



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 12:46 PM UTC

PDB ID : 1QM4 / pdb_00001qm4
Title : Methionine Adenosyltransferase Complexed with a L-Methionine Analogue
Authors : Gonzalez, B.; Pajares, M.A.; Hermoso, J.A.; Sanz-Aparicio, J.
Deposited on : 1999-09-20
Resolution : 2.66 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)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

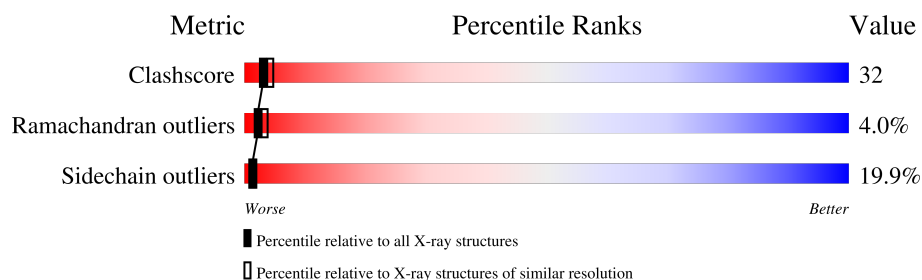
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.66 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))
Clashscore	190562	1141 (2.66-2.66)
Ramachandran outliers	187476	1126 (2.66-2.66)
Sidechain outliers	187428	1126 (2.66-2.66)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	396	
1	B	396	

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	B	401	-	X	-	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 5918 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.

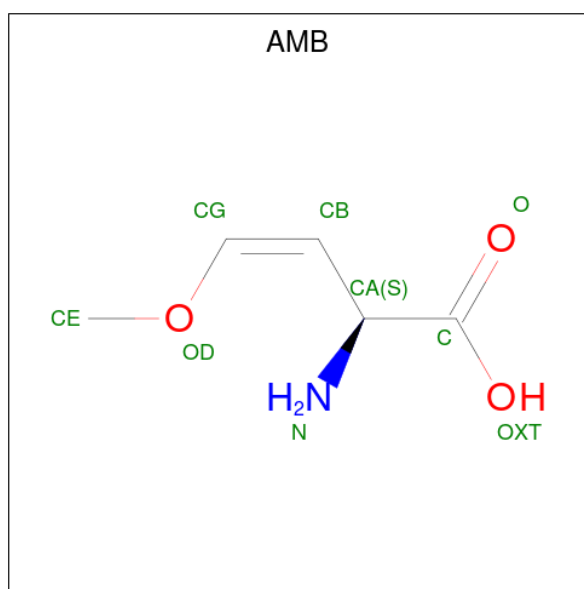
- Molecule 1 is a protein called METHIONINE ADENOSYLTRANSFERASE, ALPHA FORM.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	368	Total	C	N	O	S	0	0	0
			2846	1803	491	536	16			
1	B	368	Total	C	N	O	S	0	0	0
			2846	1803	491	536	16			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	ASP	deletion	UNP P13444
B	?	-	ASP	deletion	UNP P13444

- Molecule 2 is L-2-AMINO-4-METHOXY-CIS-BUT-3-ENOIC ACID (CCD ID: AMB) (formula: C₅H₉NO₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			9	5	1	3		

- 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	A	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Mg	0	0
			2	2		

- Molecule 5 is POTASSIUM ION (CCD ID: K) (formula: K).

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

- Molecule 6 is water.

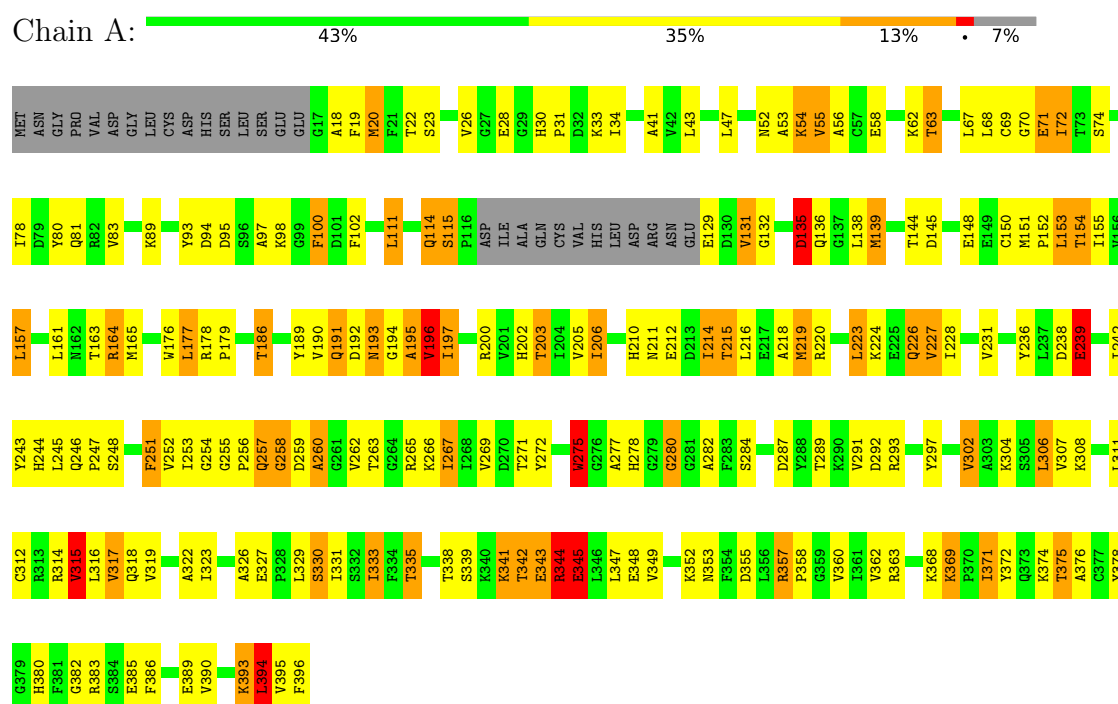
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	104	Total 104	O 104	0	0
6	B	93	Total 93	O 93	0	0

3 Residue-property plots

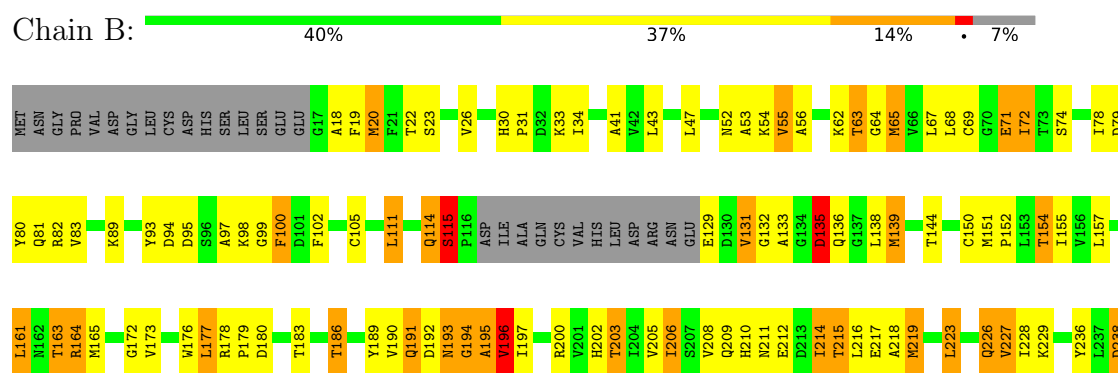
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded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

Note EDS was not executed.

