



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 09:58 PM UTC

PDB ID : 6OIV / pdb_00006oiv
Title : XFEL structure of Escherichia coli dGTPase
Authors : Barnes, C.O.; Wu, Y.; Calero, G.
Deposited on : 2019-04-09
Resolution : 3.06 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:

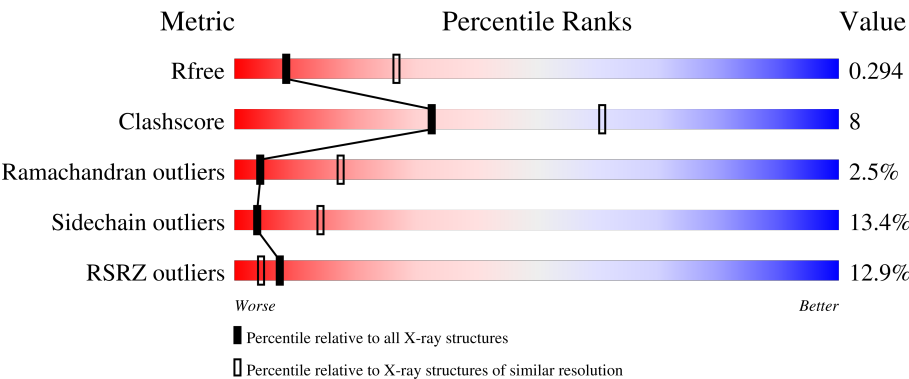
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.06 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	2469 (3.10-3.02)
Clashscore	190562	2569 (3.10-3.02)
Ramachandran outliers	187476	2424 (3.10-3.02)
Sidechain outliers	187428	2423 (3.10-3.02)
RSRZ outliers	180081	2469 (3.10-3.02)

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	505	<div><div>5%</div><div>67%25%6% ..</div></div>
1	B	505	<div><div>25%</div><div>66%25%5% ..</div></div>
1	C	505	<div><div>5%</div><div>67%24%7% ..</div></div>
1	D	505	<div><div>30%</div><div>65%27%6% ..</div></div>
1	E	505	<div><div>5%</div><div>69%24%5% .</div></div>

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Mol	Chain	Length	Quality of chain
1	F	505	 4% 71% 22% 5% **

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	SO4	C	602	-	-	X	-
3	SO4	D	602	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 24778 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 Deoxyguanosinetriphosphate triphosphohydrolase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	498	Total	C	N	O	S	Se	0	0	0
			4135	2639	737	743	6	10			
1	B	488	Total	C	N	O	S	Se	0	0	0
			4042	2586	720	720	6	10			
1	C	497	Total	C	N	O	S	Se	0	0	0
			4125	2633	736	740	6	10			
1	D	495	Total	C	N	O	S	Se	0	0	0
			4118	2630	734	738	6	10			
1	E	497	Total	C	N	O	S	Se	0	0	0
			4130	2636	736	742	6	10			
1	F	502	Total	C	N	O	S	Se	0	0	0
			4169	2658	745	750	6	10			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MSE	-	initiating methionine	UNP P15723
B	1	MSE	-	initiating methionine	UNP P15723
C	1	MSE	-	initiating methionine	UNP P15723
D	1	MSE	-	initiating methionine	UNP P15723
E	1	MSE	-	initiating methionine	UNP P15723
F	1	MSE	-	initiating methionine	UNP P15723

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

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

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	D	1	Total	Mn	0	0
			1	1		
2	E	1	Total	Mn	0	0
			1	1		
2	F	1	Total	Mn	0	0
			1	1		

- Molecule 3 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		
3	E	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	F	1	Total	O	S	0	0
			5	4	1		

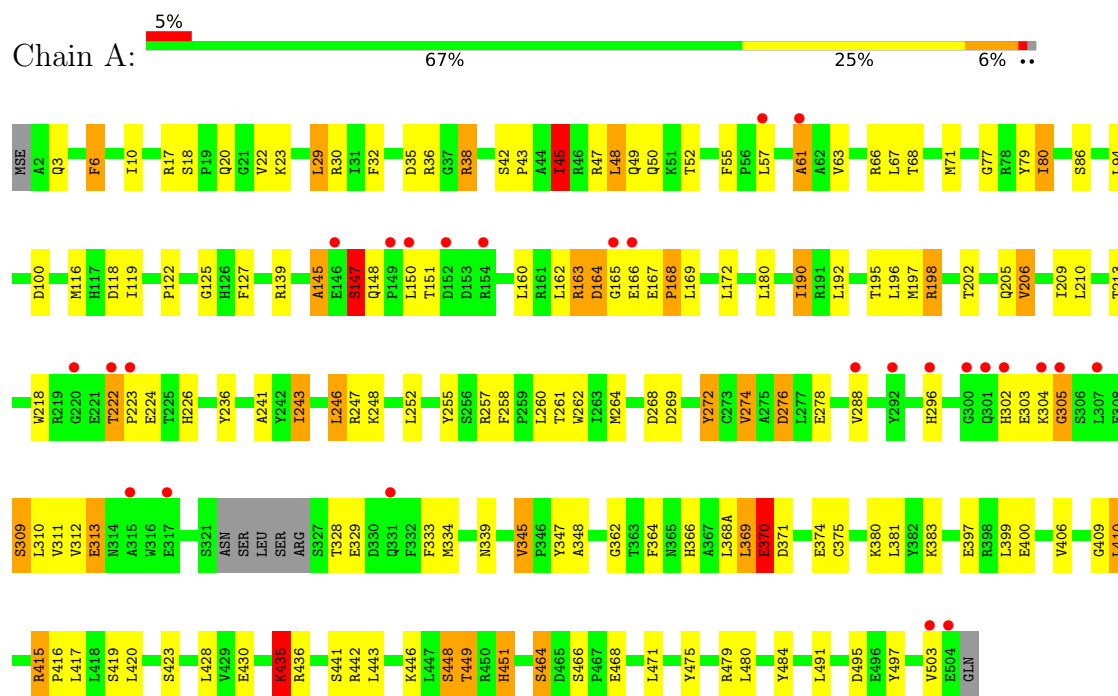
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	3	Total	O	0	0
			3	3		
4	E	3	Total	O	0	0
			3	3		
4	F	2	Total	O	0	0
			2	2		

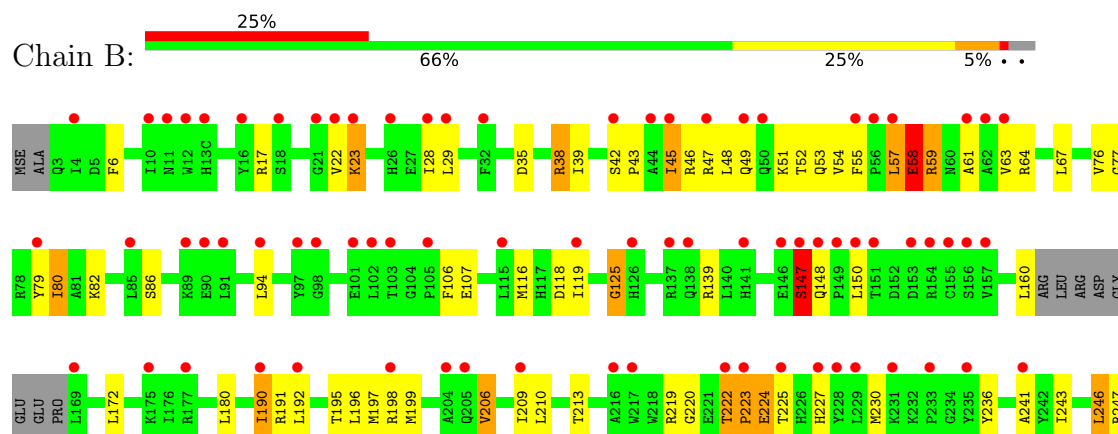
3 Residue-property plots

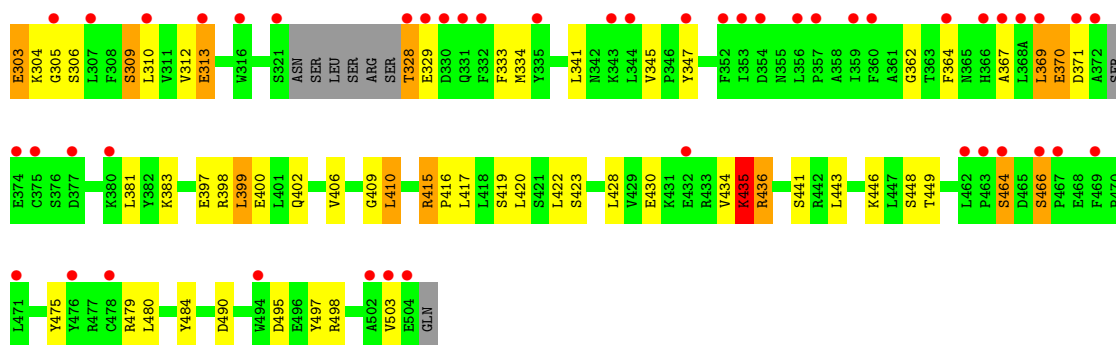
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

