



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 27, 2014 – 08:41 PM GMT

PDB ID : 4I3W
Title : Structure of phosphonoacetaldehydedehydrogenase in complex with glyceraldehyde-3-phosphate and cofactor NAD⁺
Authors : Nair, S.K.; Agarwal, V.
Deposited on : 2012-11-26
Resolution : 2.24 Å (reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

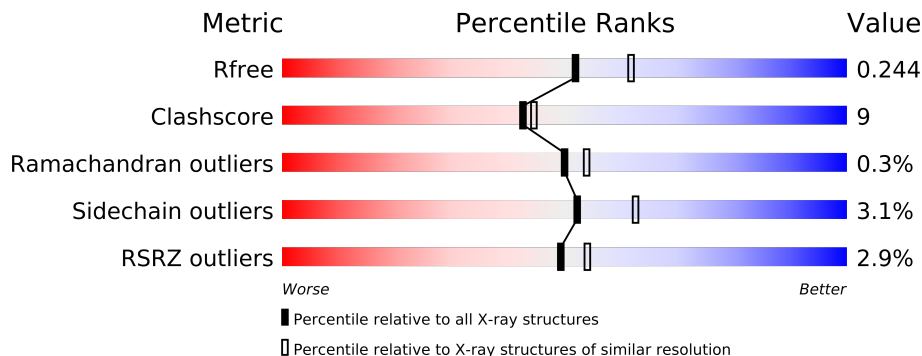
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.24 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}	66092	1112 (2.26-2.22)
Clashscore	79885	1317 (2.26-2.22)
Ramachandran outliers	78287	1282 (2.26-2.22)
Sidechain outliers	78261	1282 (2.26-2.22)
RSRZ outliers	66119	1112 (2.26-2.22)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	488	
1	B	488	
1	C	488	
1	D	488	
1	E	488	
1	F	488	
1	G	488	
1	H	488	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
2	G3H	G	501	-	X

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 30963 atoms, of which 0 are hydrogen and 0 are deuterium.

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 Aldehyde dehydrogenase (NAD+).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	B	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	C	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	D	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	E	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	F	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	G	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			
1	H	473	Total	C	N	O	S	0	0	0
			3626	2294	630	683	19			

There are 24 discrepancies between the modelled and reference sequences:

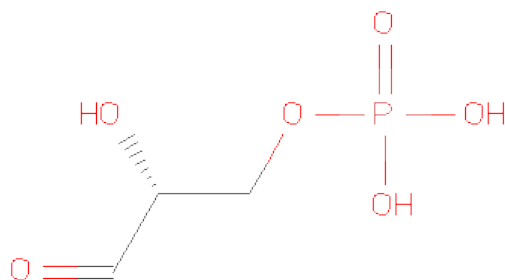
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
A	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
A	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
B	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
B	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
B	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
C	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
C	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
C	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
D	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
D	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
D	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
E	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
E	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
F	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
F	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
F	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
G	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
G	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
G	0	HIS	-	EXPRESSION TAG	UNP Q92UV7
H	-2	GLY	-	EXPRESSION TAG	UNP Q92UV7
H	-1	SER	-	EXPRESSION TAG	UNP Q92UV7
H	0	HIS	-	EXPRESSION TAG	UNP Q92UV7

- Molecule 2 is GLYCERALDEHYDE-3-PHOSPHATE (three-letter code: G3H) (formula: $C_3H_7O_6P$).



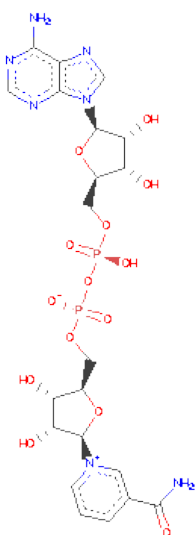
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	O	P	0	0
			10	3	6	1		
2	B	1	Total	C	O	P	0	0
			10	3	6	1		
2	C	1	Total	C	O	P	0	0
			10	3	6	1		
2	D	1	Total	C	O	P	0	0
			10	3	6	1		
2	E	1	Total	C	O	P	0	0
			10	3	6	1		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	F	1	Total	C	O	P	0	0
			10	3	6	1		
2	G	1	Total	C	O	P	0	0
			10	3	6	1		
2	H	1	Total	C	O	P	0	0
			10	3	6	1		

- Molecule 3 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	C	1	Total	C	N	O	P	0
			35	15	5	13	2	
3	D	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	F	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	G	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 4 is water.

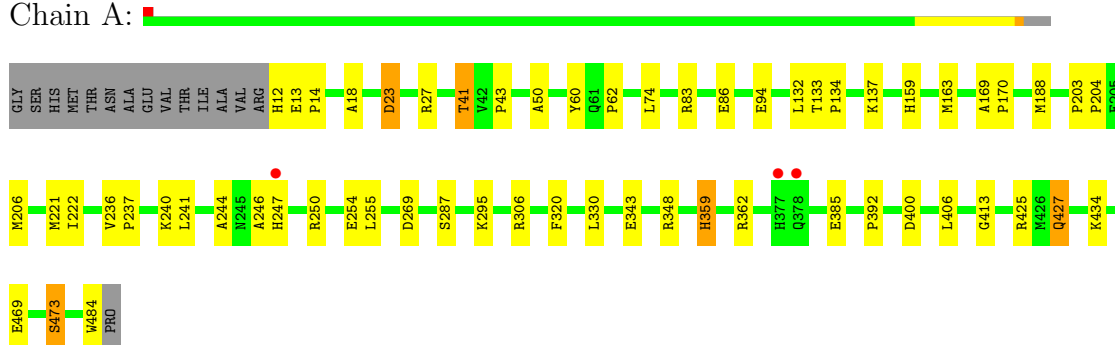
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	259	Total 259	O 259	0	0
4	B	247	Total 247	O 247	0	0
4	C	260	Total 260	O 260	0	0
4	D	201	Total 201	O 201	0	0
4	E	206	Total 206	O 206	0	0
4	F	214	Total 214	O 214	0	0
4	G	163	Total 163	O 163	0	0
4	H	128	Total 128	O 128	0	0

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

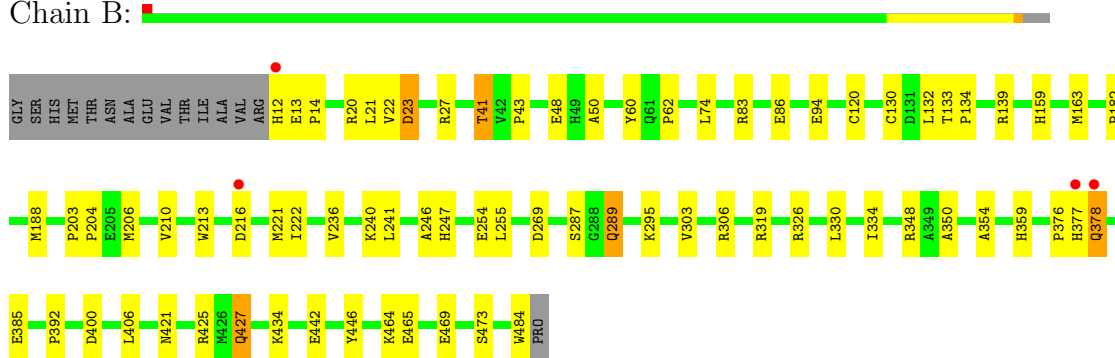
• Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain A:



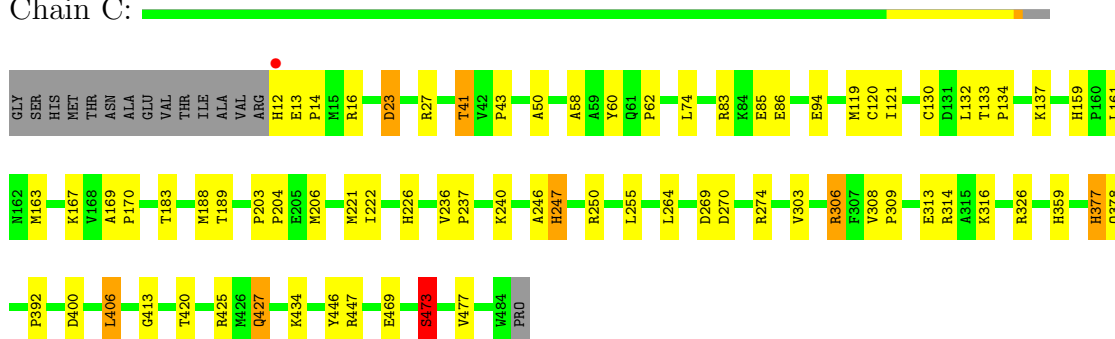
• Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain B:



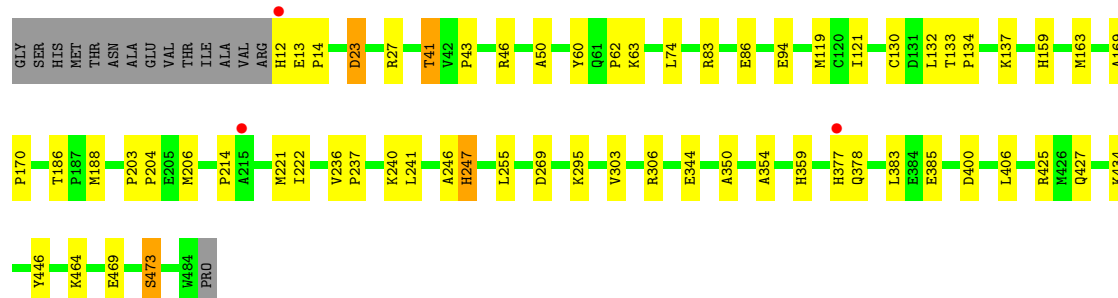
• Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain C:



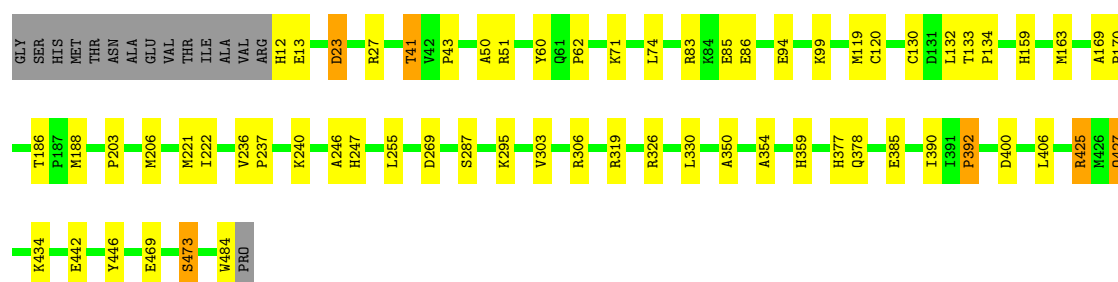
• Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain D:



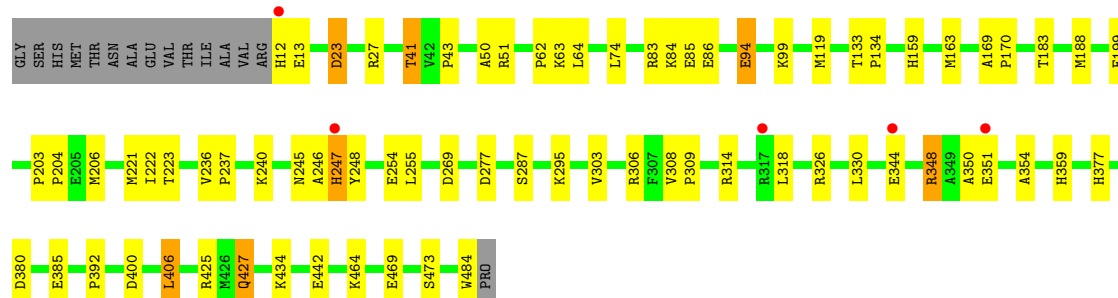
- Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain E:



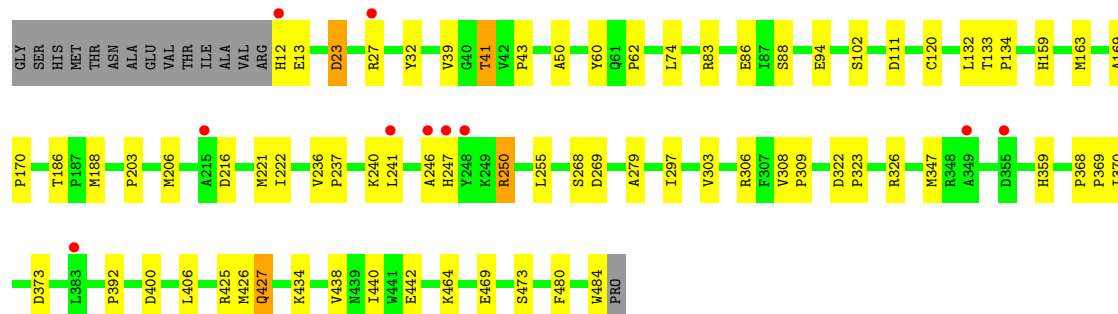
- Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain F:



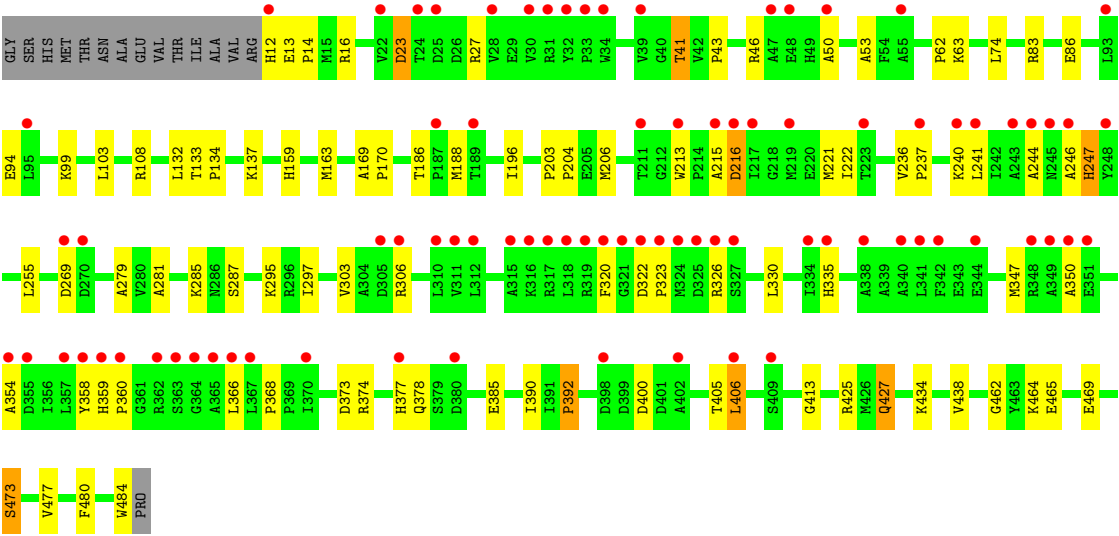
- Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain G:



- Molecule 1: Aldehyde dehydrogenase (NAD+)

Chain H: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	94.45Å 172.71Å 139.78Å 90.00° 106.90° 90.00°	Depositor
Resolution (Å)	24.97 – 2.24 39.61 – 2.24	Depositor EDS
% Data completeness (in resolution range)	97.1 (24.97-2.24) 97.1 (39.61-2.24)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.92 (at 2.24Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.1_743)	Depositor
R, R_{free}	0.204 , 0.249 0.199 , 0.244	Depositor DCC
R_{free} test set	9985 reflections (5.04%)	DCC
Wilson B-factor (Å ²)	23.0	Xtriage
Anisotropy	0.037	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 19.8	EDS
Estimated twinning fraction	0.018 for h,-k,-h-l	Xtriage
L-test for twinning	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	1 of 198143 reflections (0.001%)	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	30963	wwPDB-VP
Average B, all atoms (Å ²)	24.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.69% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: G3H, NAD

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	0.65	0/3698	0.67	0/5030
1	B	0.69	3/3698 (0.1%)	0.67	0/5030
1	C	0.65	2/3698 (0.1%)	0.68	1/5030 (0.0%)
1	D	0.62	0/3698	0.65	0/5030
1	E	0.63	1/3698 (0.0%)	0.67	1/5030 (0.0%)
1	F	0.65	0/3698	0.67	2/5030 (0.0%)
1	G	0.64	1/3698 (0.0%)	0.66	1/5030 (0.0%)
1	H	0.70	0/3698	0.69	1/5030 (0.0%)
All	All	0.65	7/29584 (0.0%)	0.67	6/40240 (0.0%)

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	120	CYS	CB-SG	-10.02	1.65	1.82
1	B	289	GLN	CD-OE1	-8.75	1.04	1.24
1	B	289	GLN	CD-NE2	-8.68	1.11	1.32
1	G	120	CYS	CB-SG	-8.45	1.67	1.82
1	C	120	CYS	CB-SG	-7.68	1.69	1.82
1	C	473	SER	CB-OG	-5.80	1.34	1.42
1	E	120	CYS	CB-SG	-5.13	1.73	1.81

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	348	ARG	NE-CZ-NH2	-7.39	116.61	120.30
1	H	216	ASP	CB-CG-OD1	-7.26	111.76	118.30
1	E	425	ARG	NE-CZ-NH2	-5.43	117.58	120.30
1	F	348	ARG	NE-CZ-NH1	5.33	122.96	120.30
1	C	306	ARG	NE-CZ-NH1	5.12	122.86	120.30
1	G	373	ASP	CB-CG-OD1	5.07	122.86	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3626	0	3654	53	1
1	B	3626	0	3654	70	1
1	C	3626	0	3654	78	2
1	D	3626	0	3654	60	1
1	E	3626	0	3654	58	0
1	F	3626	0	3654	96	1
1	G	3626	0	3654	61	0
1	H	3626	0	3654	104	0
2	A	10	0	4	0	0
2	B	10	0	4	0	0
2	C	10	0	4	0	0
2	D	10	0	4	0	0
2	E	10	0	4	1	0
2	F	10	0	4	0	0
2	G	10	0	4	0	0
2	H	10	0	4	1	0
3	A	27	0	12	0	0
3	B	27	0	12	0	0
3	C	35	0	19	1	0
3	D	27	0	11	1	0
3	E	27	0	12	0	0
3	F	27	0	12	1	0
3	G	27	0	12	0	0
4	A	259	0	0	8	1
4	B	247	0	0	16	0
4	C	260	0	0	19	1
4	D	201	0	0	10	0
4	E	206	0	0	11	0
4	F	214	0	0	21	1
4	G	163	0	0	13	1
4	H	128	0	0	24	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	30963	0	29354	524	5

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 9.

All (524) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:F:348:ARG:HD3	1:H:216:ASP:CG	1.38	1.42
1:A:359:HIS:O	1:E:326:ARG:HD2	1.27	1.29
1:F:348:ARG:CD	1:H:216:ASP:CG	2.01	1.28
1:F:348:ARG:HD3	1:H:216:ASP:OD1	1.14	1.24
4:A:856:HOH:O	1:E:319:ARG:HD2	1.34	1.23
1:F:221:MET:SD	4:F:808:HOH:O	2.01	1.19
1:B:216:ASP:HB2	4:B:815:HOH:O	1.44	1.18
1:F:348:ARG:CD	1:H:216:ASP:OD1	1.92	1.16
1:E:99:LYS:NZ	4:E:605:HOH:O	1.68	1.14
1:E:85:GLU:OE1	4:E:605:HOH:O	1.69	1.10
1:B:48:GLU:OE1	4:B:803:HOH:O	1.70	1.09
1:H:326:ARG:NH1	4:H:615:HOH:O	1.83	1.09
1:F:344:GLU:OE1	1:H:215:ALA:O	1.71	1.09
1:E:221:MET:SD	4:E:803:HOH:O	2.08	1.08
1:F:119:MET:HE1	4:F:651:HOH:O	1.54	1.07
1:H:216:ASP:HB2	4:H:633:HOH:O	1.53	1.06
1:C:326:ARG:NH1	4:C:605:HOH:O	1.85	1.06
1:D:206:MET:SD	4:D:628:HOH:O	2.13	1.05
1:E:206:MET:SD	4:E:762:HOH:O	2.15	1.05
1:B:326:ARG:NH1	4:B:604:HOH:O	1.92	1.02
1:H:347:MET:HE1	4:H:692:HOH:O	1.59	0.99
1:E:12:HIS:N	4:E:652:HOH:O	1.94	0.98
1:D:221:MET:SD	4:D:801:HOH:O	2.26	0.92
1:G:306:ARG:NH1	4:G:757:HOH:O	2.03	0.92
1:H:12:HIS:N	4:H:725:HOH:O	2.02	0.91
1:A:50:ALA:HB1	1:A:221:MET:HE2	1.53	0.91
1:E:50:ALA:HB1	1:E:221:MET:HE2	1.51	0.90
1:F:50:ALA:HB1	1:F:221:MET:HE2	1.54	0.89
1:G:50:ALA:HB1	1:G:221:MET:CE	2.04	0.88
1:B:348:ARG:NH1	4:B:783:HOH:O	1.88	0.88
1:G:50:ALA:HB1	1:G:221:MET:HE2	1.55	0.87
1:C:377:HIS:ND1	1:C:406:LEU:HD11	1.90	0.86
1:F:351:GLU:OE1	1:H:213:TRP:HB3	1.75	0.86
1:A:50:ALA:HB1	1:A:221:MET:CE	2.06	0.86
1:F:344:GLU:CD	1:H:215:ALA:O	2.13	0.85