• Molecule 1: METHIONINE ADENOSYLTRANSFERASE, ALPHA FORM



• Molecule 1: METHIONINE ADENOSYLTRANSFERASE, ALPHA FORM





4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 41 2 2	Depositor
Cell constants a, b, c, α , β , γ	115.20Å 115.20Å 159.98Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	10.00 – 2.66	Depositor
% Data completeness (in resolution range)	84.3 (10.00-2.66)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	0.08	Depositor
Refinement program	X-PLOR 3.843	Depositor
R, R_{free}	0.230 , 0.290	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	5918	wwPDB-VP
Average B, all atoms (Å ²)	31.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: AMB, MG, K, SO4

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	1.00	2/2901 (0.1%)	1.38	39/3926 (1.0%)
1	B	0.99	5/2901 (0.2%)	1.36	39/3926 (1.0%)
All	All	0.99	7/5802 (0.1%)	1.37	78/7852 (1.0%)

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	1
1	B	0	2
All	All	0	3

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	219	MET	SD-CE	-7.19	1.61	1.79
1	B	219	MET	SD-CE	-5.91	1.64	1.79
1	B	65	MET	SD-CE	5.84	1.94	1.79
1	B	258	GLY	C-N	-5.80	1.25	1.33
1	B	258	GLY	CA-C	5.67	1.59	1.51
1	A	333	ILE	C-O	-5.49	1.18	1.24
1	B	258	GLY	C-O	5.30	1.31	1.23

All (78) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	196	VAL	N-CA-C	11.37	133.00	109.34
1	B	196	VAL	N-CA-C	11.02	132.26	109.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	335	THR	N-CA-C	-10.26	95.72	110.59
1	B	335	THR	N-CA-C	-10.10	95.95	110.59
1	B	257	GLN	N-CA-C	-9.78	89.96	110.80
1	A	372	TYR	N-CA-C	9.63	121.78	111.28
1	A	275	TRP	N-CA-C	9.63	125.16	113.41
1	B	275	TRP	N-CA-C	9.28	124.73	113.41
1	B	372	TYR	N-CA-C	9.08	121.18	111.28
1	A	179	PRO	N-CA-C	8.65	125.56	113.53
1	A	195	ALA	N-CA-C	7.85	120.44	108.52
1	B	257	GLN	CA-C-O	-7.74	109.44	120.51
1	B	195	ALA	N-CA-C	7.61	120.08	108.52
1	B	179	PRO	N-CA-C	7.58	125.05	113.75
1	A	197	ILE	N-CA-C	7.38	116.14	107.73
1	A	344	ARG	O-C-N	7.01	131.91	122.59
1	A	30	HIS	N-CA-C	-6.95	99.47	109.48
1	A	315	VAL	CB-CA-C	-6.87	99.70	110.69
1	A	151	MET	CA-C-N	6.86	126.90	119.90
1	A	151	MET	C-N-CA	6.86	126.90	119.90
1	B	226	GLN	N-CA-C	6.83	121.36	112.89
1	B	30	HIS	N-CA-C	-6.76	99.75	109.48
1	A	376	ALA	N-CA-C	6.72	121.18	113.19
1	B	55	VAL	N-CA-C	6.66	117.50	108.17
1	A	280	GLY	N-CA-C	6.51	122.58	114.37
1	A	70	GLY	N-CA-C	6.48	118.72	111.85
1	A	238	ASP	N-CA-CB	-6.45	100.54	111.31
1	A	390	VAL	N-CA-C	-6.42	101.19	107.55
1	B	315	VAL	CB-CA-C	-6.38	99.29	110.71
1	B	115	SER	N-CA-C	6.35	123.84	109.81
1	A	115	SER	N-CA-C	6.20	123.50	109.81
1	A	55	VAL	N-CA-C	6.12	116.74	108.17
1	A	226	GLN	N-CA-C	6.08	120.43	112.89
1	A	341	LYS	N-CA-C	6.02	117.92	111.36
1	B	284	SER	N-CA-C	5.98	119.02	110.10
1	B	376	ALA	N-CA-C	5.96	120.28	113.19
1	B	344	ARG	O-C-N	5.95	130.50	122.59
1	B	341	LYS	N-CA-C	5.88	117.78	111.36
1	A	271	THR	N-CA-C	5.87	117.46	108.30
1	B	345	GLU	N-CA-C	-5.78	98.48	110.80
1	A	344	ARG	NE-CZ-NH2	5.73	124.36	119.20
1	B	344	ARG	NE-CZ-NH2	5.71	124.34	119.20
1	A	212	GLU	N-CA-C	5.68	117.47	111.28
1	B	238	ASP	N-CA-CB	-5.68	101.82	111.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	212	GLU	N-CA-C	5.67	117.54	111.36
1	B	226	GLN	CA-C-N	-5.58	117.50	122.97
1	B	226	GLN	C-N-CA	-5.58	117.50	122.97
1	A	277	ALA	N-CA-C	-5.56	100.26	108.99
1	B	280	GLY	N-CA-C	5.50	121.02	114.48
1	B	300	ARG	N-CA-C	-5.50	105.21	111.14
1	A	41	ALA	N-CA-C	-5.49	105.31	112.23
1	B	277	ALA	N-CA-C	-5.43	100.46	108.99
1	B	250	ARG	N-CA-C	5.41	118.64	109.76
1	A	345	GLU	N-CA-C	-5.41	99.28	110.80
1	B	194	GLY	N-CA-C	-5.36	100.47	113.18
1	A	357	ARG	N-CA-C	-5.34	103.05	109.83
1	A	239	GLU	N-CA-C	-5.30	106.77	113.18
1	B	81	GLN	N-CA-C	-5.30	105.50	111.28
1	B	239	GLU	N-CA-C	-5.29	106.82	113.28
1	A	344	ARG	CA-C-N	5.29	131.65	121.54
1	A	344	ARG	C-N-CA	5.29	131.65	121.54
1	B	236	TYR	N-CA-C	5.29	120.01	113.50
1	A	284	SER	N-CA-C	5.21	117.86	110.10
1	A	81	GLN	N-CA-C	-5.19	105.62	111.28
1	A	236	TYR	N-CA-C	5.18	119.87	113.50
1	B	133	ALA	N-CA-C	5.14	117.80	110.24
1	A	266	LYS	CA-C-N	5.14	128.59	120.47
1	A	266	LYS	C-N-CA	5.14	128.59	120.47
1	A	153	LEU	CA-C-N	5.12	127.45	120.54
1	A	153	LEU	C-N-CA	5.12	127.45	120.54
1	B	173	VAL	N-CA-C	5.08	115.70	110.36
1	B	151	MET	CA-C-N	5.05	125.05	119.90
1	B	151	MET	C-N-CA	5.05	125.05	119.90
1	B	41	ALA	N-CA-C	-5.04	105.87	111.36
1	B	172	GLY	N-CA-C	-5.04	108.49	114.48
1	A	145	ASP	N-CA-C	5.02	119.12	113.15
1	B	266	LYS	CA-C-N	5.00	128.38	120.47
1	B	266	LYS	C-N-CA	5.00	128.38	120.47