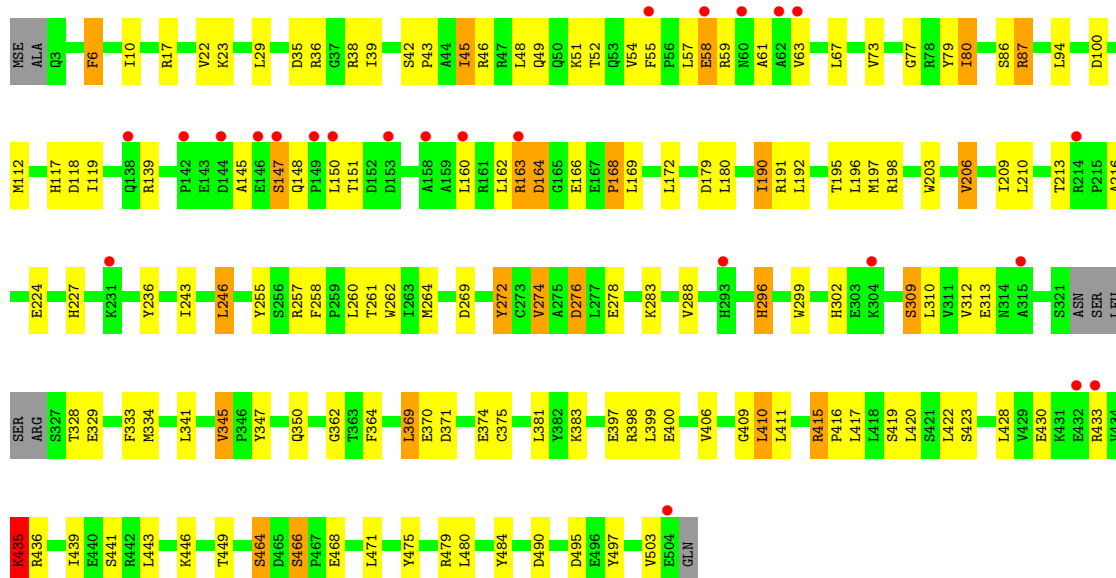


- Molecule 1: Deoxyguanosinetriphosphate triphosphohydrolase

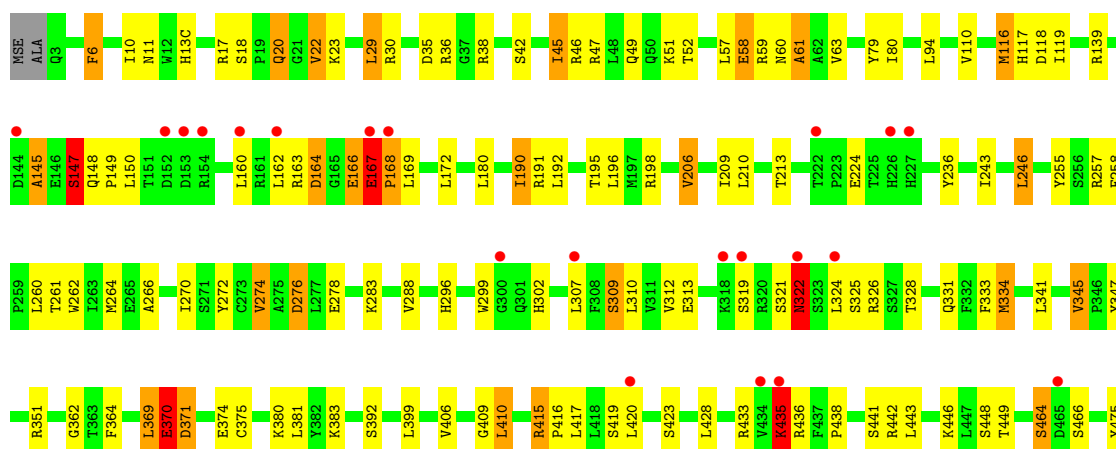


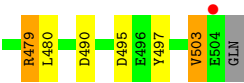


• Molecule 1: Deoxyguanosinetriphosphate triphosphohydrolase



• Molecule 1: Deoxyguanosinetriphosphate triphosphohydrolase





4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	192.59Å 192.59Å 291.25Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	61.20 – 3.06 61.20 – 3.06	Depositor EDS
% Data completeness (in resolution range)	92.3 (61.20-3.06) 92.3 (61.20-3.06)	Depositor EDS
R_{merge}	0.66	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.39 (at 3.07Å)	Xtriage
Refinement program	BUSTER 2.10.2	Depositor
R, R_{free}	0.225 , 0.248 (Not available) , 0.294	Depositor DCC
R_{free} test set	2922 reflections (2.83%)	wwPDB-VP
Wilson B-factor (Å ²)	29.1	Xtriage
Anisotropy	0.268	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 91.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.31$, $\langle L^2 \rangle = 0.15$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.73	EDS
Total number of atoms	24778	wwPDB-VP
Average B, all atoms (Å ²)	64.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.84% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, 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	0.90	1/4227 (0.0%)	1.55	44/5699 (0.8%)
1	B	0.81	1/4132 (0.0%)	1.58	40/5572 (0.7%)
1	C	0.90	4/4217 (0.1%)	1.59	47/5685 (0.8%)
1	D	0.80	1/4209 (0.0%)	1.57	54/5673 (1.0%)
1	E	0.88	1/4222 (0.0%)	1.56	45/5692 (0.8%)
1	F	0.89	2/4262 (0.0%)	1.56	36/5747 (0.6%)
All	All	0.87	10/25269 (0.0%)	1.57	266/34068 (0.8%)

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

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

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	334	MSE	SE-CE	8.58	2.21	1.95
1	F	116	MSE	SE-CE	7.63	2.18	1.95
1	D	231	LYS	C-N	-6.26	1.20	1.33
1	A	116	MSE	SE-CE	5.61	2.12	1.95
1	E	345	VAL	CA-CB	5.54	1.56	1.54
1	F	22	VAL	CA-C	5.23	1.59	1.52
1	C	39	ILE	CA-CB	5.10	1.60	1.54
1	C	503	VAL	CA-C	5.10	1.59	1.52
1	C	116	MSE	SE-CE	5.08	2.10	1.95
1	B	270	ILE	CG1-CD1	5.07	1.71	1.51

All (266) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	163	ARG	CA-C-N	8.92	138.58	121.54
1	A	163	ARG	C-N-CA	8.92	138.58	121.54
1	D	231	LYS	O-C-N	-8.86	112.87	122.09
1	F	322	ASN	CA-CB-CG	8.81	121.41	112.60
1	C	150	LEU	N-CA-C	8.53	122.78	112.38
1	B	369	LEU	CA-C-N	-8.51	105.29	121.54
1	B	369	LEU	C-N-CA	-8.51	105.29	121.54
1	F	276	ASP	CA-CB-CG	8.18	120.78	112.60
1	B	125	GLY	CA-C-N	7.88	136.59	121.54
1	B	125	GLY	C-N-CA	7.88	136.59	121.54
1	F	118	ASP	CA-CB-CG	7.80	120.41	112.60
1	A	118	ASP	CA-CB-CG	7.75	120.35	112.60
1	E	118	ASP	CA-CB-CG	7.55	120.15	112.60
1	B	118	ASP	CA-CB-CG	7.53	120.13	112.60
1	F	163	ARG	CA-C-N	7.30	135.48	121.54
1	F	163	ARG	C-N-CA	7.30	135.48	121.54
1	E	370	GLU	CB-CG-CD	7.27	124.96	112.60
1	C	269	ASP	CA-CB-CG	7.23	119.83	112.60
1	C	370	GLU	CB-CG-CD	7.22	124.88	112.60
1	B	219	ARG	CB-CA-C	-7.19	101.89	111.82
1	E	269	ASP	CA-CB-CG	7.15	119.75	112.60
1	A	464	SER	CA-C-N	7.11	129.81	120.28
1	A	464	SER	C-N-CA	7.11	129.81	120.28
1	C	261	THR	CA-C-N	6.89	129.51	120.28
1	C	261	THR	C-N-CA	6.89	129.51	120.28
1	E	345	VAL	N-CA-CB	6.84	115.11	110.52
1	E	464	SER	CA-C-N	6.81	129.41	120.28
1	E	464	SER	C-N-CA	6.81	129.41	120.28
1	D	464	SER	CA-C-N	6.81	129.41	120.28
1	D	464	SER	C-N-CA	6.81	129.41	120.28
1	D	164	ASP	CA-C-N	6.78	126.43	119.92
1	D	164	ASP	C-N-CA	6.78	126.43	119.92
1	C	220	GLY	N-CA-C	6.75	121.40	112.77
1	F	464	SER	CA-C-N	6.73	129.29	120.28
1	F	464	SER	C-N-CA	6.73	129.29	120.28
1	D	147	SER	N-CA-C	6.71	114.28	108.78
1	E	370	GLU	CA-C-N	6.70	134.34	121.54
1	E	370	GLU	C-N-CA	6.70	134.34	121.54
1	F	370	GLU	CA-C-N	6.57	134.09	121.54
1	F	370	GLU	C-N-CA	6.57	134.09	121.54
1	A	261	THR	CA-C-N	6.52	129.02	120.28
1	A	261	THR	C-N-CA	6.52	129.02	120.28
1	C	370	GLU	CA-C-N	6.51	133.98	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	370	GLU	C-N-CA	6.51	133.98	121.54
1	E	435	LYS	CA-C-N	6.49	129.62	120.28
1	E	435	LYS	C-N-CA	6.49	129.62	120.28
1	F	261	THR	CA-C-N	6.48	128.97	120.28
1	F	261	THR	C-N-CA	6.48	128.97	120.28
1	F	167	GLU	CB-CG-CD	6.44	123.55	112.60
1	E	147	SER	N-CA-C	6.43	114.05	108.78
1	D	435	LYS	CA-C-N	6.41	129.51	120.28
1	D	435	LYS	C-N-CA	6.41	129.51	120.28
1	C	219	ARG	CA-C-N	6.39	127.03	120.00
1	C	219	ARG	C-N-CA	6.39	127.03	120.00
1	A	370	GLU	CB-CG-CD	6.38	123.45	112.60
1	A	370	GLU	CA-C-N	6.37	133.71	121.54
1	A	370	GLU	C-N-CA	6.37	133.71	121.54
1	D	261	THR	CA-C-N	6.37	128.81	120.28
1	D	261	THR	C-N-CA	6.37	128.81	120.28
1	A	305	GLY	N-CA-C	-6.36	98.10	113.18
1	D	232	LYS	CA-C-N	6.36	127.79	119.84
1	D	232	LYS	C-N-CA	6.36	127.79	119.84
1	C	164	ASP	CA-C-N	6.33	126.00	119.92
1	C	164	ASP	C-N-CA	6.33	126.00	119.92
1	A	435	LYS	CA-C-N	6.32	129.38	120.28
1	A	435	LYS	C-N-CA	6.32	129.38	120.28
1	B	261	THR	CA-C-N	6.28	128.69	120.28
1	B	261	THR	C-N-CA	6.28	128.69	120.28
1	C	464	SER	CA-C-N	6.26	128.67	120.28
1	C	464	SER	C-N-CA	6.26	128.67	120.28
1	E	261	THR	CA-C-N	6.25	128.94	120.38
1	E	261	THR	C-N-CA	6.25	128.94	120.38
1	C	6	PHE	CA-CB-CG	-6.25	107.55	113.80
1	F	435	LYS	CA-C-N	6.24	129.27	120.28
1	F	435	LYS	C-N-CA	6.24	129.27	120.28
1	E	164	ASP	CA-C-N	6.21	125.88	119.92
1	E	164	ASP	C-N-CA	6.21	125.88	119.92
1	B	464	SER	CA-C-N	6.11	128.47	120.28
1	B	464	SER	C-N-CA	6.11	128.47	120.28
1	D	163	ARG	CA-C-N	6.11	128.75	120.38
1	D	163	ARG	C-N-CA	6.11	128.75	120.38
1	B	6	PHE	CA-CB-CG	-6.09	107.71	113.80
1	B	435	LYS	CA-C-N	6.08	129.03	120.28
1	B	435	LYS	C-N-CA	6.08	129.03	120.28
1	B	147	SER	N-CA-C	6.05	113.75	108.78