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:G:427:GLN:HG3	4:G:628:HOH:O	1.76	0.85
1:F:351:GLU:OE2	1:H:215:ALA:HB2	1.75	0.85
1:F:50:ALA:HB1	1:F:221:MET:CE	2.06	0.85
1:C:50:ALA:HB1	1:C:221:MET:HE2	1.58	0.85
1:C:203:PRO:HG2	1:C:206:MET:HE3	1.57	0.84
1:F:62:PRO:HB3	1:F:206:MET:HE2	1.59	0.84
1:B:203:PRO:HG2	1:B:206:MET:HE3	1.58	0.84
1:D:23:ASP:OD1	1:D:27:ARG:NH1	2.09	0.83
1:F:348:ARG:HB2	1:H:216:ASP:OD1	1.78	0.83
1:B:421:ASN:HB3	4:D:715:HOH:O	1.79	0.83
1:G:23:ASP:OD1	1:G:27:ARG:NH1	2.10	0.83
1:B:50:ALA:HB1	1:B:221:MET:HE2	1.58	0.83
1:H:484:TRP:C	4:H:722:HOH:O	2.17	0.83
1:F:85:GLU:OE1	4:F:803:HOH:O	1.94	0.83
1:E:23:ASP:OD1	1:E:27:ARG:NH1	2.12	0.82
1:D:50:ALA:HB1	1:D:221:MET:HE2	1.60	0.82
1:F:99:LYS:NZ	4:F:803:HOH:O	1.98	0.82
1:B:378:GLN:NE2	4:B:837:HOH:O	2.13	0.82
1:E:50:ALA:HB1	1:E:221:MET:CE	2.09	0.82
1:F:348:ARG:CG	1:H:216:ASP:OD1	2.28	0.81
1:F:348:ARG:CD	1:H:216:ASP:OD2	2.27	0.81
1:D:50:ALA:HB1	1:D:221:MET:CE	2.11	0.80
1:C:50:ALA:HB1	1:C:221:MET:CE	2.11	0.80
1:H:196:ILE:O	4:H:650:HOH:O	2.00	0.79
1:H:62:PRO:HB3	1:H:206:MET:HE2	1.64	0.79
1:F:23:ASP:OD1	1:F:27:ARG:NH1	2.14	0.79
1:G:12:HIS:N	4:G:683:HOH:O	2.15	0.79
1:F:348:ARG:HD2	1:H:216:ASP:OD2	1.82	0.79
1:H:50:ALA:HB1	1:H:221:MET:HE2	1.65	0.79
1:F:344:GLU:OE1	1:H:216:ASP:HA	1.83	0.78
1:F:348:ARG:HD2	1:H:216:ASP:CG	2.02	0.78
1:A:23:ASP:OD1	1:A:27:ARG:NH1	2.17	0.78
1:E:203:PRO:HG2	1:E:206:MET:HE3	1.65	0.78
1:G:203:PRO:HG2	1:G:206:MET:HE3	1.65	0.77
1:D:203:PRO:HG2	1:D:206:MET:HE3	1.65	0.77
1:F:351:GLU:OE2	1:H:215:ALA:CB	2.31	0.77
1:H:53:ALA:O	4:H:622:HOH:O	2.01	0.77
1:H:103:LEU:HD11	4:H:615:HOH:O	1.85	0.77
1:H:23:ASP:OD1	1:H:27:ARG:NH1	2.18	0.76
1:F:318:LEU:O	4:F:755:HOH:O	2.01	0.76
1:B:484:TRP:C	4:B:842:HOH:O	2.25	0.75
1:C:85:GLU:OE2	4:C:605:HOH:O	2.03	0.75

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:H:405:THR:O	4:H:667:HOH:O	2.05	0.74
1:B:50:ALA:HB1	1:B:221:MET:CE	2.16	0.74
1:H:50:ALA:HB1	1:H:221:MET:CE	2.17	0.74
1:A:484:TRP:C	4:A:804:HOH:O	2.23	0.74
1:B:23:ASP:OD1	1:B:27:ARG:NH1	2.21	0.74
1:A:203:PRO:HG2	1:A:206:MET:HE3	1.67	0.74
1:F:348:ARG:CB	1:H:216:ASP:OD1	2.36	0.73
1:H:287:SER:OG	4:H:694:HOH:O	1.99	0.73
1:C:427:GLN:HG3	4:C:611:HOH:O	1.88	0.73
1:B:21:LEU:O	1:F:247:HIS:NE2	2.18	0.72
1:F:464:LYS:HE2	4:F:731:HOH:O	1.90	0.72
1:E:50:ALA:CB	1:E:221:MET:CE	2.68	0.72
1:A:27:ARG:HE	1:A:41:THR:HG23	1.55	0.71
1:F:248:TYR:C	4:F:638:HOH:O	2.27	0.71
1:B:20:ARG:HB3	1:F:247:HIS:HE1	1.55	0.70
1:C:23:ASP:OD1	1:C:27:ARG:NH1	2.24	0.70
1:G:50:ALA:CB	1:G:221:MET:CE	2.69	0.70
1:G:347:MET:HE3	4:G:761:HOH:O	1.92	0.70
1:F:50:ALA:CB	1:F:221:MET:CE	2.69	0.69
1:C:50:ALA:CB	1:C:221:MET:CE	2.70	0.69
1:H:203:PRO:HG2	1:H:206:MET:HE3	1.74	0.69
1:D:27:ARG:HE	1:D:41:THR:HG23	1.58	0.69
1:A:50:ALA:CB	1:A:221:MET:CE	2.70	0.69
1:B:62:PRO:HB3	1:B:206:MET:CE	2.23	0.68
1:F:85:GLU:OE2	4:F:802:HOH:O	2.11	0.68
1:C:427:GLN:NE2	4:C:762:HOH:O	2.26	0.68
1:C:58:ALA:CB	1:C:226:HIS:ND1	2.57	0.68
1:F:427:GLN:NE2	4:F:681:HOH:O	2.25	0.68
1:A:427:GLN:HG3	4:A:611:HOH:O	1.94	0.67
1:H:94:GLU:OE2	1:H:188:MET:N	2.21	0.67
1:F:203:PRO:HG2	1:F:206:MET:HE3	1.74	0.67
1:C:163:MET:HE2	4:C:849:HOH:O	1.94	0.67
1:B:94:GLU:OE2	1:B:188:MET:N	2.23	0.67
1:D:50:ALA:CB	1:D:221:MET:CE	2.73	0.67
1:F:199:GLU:HG2	4:F:774:HOH:O	1.94	0.67
1:A:137:LYS:HE3	1:F:442:GLU:OE2	1.92	0.67
1:G:62:PRO:HB3	1:G:206:MET:HE2	1.77	0.66
1:H:62:PRO:HB3	1:H:206:MET:CE	2.25	0.66
1:B:21:LEU:N	1:F:247:HIS:CE1	2.64	0.66
1:B:62:PRO:HB3	1:B:206:MET:HE2	1.78	0.65
1:A:244:ALA:HB1	1:B:21:LEU:HD12	1.78	0.65
1:B:20:ARG:HB3	1:F:247:HIS:CE1	2.32	0.65