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	272	TYR	Sidechain
1	B	257	GLN	Mainchain
1	B	258	GLY	Mainchain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2846	0	2852	178	0
1	B	2846	0	2852	189	0
2	A	9	0	8	0	0
3	A	10	0	0	0	0
3	B	5	0	0	0	0
4	A	2	0	0	0	0
5	A	2	0	0	0	0
5	B	1	0	0	0	0
6	A	104	0	0	4	0
6	B	93	0	0	7	0
All	All	5918	0	5712	361	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 32.

All (361) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:LYS:O	1:A:342:THR:HG22	1.56	1.04
1:B:341:LYS:O	1:B:342:THR:HG22	1.58	1.03
1:A:344:ARG:NE	1:A:347:LEU:HD23	1.71	1.03
1:B:344:ARG:NE	1:B:347:LEU:HD23	1.75	1.01
1:A:262:VAL:HG11	1:B:262:VAL:HG11	1.43	1.00
1:A:267:ILE:HD11	1:A:282:ALA:HA	1.50	0.92
1:B:267:ILE:HD11	1:B:282:ALA:HA	1.54	0.87
1:A:278:HIS:HD2	1:A:280:GLY:H	1.24	0.86
1:B:202:HIS:ND1	1:B:203:THR:HG22	1.95	0.81
1:B:278:HIS:HD2	1:B:280:GLY:H	1.25	0.81
1:A:203:THR:HB	1:A:242:ILE:HB	1.63	0.80
1:A:344:ARG:CD	1:A:347:LEU:HD23	2.11	0.79
1:B:333:ILE:O	1:B:343:GLU:HG2	1.82	0.79
1:A:63:THR:OG1	1:A:257:GLN:CG	2.29	0.79
1:B:393:LYS:O	1:B:394:LEU:HB2	1.81	0.79
1:A:257:GLN:O	1:A:260:ALA:N	2.16	0.79
1:B:34:ILE:HD11	1:B:256:PRO:HG3	1.65	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:203:THR:HB	1:B:242:ILE:HB	1.63	0.79
1:B:341:LYS:O	1:B:342:THR:CG2	2.32	0.78
1:A:202:HIS:ND1	1:A:203:THR:HG22	1.99	0.78
1:A:257:GLN:O	1:A:259:ASP:N	2.17	0.78
1:A:63:THR:OG1	1:A:257:GLN:HG2	1.85	0.77
1:A:333:ILE:O	1:A:343:GLU:HG2	1.84	0.77
1:B:215:THR:HG21	6:B:557:HOH:O	1.84	0.77
1:B:335:THR:HG22	1:B:338:THR:H	1.49	0.77
1:B:248:SER:HB2	6:B:543:HOH:O	1.86	0.76
1:A:341:LYS:O	1:A:342:THR:CG2	2.32	0.76
1:A:393:LYS:O	1:A:394:LEU:HB2	1.84	0.76
1:B:135:ASP:HA	1:B:323:ILE:HD12	1.66	0.76
1:B:329:LEU:O	1:B:330:SER:HB3	1.85	0.76
1:A:342:THR:O	1:A:345:GLU:HB2	1.86	0.76
1:B:100:PHE:CD2	1:B:256:PRO:HG2	2.21	0.76
1:A:148:GLU:HB2	6:A:521:HOH:O	1.88	0.73
1:A:342:THR:O	1:A:342:THR:HG23	1.87	0.73
1:A:135:ASP:HA	1:A:323:ILE:HD12	1.71	0.72
1:A:329:LEU:O	1:A:330:SER:HB3	1.90	0.72
1:B:342:THR:HG23	1:B:342:THR:O	1.89	0.72
1:A:95:ASP:HB2	1:A:98:LYS:HD2	1.72	0.72
1:A:335:THR:HG22	1:A:338:THR:H	1.54	0.71
1:B:95:ASP:HB2	1:B:98:LYS:HD2	1.72	0.71
1:A:31:PRO:HG3	1:A:256:PRO:HA	1.73	0.70
1:A:20:MET:HE1	1:A:202:HIS:CD2	2.27	0.68
1:A:293:ARG:HH21	1:A:375:THR:HG21	1.58	0.68
1:B:344:ARG:CD	1:B:347:LEU:HD23	2.23	0.68
1:A:342:THR:CG2	1:A:342:THR:O	2.42	0.68
1:B:375:THR:HG23	1:B:380:HIS:NE2	2.08	0.68
1:A:257:GLN:C	1:A:259:ASP:N	2.48	0.68
1:A:375:THR:HG23	1:A:380:HIS:NE2	2.09	0.67
1:B:93:TYR:OH	1:B:256:PRO:HD3	1.95	0.67
1:B:210:HIS:CE1	1:B:251:PHE:H	2.13	0.67
1:B:312:CYS:SG	1:B:315:VAL:HG22	2.36	0.66
1:B:20:MET:HE1	1:B:202:HIS:CD2	2.31	0.66
1:B:165:MET:CE	1:B:206:ILE:HD11	2.26	0.66
1:B:342:THR:O	1:B:345:GLU:HB2	1.95	0.66
1:A:69:CYS:SG	1:B:62:LYS:HE2	2.36	0.66
1:B:342:THR:HG22	1:B:345:GLU:HB2	1.78	0.66
1:B:293:ARG:HH21	1:B:375:THR:HG21	1.60	0.65
1:B:342:THR:CG2	1:B:342:THR:O	2.44	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:205:VAL:HG22	1:B:244:HIS:HB2	1.78	0.65
1:B:152:PRO:HB2	1:B:155:ILE:HG22	1.79	0.64
1:B:262:VAL:HG13	6:B:545:HOH:O	1.96	0.64
1:A:342:THR:HG22	1:A:345:GLU:HB2	1.79	0.64
1:A:63:THR:OG1	1:A:257:GLN:HG3	1.97	0.64
1:A:23:SER:HB2	1:A:154:THR:HG23	1.79	0.64