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	45	ILE	CB-CA-C	5.96	120.19	112.14
1	A	6	PHE	CA-CB-CG	-5.96	107.84	113.80
1	E	36	ARG	CA-C-N	5.94	126.68	120.03
1	E	36	ARG	C-N-CA	5.94	126.68	120.03
1	C	163	ARG	CA-C-N	5.93	128.50	120.38
1	C	163	ARG	C-N-CA	5.93	128.50	120.38
1	C	241	ALA	CA-C-N	5.88	128.17	120.28
1	C	241	ALA	C-N-CA	5.88	128.17	120.28
1	C	151	THR	N-CA-CB	5.85	120.38	110.49
1	B	276	ASP	CA-CB-CG	5.83	118.43	112.60
1	F	370	GLU	CB-CG-CD	5.82	122.49	112.60
1	A	276	ASP	CA-CB-CG	5.81	118.41	112.60
1	B	223	PRO	N-CA-C	5.80	120.71	114.68
1	C	147	SER	N-CA-C	5.80	113.53	108.78
1	A	222	THR	CA-C-O	-5.77	112.25	120.16
1	C	58	GLU	CB-CG-CD	5.76	122.40	112.60
1	E	6	PHE	CA-CB-CG	-5.72	108.08	113.80
1	C	276	ASP	CA-CB-CG	5.71	118.31	112.60
1	E	276	ASP	CA-CB-CG	5.70	118.30	112.60
1	F	168	PRO	CA-C-N	5.70	128.49	120.28
1	F	168	PRO	C-N-CA	5.70	128.49	120.28
1	D	6	PHE	CA-CB-CG	-5.64	108.16	113.80
1	C	435	LYS	CA-C-N	5.63	128.87	120.31
1	C	435	LYS	C-N-CA	5.63	128.87	120.31
1	A	147	SER	N-CA-C	5.59	114.12	108.75
1	A	236	TYR	CA-C-N	5.59	128.33	120.28
1	A	236	TYR	C-N-CA	5.59	128.33	120.28
1	B	236	TYR	CA-C-N	5.59	128.33	120.28
1	B	236	TYR	C-N-CA	5.59	128.33	120.28
1	D	236	TYR	CA-C-N	5.56	128.29	120.28
1	D	236	TYR	C-N-CA	5.56	128.29	120.28
1	E	236	TYR	CA-C-N	5.55	128.27	120.28
1	E	236	TYR	C-N-CA	5.55	128.27	120.28
1	F	374	GLU	CA-C-N	5.55	127.65	120.44
1	F	374	GLU	C-N-CA	5.55	127.65	120.44
1	B	269	ASP	CA-CB-CG	5.54	118.14	112.60
1	E	168	PRO	CA-C-N	5.54	128.25	120.28
1	E	168	PRO	C-N-CA	5.54	128.25	120.28
1	D	106	PHE	CA-C-N	5.54	127.64	120.44
1	D	106	PHE	C-N-CA	5.54	127.64	120.44
1	E	374	GLU	CA-C-N	5.53	127.63	120.44
1	E	374	GLU	C-N-CA	5.53	127.63	120.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	484	TYR	CA-C-N	5.53	127.61	120.70
1	A	484	TYR	C-N-CA	5.53	127.61	120.70
1	F	117	HIS	N-CA-C	-5.52	102.71	110.50
1	C	236	TYR	CA-C-N	5.50	128.21	120.28
1	C	236	TYR	C-N-CA	5.50	128.21	120.28
1	E	117	HIS	N-CA-C	-5.50	102.75	110.50
1	F	147	SER	N-CA-C	5.49	114.02	108.75
1	D	91	LEU	CA-C-N	5.49	132.03	121.54
1	D	91	LEU	C-N-CA	5.49	132.03	121.54
1	A	18	SER	N-CA-C	5.48	115.90	109.60
1	A	269	ASP	CA-CB-CG	5.46	118.06	112.60
1	D	168	PRO	CA-C-N	5.46	128.14	120.28
1	D	168	PRO	C-N-CA	5.46	128.14	120.28
1	F	236	TYR	CA-C-N	5.46	128.14	120.28
1	F	236	TYR	C-N-CA	5.46	128.14	120.28
1	C	168	PRO	CA-C-N	5.42	128.09	120.28
1	C	168	PRO	C-N-CA	5.42	128.09	120.28
1	D	276	ASP	CA-CB-CG	5.41	118.01	112.60
1	B	86	SER	CA-C-N	5.41	127.47	120.44
1	B	86	SER	C-N-CA	5.41	127.47	120.44
1	A	168	PRO	CA-C-N	5.36	128.00	120.28
1	A	168	PRO	C-N-CA	5.36	128.00	120.28
1	C	398	ARG	CA-C-N	5.36	127.46	120.28
1	C	398	ARG	C-N-CA	5.36	127.46	120.28
1	C	222	THR	CA-C-O	-5.36	112.82	120.16
1	B	106	PHE	CA-C-N	5.34	127.75	120.54
1	B	106	PHE	C-N-CA	5.34	127.75	120.54
1	A	313	GLU	CA-C-N	5.31	127.34	120.44
1	A	313	GLU	C-N-CA	5.31	127.34	120.44
1	D	402	GLN	CA-C-N	5.31	125.99	119.99
1	D	402	GLN	C-N-CA	5.31	125.99	119.99
1	D	191	ARG	CA-C-N	5.29	127.64	120.65
1	D	191	ARG	C-N-CA	5.29	127.64	120.65
1	E	191	ARG	CA-C-N	5.29	127.64	120.65
1	E	191	ARG	C-N-CA	5.29	127.64	120.65
1	D	398	ARG	CA-C-N	5.28	127.36	120.28
1	D	398	ARG	C-N-CA	5.28	127.36	120.28
1	B	241	ALA	CA-C-N	5.26	127.33	120.28
1	B	241	ALA	C-N-CA	5.26	127.33	120.28
1	A	345	VAL	N-CA-CB	5.26	114.55	110.45
1	C	374	GLU	CA-C-N	5.26	127.27	120.44
1	C	374	GLU	C-N-CA	5.26	127.27	120.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	106	PHE	CA-C-N	5.25	127.59	120.65
1	C	106	PHE	C-N-CA	5.25	127.59	120.65
1	E	86	SER	CA-C-N	5.25	127.27	120.44
1	E	86	SER	C-N-CA	5.25	127.27	120.44
1	E	227	HIS	CA-C-N	5.25	127.27	120.44
1	E	227	HIS	C-N-CA	5.25	127.27	120.44
1	C	36	ARG	CA-C-N	5.25	125.91	120.03
1	C	36	ARG	C-N-CA	5.25	125.91	120.03
1	B	402	GLN	CA-C-N	5.24	125.91	119.99
1	B	402	GLN	C-N-CA	5.24	125.91	119.99
1	F	6	PHE	CA-CB-CG	-5.24	108.56	113.80
1	B	398	ARG	CA-C-N	5.24	127.30	120.28
1	B	398	ARG	C-N-CA	5.24	127.30	120.28
1	F	110	VAL	CA-C-N	5.23	128.67	120.82
1	F	110	VAL	C-N-CA	5.23	128.67	120.82
1	D	241	ALA	CA-C-N	5.22	127.28	120.28
1	D	241	ALA	C-N-CA	5.22	127.28	120.28
1	F	345	VAL	N-CA-CB	5.22	114.52	110.45
1	D	434	VAL	CA-C-N	5.21	131.50	121.54
1	D	434	VAL	C-N-CA	5.21	131.50	121.54
1	D	86	SER	CA-C-N	5.21	127.21	120.44
1	D	86	SER	C-N-CA	5.21	127.21	120.44
1	C	448	SER	CA-C-N	5.21	131.48	121.54
1	C	448	SER	C-N-CA	5.21	131.48	121.54
1	E	466	SER	N-CA-C	5.20	115.58	109.60
1	E	484	TYR	CA-C-N	5.20	127.19	120.70
1	E	484	TYR	C-N-CA	5.20	127.19	120.70
1	A	86	SER	CA-C-N	5.19	127.19	120.44
1	A	86	SER	C-N-CA	5.19	127.19	120.44
1	F	448	SER	CA-C-N	5.19	131.45	121.54
1	F	448	SER	C-N-CA	5.19	131.45	121.54
1	A	448	SER	CA-C-N	5.18	131.43	121.54
1	A	448	SER	C-N-CA	5.18	131.43	121.54
1	D	422	LEU	CA-C-N	5.18	127.48	120.38
1	D	422	LEU	C-N-CA	5.18	127.48	120.38
1	A	241	ALA	CA-C-N	5.17	127.20	120.28
1	A	241	ALA	C-N-CA	5.17	127.20	120.28
1	F	36	ARG	CA-C-N	5.17	125.82	120.03
1	F	36	ARG	C-N-CA	5.17	125.82	120.03
1	B	374	GLU	CA-C-N	5.16	127.15	120.44
1	B	374	GLU	C-N-CA	5.16	127.15	120.44
1	D	328	THR	CA-C-N	5.16	127.15	120.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	328	THR	C-N-CA	5.16	127.15	120.44
1	A	145	ALA	CA-C-N	5.14	128.53	120.82
1	A	145	ALA	C-N-CA	5.14	128.53	120.82
1	B	38	ARG	CA-C-N	5.14	127.12	120.70
1	B	38	ARG	C-N-CA	5.14	127.12	120.70
1	C	466	SER	N-CA-C	5.13	115.50	109.60
1	E	439	ILE	CA-C-N	5.13	127.15	120.28
1	E	439	ILE	C-N-CA	5.13	127.15	120.28
1	D	296	HIS	CA-C-N	5.12	127.14	120.28
1	D	296	HIS	C-N-CA	5.12	127.14	120.28
1	D	484	TYR	CA-C-N	5.12	127.10	120.70
1	D	484	TYR	C-N-CA	5.12	127.10	120.70
1	C	125	GLY	CA-C-N	5.12	127.86	120.38
1	C	125	GLY	C-N-CA	5.12	127.86	120.38
1	D	448	SER	CA-C-N	5.12	131.32	121.54
1	D	448	SER	C-N-CA	5.12	131.32	121.54
1	A	38	ARG	CA-C-N	5.12	127.09	120.70
1	A	38	ARG	C-N-CA	5.12	127.09	120.70
1	A	127	PHE	N-CA-C	-5.11	107.10	113.38
1	F	191	ARG	CA-C-N	5.10	127.39	120.65
1	F	191	ARG	C-N-CA	5.10	127.39	120.65
1	D	466	SER	N-CA-C	5.10	115.46	109.60
1	B	484	TYR	CA-C-N	5.10	127.07	120.70
1	B	484	TYR	C-N-CA	5.10	127.07	120.70
1	F	145	ALA	CA-C-N	5.09	128.45	120.82
1	F	145	ALA	C-N-CA	5.09	128.45	120.82
1	B	466	SER	N-CA-C	5.09	115.45	109.60
1	E	422	LEU	CA-C-N	5.08	127.35	120.38
1	E	422	LEU	C-N-CA	5.08	127.35	120.38
1	F	18	SER	N-CA-C	5.08	115.44	109.60
1	C	191	ARG	CA-C-N	5.08	127.36	120.65
1	C	191	ARG	C-N-CA	5.08	127.36	120.65
1	D	173	ARG	CA-C-N	5.08	127.04	120.44
1	D	173	ARG	C-N-CA	5.08	127.04	120.44
1	D	117	HIS	CA-C-N	-5.08	116.27	125.66
1	D	117	HIS	C-N-CA	-5.08	116.27	125.66
1	E	73	VAL	CA-C-N	5.07	127.07	120.28
1	E	73	VAL	C-N-CA	5.07	127.07	120.28
1	B	191	ARG	CA-C-N	5.06	127.33	120.65
1	B	191	ARG	C-N-CA	5.06	127.33	120.65
1	B	422	LEU	CA-C-N	5.06	127.31	120.38
1	B	422	LEU	C-N-CA	5.06	127.31	120.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	38	ARG	CA-C-N	5.06	127.02	120.70
1	C	38	ARG	C-N-CA	5.06	127.02	120.70
1	A	374	GLU	CA-C-N	5.06	127.01	120.44
1	A	374	GLU	C-N-CA	5.06	127.01	120.44
1	E	203	TRP	CA-C-N	5.05	127.35	120.54
1	E	203	TRP	C-N-CA	5.05	127.35	120.54
1	A	36	ARG	CA-C-N	5.04	125.68	120.03
1	A	36	ARG	C-N-CA	5.04	125.68	120.03
1	E	296	HIS	CA-C-N	5.02	127.01	120.28
1	E	296	HIS	C-N-CA	5.02	127.01	120.28
1	D	313	GLU	CA-C-N	5.01	126.96	120.44
1	D	313	GLU	C-N-CA	5.01	126.96	120.44
1	D	435	LYS	CG-CD-CE	5.01	122.82	111.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	47	ARG	Sidechain
1	A	66	ARG	Sidechain

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4135	0	4091	72	0
1	B	4042	0	3996	76	0
1	C	4125	0	4080	72	0
1	D	4118	0	4075	76	0
1	E	4130	0	4086	50	0
1	F	4169	0	4127	64	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	5	0	0	0	0
3	B	5	0	0	0	0
3	C	20	0	0	3	0
3	D	5	0	0	2	0
3	E	5	0	0	0	0
3	F	5	0	0	0	0
4	C	3	0	0	0	0
4	E	3	0	0	1	0
4	F	2	0	0	0	0
All	All	24778	0	24455	387	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 8.