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:F:94:GLU:OE2	1:F:188:MET:N	2.24	0.65
1:B:213:TRP:O	4:B:815:HOH:O	2.14	0.65
1:B:20:ARG:NH2	1:F:223:THR:HG21	2.12	0.65
1:A:359:HIS:O	1:E:326:ARG:CD	2.23	0.64
1:H:427:GLN:HG3	4:H:616:HOH:O	1.96	0.64
1:E:27:ARG:HE	1:E:41:THR:HG23	1.62	0.64
1:D:27:ARG:HE	1:D:41:THR:CG2	2.10	0.64
1:C:377:HIS:NE2	1:C:378:GLN:OE1	2.31	0.64
1:G:484:TRP:C	4:G:710:HOH:O	2.36	0.64
1:D:94:GLU:OE2	1:D:188:MET:N	2.23	0.64
1:F:344:GLU:OE2	1:H:215:ALA:O	2.16	0.63
1:F:27:ARG:HE	1:F:41:THR:HG23	1.63	0.63
1:F:51:ARG:HD2	4:F:794:HOH:O	1.97	0.63
1:F:62:PRO:CB	1:F:206:MET:HE2	2.28	0.63
1:A:27:ARG:HE	1:A:41:THR:CG2	2.12	0.63
1:F:62:PRO:HB3	1:F:206:MET:CE	2.29	0.63
1:G:12:HIS:HA	1:G:41:THR:HG22	1.81	0.62
1:B:50:ALA:CB	1:B:221:MET:CE	2.77	0.62
1:E:94:GLU:OE2	1:E:188:MET:N	2.25	0.62
1:F:351:GLU:OE1	1:H:213:TRP:CB	2.45	0.62
1:B:269:ASP:OD1	1:B:306:ARG:HD2	2.00	0.62
1:C:314:ARG:HG2	4:C:835:HOH:O	1.99	0.62
1:B:376:PRO:HB3	4:B:837:HOH:O	2.00	0.62
1:C:27:ARG:HE	1:C:41:THR:HG23	1.64	0.62
1:H:133:THR:HB	1:H:134:PRO:HD2	1.81	0.62
1:E:62:PRO:HB3	1:E:206:MET:CE	2.29	0.62
1:A:269:ASP:OD1	1:A:306:ARG:HD2	2.00	0.61
1:H:50:ALA:CB	1:H:221:MET:CE	2.79	0.61
1:B:159:HIS:HB2	1:B:163:MET:HG2	1.82	0.61
1:D:378:GLN:O	4:D:659:HOH:O	2.16	0.61
1:B:27:ARG:HE	1:B:41:THR:HG23	1.66	0.61
1:G:62:PRO:HB3	1:G:206:MET:CE	2.30	0.60
1:B:21:LEU:H	1:F:247:HIS:CE1	2.19	0.60
1:H:62:PRO:CB	1:H:206:MET:HE2	2.31	0.60
1:G:94:GLU:OE2	1:G:188:MET:N	2.26	0.60
1:A:348:ARG:HG2	4:A:815:HOH:O	2.02	0.60
1:C:119:MET:HE3	1:D:121:ILE:HD11	1.84	0.60
1:H:12:HIS:HA	1:H:41:THR:HG22	1.84	0.60
1:D:159:HIS:HB2	1:D:163:MET:HG2	1.84	0.60
1:F:348:ARG:CG	1:H:216:ASP:CG	2.69	0.59
1:E:159:HIS:HB2	1:E:163:MET:HG2	1.84	0.59
1:C:377:HIS:HD2	1:C:378:GLN:N	1.99	0.59

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:F:348:ARG:HD3	1:H:216:ASP:CB	2.26	0.59
1:C:121:ILE:HD11	1:D:119:MET:HE2	1.84	0.59
1:E:12:HIS:HA	1:E:41:THR:HG22	1.83	0.59
1:B:216:ASP:OD2	4:B:644:HOH:O	2.16	0.59
1:F:27:ARG:HE	1:F:41:THR:CG2	2.16	0.59
1:C:313:GLU:OE1	4:C:801:HOH:O	2.16	0.59
1:E:27:ARG:HE	1:E:41:THR:CG2	2.16	0.59
1:G:27:ARG:HE	1:G:41:THR:HG23	1.67	0.59
1:C:27:ARG:HE	1:C:41:THR:CG2	2.16	0.59
1:D:383:LEU:HD23	4:D:659:HOH:O	2.02	0.59
1:C:377:HIS:CD2	1:C:378:GLN:OE1	2.56	0.58
1:B:27:ARG:HE	1:B:41:THR:CG2	2.16	0.58
1:D:464:LYS:HE2	4:D:700:HOH:O	2.03	0.58
1:A:13:GLU:O	1:A:43:PRO:HD3	2.04	0.58
1:F:133:THR:HB	1:F:134:PRO:HD2	1.85	0.58
1:E:119:MET:HE1	4:E:628:HOH:O	2.04	0.57
1:E:269:ASP:OD1	1:E:306:ARG:HD2	2.05	0.57
1:H:27:ARG:HE	1:H:41:THR:HG23	1.68	0.57
1:C:159:HIS:HB2	1:C:163:MET:HG2	1.86	0.57
1:D:133:THR:HB	1:D:134:PRO:HD2	1.85	0.57
4:A:856:HOH:O	1:E:319:ARG:CD	2.14	0.57
1:G:427:GLN:O	1:G:427:GLN:OE1	2.21	0.57
1:H:169:ALA:HB3	1:H:170:PRO:HD3	1.87	0.57
1:A:12:HIS:HA	1:A:41:THR:HG22	1.86	0.57
1:E:51:ARG:HD2	4:E:759:HOH:O	2.03	0.56
1:F:159:HIS:HB2	1:F:163:MET:HG2	1.87	0.56
1:C:303:VAL:HG12	1:C:306:ARG:NH2	2.20	0.56
1:H:373:ASP:OD1	1:H:374:ARG:N	2.38	0.56
1:G:236:VAL:O	1:G:240:LYS:HG2	2.04	0.56
1:H:464:LYS:HE2	4:H:689:HOH:O	2.04	0.56
1:G:222:ILE:HG23	1:G:246:ALA:HB2	1.87	0.56
1:H:13:GLU:O	1:H:43:PRO:HD3	2.05	0.56
1:G:133:THR:HB	1:G:134:PRO:HD2	1.87	0.56
1:B:236:VAL:O	1:B:240:LYS:HG2	2.05	0.56
1:D:27:ARG:NE	1:D:41:THR:HG23	2.21	0.56
1:F:326:ARG:NH1	4:F:802:HOH:O	2.38	0.56
1:A:159:HIS:HB2	1:A:163:MET:HG2	1.88	0.56
1:A:240:LYS:HE2	4:A:683:HOH:O	2.05	0.56
1:A:62:PRO:HB3	1:A:206:MET:CE	2.36	0.56
1:C:121:ILE:HD11	1:D:119:MET:CE	2.36	0.56
4:B:712:HOH:O	1:C:247:HIS:HB2	2.05	0.56
1:H:222:ILE:HG23	1:H:246:ALA:HB2	1.88	0.56