1:B:31:PRO:HG3	1:B:256:PRO:HA	1.79	0.64
1:B:34:ILE:CD1	1:B:256:PRO:HG3	2.28	0.64
1:A:210:HIS:CE1	1:A:251:PHE:H	2.17	0.63
1:B:164:ARG:HG2	1:B:227:VAL:HB	1.80	0.63
1:B:329:LEU:O	1:B:329:LEU:HG	1.98	0.63
1:A:223:LEU:HD23	1:A:245:LEU:HB3	1.80	0.62
1:B:176:TRP:CE3	1:B:219:MET:HE3	2.34	0.62
1:A:22:THR:OG1	1:A:186:THR:HB	2.00	0.62
1:A:56:ALA:H	1:A:72:ILE:HG22	1.64	0.61
1:A:97:ALA:O	1:A:253:ILE:HD12	2.00	0.61
1:B:56:ALA:H	1:B:72:ILE:HG22	1.64	0.61
1:B:97:ALA:O	1:B:253:ILE:HG23	2.00	0.61
1:A:139:MET:HE2	1:A:292:ASP:HA	1.82	0.61
1:B:139:MET:HE2	1:B:292:ASP:HA	1.82	0.61
1:B:333:ILE:O	1:B:343:GLU:CG	2.48	0.61
1:A:267:ILE:HG23	1:A:278:HIS:CE1	2.35	0.61
1:B:23:SER:HB2	1:B:154:THR:HG23	1.81	0.61
1:A:23:SER:CB	1:A:154:THR:HG23	2.31	0.61
1:A:100:PHE:CD2	1:A:256:PRO:HG2	2.35	0.61
1:B:99:GLY:HA3	1:B:255:GLY:HA3	1.81	0.61
1:A:165:MET:CE	1:A:206:ILE:HD11	2.31	0.61
1:A:312:CYS:SG	1:A:315:VAL:HG22	2.42	0.60
1:B:335:THR:HG21	1:B:339:SER:N	2.17	0.60
1:B:278:HIS:CD2	1:B:280:GLY:H	2.14	0.60
1:A:164:ARG:HG2	1:A:227:VAL:HB	1.83	0.60
1:B:100:PHE:HD2	1:B:256:PRO:HG2	1.66	0.60
1:B:297:TYR:OH	1:B:380:HIS:HD2	1.84	0.60
1:B:215:THR:HG23	1:B:218:ALA:CB	2.31	0.60
1:A:345:GLU:O	1:A:349:VAL:HG23	2.02	0.60
1:A:348:GLU:HG3	1:A:352:LYS:HE2	1.84	0.60
1:B:223:LEU:HD23	1:B:245:LEU:HB3	1.83	0.59
1:B:345:GLU:O	1:B:349:VAL:HG23	2.02	0.59
1:B:210:HIS:CD2	1:B:252:VAL:HG22	2.38	0.59
1:A:136:GLN:NE2	1:A:323:ILE:H	2.00	0.59
1:B:267:ILE:HG23	1:B:278:HIS:CE1	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:297:TYR:OH	1:A:380:HIS:HD2	1.84	0.59
1:B:348:GLU:HG3	1:B:352:LYS:HE2	1.83	0.59
1:B:214:ILE:HD12	1:B:219:MET:HG3	1.84	0.59
1:B:371:ILE:O	1:B:374:LYS:HG2	2.03	0.59
1:A:355:ASP:OD2	1:A:360:VAL:HG21	2.03	0.58
1:A:353:ASN:HD22	1:A:394:LEU:HD22	1.68	0.58
1:A:152:PRO:HB2	1:A:155:ILE:HG22	1.84	0.58
1:B:369:LYS:O	1:B:371:ILE:HD13	2.02	0.58
1:A:329:LEU:O	1:A:329:LEU:HG	2.01	0.58
1:B:23:SER:CB	1:B:154:THR:HG23	2.32	0.58
1:A:344:ARG:HD2	1:A:347:LEU:HB3	1.86	0.57
1:A:371:ILE:HB	1:A:374:LYS:HE3	1.86	0.57
1:A:278:HIS:CD2	1:A:280:GLY:H	2.13	0.57
1:A:194:GLY:O	1:A:195:ALA:HB2	2.04	0.57
1:A:31:PRO:HG3	1:A:256:PRO:CA	2.35	0.57
1:B:348:GLU:O	1:B:352:LYS:HG3	2.05	0.57
1:A:257:GLN:O	1:A:258:GLY:C	2.47	0.57
1:B:251:PHE:CE1	1:B:254:GLY:HA3	2.40	0.57
1:B:252:VAL:HG12	1:B:253:ILE:HD13	1.87	0.57
1:B:195:ALA:CB	1:B:314:ARG:HD3	2.35	0.56
1:A:62:LYS:HE2	1:B:69:CYS:SG	2.45	0.56
1:A:195:ALA:CB	1:A:314:ARG:HD3	2.35	0.56
1:B:63:THR:OG1	1:B:257:GLN:HB2	2.05	0.56
1:A:136:GLN:NE2	1:A:322:ALA:HA	2.20	0.56
1:A:371:ILE:O	1:A:374:LYS:HG2	2.04	0.56
1:A:333:ILE:O	1:A:343:GLU:CG	2.52	0.56
1:A:214:ILE:HD12	1:A:219:MET:HG3	1.87	0.56
1:A:348:GLU:O	1:A:352:LYS:HG3	2.04	0.56
1:A:369:LYS:O	1:A:371:ILE:HD13	2.06	0.56
1:B:341:LYS:O	1:B:342:THR:CB	2.52	0.56
1:B:371:ILE:HB	1:B:374:LYS:HE3	1.85	0.56
1:A:335:THR:HG21	1:A:339:SER:N	2.21	0.56
1:A:52:ASN:ND2	1:A:368:LYS:HE2	2.21	0.56
1:A:196:VAL:HG12	1:A:196:VAL:O	2.06	0.55
1:A:257:GLN:C	1:A:259:ASP:H	2.13	0.55
1:A:178:ARG:HH12	1:A:253:ILE:HD13	1.70	0.55
1:A:344:ARG:CD	1:A:347:LEU:CD2	2.83	0.55
1:B:342:THR:CG2	1:B:345:GLU:HB2	2.36	0.55
1:B:176:TRP:CZ3	1:B:219:MET:HE3	2.41	0.55
1:A:252:VAL:HG12	1:A:253:ILE:HD13	1.89	0.55