All (387) 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:F:116:MSE:SE	1:F:116:MSE:CE	2.18	1.40
1:C:334:MSE:SE	1:C:334:MSE:CE	2.21	1.38
1:C:66:ARG:NH1	1:C:118:ASP:OD1	1.58	1.33
1:A:17:ARG:NH2	1:F:326:ARG:HH22	1.54	1.05
1:A:17:ARG:HH21	1:F:326:ARG:NH2	1.62	0.98
1:D:117:HIS:O	1:D:118:ASP:HB2	1.59	0.97
1:C:218:TRP:HE1	1:C:221:GLU:H	1.15	0.94
1:D:116:MSE:O	1:D:119:ILE:HG22	1.67	0.93
1:A:35:ASP:OD2	1:A:202:THR:HG22	1.69	0.91
1:C:448:SER:HB2	1:C:451:HIS:CE1	2.06	0.90
1:B:367:ALA:HB3	1:B:370:GLU:HB3	1.51	0.89
1:B:444:PHE:O	1:B:447:LEU:HD12	1.73	0.89
1:C:448:SER:HB2	1:C:451:HIS:HE1	1.39	0.86
1:A:448:SER:HB2	1:A:451:HIS:CE1	2.10	0.86
1:A:448:SER:HB2	1:A:451:HIS:HE1	1.43	0.83
1:A:50:GLN:HG2	1:A:491:LEU:HD13	1.60	0.82
1:D:223:PRO:HB2	1:D:226:HIS:HB2	1.60	0.82
1:F:13(C):HIS:CE1	1:F:20:GLN:HG2	2.15	0.82
1:A:49:GLN:HB2	1:A:67:LEU:HD22	1.62	0.81
1:B:479:ARG:HH11	1:B:479:ARG:HG3	1.47	0.80
1:F:13(C):HIS:HE1	1:F:20:GLN:HG2	1.45	0.80
1:F:479:ARG:HG3	1:F:479:ARG:HH11	1.47	0.79
1:A:366:HIS:HB3	1:A:370:GLU:HG3	1.65	0.79
1:C:66:ARG:NH1	1:C:118:ASP:CG	2.40	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:479:ARG:HG3	1:C:479:ARG:HH11	1.47	0.78
1:A:17:ARG:HH21	1:F:326:ARG:HH22	0.82	0.78
1:B:23:LYS:HB2	1:B:28:ILE:HD11	1.67	0.76
1:D:117:HIS:CD2	1:D:268:ASP:OD2	2.38	0.75
1:D:119:ILE:HD13	1:D:192:LEU:HD23	1.67	0.75
1:B:223:PRO:HD2	1:B:227:HIS:HA	1.66	0.75
1:C:218:TRP:NE1	1:C:221:GLU:H	1.84	0.74
1:B:262:TRP:CD1	1:B:262:TRP:H	2.05	0.74
1:D:23:LYS:HB2	1:D:28:ILE:HD11	1.68	0.74
1:A:262:TRP:H	1:A:262:TRP:CD1	2.05	0.74
1:E:87:ARG:HH21	1:E:350:GLN:HB2	1.51	0.73
1:F:262:TRP:H	1:F:262:TRP:CD1	2.05	0.73
1:E:262:TRP:H	1:E:262:TRP:CD1	2.04	0.73
1:D:262:TRP:H	1:D:262:TRP:CD1	2.06	0.73
1:E:417:LEU:HD11	1:E:443:LEU:HB3	1.70	0.73
1:A:417:LEU:HD11	1:A:443:LEU:HB3	1.70	0.72
1:C:218:TRP:HE1	1:C:221:GLU:N	1.85	0.72
1:B:444:PHE:HA	1:B:447:LEU:CD1	2.18	0.71
1:C:262:TRP:H	1:C:262:TRP:CD1	2.06	0.71
1:C:417:LEU:HD11	1:C:443:LEU:HB3	1.72	0.70
1:A:17:ARG:HH12	1:A:38:ARG:HH22	1.40	0.70
1:B:498:ARG:HE	1:C:503:VAL:HG12	1.57	0.70
1:A:42:SER:O	1:A:45:ILE:HG22	1.92	0.70
1:F:417:LEU:HD11	1:F:443:LEU:HB3	1.74	0.70
1:A:48:LEU:N	1:A:48:LEU:HD23	2.06	0.70
1:B:82:LYS:HE2	1:B:107:GLU:OE2	1.92	0.69
1:D:116:MSE:O	1:D:119:ILE:CG2	2.40	0.69
1:B:417:LEU:HD11	1:B:443:LEU:HB3	1.75	0.68
1:D:17:ARG:HH12	1:D:38:ARG:HH22	1.40	0.68
1:A:50:GLN:HB2	1:F:61:ALA:HB2	1.74	0.68
1:D:417:LEU:HD11	1:D:443:LEU:HB3	1.76	0.68
1:C:55:PHE:HB2	1:C:63:VAL:HG21	1.75	0.67
1:D:119:ILE:CD1	1:D:192:LEU:HD23	2.24	0.67
1:C:213:THR:HB	1:C:255:TYR:HA	1.77	0.66
1:E:55:PHE:HB2	1:E:63:VAL:HG21	1.77	0.66
1:E:17:ARG:HH12	1:E:38:ARG:HH22	1.44	0.66
1:A:17:ARG:HG2	1:F:324:LEU:HD21	1.76	0.66
1:F:213:THR:HB	1:F:255:TYR:HA	1.77	0.66
1:F:17:ARG:HH21	1:F:38:ARG:HH22	1.42	0.65
1:A:213:THR:HB	1:A:255:TYR:HA	1.79	0.65
1:B:401:LEU:HD11	1:C:442:ARG:HB3	1.78	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:145:ALA:HA	1:F:162:LEU:HD11	1.79	0.65
1:C:258:PHE:CE2	1:C:260:LEU:HB2	2.31	0.65
1:D:55:PHE:HB2	1:D:63:VAL:HG21	1.78	0.65
1:F:299:TRP:HB3	1:F:302:HIS:CE1	2.33	0.64
1:F:258:PHE:CE2	1:F:260:LEU:HB2	2.32	0.64
1:D:258:PHE:CE2	1:D:260:LEU:HB2	2.33	0.64
1:B:55:PHE:HB2	1:B:63:VAL:HG21	1.79	0.64
1:E:258:PHE:CE2	1:E:260:LEU:HB2	2.33	0.64
1:C:299:TRP:HB3	1:C:302:HIS:CE1	2.33	0.64
1:E:145:ALA:HA	1:E:162:LEU:HD11	1.79	0.64
1:B:258:PHE:CE2	1:B:260:LEU:HB2	2.33	0.63
1:B:17:ARG:HH12	1:B:38:ARG:HH22	1.44	0.63
1:B:444:PHE:HA	1:B:447:LEU:HD11	1.80	0.63
1:E:213:THR:HB	1:E:255:TYR:HA	1.80	0.63
1:E:299:TRP:HB3	1:E:302:HIS:CE1	2.33	0.62
1:D:299:TRP:HB3	1:D:302:HIS:CE1	2.34	0.62
1:A:218:TRP:HZ2	1:A:222:THR:HB	1.65	0.62
1:B:213:THR:HB	1:B:255:TYR:HA	1.81	0.62
1:C:145:ALA:HA	1:C:162:LEU:HD11	1.80	0.62
1:B:299:TRP:HB3	1:B:302:HIS:CE1	2.35	0.62
1:D:228:TYR:OH	1:D:367:ALA:HB2	1.99	0.61
1:B:444:PHE:HA	1:B:447:LEU:HD12	1.83	0.61
1:D:213:THR:HB	1:D:255:TYR:HA	1.80	0.61
1:A:258:PHE:CE2	1:A:260:LEU:HB2	2.35	0.61
1:D:66:ARG:NH1	1:D:118:ASP:OD2	2.33	0.60
1:D:145:ALA:HA	1:D:162:LEU:HD11	1.83	0.60
1:D:117:HIS:O	1:D:118:ASP:CB	2.39	0.60
1:A:145:ALA:HA	1:A:162:LEU:HD11	1.83	0.59
1:D:232:LYS:HB3	1:D:233:PRO:CD	2.32	0.59
1:E:87:ARG:NH2	1:E:350:GLN:HB2	2.17	0.58
1:B:76:VAL:HG11	1:B:270:ILE:CG2	2.33	0.58
1:C:24:THR:HG22	3:C:602:SO4:O3	2.04	0.58
1:B:23:LYS:HB2	1:B:28:ILE:CD1	2.34	0.58
1:A:32:PHE:CE1	1:A:202:THR:HG21	2.39	0.57
1:D:222:THR:CG2	1:D:227:HIS:HA	2.34	0.57
1:D:211:LYS:NZ	3:D:602:SO4:O3	2.38	0.57
1:F:309:SER:HA	1:F:313:GLU:HB2	1.87	0.57
1:E:42:SER:O	1:E:45:ILE:HG22	2.05	0.57
1:B:491:LEU:HD23	1:D:59:ARG:HD3	1.88	0.56
1:F:351:ARG:NH2	1:F:370:GLU:HG3	2.20	0.56
1:B:309:SER:HA	1:B:313:GLU:HB2	1.85	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:479:ARG:HG3	1:B:479:ARG:NH1	2.19	0.56
1:D:309:SER:HA	1:D:313:GLU:HB2	1.87	0.56
1:A:168:PRO:HD2	1:A:169:LEU:HD12	1.88	0.56
1:A:309:SER:HA	1:A:313:GLU:HB2	1.87	0.56
1:C:309:SER:HA	1:C:313:GLU:HB2	1.87	0.56
1:C:479:ARG:HG3	1:C:479:ARG:NH1	2.19	0.55
1:E:179:ASP:OD1	1:E:216:ALA:HB3	2.06	0.55
1:A:55:PHE:HB2	1:A:63:VAL:HG21	1.88	0.55
1:A:415:ARG:N	1:A:416:PRO:HD2	2.21	0.55
1:C:168:PRO:HD2	1:C:169:LEU:HD12	1.88	0.55
1:E:168:PRO:HD2	1:E:169:LEU:HD12	1.89	0.55
1:D:428:LEU:HD11	1:D:441:SER:HA	1.88	0.55
1:E:415:ARG:N	1:E:416:PRO:HD2	2.22	0.55
1:F:168:PRO:HD2	1:F:169:LEU:HD12	1.88	0.55
1:B:444:PHE:C	1:B:447:LEU:HD12	2.32	0.54
1:F:17:ARG:NH2	1:F:38:ARG:HH12	2.05	0.54
1:E:309:SER:HA	1:E:313:GLU:HB2	1.88	0.54
1:D:168:PRO:HD2	1:D:169:LEU:HD12	1.89	0.54
1:D:23:LYS:HB2	1:D:28:ILE:CD1	2.35	0.54
1:D:415:ARG:N	1:D:416:PRO:HD2	2.23	0.54
1:A:442:ARG:HG2	1:C:397:GLU:HB3	1.90	0.54
1:B:223:PRO:HG2	1:B:230:MSE:HB2	1.90	0.53
1:B:415:ARG:N	1:B:416:PRO:HD2	2.24	0.53
1:C:351:ARG:NH2	1:C:370:GLU:HG3	2.22	0.53
1:C:180:LEU:HD11	1:C:475:TYR:HA	1.91	0.53
1:C:258:PHE:HE2	1:C:260:LEU:HB2	1.74	0.53
1:D:117:HIS:NE2	1:D:118:ASP:OD1	2.41	0.53
1:C:415:ARG:N	1:C:416:PRO:HD2	2.24	0.53
1:D:258:PHE:HE2	1:D:260:LEU:HB2	1.74	0.53
1:A:122:PRO:HG2	1:A:125:GLY:O	2.09	0.53
1:E:428:LEU:HD11	1:E:441:SER:HA	1.91	0.53
1:F:428:LEU:HD11	1:F:441:SER:HA	1.91	0.52
1:A:218:TRP:CZ2	1:A:222:THR:HB	2.45	0.52
1:D:303:GLU:HG3	1:D:305:GLY:H	1.74	0.52
1:F:166:GLU:HG2	1:F:167:GLU:HG2	1.91	0.52
1:F:180:LEU:HD11	1:F:475:TYR:HA	1.91	0.52
1:B:428:LEU:HD11	1:B:441:SER:HA	1.91	0.52
1:E:180:LEU:HD11	1:E:475:TYR:HA	1.92	0.52
1:D:180:LEU:HD11	1:D:475:TYR:HA	1.92	0.52
1:F:479:ARG:HG3	1:F:479:ARG:NH1	2.18	0.52
1:A:68:THR:HA	1:A:71:MSE:HE2	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:278:GLU:HA	1:B:333:PHE:CZ	2.46	0.51
1:B:59:ARG:HH21	1:E:398:ARG:HH12	1.58	0.51
1:C:69:HIS:CE1	1:C:117:HIS:CE1	2.99	0.51
1:D:222:THR:HG21	1:D:227:HIS:HA	1.92	0.51
1:F:192:LEU:HA	1:F:196:LEU:HB2	1.93	0.51
1:F:415:ARG:N	1:F:416:PRO:HD2	2.26	0.51
1:A:180:LEU:HD11	1:A:475:TYR:HA	1.93	0.51
1:E:17:ARG:NH1	1:E:38:ARG:HH22	2.07	0.51
1:E:258:PHE:HE2	1:E:260:LEU:HB2	1.76	0.50
1:E:192:LEU:HA	1:E:196:LEU:HB2	1.94	0.50
1:F:258:PHE:HE2	1:F:260:LEU:HB2	1.75	0.50
1:C:428:LEU:HD11	1:C:441:SER:HA	1.92	0.50
1:A:428:LEU:HD11	1:A:441:SER:HA	1.92	0.50
1:B:46:ARG:HD3	1:D:64:ARG:HG3	1.94	0.50
1:B:76:VAL:HG11	1:B:270:ILE:HG21	1.93	0.50
1:A:397:GLU:HB3	1:B:442:ARG:HG2	1.93	0.50
1:A:268:ASP:O	1:A:272:TYR:HB2	2.12	0.50
1:B:444:PHE:CA	1:B:447:LEU:HD12	2.42	0.50
1:C:278:GLU:HA	1:C:333:PHE:CZ	2.47	0.50
1:A:61:ALA:HB3	1:F:47:ARG:HA	1.94	0.49
1:A:278:GLU:HA	1:A:333:PHE:CZ	2.47	0.49
1:D:42:SER:O	1:D:45:ILE:HG22	2.11	0.49
1:D:211:LYS:CE	3:D:602:SO4:O3	2.60	0.49
1:D:278:GLU:HA	1:D:333:PHE:CZ	2.47	0.49
1:F:58:GLU:HG3	1:F:283:LYS:HZ3	1.77	0.49
1:F:319:SER:O	1:F:322:ASN:HB3	2.13	0.49
1:A:258:PHE:HE2	1:A:260:LEU:HB2	1.77	0.49
1:B:47:ARG:HA	1:D:61:ALA:HB3	1.94	0.49
1:C:192:LEU:HA	1:C:196:LEU:HB2	1.93	0.49
1:E:415:ARG:NH2	4:E:701:HOH:O	2.46	0.49
1:F:149:PRO:HG2	1:F:164:ASP:O	2.12	0.49
1:B:58:GLU:HG3	1:B:283:LYS:HZ3	1.78	0.49
1:C:42:SER:O	1:C:45:ILE:HG22	2.13	0.49
1:A:166:GLU:HG2	1:A:167:GLU:HG3	1.95	0.49
1:B:180:LEU:HD11	1:B:475:TYR:HA	1.93	0.49
1:D:192:LEU:HA	1:D:196:LEU:HB2	1.95	0.48
1:E:278:GLU:HA	1:E:333:PHE:CZ	2.47	0.48
1:F:278:GLU:HA	1:F:333:PHE:CZ	2.48	0.48
1:A:17:ARG:NH2	1:F:326:ARG:NH2	2.38	0.48
1:B:307:LEU:HD12	1:B:374:GLU:HB3	1.95	0.48
1:B:367:ALA:HB3	1:B:370:GLU:CB	2.35	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:13(C):HIS:HE1	1:F:20:GLN:CG	2.22	0.48
1:B:258:PHE:HE2	1:B:260:LEU:HB2	1.74	0.48
1:B:309:SER:HA	1:B:313:GLU:CB	2.44	0.48
1:B:370:GLU:HG3	1:B:371:ASP:N	2.28	0.48
1:E:43:PRO:HD2	1:E:197:MSE:CE	2.44	0.48
1:D:17:ARG:NH1	1:D:38:ARG:HH22	2.10	0.48
1:D:214:ARG:NH2	1:D:232:LYS:HA	2.28	0.48
1:B:64:ARG:HG3	1:D:46:ARG:HD3	1.95	0.47