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:F:188:MET:HE1	4:F:722:HOH:O	2.04	0.55
1:E:133:THR:HB	1:E:134:PRO:HD2	1.88	0.55
1:C:247:HIS:HA	4:C:752:HOH:O	2.05	0.55
1:E:222:ILE:HG23	1:E:246:ALA:HB2	1.87	0.55
1:D:137:LYS:HE3	1:E:442:GLU:OE2	2.07	0.55
1:E:85:GLU:HA	4:E:605:HOH:O	2.06	0.54
1:C:203:PRO:CG	1:C:206:MET:HE3	2.34	0.54
1:F:473:SER:O	4:F:810:HOH:O	2.18	0.54
1:F:484:TRP:C	4:F:665:HOH:O	2.45	0.54
1:F:348:ARG:NH2	4:F:670:HOH:O	2.40	0.54
1:H:159:HIS:HB2	1:H:163:MET:HG2	1.90	0.54
1:D:269:ASP:OD1	1:D:306:ARG:HD2	2.07	0.54
1:B:442:GLU:OE2	1:C:137:LYS:HE3	2.07	0.54
1:H:295:LYS:HB3	4:H:638:HOH:O	2.08	0.54
1:A:133:THR:HB	1:A:134:PRO:HD2	1.89	0.54
1:G:216:ASP:OD2	4:G:645:HOH:O	2.18	0.54
1:H:236:VAL:O	1:H:240:LYS:HG2	2.08	0.54
1:G:269:ASP:OD1	1:G:306:ARG:HD2	2.07	0.54
1:A:27:ARG:NE	1:A:41:THR:HG23	2.23	0.54
1:C:12:HIS:HA	1:C:41:THR:HG22	1.88	0.54
1:E:60:TYR:HE2	1:E:206:MET:HE2	1.74	0.53
1:H:27:ARG:HE	1:H:41:THR:CG2	2.20	0.53
1:A:62:PRO:HB3	1:A:206:MET:HE2	1.90	0.53
1:E:303:VAL:HG12	1:E:306:ARG:NH2	2.23	0.53
1:A:359:HIS:O	1:E:326:ARG:HB2	2.07	0.53
1:D:60:TYR:HE2	1:D:206:MET:HE2	1.73	0.53
1:G:27:ARG:HE	1:G:41:THR:CG2	2.21	0.53
1:C:400:ASP:OD2	1:C:425:ARG:HD2	2.09	0.53
1:C:60:TYR:HE2	1:C:206:MET:HE2	1.73	0.53
1:C:378:GLN:CD	4:C:726:HOH:O	2.47	0.53
1:E:62:PRO:HB3	1:E:206:MET:HE2	1.90	0.53
1:H:12:HIS:HA	4:H:717:HOH:O	2.08	0.53
1:H:133:THR:HB	1:H:134:PRO:CD	2.39	0.53
1:C:133:THR:HB	1:C:134:PRO:HD2	1.91	0.53
1:H:366:LEU:HD23	4:H:718:HOH:O	2.09	0.53
1:H:400:ASP:OD2	1:H:425:ARG:HD2	2.08	0.53
1:F:163:MET:HA	1:F:163:MET:HE2	1.91	0.53
1:B:203:PRO:CG	1:B:206:MET:HE3	2.35	0.52
1:D:303:VAL:HG12	1:D:306:ARG:NH2	2.25	0.52
1:C:469:GLU:O	1:C:473:SER:HB3	2.08	0.52
1:D:13:GLU:O	1:D:43:PRO:HD3	2.10	0.52
1:D:446:TYR:OH	1:E:130:CYS:HB3	2.09	0.52

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:E:484:TRP:C	4:E:708:HOH:O	2.47	0.52
1:C:13:GLU:O	1:C:43:PRO:HD3	2.09	0.52
1:E:236:VAL:O	1:E:240:LYS:HG2	2.09	0.52
1:E:50:ALA:HB2	1:E:221:MET:HE3	1.92	0.52
1:F:12:HIS:HA	1:F:41:THR:HG22	1.92	0.52
1:C:269:ASP:OD1	1:C:306:ARG:HD2	2.08	0.52
1:F:469:GLU:O	1:F:473:SER:HB2	2.10	0.52
1:F:236:VAL:O	1:F:240:LYS:HG2	2.09	0.52
1:G:12:HIS:CD2	1:G:41:THR:HG21	2.45	0.52
1:F:269:ASP:OD1	1:F:306:ARG:HD2	2.10	0.52
1:G:368:PRO:HB2	4:G:759:HOH:O	2.09	0.52
1:G:427:GLN:OE1	1:G:427:GLN:C	2.48	0.52
1:F:203:PRO:HG2	1:F:206:MET:CE	2.39	0.52
1:C:27:ARG:NE	1:C:41:THR:HG23	2.25	0.52
1:G:269:ASP:N	4:G:757:HOH:O	2.42	0.52
1:H:303:VAL:HG12	1:H:306:ARG:NH2	2.24	0.52
1:D:83:ARG:HD2	1:D:86:GLU:OE1	2.11	0.51
1:C:477:VAL:O	4:C:828:HOH:O	2.19	0.51
1:B:427:GLN:HG3	4:B:658:HOH:O	2.09	0.51
1:D:12:HIS:HA	1:D:41:THR:HG22	1.91	0.51
1:E:295:LYS:HE2	1:E:385:GLU:HG3	1.93	0.51
2:E:501:G3H:O4P	2:E:501:G3H:O1	2.29	0.51
1:F:50:ALA:CB	1:F:221:MET:HE3	2.40	0.51
1:B:133:THR:HB	1:B:134:PRO:HD2	1.93	0.51
1:F:27:ARG:NE	1:F:41:THR:HG23	2.26	0.51
1:G:62:PRO:CB	1:G:206:MET:HE2	2.40	0.51
1:G:426:MET:HG2	1:G:440:ILE:HD12	1.92	0.51
1:B:12:HIS:HA	1:B:41:THR:HG22	1.92	0.51
1:A:400:ASP:OD2	1:A:425:ARG:HD2	2.11	0.51
1:C:62:PRO:HB3	1:C:206:MET:CE	2.40	0.50
1:A:60:TYR:HE2	1:A:206:MET:HE2	1.76	0.50
1:F:344:GLU:OE1	1:H:216:ASP:CA	2.58	0.50
1:D:12:HIS:CD2	1:D:41:THR:HG21	2.46	0.50
1:B:27:ARG:NE	1:B:41:THR:HG23	2.26	0.50
1:G:159:HIS:HB2	1:G:163:MET:HG2	1.94	0.50
1:B:378:GLN:O	4:B:752:HOH:O	2.20	0.50
1:G:400:ASP:OD2	1:G:425:ARG:HD2	2.10	0.50
1:B:22:VAL:HG13	1:F:245:ASN:OD1	2.11	0.50
1:A:50:ALA:CB	1:A:221:MET:HE3	2.42	0.50
1:G:279:ALA:HB1	1:G:297:ILE:HD13	1.93	0.50
1:C:274:ARG:NH1	4:C:812:HOH:O	2.45	0.50
1:E:13:GLU:O	1:E:43:PRO:HD3	2.12	0.50