1:B:252:VAL:HG12	1:B:253:ILE:CD1	2.36	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:205:VAL:HG22	1:A:244:HIS:HB2	1.89	0.55
1:B:52:ASN:ND2	1:B:368:LYS:HE2	2.22	0.55
1:A:97:ALA:O	1:A:253:ILE:HG23	2.05	0.55
1:A:342:THR:CG2	1:A:345:GLU:HB2	2.36	0.55
1:B:94:ASP:OD1	1:B:98:LYS:NZ	2.39	0.55
1:B:228:ILE:HG21	1:B:243:TYR:HE2	1.72	0.54
1:B:194:GLY:O	1:B:195:ALA:HB2	2.05	0.54
1:A:374:LYS:HG3	1:A:386:PHE:HE1	1.73	0.54
1:A:215:THR:HG23	1:A:218:ALA:CB	2.38	0.54
1:A:258:GLY:C	1:A:260:ALA:H	2.14	0.54
1:B:97:ALA:O	1:B:253:ILE:HD12	2.07	0.54
1:B:355:ASP:OD2	1:B:360:VAL:HG21	2.07	0.54
1:A:89:LYS:HD2	1:A:102:PHE:CZ	2.43	0.54
1:B:93:TYR:HB3	1:B:100:PHE:HB3	1.90	0.53
1:A:341:LYS:O	1:A:342:THR:CB	2.56	0.53
1:A:210:HIS:ND1	1:A:219:MET:HE1	2.24	0.53
1:A:214:ILE:CD1	1:A:218:ALA:HB3	2.38	0.53
1:B:257:GLN:C	1:B:259:ASP:N	2.65	0.53
1:B:136:GLN:NE2	1:B:323:ILE:H	2.07	0.53
1:A:93:TYR:HB3	1:A:100:PHE:HB3	1.89	0.52
1:A:176:TRP:CE3	1:A:219:MET:HE3	2.44	0.52
1:B:26:VAL:CG2	1:B:33:LYS:HD3	2.39	0.52
1:B:374:LYS:HG3	1:B:386:PHE:HE1	1.74	0.52
1:B:22:THR:OG1	1:B:186:THR:HB	2.10	0.52
1:B:353:ASN:HD22	1:B:394:LEU:HD22	1.73	0.52
1:B:165:MET:HE1	1:B:206:ILE:HD11	1.90	0.52
1:B:257:GLN:HB3	6:B:549:HOH:O	2.10	0.51
1:A:97:ALA:HB1	1:A:253:ILE:HD12	1.92	0.51
1:A:192:ASP:HB2	1:A:197:ILE:HD12	1.92	0.51
1:A:58:GLU:CD	1:B:259:ASP:O	2.54	0.51
1:A:138:LEU:HD11	1:A:318:GLN:CG	2.39	0.51
1:B:178:ARG:HH12	1:B:253:ILE:HD13	1.74	0.51
1:B:189:TYR:CD2	1:B:196:VAL:HG13	2.45	0.51
1:B:192:ASP:HB2	1:B:197:ILE:HD12	1.92	0.51
1:B:163:THR:HG22	6:B:524:HOH:O	2.11	0.51
1:B:23:SER:OG	1:B:154:THR:HG23	2.10	0.51
1:A:72:ILE:CD1	1:A:111:LEU:HD11	2.41	0.51
1:B:89:LYS:HD2	1:B:102:PHE:CZ	2.45	0.51
1:A:23:SER:OG	1:A:154:THR:HG23	2.10	0.51
1:B:382:GLY:H	1:B:389:GLU:CD	2.20	0.50
1:A:34:ILE:HD11	1:A:256:PRO:CG	2.41	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:138:LEU:HD11	1:A:318:GLN:HG2	1.93	0.50
1:A:178:ARG:NE	1:A:211:ASN:OD1	2.43	0.50
1:B:53:ALA:HB1	1:B:74:SER:HB2	1.92	0.50
1:B:217:GLU:CD	6:B:514:HOH:O	2.54	0.50
1:A:34:ILE:HD11	1:A:256:PRO:HG3	1.93	0.50
1:A:267:ILE:HD11	1:A:282:ALA:CA	2.33	0.50
1:A:228:ILE:HG21	1:A:243:TYR:HE2	1.75	0.50
1:B:176:TRP:CZ3	1:B:219:MET:CE	2.94	0.50
1:B:136:GLN:NE2	1:B:322:ALA:HA	2.27	0.50
1:B:344:ARG:HD2	1:B:347:LEU:HB3	1.94	0.50
1:B:196:VAL:O	1:B:196:VAL:HG12	2.11	0.50
1:B:138:LEU:HD11	1:B:318:GLN:HG2	1.93	0.49
1:B:383:ARG:O	1:B:389:GLU:HG3	2.12	0.49
1:A:214:ILE:HD13	1:A:218:ALA:HB3	1.94	0.49
1:B:72:ILE:CD1	1:B:111:LEU:HD11	2.42	0.49
1:A:165:MET:HE1	1:A:206:ILE:HD11	1.93	0.49
1:A:327:GLU:HA	1:A:357:ARG:HG2	1.94	0.49
1:B:100:PHE:HE2	1:B:256:PRO:HB2	1.76	0.49
1:A:239:GLU:HB2	6:A:565:HOH:O	2.12	0.49
1:B:327:GLU:HA	1:B:357:ARG:HG2	1.93	0.49
1:A:191:GLN:HE21	1:A:191:GLN:N	2.10	0.49
1:B:214:ILE:CD1	1:B:218:ALA:HB3	2.43	0.49
1:A:192:ASP:O	1:A:194:GLY:N	2.46	0.49
1:B:216:LEU:HD21	1:B:249:GLY:HA2	1.94	0.49
1:B:214:ILE:HD13	1:B:215:THR:N	2.27	0.49
1:B:374:LYS:HD2	1:B:385:GLU:OE2	2.13	0.49
1:B:195:ALA:HB3	1:B:314:ARG:HD3	1.95	0.49
1:B:229:LYS:HG2	6:B:580:HOH:O	2.13	0.48
1:A:251:PHE:CE1	1:A:254:GLY:HA3	2.48	0.48
1:B:306:LEU:HD12	1:B:394:LEU:HD11	1.95	0.48
1:B:164:ARG:NH1	1:B:226:GLN:O	2.45	0.48
1:A:214:ILE:HD12	1:A:219:MET:CG	2.43	0.48
1:B:192:ASP:O	1:B:194:GLY:N	2.47	0.48
1:A:152:PRO:HB3	1:A:275:TRP:CE3	2.49	0.48