1:C:68:THR:HA	1:C:71:MSE:HE2	1.96	0.47
1:D:91:LEU:O	1:D:92:LYS:HG2	2.14	0.47
1:F:51:LYS:HA	1:F:490:ASP:OD1	2.14	0.47
1:B:42:SER:O	1:B:45:ILE:HG22	2.14	0.47
1:D:232:LYS:HB3	1:D:233:PRO:HD2	1.95	0.47
1:C:24:THR:HA	3:C:602:SO4:O1	2.14	0.47
1:B:59:ARG:NH2	1:E:398:ARG:HH12	2.12	0.47
1:C:66:ARG:HD3	1:C:66:ARG:HA	1.70	0.47
1:C:307:LEU:HD12	1:C:374:GLU:HB3	1.97	0.47
1:C:309:SER:HA	1:C:313:GLU:CB	2.44	0.47
1:D:43:PRO:HD2	1:D:197:MSE:CE	2.45	0.47
1:E:163:ARG:HA	1:E:163:ARG:HD3	1.52	0.47
1:B:43:PRO:HD2	1:B:197:MSE:CE	2.45	0.47
1:E:272:TYR:HE2	1:E:383:LYS:HG2	1.80	0.47
1:B:222:THR:HA	1:B:223:PRO:HD3	1.68	0.47
1:C:43:PRO:HD2	1:C:197:MSE:CE	2.45	0.47
1:B:116:MSE:HE1	1:B:199:MSE:SE	2.65	0.47
1:B:262:TRP:CD1	1:B:262:TRP:N	2.81	0.47
1:E:51:LYS:HA	1:E:490:ASP:OD1	2.14	0.47
1:B:46:ARG:O	1:B:49:GLN:HG2	2.16	0.46
1:C:272:TYR:HE2	1:C:383:LYS:HG2	1.80	0.46
1:A:192:LEU:HA	1:A:196:LEU:HB2	1.96	0.46
1:A:202:THR:HG23	1:A:205:GLN:H	1.79	0.46
1:D:309:SER:HA	1:D:313:GLU:CB	2.45	0.46
1:B:192:LEU:HA	1:B:196:LEU:HB2	1.96	0.46
1:D:272:TYR:HE2	1:D:383:LYS:HG2	1.81	0.46
1:F:147:SER:HB3	1:F:148:GLN:H	1.55	0.46
1:B:147:SER:HB3	1:B:148:GLN:H	1.59	0.46
1:B:17:ARG:NH1	1:B:38:ARG:HH22	2.12	0.46
1:D:68:THR:HA	1:D:71:MSE:HE2	1.98	0.46
1:D:222:THR:HG22	1:D:227:HIS:HA	1.97	0.46
1:F:42:SER:O	1:F:45:ILE:HG22	2.16	0.46
1:F:262:TRP:CD1	1:F:262:TRP:N	2.82	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:190:ILE:HD11	1:A:210:LEU:HA	1.98	0.46
1:D:39:ILE:HG12	1:D:116:MSE:HE3	1.98	0.46
1:D:370:GLU:HB3	1:D:371:ASP:H	1.38	0.46
1:E:46:ARG:O	1:E:49:GLN:HG2	2.15	0.46
1:E:58:GLU:HG3	1:E:283:LYS:HZ3	1.80	0.46
1:F:266:ALA:O	1:F:270:ILE:HG13	2.16	0.45
1:F:17:ARG:HH21	1:F:38:ARG:HH12	1.62	0.45
1:A:309:SER:HA	1:A:313:GLU:CB	2.46	0.45
1:E:79:TYR:CD2	1:E:345:VAL:HG21	2.51	0.45
1:A:272:TYR:HE2	1:A:383:LYS:HG2	1.81	0.45
1:C:448:SER:CB	1:C:451:HIS:CE1	2.90	0.45
1:E:309:SER:HA	1:E:313:GLU:CB	2.46	0.45
1:B:370:GLU:HG3	1:B:371:ASP:H	1.82	0.45
1:C:17:ARG:HB2	1:C:17:ARG:HH11	1.81	0.45
1:C:212:TYR:HE2	3:C:605:SO4:O3	1.99	0.45
1:F:272:TYR:HE2	1:F:383:LYS:HG2	1.82	0.45
1:C:347:TYR:HD2	1:C:369:LEU:HD13	1.82	0.45
1:D:147:SER:HB3	1:D:148:GLN:H	1.58	0.45
1:A:147:SER:HB3	1:A:148:GLN:H	1.58	0.45
1:B:397:GLU:HA	1:B:400:GLU:OE1	2.16	0.45
1:B:406:VAL:O	1:B:410:LEU:HB2	2.17	0.44
1:A:43:PRO:HD2	1:A:197:MSE:CE	2.47	0.44
1:F:322:ASN:HB2	1:F:331:GLN:HG2	1.99	0.44
1:C:51:LYS:HA	1:C:490:ASP:OD1	2.17	0.44
1:D:53:GLN:HE21	1:D:54:VAL:HG23	1.83	0.44
1:D:347:TYR:HD2	1:D:369:LEU:HD13	1.83	0.44
1:A:247:ARG:HG2	1:A:252:LEU:HB2	1.99	0.44
1:B:347:TYR:HD2	1:B:369:LEU:HD13	1.82	0.44
1:E:433:ARG:HH12	1:F:392:SER:HB3	1.83	0.44
1:F:6:PHE:HB3	1:F:10:ILE:HD12	1.99	0.44
1:F:11:ASN:OD1	1:F:13(C):HIS:HB2	2.18	0.44
1:F:406:VAL:O	1:F:410:LEU:HB2	2.18	0.44
1:B:39:ILE:HG12	1:B:116:MSE:HE3	1.98	0.44
1:B:371:ASP:C	1:B:373:SER:H	2.25	0.44
1:E:6:PHE:HB3	1:E:10:ILE:HD12	1.98	0.44
1:F:17:ARG:HH21	1:F:38:ARG:NH2	2.10	0.44
1:A:17:ARG:NH1	1:A:38:ARG:HH22	2.11	0.44
1:B:272:TYR:HE2	1:B:383:LYS:HG2	1.82	0.44
1:C:243:ILE:HD13	1:C:243:ILE:HA	1.93	0.44
1:D:51:LYS:HA	1:D:490:ASP:OD1	2.17	0.44
1:D:303:GLU:HG2	1:D:306:SER:HB3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:198:ARG:CD	1:F:325:SER:HB2	2.49	0.43
1:B:39:ILE:HG12	1:B:116:MSE:CE	2.48	0.43
1:C:46:ARG:O	1:C:49:GLN:HG2	2.18	0.43
1:B:77:GLY:HA2	1:B:80:ILE:HD12	2.01	0.43
1:D:79:TYR:CD2	1:D:345:VAL:HG21	2.53	0.43
1:A:262:TRP:CD1	1:A:262:TRP:N	2.81	0.43
1:D:76:VAL:HB	1:D:267:ALA:HB1	1.99	0.43
1:C:48:LEU:HB2	1:C:67:LEU:HB2	2.01	0.43
1:E:347:TYR:HD2	1:E:369:LEU:HD13	1.83	0.43
1:A:304:LYS:HG2	1:A:305:GLY:H	1.83	0.43
1:C:223:PRO:HB2	1:C:226:HIS:HB2	2.00	0.43
1:C:406:VAL:O	1:C:410:LEU:HB2	2.18	0.43
1:E:257:ARG:O	1:E:362:GLY:HA3	2.19	0.43
1:F:309:SER:HA	1:F:313:GLU:CB	2.47	0.43
1:A:79:TYR:CD2	1:A:345:VAL:HG21	2.54	0.43
1:B:51:LYS:HA	1:B:490:ASP:OD1	2.18	0.43
1:D:119:ILE:CD1	1:D:192:LEU:CD2	2.95	0.43
1:A:347:TYR:HD2	1:A:369:LEU:HD13	1.83	0.43
1:C:69:HIS:HE1	1:C:117:HIS:CE1	2.36	0.43
1:C:190:ILE:HD11	1:C:210:LEU:HA	2.01	0.43
1:A:223:PRO:HB2	1:A:226:HIS:HB2	2.01	0.43
1:C:247:ARG:HG2	1:C:252:LEU:HB2	2.00	0.43
1:A:448:SER:CB	1:A:451:HIS:CE1	2.94	0.43
1:B:370:GLU:O	1:B:371:ASP:O	2.37	0.43
1:C:43:PRO:HD2	1:C:197:MSE:HE2	2.01	0.43
1:C:206:VAL:HB	1:C:246:LEU:HD11	2.01	0.43
1:E:206:VAL:HB	1:E:246:LEU:HD11	2.01	0.43
1:F:369:LEU:HD12	1:F:375:CYS:HB3	2.00	0.43
1:B:53:GLN:HE21	1:B:54:VAL:HG23	1.84	0.42
1:C:119:ILE:HD13	1:C:192:LEU:CD2	2.49	0.42
1:C:224:GLU:HA	1:C:227:HIS:ND1	2.34	0.42
1:C:39:ILE:HD13	1:C:112:MSE:HB3	2.01	0.42
1:E:262:TRP:CD1	1:E:262:TRP:N	2.81	0.42
1:F:46:ARG:O	1:F:49:GLN:HG2	2.18	0.42
1:D:190:ILE:HD11	1:D:210:LEU:HA	2.01	0.42
1:E:35:ASP:HA	1:E:38:ARG:HD2	2.01	0.42
1:B:222:THR:HB	1:B:227:HIS:HD2	1.85	0.42
1:E:77:GLY:HA2	1:E:80:ILE:HD12	2.01	0.42
1:A:348:ALA:HB1	1:A:368(A):LEU:HD23	2.01	0.42
1:B:257:ARG:O	1:B:362:GLY:HA3	2.19	0.42
1:A:68:THR:HG21	1:F:46:ARG:HG2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:69:HIS:CE1	1:C:117:HIS:HE1	2.37	0.42
1:F:79:TYR:CD2	1:F:345:VAL:HG21	2.55	0.42
1:B:43:PRO:HD2	1:B:197:MSE:HE2	2.02	0.42
1:C:58:GLU:HB2	1:C:283:LYS:HZ1	1.84	0.42
1:E:369:LEU:HD12	1:E:375:CYS:HB3	2.02	0.42
1:C:380:LYS:HA	1:C:383:LYS:HD2	2.02	0.42
1:D:184:GLU:OE1	1:D:232:LYS:HD2	2.20	0.42
1:D:409:GLY:HA3	1:D:497:TYR:HE1	1.84	0.42
1:E:147:SER:HB3	1:E:148:GLN:H	1.54	0.42
1:F:35:ASP:HA	1:F:38:ARG:HD2	2.01	0.42
1:F:190:ILE:HD11	1:F:210:LEU:HA	2.01	0.42
1:C:272:TYR:CE2	1:C:383:LYS:HG2	2.55	0.42
1:D:406:VAL:O	1:D:410:LEU:HB2	2.19	0.42
1:E:397:GLU:HA	1:E:400:GLU:OE1	2.20	0.42
1:A:29:LEU:HD23	1:A:30:ARG:HG2	2.02	0.42
1:C:397:GLU:HA	1:C:400:GLU:OE1	2.18	0.42
1:D:6:PHE:HB3	1:D:10:ILE:HD12	2.01	0.42
1:E:43:PRO:HD2	1:E:197:MSE:HE2	2.01	0.42
1:E:406:VAL:O	1:E:410:LEU:HB2	2.20	0.42
1:A:77:GLY:HA2	1:A:80:ILE:HD12	2.02	0.41
1:A:369:LEU:HD12	1:A:375:CYS:HB3	2.01	0.41
1:B:79:TYR:CD2	1:B:345:VAL:HG21	2.55	0.41
1:D:39:ILE:HG12	1:D:116:MSE:CE	2.50	0.41
1:F:257:ARG:O	1:F:362:GLY:HA3	2.19	0.41
1:F:347:TYR:HD2	1:F:369:LEU:HD13	1.84	0.41
1:B:48:LEU:HB2	1:B:67:LEU:HB2	2.02	0.41
1:C:257:ARG:O	1:C:362:GLY:HA3	2.20	0.41
1:D:397:GLU:HA	1:D:400:GLU:OE1	2.21	0.41
1:F:380:LYS:HA	1:F:383:LYS:HD2	2.02	0.41
1:C:6:PHE:HB3	1:C:10:ILE:HD12	2.01	0.41
1:C:35:ASP:HA	1:C:38:ARG:HD2	2.03	0.41
1:C:77:GLY:HA2	1:C:80:ILE:HD12	2.01	0.41
1:C:311:VAL:HG13	1:C:339:ASN:HB3	2.03	0.41
1:C:409:GLY:HA3	1:C:497:TYR:HE1	1.85	0.41
1:D:77:GLY:HA2	1:D:80:ILE:HD12	2.02	0.41
1:D:163:ARG:HA	1:D:163:ARG:HD3	1.61	0.41
1:E:39:ILE:HD13	1:E:112:MSE:HB3	2.02	0.41
1:E:468:GLU:HA	1:E:471:LEU:HD13	2.02	0.41
1:A:257:ARG:O	1:A:362:GLY:HA3	2.20	0.41
1:F:206:VAL:HB	1:F:246:LEU:HD11	2.03	0.41
1:B:190:ILE:HD11	1:B:210:LEU:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:206:VAL:HB	1:B:246:LEU:HD11	2.03	0.41
1:B:369:LEU:HD12	1:B:375:CYS:HB3	2.02	0.41
1:B:498:ARG:NE	1:C:503:VAL:HG12	2.30	0.41
1:D:436:ARG:H	1:D:436:ARG:HG2	1.64	0.41
1:D:498:ARG:HE	1:F:503:VAL:HG12	1.84	0.41
1:A:35:ASP:HA	1:A:38:ARG:HD2	2.03	0.41
1:A:38:ARG:HG2	1:F:334:MSE:HE2	2.02	0.41
1:A:206:VAL:HB	1:A:246:LEU:HD11	2.02	0.41
1:A:406:VAL:O	1:A:410:LEU:HB2	2.20	0.41
1:B:35:ASP:HA	1:B:38:ARG:HD2	2.03	0.41
1:E:48:LEU:HB2	1:E:67:LEU:HB2	2.03	0.41
1:E:190:ILE:HD11	1:E:210:LEU:HA	2.03	0.41
1:A:6:PHE:HB3	1:A:10:ILE:HD12	2.03	0.41
1:A:380:LYS:HA	1:A:383:LYS:HD2	2.02	0.41
1:A:243:ILE:HD13	1:A:243:ILE:HA	1.98	0.41
1:A:397:GLU:HA	1:A:400:GLU:OE1	2.20	0.41
1:A:409:GLY:HA3	1:A:497:TYR:HE1	1.85	0.41
1:B:247:ARG:HG2	1:B:252:LEU:HB2	2.02	0.41
1:D:35:ASP:HA	1:D:38:ARG:HD2	2.02	0.41
1:D:43:PRO:HD2	1:D:197:MSE:HE2	2.03	0.41
1:D:48:LEU:HB2	1:D:67:LEU:HB2	2.03	0.41
1:D:56:PRO:HG3	1:D:399:LEU:HD22	2.03	0.41
1:D:257:ARG:O	1:D:362:GLY:HA3	2.20	0.41
1:E:409:GLY:HA3	1:E:497:TYR:HE1	1.85	0.41
1:F:29:LEU:HD23	1:F:30:ARG:HG2	2.03	0.41
1:C:331:GLN:HA	1:C:331:GLN:HE21	1.85	0.40
1:D:46:ARG:O	1:D:49:GLN:HG2	2.20	0.40
1:A:311:VAL:HG13	1:A:339:ASN:HB3	2.03	0.40
1:A:468:GLU:HA	1:A:471:LEU:HD13	2.04	0.40
1:B:393:HIS:CE1	1:B:395:ASP:H	2.40	0.40
1:F:409:GLY:HA3	1:F:497:TYR:HE1	1.85	0.40
1:A:43:PRO:HD2	1:A:197:MSE:HE2	2.02	0.40
1:C:369:LEU:HD12	1:C:375:CYS:HB3	2.03	0.40
1:C:370:GLU:OE2	1:C:373:SER:HB3	2.21	0.40
1:F:438:PRO:O	1:F:442:ARG:HD2	2.22	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	494/505 (98%)	434 (88%)	47 (10%)	13 (3%)	4	17
1	B	482/505 (95%)	421 (87%)	46 (10%)	15 (3%)	3	14
1	C	493/505 (98%)	439 (89%)	41 (8%)	13 (3%)	4	17
1	D	489/505 (97%)	432 (88%)	45 (9%)	12 (2%)	4	17
1	E	493/505 (98%)	441 (90%)	40 (8%)	12 (2%)	4	18
1	F	500/505 (99%)	443 (89%)	47 (9%)	10 (2%)	6	21
All	All	2951/3030 (97%)	2610 (88%)	266 (9%)	75 (2%)	4	17