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:E:27:ARG:NE	1:E:41:THR:HG23	2.25	0.50
1:G:50:ALA:HB2	1:G:221:MET:HE3	1.94	0.50
1:G:400:ASP:OD2	1:G:425:ARG:CD	2.60	0.50
1:F:50:ALA:HB2	1:F:221:MET:HE3	1.93	0.49
1:D:62:PRO:HB3	1:D:206:MET:CE	2.41	0.49
1:C:400:ASP:OD2	1:C:425:ARG:CD	2.60	0.49
1:A:94:GLU:OE2	1:A:188:MET:N	2.27	0.49
1:G:50:ALA:CB	1:G:221:MET:HE3	2.41	0.49
1:D:222:ILE:HG23	1:D:246:ALA:HB2	1.94	0.49
1:D:62:PRO:HB3	1:D:206:MET:HE2	1.93	0.49
1:C:377:HIS:CD2	1:C:378:GLN:N	2.79	0.49
1:F:303:VAL:HG12	1:F:306:ARG:NH2	2.28	0.49
1:D:130:CYS:HB3	1:E:446:TYR:OH	2.12	0.49
1:A:295:LYS:HE2	1:A:385:GLU:HG3	1.93	0.49
1:G:469:GLU:O	1:G:473:SER:HB2	2.12	0.49
1:D:203:PRO:CG	1:D:206:MET:HE3	2.41	0.49
1:B:60:TYR:HE2	1:B:206:MET:HE2	1.77	0.49
1:G:111:ASP:HA	4:G:730:HOH:O	2.12	0.49
1:D:469:GLU:O	1:D:473:SER:HB2	2.12	0.49
1:A:348:ARG:NE	4:A:815:HOH:O	2.35	0.49
1:E:400:ASP:OD2	1:E:425:ARG:HD2	2.12	0.49
1:F:348:ARG:HG3	1:H:216:ASP:OD2	2.12	0.49
1:E:94:GLU:HG2	1:E:186:THR:HA	1.95	0.49
1:H:473:SER:HB2	4:H:663:HOH:O	2.12	0.49
1:F:348:ARG:CG	1:H:216:ASP:OD2	2.61	0.49
1:C:378:GLN:NE2	4:C:726:HOH:O	2.44	0.49
1:H:287:SER:HA	1:H:330:LEU:CD1	2.42	0.49
1:G:133:THR:HB	1:G:134:PRO:CD	2.43	0.48
1:A:50:ALA:HB2	1:A:221:MET:HE3	1.95	0.48
1:C:50:ALA:HB2	1:C:221:MET:HE3	1.94	0.48
1:D:236:VAL:HB	1:D:237:PRO:HD3	1.95	0.48
1:H:46:ARG:NH2	4:H:629:HOH:O	2.34	0.48
1:F:169:ALA:HB3	1:F:170:PRO:HD3	1.96	0.48
1:B:446:TYR:OH	1:C:130:CYS:HB3	2.13	0.48
1:G:236:VAL:HB	1:G:237:PRO:HD3	1.96	0.48
1:D:236:VAL:O	1:D:240:LYS:HG2	2.13	0.48
1:D:295:LYS:HE2	1:D:385:GLU:HG3	1.94	0.48
1:E:50:ALA:CB	1:E:221:MET:HE3	2.42	0.48
1:G:94:GLU:HG2	1:G:186:THR:HA	1.96	0.48
1:A:287:SER:HA	1:A:330:LEU:CD1	2.44	0.48
1:G:303:VAL:HG12	1:G:306:ARG:NH2	2.29	0.48
1:B:400:ASP:OD2	1:B:425:ARG:HD2	2.13	0.48

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:G:83:ARG:HD2	1:G:86:GLU:OE1	2.13	0.48
1:C:83:ARG:HD2	1:C:86:GLU:OE1	2.14	0.48
1:A:244:ALA:CB	1:B:21:LEU:HD12	2.44	0.47
1:F:133:THR:HB	1:F:134:PRO:CD	2.43	0.47
1:B:469:GLU:O	1:B:473:SER:HB2	2.14	0.47
1:G:268:SER:C	4:G:757:HOH:O	2.52	0.47
1:G:369:PRO:C	4:G:759:HOH:O	2.52	0.47
1:E:427:GLN:HG3	4:E:630:HOH:O	2.13	0.47
1:E:236:VAL:HB	1:E:237:PRO:HD3	1.96	0.47
1:H:269:ASP:OD1	1:H:306:ARG:HD2	2.15	0.47
1:E:400:ASP:OD2	1:E:425:ARG:CD	2.62	0.47
1:F:427:GLN:HG3	4:F:658:HOH:O	2.14	0.47
1:D:94:GLU:HG2	1:D:186:THR:HA	1.95	0.47
1:G:250:ARG:HD3	1:H:462:GLY:HA3	1.96	0.47
1:F:308:VAL:HB	1:F:309:PRO:HD3	1.95	0.47
1:H:400:ASP:OD2	1:H:425:ARG:CD	2.63	0.47
1:F:183:THR:HB	3:F:502:NAD:H3B	1.97	0.47
1:B:62:PRO:CB	1:B:206:MET:HE2	2.45	0.47
1:B:303:VAL:HG12	1:B:306:ARG:NH2	2.30	0.47
1:C:222:ILE:HG23	1:C:246:ALA:HB2	1.96	0.47
1:G:203:PRO:CG	1:G:206:MET:HE3	2.43	0.47
1:A:169:ALA:HB3	1:A:170:PRO:HD3	1.97	0.47
1:F:254:GLU:HB3	4:F:741:HOH:O	2.15	0.47
1:F:13:GLU:O	1:F:43:PRO:HD3	2.15	0.47
1:F:64:LEU:HG	1:F:206:MET:HE1	1.97	0.46
1:D:50:ALA:CB	1:D:221:MET:HE3	2.44	0.46
1:H:27:ARG:NE	1:H:41:THR:HG23	2.30	0.46
1:H:203:PRO:HG2	1:H:206:MET:CE	2.44	0.46
1:C:119:MET:CE	1:D:121:ILE:HD11	2.44	0.46
1:F:236:VAL:HB	1:F:237:PRO:HD3	1.96	0.46
1:A:320:PHE:HA	1:A:330:LEU:O	2.15	0.46
1:H:247:HIS:CD2	4:H:659:HOH:O	2.69	0.46
1:E:133:THR:HB	1:E:134:PRO:CD	2.45	0.46
1:D:163:MET:HA	1:D:163:MET:HE2	1.98	0.46
1:E:469:GLU:O	1:E:473:SER:HB3	2.16	0.46
1:G:442:GLU:OE2	1:H:137:LYS:HE3	2.15	0.46
1:D:94:GLU:OE2	1:D:188:MET:HB2	2.16	0.46
1:F:222:ILE:HG23	1:F:246:ALA:HB2	1.97	0.46
1:C:167:LYS:NZ	4:C:632:HOH:O	2.48	0.46
1:G:169:ALA:HB3	1:G:170:PRO:HD3	1.96	0.46
1:C:62:PRO:HB3	1:C:206:MET:HE2	1.97	0.46
1:H:236:VAL:HB	1:H:237:PRO:HD3	1.97	0.46