1:B:152:PRO:HB3	1:B:275:TRP:CE3	2.48	0.48
1:A:136:GLN:HE21	1:A:323:ILE:H	1.62	0.48
1:A:176:TRP:CZ3	1:A:219:MET:HE3	2.49	0.48
1:B:311:LEU:CD2	1:B:341:LYS:HD2	2.43	0.48
1:A:252:VAL:C	1:A:254:GLY:H	2.21	0.47
1:A:89:LYS:HD2	1:A:102:PHE:CE2	2.48	0.47
1:B:72:ILE:HD11	1:B:80:TYR:OH	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:ASP:OD1	1:A:98:LYS:NZ	2.45	0.47
1:A:297:TYR:OH	1:A:380:HIS:CD2	2.66	0.47
1:B:31:PRO:HG3	1:B:256:PRO:CA	2.44	0.47
1:B:191:GLN:HE21	1:B:191:GLN:N	2.13	0.47
1:A:135:ASP:O	1:A:136:GLN:C	2.58	0.47
1:A:93:TYR:HB3	1:A:100:PHE:O	2.14	0.47
1:A:306:LEU:HD12	1:A:394:LEU:HD11	1.96	0.47
1:A:382:GLY:H	1:A:389:GLU:CD	2.22	0.47
1:B:144:THR:O	1:B:150:CYS:HA	2.14	0.47
1:B:178:ARG:NE	1:B:211:ASN:OD1	2.48	0.47
1:B:210:HIS:ND1	1:B:219:MET:HE1	2.30	0.47
1:B:375:THR:HG23	1:B:380:HIS:CD2	2.50	0.47
1:A:192:ASP:O	1:A:193:ASN:C	2.57	0.47
1:A:342:THR:HG22	1:A:345:GLU:CB	2.43	0.47
1:B:251:PHE:C	1:B:251:PHE:CD1	2.93	0.47
1:B:297:TYR:OH	1:B:380:HIS:CD2	2.67	0.46
1:B:52:ASN:HA	1:B:288:TYR:OH	2.15	0.46
1:B:349:VAL:HG13	1:B:396:PHE:HA	1.98	0.46
1:B:214:ILE:HD12	1:B:219:MET:CG	2.45	0.46
1:A:344:ARG:HE	1:A:347:LEU:HD23	1.69	0.46
1:B:348:GLU:OE1	1:B:348:GLU:HA	2.15	0.46
1:A:53:ALA:HB1	1:A:74:SER:HB2	1.97	0.46
1:A:93:TYR:CZ	1:A:256:PRO:HG3	2.50	0.46
1:B:259:ASP:O	1:B:260:ALA:HB3	2.15	0.46
1:A:26:VAL:CG2	1:A:33:LYS:HD3	2.45	0.46
1:A:262:VAL:HG12	1:A:263:THR:N	2.31	0.46
1:A:210:HIS:CD2	1:A:252:VAL:HG22	2.51	0.46
1:B:165:MET:HE1	1:B:208:VAL:HG11	1.97	0.46
1:B:252:VAL:C	1:B:254:GLY:H	2.24	0.46
1:A:194:GLY:C	1:A:338:THR:HG22	2.41	0.46
1:B:138:LEU:HD11	1:B:318:GLN:CG	2.46	0.46
1:A:176:TRP:CZ3	1:A:177:LEU:HD13	2.51	0.46
1:B:43:LEU:HD13	1:B:55:VAL:HB	1.98	0.46
1:A:195:ALA:HB1	1:A:314:ARG:HD3	1.98	0.45
1:B:395:VAL:CG1	1:B:395:VAL:O	2.63	0.45
1:A:153:LEU:HG	1:A:157:LEU:HD22	1.98	0.45
1:B:215:THR:HG23	1:B:218:ALA:HB2	1.98	0.45
1:A:349:VAL:HG13	1:A:396:PHE:HA	1.97	0.45
1:B:344:ARG:HE	1:B:347:LEU:HD23	1.74	0.45
1:A:219:MET:CE	1:A:246:GLN:HE21	2.29	0.45
1:B:89:LYS:HD2	1:B:102:PHE:CE2	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:192:ASP:O	1:B:193:ASN:C	2.58	0.45
1:A:129:GLU:HG3	1:A:363:ARG:NH2	2.32	0.45
1:B:194:GLY:CA	1:B:338:THR:HG22	2.47	0.45
1:B:219:MET:CE	1:B:246:GLN:HE21	2.30	0.45
1:A:97:ALA:HB1	1:A:253:ILE:CD1	2.47	0.45
1:A:132:GLY:HA2	1:A:326:ALA:HA	1.97	0.45
1:B:34:ILE:CD1	1:B:256:PRO:CG	2.95	0.45
1:A:311:LEU:CD2	1:A:341:LYS:HD2	2.47	0.44
1:A:348:GLU:HA	1:A:348:GLU:OE1	2.17	0.44
1:A:375:THR:HG23	1:A:380:HIS:CD2	2.53	0.44
1:A:344:ARG:HD2	1:A:344:ARG:HA	1.49	0.44
1:A:253:ILE:O	1:A:254:GLY:C	2.60	0.44
1:B:293:ARG:NH2	1:B:375:THR:HG21	2.31	0.44
1:B:395:VAL:O	1:B:395:VAL:HG12	2.16	0.44
1:A:34:ILE:HD12	1:A:256:PRO:CB	2.47	0.44
1:A:93:TYR:OH	1:A:256:PRO:HG3	2.17	0.44
1:B:93:TYR:HB3	1:B:100:PHE:O	2.17	0.44
1:B:165:MET:HB3	1:B:177:LEU:HD21	1.99	0.44
1:A:28:GLU:HG3	1:A:378:TYR:OH	2.17	0.44
1:A:194:GLY:CA	1:A:338:THR:HG22	2.47	0.44
1:B:304:LYS:NZ	1:B:389:GLU:HB3	2.32	0.44
1:B:180:ASP:OD2	1:B:251:PHE:HZ	2.01	0.44
1:B:238:ASP:HB3	1:B:241:THR:H	1.82	0.44
1:B:342:THR:HG22	1:B:345:GLU:CB	2.46	0.44
1:A:138:LEU:HD22	1:B:22:THR:H	1.82	0.44
1:A:144:THR:O	1:A:150:CYS:HA	2.17	0.44
1:B:294:SER:O	1:B:297:TYR:HB2	2.18	0.44
1:B:344:ARG:HD2	1:B:344:ARG:HA	1.53	0.44