All (75) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	164	ASP
1	A	371	ASP
1	B	58	GLU
1	B	125	GLY
1	B	222	THR
1	B	371	ASP
1	C	58	GLU
1	C	371	ASP
1	D	370	GLU
1	E	371	ASP
1	F	164	ASP
1	F	371	ASP
1	A	22	VAL
1	A	57	LEU
1	A	435	LYS
1	B	22	VAL
1	B	224	GLU
1	B	435	LYS
1	C	22	VAL
1	C	166	GLU

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Mol	Chain	Res	Type
1	C	435	LYS
1	D	22	VAL
1	D	272	TYR
1	D	435	LYS
1	E	22	VAL
1	E	166	GLU
1	E	435	LYS
1	F	22	VAL
1	F	435	LYS
1	A	61	ALA
1	B	61	ALA
1	B	372	ALA
1	C	61	ALA
1	C	100	ASP
1	D	61	ALA
1	D	166	GLU
1	D	232	LYS
1	E	61	ALA
1	E	272	TYR
1	F	61	ALA
1	A	23	LYS
1	A	100	ASP
1	A	272	TYR
1	A	449	THR
1	B	23	LYS
1	B	57	LEU
1	B	220	GLY
1	B	272	TYR
1	B	364	PHE
1	C	23	LYS
1	C	272	TYR
1	D	23	LYS
1	E	57	LEU
1	E	100	ASP
1	F	23	LYS
1	A	364	PHE
1	C	274	VAL
1	C	449	THR
1	D	100	ASP
1	D	364	PHE
1	E	23	LYS
1	F	57	LEU

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Mol	Chain	Res	Type
1	F	167	GLU
1	F	364	PHE
1	A	165	GLY
1	A	274	VAL
1	B	274	VAL
1	C	364	PHE
1	D	274	VAL
1	E	364	PHE
1	E	274	VAL
1	F	274	VAL
1	C	54	VAL
1	E	54	VAL
1	D	54	VAL

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	443/439 (101%)	383 (86%)	60 (14%)	4	14
1	B	431/439 (98%)	374 (87%)	57 (13%)	4	14
1	C	442/439 (101%)	381 (86%)	61 (14%)	3	13
1	D	441/439 (100%)	380 (86%)	61 (14%)	3	13
1	E	443/439 (101%)	387 (87%)	56 (13%)	4	16
1	F	448/439 (102%)	388 (87%)	60 (13%)	4	14
All	All	2648/2634 (100%)	2293 (87%)	355 (13%)	4	14

All (355) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	GLN
1	A	20	GLN
1	A	29	LEU
1	A	45	ILE
1	A	48	LEU

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Mol	Chain	Res	Type
1	A	52	THR
1	A	80	ILE
1	A	94	LEU
1	A	119	ILE
1	A	139	ARG
1	A	147	SER
1	A	150	LEU
1	A	151	THR
1	A	160	LEU
1	A	163	ARG
1	A	164	ASP
1	A	172	LEU
1	A	190	ILE
1	A	195	THR
1	A	198	ARG
1	A	206	VAL
1	A	209	ILE
1	A	224	GLU
1	A	243	ILE
1	A	246	LEU
1	A	248	LYS
1	A	264	MSE
1	A	274	VAL
1	A	276	ASP
1	A	288	VAL
1	A	296	HIS
1	A	302	HIS
1	A	303	GLU
1	A	309	SER
1	A	310	LEU
1	A	312	VAL
1	A	328	THR
1	A	329	GLU
1	A	334	MSE
1	A	369	LEU
1	A	370	GLU
1	A	381	LEU
1	A	399	LEU
1	A	410	LEU
1	A	415	ARG
1	A	419	SER
1	A	420	LEU

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Mol	Chain	Res	Type
1	A	423	SER
1	A	430	GLU
1	A	435	LYS
1	A	436	ARG
1	A	446	LYS
1	A	449	THR
1	A	451	HIS
1	A	464	SER
1	A	466	SER
1	A	479	ARG
1	A	480	LEU
1	A	495	ASP
1	A	503	VAL
1	B	29	LEU
1	B	45	ILE
1	B	52	THR
1	B	57	LEU
1	B	58	GLU
1	B	59	ARG
1	B	80	ILE
1	B	94	LEU
1	B	119	ILE
1	B	139	ARG
1	B	147	SER
1	B	150	LEU
1	B	160	LEU
1	B	172	LEU
1	B	190	ILE
1	B	195	THR
1	B	198	ARG
1	B	206	VAL
1	B	209	ILE
1	B	224	GLU
1	B	225	THR
1	B	243	ILE
1	B	246	LEU
1	B	264	MSE
1	B	270	ILE
1	B	273	CYS
1	B	274	VAL
1	B	276	ASP
1	B	288	VAL

