
1	C	169	HIS
1	C	287	ASN
1	C	306	GLN
1	C	334	ASN
1	C	368	ASN
1	C	399	GLN
1	D	11	HIS
1	D	105	ASN
1	D	143	ASN
1	D	169	HIS
1	D	185	ASN
1	D	206	ASN
1	D	287	ASN
1	D	301	GLN
1	D	306	GLN
1	D	321	ASN
1	D	334	ASN
1	D	383	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ > 2		OWAB(Å ²)	Q < 0.9
1	A	437/450 (97%)	-0.23	13 (2%)	52 42	7, 21, 51, 100	0
1	B	437/450 (97%)	-0.34	4 (0%)	81 74	3, 18, 44, 77	0
1	C	437/450 (97%)	-0.38	3 (0%)	84 77	4, 17, 43, 89	0
1	D	437/450 (97%)	-0.31	5 (1%)	78 70	3, 19, 46, 85	0
All	All	1748/1800 (97%)	-0.32	25 (1%)	73 64	3, 19, 45, 100	0

All (25) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	291	LYS	3.6
1	A	252	ASP	3.5
1	C	252	ASP	3.2
1	B	327	GLY	3.0
1	C	3	LYS	3.0
1	D	269	GLU	3.0
1	D	172	LYS	2.7
1	A	310	ASP	2.6
1	C	403	GLY	2.5
1	A	288	THR	2.5
1	A	173	GLU	2.4
1	B	55	GLU	2.4
1	D	191	GLY	2.3
1	A	55	GLU	2.3
1	A	394	LEU	2.2
1	B	362	ARG	2.2
1	A	59	GLY	2.2
1	A	360	GLY	2.2
1	D	173	GLU	2.2
1	A	65	THR	2.2
1	A	48	GLU	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	289	GLY	2.1
1	D	402	GLY	2.1
1	A	269	GLU	2.1
1	B	252	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 oligosaccharides 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($\text{\AA}^2$)	Q<0.9
2	MN	A	5002	1/1	0.97	0.05	19,19,19,19	0
2	MN	A	5001	1/1	0.99	0.04	17,17,17,17	0
2	MN	B	5003	1/1	0.99	0.03	18,18,18,18	0
2	MN	B	5004	1/1	0.99	0.02	17,17,17,17	0
2	MN	C	5006	1/1	0.99	0.03	15,15,15,15	0
2	MN	C	5007	1/1	0.99	0.05	17,17,17,17	0
2	MN	D	5008	1/1	0.99	0.02	16,16,16,16	0
2	MN	D	5009	1/1	0.99	0.02	18,18,18,18	0

6.5 Other polymers [i](#)

There are no such residues in this entry.