1:A:189:TYR:CD2	1:A:196:VAL:HG13	2.52	0.44
1:A:251:PHE:CD1	1:A:254:GLY:HA3	2.53	0.43
1:B:114:GLN:HB3	1:B:115:SER:H	1.66	0.43
1:A:195:ALA:HB3	1:A:314:ARG:HD3	1.99	0.43
1:A:374:LYS:HD2	1:A:385:GLU:OE2	2.17	0.43
1:B:209:GLN:HA	1:B:251:PHE:O	2.19	0.43
1:B:132:GLY:HA2	1:B:326:ALA:HA	2.00	0.43
1:B:165:MET:O	1:B:177:LEU:HD23	2.18	0.43
1:B:333:ILE:HB	1:B:343:GLU:HG3	2.00	0.43
1:B:344:ARG:CD	1:B:347:LEU:CD2	2.94	0.43
1:B:161:LEU:O	1:B:165:MET:HG3	2.19	0.43
1:B:195:ALA:HB1	1:B:314:ARG:HD3	1.99	0.43
1:B:215:THR:HG23	1:B:218:ALA:H	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:220:ARG:HG2	1:A:245:LEU:HB2	1.99	0.43
1:A:322:ALA:HB2	1:A:329:LEU:HD22	2.00	0.43
1:A:333:ILE:HB	1:A:343:GLU:HG3	1.99	0.43
1:A:100:PHE:HD2	1:A:256:PRO:HG2	1.78	0.43
1:B:215:THR:HG23	1:B:218:ALA:HB3	2.01	0.43
1:A:216:LEU:HD12	1:A:216:LEU:HA	1.86	0.43
1:A:224:LYS:HE3	6:A:552:HOH:O	2.18	0.43
1:A:302:VAL:HG22	1:A:317:VAL:HG11	2.01	0.43
1:B:303:ALA:HB2	1:B:317:VAL:CG1	2.49	0.43
1:A:374:LYS:HG3	1:A:386:PHE:CE1	2.52	0.42
1:B:346:LEU:HD23	1:B:346:LEU:HA	1.78	0.42
1:A:43:LEU:HD13	1:A:55:VAL:HB	2.01	0.42
1:B:129:GLU:HG3	1:B:363:ARG:NH2	2.33	0.42
1:B:253:ILE:C	1:B:255:GLY:H	2.27	0.42
1:A:374:LYS:O	1:A:383:ARG:NH2	2.52	0.42
1:A:259:ASP:O	1:A:260:ALA:HB2	2.19	0.42
1:B:240:ASP:O	1:B:241:THR:C	2.61	0.42
1:B:246:GLN:N	1:B:247:PRO:HD3	2.33	0.42
1:B:19:PHE:CD1	1:B:191:GLN:NE2	2.88	0.42
1:B:331:ILE:HD11	1:B:333:ILE:HD11	2.01	0.42
1:A:71:GLU:OE2	1:A:114:GLN:NE2	2.53	0.42
1:A:176:TRP:CZ3	1:A:219:MET:CE	3.03	0.42
1:A:215:THR:HG23	1:A:218:ALA:HB2	2.02	0.42
1:A:252:VAL:HG12	1:A:253:ILE:CD1	2.49	0.42
1:B:374:LYS:HG3	1:B:386:PHE:CE1	2.54	0.42
1:A:246:GLN:N	1:A:247:PRO:HD3	2.34	0.42
1:A:253:ILE:O	1:A:253:ILE:HG22	2.19	0.42
1:A:262:VAL:CG1	1:B:262:VAL:HG11	2.31	0.42
1:B:135:ASP:O	1:B:136:GLN:C	2.62	0.42
1:A:395:VAL:O	1:A:395:VAL:CG1	2.68	0.41
1:B:262:VAL:HG12	1:B:263:THR:N	2.35	0.41
1:A:54:LYS:HA	1:A:287:ASP:OD2	2.20	0.41
1:B:293:ARG:HH21	1:B:375:THR:CG2	2.31	0.41
1:B:71:GLU:OE2	1:B:114:GLN:NE2	2.53	0.41
1:B:304:LYS:O	1:B:308:LYS:HB2	2.20	0.41
1:A:93:TYR:CB	1:A:100:PHE:HB3	2.50	0.41
1:A:165:MET:HB3	1:A:177:LEU:HD21	2.02	0.41
1:B:194:GLY:C	1:B:338:THR:HG22	2.46	0.41
1:B:219:MET:CE	1:B:246:GLN:NE2	2.83	0.41
1:A:304:LYS:NZ	1:A:389:GLU:HB3	2.36	0.41
1:A:293:ARG:NH2	1:A:375:THR:HG21	2.31	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:210:HIS:HB3	1:B:219:MET:HE1	2.03	0.41
1:B:267:ILE:HD11	1:B:282:ALA:CA	2.37	0.41
1:B:180:ASP:H	1:B:209:GLN:HE21	1.68	0.41
1:B:251:PHE:CD1	1:B:254:GLY:HA3	2.56	0.41
1:A:72:ILE:HD11	1:A:80:TYR:OH	2.20	0.40
1:A:114:GLN:HE21	1:A:114:GLN:N	2.19	0.40
1:B:161:LEU:HD23	1:B:183:THR:HG23	2.03	0.40
1:A:19:PHE:CD2	1:A:191:GLN:NE2	2.90	0.40
1:B:19:PHE:HD1	1:B:191:GLN:HE22	1.69	0.40
1:B:114:GLN:HE21	1:B:114:GLN:N	2.19	0.40
1:A:164:ARG:NH1	1:A:226:GLN:O	2.51	0.40
1:A:194:GLY:HA3	6:A:514:HOH:O	2.20	0.40
1:A:215:THR:HG23	1:A:218:ALA:H	1.87	0.40
1:B:154:THR:CG2	1:B:155:ILE:N	2.84	0.40
1:B:64:GLY:HA2	1:B:105:CYS:HB2	2.04	0.40
1:B:79:ASP:O	1:B:82:ARG:HB3	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	364/396 (92%)	314 (86%)	36 (10%)	14 (4%)	2	3
1	B	364/396 (92%)	310 (85%)	39 (11%)	15 (4%)	2	3
All	All	728/792 (92%)	624 (86%)	75 (10%)	29 (4%)	2	3