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Mol	Chain	Res	Type
1	B	296	HIS
1	B	309	SER
1	B	310	LEU
1	B	328	THR
1	B	334	MSE
1	B	341	LEU
1	B	369	LEU
1	B	370	GLU
1	B	381	LEU
1	B	399	LEU
1	B	410	LEU
1	B	415	ARG
1	B	419	SER
1	B	420	LEU
1	B	423	SER
1	B	433	ARG
1	B	435	LYS
1	B	436	ARG
1	B	446	LYS
1	B	447	LEU
1	B	448	SER
1	B	449	THR
1	B	464	SER
1	B	466	SER
1	B	479	ARG
1	B	480	LEU
1	B	495	ASP
1	B	503	VAL
1	C	17	ARG
1	C	20	GLN
1	C	29	LEU
1	C	45	ILE
1	C	52	THR
1	C	80	ILE
1	C	88	LEU
1	C	94	LEU
1	C	117	HIS
1	C	119	ILE
1	C	139	ARG
1	C	150	LEU
1	C	160	LEU
1	C	163	ARG

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Mol	Chain	Res	Type
1	C	164	ASP
1	C	172	LEU
1	C	190	ILE
1	C	195	THR
1	C	198	ARG
1	C	206	VAL
1	C	209	ILE
1	C	227	HIS
1	C	243	ILE
1	C	246	LEU
1	C	264	MSE
1	C	274	VAL
1	C	276	ASP
1	C	296	HIS
1	C	303	GLU
1	C	309	SER
1	C	310	LEU
1	C	312	VAL
1	C	327	SER
1	C	328	THR
1	C	329	GLU
1	C	331	GLN
1	C	334	MSE
1	C	369	LEU
1	C	370	GLU
1	C	371	ASP
1	C	381	LEU
1	C	392	SER
1	C	399	LEU
1	C	410	LEU
1	C	415	ARG
1	C	419	SER
1	C	420	LEU
1	C	423	SER
1	C	430	GLU
1	C	433	ARG
1	C	435	LYS
1	C	436	ARG
1	C	446	LYS
1	C	449	THR
1	C	451	HIS
1	C	464	SER

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Mol	Chain	Res	Type
1	C	466	SER
1	C	479	ARG
1	C	480	LEU
1	C	495	ASP
1	C	503	VAL
1	D	20	GLN
1	D	29	LEU
1	D	30	ARG
1	D	45	ILE
1	D	52	THR
1	D	58	GLU
1	D	80	ILE
1	D	94	LEU
1	D	119	ILE
1	D	139	ARG
1	D	148	GLN
1	D	150	LEU
1	D	151	THR
1	D	160	LEU
1	D	163	ARG
1	D	164	ASP
1	D	166	GLU
1	D	172	LEU
1	D	190	ILE
1	D	195	THR
1	D	198	ARG
1	D	206	VAL
1	D	209	ILE
1	D	224	GLU
1	D	243	ILE
1	D	246	LEU
1	D	264	MSE
1	D	271	SER
1	D	274	VAL
1	D	276	ASP
1	D	288	VAL
1	D	296	HIS
1	D	301	GLN
1	D	303	GLU
1	D	304	LYS
1	D	309	SER
1	D	310	LEU

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Mol	Chain	Res	Type
1	D	312	VAL
1	D	328	THR
1	D	329	GLU
1	D	334	MSE
1	D	341	LEU
1	D	369	LEU
1	D	381	LEU
1	D	399	LEU
1	D	410	LEU
1	D	415	ARG
1	D	419	SER
1	D	420	LEU
1	D	423	SER
1	D	430	GLU
1	D	435	LYS
1	D	436	ARG
1	D	446	LYS
1	D	449	THR
1	D	464	SER
1	D	466	SER
1	D	479	ARG
1	D	480	LEU
1	D	495	ASP
1	D	503	VAL
1	E	29	LEU
1	E	45	ILE
1	E	52	THR
1	E	58	GLU
1	E	59	ARG
1	E	80	ILE
1	E	87	ARG
1	E	94	LEU
1	E	119	ILE
1	E	139	ARG
1	E	150	LEU
1	E	151	THR
1	E	160	LEU
1	E	163	ARG
1	E	164	ASP
1	E	172	LEU
1	E	190	ILE
1	E	195	THR

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Mol	Chain	Res	Type
1	E	198	ARG
1	E	206	VAL
1	E	209	ILE
1	E	224	GLU
1	E	243	ILE
1	E	246	LEU
1	E	264	MSE
1	E	274	VAL
1	E	276	ASP
1	E	288	VAL
1	E	296	HIS
1	E	309	SER
1	E	310	LEU
1	E	312	VAL
1	E	328	THR
1	E	329	GLU
1	E	334	MSE
1	E	341	LEU
1	E	369	LEU
1	E	381	LEU
1	E	399	LEU
1	E	410	LEU
1	E	411	LEU
1	E	415	ARG
1	E	419	SER
1	E	420	LEU
1	E	423	SER
1	E	430	GLU
1	E	435	LYS
1	E	436	ARG
1	E	446	LYS
1	E	449	THR
1	E	464	SER
1	E	466	SER
1	E	479	ARG
1	E	480	LEU
1	E	495	ASP
1	E	503	VAL
1	F	20	GLN
1	F	29	LEU
1	F	45	ILE
1	F	52	THR

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Mol	Chain	Res	Type
1	F	58	GLU
1	F	59	ARG
1	F	60	ASN
1	F	63	VAL
1	F	80	ILE
1	F	94	LEU
1	F	119	ILE
1	F	139	ARG
1	F	147	SER
1	F	150	LEU
1	F	160	LEU
1	F	166	GLU
1	F	172	LEU
1	F	190	ILE
1	F	195	THR
1	F	198	ARG
1	F	206	VAL
1	F	209	ILE
1	F	224	GLU
1	F	243	ILE
1	F	246	LEU
1	F	264	MSE
1	F	274	VAL
1	F	276	ASP
1	F	288	VAL
1	F	296	HIS
1	F	307	LEU
1	F	309	SER
1	F	310	LEU
1	F	312	VAL
1	F	321	SER
1	F	322	ASN
1	F	328	THR
1	F	334	MSE
1	F	341	LEU
1	F	369	LEU
1	F	370	GLU
1	F	371	ASP
1	F	381	LEU
1	F	399	LEU
1	F	410	LEU
1	F	415	ARG

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Mol	Chain	Res	Type
1	F	419	SER
1	F	420	LEU
1	F	423	SER
1	F	433	ARG
1	F	435	LYS
1	F	436	ARG
1	F	446	LYS
1	F	449	THR
1	F	464	SER
1	F	466	SER
1	F	479	ARG
1	F	480	LEU
1	F	495	ASP
1	F	503	VAL

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	26	HIS
1	A	41	ASN
1	A	60	ASN
1	A	182	HIS
1	A	339	ASN
1	A	451	HIS
1	B	26	HIS
1	B	41	ASN
1	B	53	GLN
1	B	60	ASN
1	B	227	HIS
1	B	251	ASN
1	B	294	HIS
1	B	302	HIS
1	B	339	ASN
1	B	384	ASN
1	C	26	HIS
1	C	50	GLN
1	C	53	GLN
1	C	69	HIS
1	C	117	HIS
1	C	188	GLN
1	C	302	HIS
1	C	331	GLN

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Mol	Chain	Res	Type
1	C	339	ASN
1	C	451	HIS
1	D	26	HIS
1	D	53	GLN
1	D	69	HIS
1	D	126	HIS
1	D	148	GLN
1	D	182	HIS
1	D	186	ASN
1	D	302	HIS
1	D	339	ASN
1	E	26	HIS
1	E	50	GLN
1	E	182	HIS
1	E	186	ASN
1	E	194	HIS
1	E	294	HIS
1	E	339	ASN
1	E	365	ASN
1	F	13(C)	HIS
1	F	26	HIS
1	F	60	ASN
1	F	126	HIS
1	F	188	GLN
1	F	302	HIS
1	F	322	ASN
1	F	339	ASN

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

Of 15 ligands modelled in this entry, 6 are monoatomic - leaving 9 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	SO4	C	604	-	4,4,4	0.22	0	6,6,6	0.33	0
3	SO4	F	602	-	4,4,4	0.32	0	6,6,6	0.12	0
3	SO4	B	602	-	4,4,4	0.29	0	6,6,6	0.14	0
3	SO4	E	602	-	4,4,4	0.29	0	6,6,6	0.14	0
3	SO4	C	605	-	4,4,4	0.45	0	6,6,6	0.35	0
3	SO4	C	602	-	4,4,4	0.37	0	6,6,6	0.32	0
3	SO4	C	603	-	4,4,4	0.35	0	6,6,6	0.32	0
3	SO4	A	602	-	4,4,4	0.37	0	6,6,6	0.21	0
3	SO4	D	602	-	4,4,4	0.54	0	6,6,6	0.14	0

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.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	605	SO4	1	0
3	C	602	SO4	2	0
3	D	602	SO4	2	0

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	488/505 (96%)	0.38	26 (5%) 32 16	4, 43, 93, 126	0
1	B	478/505 (94%)	1.46	127 (26%) 1 1	22, 95, 126, 141	0
1	C	487/505 (96%)	0.36	26 (5%) 32 16	5, 44, 87, 122	0
1	D	485/505 (96%)	1.57	150 (30%) 1 1	34, 94, 125, 145	0
1	E	487/505 (96%)	0.42	24 (4%) 35 17	4, 50, 95, 125	0
1	F	492/505 (97%)	0.51	22 (4%) 38 20	5, 49, 95, 126	0
All	All	2917/3030 (96%)	0.78	375 (12%) 7 4	4, 60, 116, 145	0

All (375) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	60	ASN	5.2
1	D	150	LEU	5.0
1	B	155	CYS	4.8
1	D	74	GLN	4.8
1	B	22	VAL	4.8
1	B	57	LEU	4.7
1	B	61	ALA	4.5
1	C	305	GLY	4.5
1	B	150	LEU	4.5
1	D	310	LEU	4.3
1	A	302	HIS	4.3
1	B	156	SER	4.2
1	B	235	TYR	4.1
1	F	504	GLU	4.1
1	D	369	LEU	4.1
1	B	303	GLU	4.1
1	D	368(A)	LEU	4.0
1	C	304	LYS	4.0
1	D	8	LYS	4.0

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Mol	Chain	Res	Type	RSRZ
1	D	332	PHE	4.0
1	D	289	GLU	4.0
1	D	330	ASP	4.0
1	B	153	ASP	4.0
1	D	372	ALA	3.9
1	B	146	GLU	3.8
1	D	255	TYR	3.8
1	B	32	PHE	3.8
1	B	302	HIS	3.8
1	D	26	HIS	3.8
1	B	225	THR	3.7
1	D	232	LYS	3.6
1	D	61	ALA	3.6
1	B	79	TYR	3.6
1	D	9	LYS	3.6
1	B	44	ALA	3.5
1	D	204	ALA	3.5
1	B	62	ALA	3.5
1	D	149	PRO	3.5
1	D	462	LEU	3.4
1	D	55	PHE	3.4
1	A	150	LEU	3.4
1	E	60	ASN	3.4
1	B	102	LEU	3.4
1	B	263	ILE	3.4
1	C	156	SER	3.3
1	D	62	ALA	3.3
1	B	314	ASN	3.3
1	A	504	GLU	3.3
1	B	272	TYR	3.3
1	B	209	ILE	3.3
1	B	98	GLY	3.3
1	B	368(A)	LEU	3.2
1	D	169	LEU	3.2
1	D	354	ASP	3.2
1	E	144	ASP	3.2
1	E	153	ASP	3.2
1	D	32	PHE	3.2
1	B	229	LEU	3.2
1	D	144	ASP	3.2
1	D	154	ARG	3.2
1	E	214	ARG	3.2

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Mol	Chain	Res	Type	RSRZ
1	E	62	ALA	3.2
1	D	165	GLY	3.1
1	D	22	VAL	3.1
1	B	26	HIS	3.1
1	D	367	ALA	3.1
1	B	301	GLN	3.1
1	B	169	LEU	3.1
1	C	162	LEU	3.1
1	A	331	GLN	3.1
1	C	300	GLY	3.1
1	D	12	TRP	3.1
1	A	307	LEU	3.1
1	C	57	LEU	3.1
1	D	359	ILE	3.1
1	A	222	THR	3.0
1	B	317	GLU	3.0
1	D	25	GLU	3.0
1	D	307	LEU	3.0
1	D	54	VAL	3.0
1	D	151	THR	3.0
1	D	292	TYR	3.0
1	B	300	GLY	3.0
1	C	60	ASN	3.0
1	D	217	TRP	3.0
1	C	153	ASP	3.0
1	D	374	GLU	2.9
1	F	152	ASP	2.9
1	D	201	LEU	2.9
1	B	56	PRO	2.9
1	B	274	VAL	2.9
1	D	271	SER	2.9
1	D	72	GLU	2.9
1	B	228	TYR	2.9
1	C	331	GLN	2.9
1	E	433	ARG	2.9
1	D	146	GLU	2.9
1	B	42	SER	2.9
1	B	45	ILE	2.9
1	B	217	TRP	2.9
1	A	503	VAL	2.9
1	A	165	GLY	2.9
1	B	10	ILE	2.9

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Mol	Chain	Res	Type	RSRZ
1	D	94	LEU	2.9
1	D	298	ALA	2.8
1	F	153	ASP	2.8
1	B	282	GLU	2.8
1	E	58	GLU	2.8
1	F	435	LYS	2.8
1	B	331	GLN	2.8
1	F	319	SER	2.8
1	B	313	GLU	2.8
1	D	153	ASP	2.8
1	B	23	LYS	2.8
1	D	63	VAL	2.8
1	B	94	LEU	2.8
1	D	57	LEU	2.8
1	D	162	LEU	2.8
1	B	12	TRP	2.7
1	F	465	ASP	2.7
1	D	3	GLN	2.7
1	F	324	LEU	2.7
1	D	18	SER	2.7
1	D	313	GLU	2.7
1	E	432	GLU	2.7
1	A	304	LYS	2.7
1	D	296	HIS	2.7
1	B	270	ILE	2.7
1	A	166	GLU	2.7
1	B	261	THR	2.7
1	D	156	SER	2.7
1	B	316	TRP	2.7
1	B	29	LEU	2.7
1	B	148	GLN	2.7
1	D	49	GLN	2.7
1	B	318	LYS	2.7
1	D	251	ASN	2.7
1	B	119	ILE	2.7
1	D	53	GLN	2.7
1	B	137	ARG	2.7
1	F	307	LEU	2.7
1	B	55	PHE	2.6
1	B	299	TRP	2.6
1	A	61	ALA	2.6
1	D	344	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	D	121	ASN	2.6
1	D	301	GLN	2.6
1	F	227	HIS	2.6
1	D	168	PRO	2.6
1	B	374	GLU	2.6
1	D	328	THR	2.6
1	D	375	CYS	2.6
1	D	142	PRO	2.6
1	B	192	LEU	2.6
1	E	146	GLU	2.6
1	A	154	ARG	2.6
1	D	89	LYS	2.6
1	D	231	LYS	2.6
1	B	273	CYS	2.6
1	D	273	CYS	2.6
1	B	360	PHE	2.6
1	D	152	ASP	2.6
1	D	263	ILE	2.5
1	B	21	GLY	2.5
1	E	504	GLU	2.5
1	B	103	THR	2.5
1	B	16	TYR	2.5
1	B	382	TYR	2.5
1	E	293	HIS	2.5
1	C	307	LEU	2.5
1	D	229	LEU	2.5
1	D	202	THR	2.5
1	E	142	PRO	2.5
1	D	356	LEU	2.5
1	E	304	LYS	2.5
1	B	63	VAL	2.5
1	B	241	ALA	2.5
1	B	312	VAL	2.5
1	B	18	SER	2.5
1	C	95	GLU	2.5
1	D	504	GLU	2.5
1	D	360	PHE	2.5
1	D	469	PHE	2.5
1	D	380	LYS	2.5
1	B	255	TYR	2.5
1	B	49	GLN	2.5
1	E	147	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	465	ASP	2.4
1	A	223	PRO	2.4
1	D	335	TYR	2.4
1	B	157	VAL	2.4
1	D	464	SER	2.4
1	B	343	LYS	2.4
1	D	245	ARG	2.4
1	A	149	PRO	2.4
1	D	157	VAL	2.4
1	D	305	GLY	2.4
1	B	4	ILE	2.4
1	C	298	ALA	2.4
1	B	365	ASN	2.4
1	D	213	THR	2.4
1	D	463	PRO	2.4
1	D	503	VAL	2.4
1	B	216	ALA	2.4
1	D	4	ILE	2.4
1	B	50	GLN	2.4
1	B	435	LYS	2.4
1	A	57	LEU	2.4
1	B	369	LEU	2.4
1	F	167	GLU	2.4
1	B	271	SER	2.4
1	B	276	ASP	2.4
1	D	302	HIS	2.4
1	D	216	ALA	2.4
1	C	231	LYS	2.4
1	D	59	ARG	2.4
1	B	205	GLN	2.4
1	D	331	GLN	2.4
1	E	55	PHE	2.4
1	B	310	LEU	2.4
1	D	254	LEU	2.4
1	E	160	LEU	2.4
1	B	147	SER	2.4
1	D	353	ILE	2.3
1	D	164	ASP	2.3
1	D	269	ASP	2.3
1	B	149	PRO	2.3
1	F	154	ARG	2.3
1	D	141	HIS	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	97	TYR	2.3
1	B	384	ASN	2.3
1	D	235	TYR	2.3
1	D	476	TYR	2.3
1	A	301	GLN	2.3
1	A	146	GLU	2.3
1	B	90	GLU	2.3
1	D	175	LYS	2.3
1	B	47	ARG	2.3
1	B	28	ILE	2.3
1	B	13(C)	HIS	2.3
1	D	200	ASN	2.3
1	D	250	LEU	2.3
1	F	160	LEU	2.3
1	B	138	GLN	2.3
1	A	288	VAL	2.3
1	D	28	ILE	2.3
1	D	234	GLY	2.3
1	D	96	ALA	2.3
1	B	151	THR	2.3
1	B	141	HIS	2.3
1	D	288	VAL	2.3
1	B	190	ILE	2.3
1	D	31	ILE	2.3
1	A	305	GLY	2.3
1	B	85	LEU	2.3
1	B	379	LEU	2.3
1	D	364	PHE	2.3
1	B	175	LYS	2.3
1	D	148	GLN	2.3
1	D	352	PHE	2.2
1	B	292	TYR	2.2
1	F	322	ASN	2.2
1	A	317	GLU	2.2
1	B	504	GLU	2.2
1	C	432	GLU	2.2
1	D	95	GLU	2.2
1	D	502	ALA	2.2
1	E	158	ALA	2.2
1	D	248	LYS	2.2
1	B	366	HIS	2.2
1	A	292	TYR	2.2

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Mol	Chain	Res	Type	RSRZ
1	D	190	ILE	2.2
1	E	150	LEU	2.2
1	B	463	PRO	2.2
1	D	233	PRO	2.2
1	D	478	CYS	2.2
1	B	431	LYS	2.2
1	B	332	PHE	2.2
1	B	391	PHE	2.2
1	D	15	ARG	2.2
1	E	163	ARG	2.2
1	C	494	TRP	2.2
1	B	222	THR	2.2
1	B	227	HIS	2.2
1	C	503	VAL	2.2
1	B	91	LEU	2.2
1	B	115	LEU	2.2
1	D	471	LEU	2.2
1	B	89	LYS	2.2
1	B	223	PRO	2.2
1	B	304	LYS	2.2
1	E	149	PRO	2.2
1	C	63	VAL	2.1
1	F	434	VAL	2.1
1	D	228	TYR	2.1
1	C	53	GLN	2.1
1	D	205	GLN	2.1
1	B	231	LYS	2.1
1	D	86	SER	2.1
1	D	159	ALA	2.1
1	B	105	PRO	2.1
1	B	154	ARG	2.1
1	D	17	ARG	2.1
1	D	198	ARG	2.1
1	D	357	PRO	2.1
1	D	377	ASP	2.1
1	F	144	ASP	2.1
1	D	299	TRP	2.1
1	D	494	TRP	2.1
1	D	222	THR	2.1
1	E	231	LYS	2.1
1	B	198	ARG	2.1
1	C	161	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	433	ARG	2.1
1	B	101	GLU	2.1
1	B	233	PRO	2.1
1	D	329	GLU	2.1
1	B	11	ASN	2.1
1	D	316	TRP	2.1
1	D	56	PRO	2.1
1	D	432	GLU	2.1
1	F	300	GLY	2.1
1	D	11	ASN	2.1
1	D	186	ASN	2.1
1	E	63	VAL	2.1
1	A	152	ASP	2.1
1	A	296	HIS	2.1
1	B	126	HIS	2.1
1	C	431	LYS	2.1
1	B	250	LEU	2.1
1	D	371	ASP	2.1
1	D	347	TYR	2.1
1	F	222	THR	2.1
1	A	315	ALA	2.1
1	D	20	GLN	2.1
1	D	207	GLY	2.1
1	C	166	GLU	2.1
1	D	58	GLU	2.1
1	D	467	PRO	2.1
1	D	466	SER	2.1
1	C	51	LYS	2.1
1	C	163	ARG	2.1
1	D	295	LEU	2.1
1	F	162	LEU	2.1
1	C	227	HIS	2.1
1	D	294	HIS	2.1
1	D	366	HIS	2.1
1	B	371	ASP	2.1
1	D	35	ASP	2.1
1	B	363	THR	2.1
1	B	476	TYR	2.1
1	E	315	ALA	2.1
1	A	300	GLY	2.1
1	B	467	PRO	2.1
1	D	321	SER	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	177	ARG	2.0
1	D	14	ARG	2.0
1	D	80	ILE	2.0
1	B	204	ALA	2.0
1	A	220	GLY	2.0
1	B	305	GLY	2.0
1	B	308	PHE	2.0
1	B	469	PHE	2.0
1	E	138	GLN	2.0
1	F	168	PRO	2.0
1	C	58	GLU	2.0
1	D	47	ARG	2.0
1	F	226	HIS	2.0
1	D	181	CYS	2.0
1	D	343	LYS	2.0
1	F	318	LYS	2.0
1	B	289	GLU	2.0
1	D	160	LEU	2.0
1	F	420	LEU	2.0
1	D	285	ILE	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(Å ²)	Q<0.9
3	SO4	D	602	5/5	0.58	0.15	143,144,144,144	0
3	SO4	B	602	5/5	0.66	0.14	140,141,142,143	0
3	SO4	E	602	5/5	0.76	0.15	147,147,147,147	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	SO4	A	602	5/5	0.86	0.22	98,98,100,100	0
3	SO4	F	602	5/5	0.87	0.12	113,113,114,114	0
3	SO4	C	603	5/5	0.90	0.10	70,72,72,74	0
3	SO4	C	602	5/5	0.90	0.11	61,63,63,64	0
2	MN	D	601	1/1	0.93	0.08	112,112,112,112	0
3	SO4	C	605	5/5	0.95	0.11	54,58,60,60	0
2	MN	A	601	1/1	0.95	0.06	69,69,69,69	0
2	MN	E	601	1/1	0.97	0.04	43,43,43,43	1
2	MN	F	601	1/1	0.97	0.04	26,26,26,26	1
2	MN	B	601	1/1	0.97	0.05	43,43,43,43	1
3	SO4	C	604	5/5	0.97	0.08	49,50,50,53	0
2	MN	C	601	1/1	0.98	0.03	39,39,39,39	1

6.5 Other polymers [i](#)

There are no such residues in this entry.