All (29) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	18	ALA
1	A	193	ASN

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Mol	Chain	Res	Type
1	B	18	ALA
1	B	193	ASN
1	B	258	GLY
1	A	196	VAL
1	A	258	GLY
1	A	344	ARG
1	B	196	VAL
1	B	344	ARG
1	A	63	THR
1	A	115	SER
1	A	330	SER
1	B	63	THR
1	B	115	SER
1	B	135	ASP
1	B	330	SER
1	A	135	ASP
1	B	256	PRO
1	B	342	THR
1	A	131	VAL
1	A	260	ALA
1	A	342	THR
1	B	131	VAL
1	B	260	ALA
1	A	394	LEU
1	B	356	LEU
1	A	255	GLY
1	B	253	ILE

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	307/332 (92%)	246 (80%)	61 (20%)	1	1
1	B	307/332 (92%)	246 (80%)	61 (20%)	1	1
All	All	614/664 (92%)	492 (80%)	122 (20%)	1	1

All (122) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	MET
1	A	47	LEU
1	A	54	LYS
1	A	67	LEU
1	A	68	LEU
1	A	71	GLU
1	A	72	ILE
1	A	78	ILE
1	A	83	VAL
1	A	100	PHE
1	A	111	LEU
1	A	114	GLN
1	A	131	VAL
1	A	135	ASP
1	A	139	MET
1	A	154	THR
1	A	157	LEU
1	A	161	LEU
1	A	163	THR
1	A	164	ARG
1	A	177	LEU
1	A	186	THR
1	A	190	VAL
1	A	191	GLN
1	A	200	ARG
1	A	203	THR
1	A	206	ILE
1	A	214	ILE
1	A	215	THR
1	A	223	LEU
1	A	227	VAL
1	A	231	VAL
1	A	239	GLU
1	A	248	SER
1	A	251	PHE
1	A	257	GLN
1	A	265	ARG
1	A	267	ILE
1	A	269	VAL
1	A	275	TRP
1	A	289	THR
1	A	291	VAL

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Mol	Chain	Res	Type
1	A	302	VAL
1	A	306	LEU
1	A	307	VAL
1	A	308	LYS
1	A	315	VAL
1	A	316	LEU
1	A	317	VAL
1	A	319	VAL
1	A	331	ILE
1	A	343	GLU
1	A	344	ARG
1	A	345	GLU
1	A	358	PRO
1	A	362	VAL
1	A	369	LYS
1	A	371	ILE
1	A	375	THR
1	A	393	LYS
1	A	394	LEU
1	B	20	MET
1	B	47	LEU
1	B	54	LYS
1	B	65	MET
1	B	67	LEU
1	B	68	LEU
1	B	71	GLU
1	B	72	ILE
1	B	78	ILE
1	B	83	VAL
1	B	100	PHE
1	B	111	LEU
1	B	114	GLN
1	B	131	VAL
1	B	135	ASP
1	B	139	MET
1	B	154	THR
1	B	157	LEU
1	B	161	LEU
1	B	163	THR
1	B	164	ARG
1	B	177	LEU
1	B	186	THR

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Mol	Chain	Res	Type
1	B	190	VAL
1	B	191	GLN
1	B	200	ARG
1	B	203	THR
1	B	206	ILE
1	B	214	ILE
1	B	215	THR
1	B	223	LEU
1	B	227	VAL
1	B	239	GLU
1	B	248	SER
1	B	251	PHE
1	B	257	GLN
1	B	265	ARG
1	B	267	ILE
1	B	269	VAL
1	B	275	TRP
1	B	289	THR
1	B	291	VAL
1	B	302	VAL
1	B	306	LEU
1	B	307	VAL
1	B	308	LYS
1	B	315	VAL
1	B	316	LEU
1	B	317	VAL
1	B	319	VAL
1	B	331	ILE
1	B	343	GLU
1	B	344	ARG
1	B	353	ASN
1	B	358	PRO
1	B	362	VAL
1	B	369	LYS
1	B	371	ILE
1	B	375	THR
1	B	393	LYS
1	B	394	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	37	GLN
1	A	52	ASN
1	A	113	GLN
1	A	114	GLN
1	A	136	GLN
1	A	159	HIS
1	A	162	ASN
1	A	191	GLN
1	A	209	GLN
1	A	210	HIS
1	A	278	HIS
1	A	318	GLN
1	A	380	HIS
1	B	30	HIS
1	B	37	GLN
1	B	52	ASN
1	B	113	GLN
1	B	114	GLN
1	B	136	GLN
1	B	159	HIS
1	B	162	ASN
1	B	191	GLN
1	B	209	GLN
1	B	210	HIS
1	B	278	HIS
1	B	318	GLN
1	B	380	HIS

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 9 ligands modelled in this entry, 5 are monoatomic - leaving 4 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	B	401	5	4,4,4	1.07	0	6,6,6	1.86	4 (66%)
3	SO4	A	403	5	4,4,4	2.09	1 (25%)	6,6,6	1.82	2 (33%)
3	SO4	A	402	4	4,4,4	1.36	1 (25%)	6,6,6	2.22	2 (33%)
2	AMB	A	401	4	7,8,8	1.55	1 (14%)	3,9,9	1.81	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	AMB	A	401	4	-	4/7/8/8	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	403	SO4	O1-S	3.62	1.66	1.44
2	A	401	AMB	CG-CB	2.53	1.43	1.30
3	A	402	SO4	O1-S	2.07	1.57	1.44

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	402	SO4	O4-S-O2	3.81	129.48	109.56
3	A	403	SO4	O3-S-O1	-3.30	92.29	109.56
3	A	402	SO4	O3-S-O1	-2.92	94.32	109.56
3	A	403	SO4	O2-S-O1	2.56	127.07	109.06
3	B	401	SO4	O3-S-O1	-2.51	96.45	109.56
3	B	401	SO4	O3-S-O2	2.30	121.57	109.56
3	B	401	SO4	O4-S-O1	-2.20	98.04	109.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	401	SO4	O4-S-O2	2.05	120.29	109.56

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	AMB	OXT-C-CA-CB
2	A	401	AMB	OXT-C-CA-N
2	A	401	AMB	O-C-CA-CB
2	A	401	AMB	CB-CG-OD-CE

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

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.