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:F:83:ARG:HD2	1:F:86:GLU:OE1	2.16	0.45
1:A:83:ARG:HD2	1:A:86:GLU:OE1	2.15	0.45
1:D:46:ARG:NH1	4:D:758:HOH:O	2.41	0.45
1:H:377:HIS:ND1	1:H:406:LEU:HD11	2.31	0.45
1:C:119:MET:CE	4:D:639:HOH:O	2.64	0.45
1:E:169:ALA:HB3	1:E:170:PRO:HD3	1.98	0.45
1:G:326:ARG:HD3	4:G:644:HOH:O	2.15	0.45
1:H:469:GLU:O	1:H:473:SER:HB3	2.16	0.45
1:B:83:ARG:HD2	1:B:86:GLU:OE1	2.17	0.45
1:B:348:ARG:HD3	4:B:783:HOH:O	2.14	0.45
1:G:27:ARG:NE	1:G:41:THR:HG23	2.31	0.45
1:F:63:LYS:HA	1:F:63:LYS:HD3	1.78	0.45
1:H:27:ARG:HH21	1:H:41:THR:HG23	1.81	0.45
1:C:133:THR:HB	1:C:134:PRO:CD	2.47	0.45
1:D:400:ASP:OD2	1:D:425:ARG:CD	2.64	0.45
1:C:447:ARG:HD2	4:C:612:HOH:O	2.17	0.45
1:A:133:THR:HB	1:A:134:PRO:CD	2.46	0.45
1:B:400:ASP:OD2	1:B:425:ARG:CD	2.64	0.45
1:C:94:GLU:OE2	1:C:188:MET:N	2.35	0.45
1:G:13:GLU:O	1:G:43:PRO:HD3	2.16	0.45
1:G:203:PRO:HG2	1:G:206:MET:CE	2.42	0.45
1:H:335:HIS:HB2	4:H:728:HOH:O	2.16	0.45
1:B:13:GLU:O	1:B:43:PRO:HD3	2.16	0.45
1:G:60:TYR:HE2	1:G:206:MET:HE2	1.82	0.45
1:C:119:MET:HE3	1:D:121:ILE:CD1	2.45	0.44
1:F:163:MET:HA	1:F:163:MET:CE	2.47	0.44
1:H:244:ALA:O	1:H:247:HIS:CD2	2.70	0.44
1:D:400:ASP:OD2	1:D:425:ARG:HD2	2.17	0.44
1:B:295:LYS:HE2	1:B:385:GLU:HG3	1.99	0.44
1:E:350:ALA:HA	1:E:354:ALA:HB3	1.99	0.44
1:F:203:PRO:HA	1:F:204:PRO:HD3	1.82	0.44
1:A:244:ALA:HB1	1:B:21:LEU:CD1	2.45	0.44
1:C:12:HIS:N	4:C:660:HOH:O	2.50	0.44
1:C:58:ALA:HB2	1:C:226:HIS:ND1	2.29	0.44
1:H:13:GLU:HA	1:H:14:PRO:HD3	1.84	0.44
1:A:400:ASP:OD2	1:A:425:ARG:CD	2.65	0.44
1:H:12:HIS:CA	4:H:717:HOH:O	2.63	0.44
1:D:63:LYS:HD3	1:D:63:LYS:HA	1.78	0.44
1:H:108:ARG:HH12	2:H:501:G3H:P	2.40	0.44
1:G:370:ILE:N	4:G:759:HOH:O	2.51	0.44
1:D:50:ALA:CB	1:D:221:MET:HE2	2.38	0.44
1:C:183:THR:HB	3:C:502:NAD:H3B	2.00	0.44

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:308:VAL:HB	1:C:309:PRO:HD3	2.00	0.44
1:C:58:ALA:HB3	1:C:226:HIS:ND1	2.31	0.44
1:H:14:PRO:O	1:H:16:ARG:NH1	2.47	0.44
1:B:377:HIS:NE2	1:B:378:GLN:OE1	2.51	0.44
1:H:484:TRP:C	4:H:601:HOH:O	2.55	0.43
1:B:20:ARG:NE	4:B:731:HOH:O	2.44	0.43
1:C:247:HIS:HA	4:C:720:HOH:O	2.17	0.43
1:H:350:ALA:HA	1:H:354:ALA:HB3	1.99	0.43
1:G:464:LYS:HE3	1:H:477:VAL:HB	1.99	0.43
1:H:27:ARG:HD2	1:H:27:ARG:HA	1.79	0.43
1:H:203:PRO:HA	1:H:204:PRO:HD3	1.87	0.43
1:H:295:LYS:HE2	1:H:385:GLU:HG3	2.00	0.43
1:D:214:PRO:HB3	3:D:502:NAD:C5A	2.48	0.43
1:D:247:HIS:CD2	4:D:775:HOH:O	2.70	0.43
1:H:63:LYS:HA	1:H:63:LYS:HD3	1.81	0.43
1:H:27:ARG:HH21	1:H:41:THR:CG2	2.32	0.43
1:G:438:VAL:O	1:H:480:PHE:HA	2.17	0.43
1:D:247:HIS:HD2	4:D:775:HOH:O	2.02	0.43
1:H:83:ARG:HD2	1:H:86:GLU:OE1	2.19	0.43
1:H:99:LYS:CE	4:H:615:HOH:O	2.66	0.43
1:E:62:PRO:HB3	1:E:206:MET:HE1	2.01	0.43
1:A:27:ARG:HD2	1:A:27:ARG:HA	1.81	0.43
1:A:13:GLU:HA	1:A:14:PRO:HD3	1.91	0.43
1:B:222:ILE:HG23	1:B:246:ALA:HB2	2.01	0.43
1:A:62:PRO:CB	1:A:206:MET:HE2	2.48	0.43
1:C:236:VAL:HB	1:C:237:PRO:HD3	1.99	0.43
1:A:18:ALA:HA	1:A:204:PRO:O	2.19	0.43
1:H:94:GLU:HG2	1:H:186:THR:HA	2.01	0.43
1:A:254:GLU:HB3	4:A:765:HOH:O	2.17	0.43
1:B:130:CYS:HB3	1:C:446:TYR:OH	2.19	0.43
1:A:27:ARG:HH21	1:A:41:THR:CG2	2.31	0.42
1:C:169:ALA:HB3	1:C:170:PRO:HD3	2.00	0.42
1:A:469:GLU:O	1:A:473:SER:HB2	2.18	0.42
1:A:27:ARG:HH21	1:A:41:THR:HG23	1.84	0.42
1:F:248:TYR:HA	4:F:638:HOH:O	2.18	0.42
1:E:83:ARG:HD2	1:E:86:GLU:OE1	2.19	0.42
1:B:289:GLN:HE22	1:B:334:ILE:N	2.17	0.42
1:F:287:SER:HA	1:F:330:LEU:CD1	2.49	0.42
1:D:203:PRO:HA	1:D:204:PRO:HD3	1.82	0.42
1:A:203:PRO:HA	1:A:204:PRO:HD3	1.82	0.42
1:H:320:PHE:CE1	1:H:368:PRO:HB3	2.54	0.42
1:E:377:HIS:NE2	1:E:378:GLN:OE1	2.52	0.42

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:27:ARG:HA	1:C:27:ARG:HD2	1.83	0.42
1:F:377:HIS:CG	1:F:406:LEU:HD11	2.55	0.42
1:D:12:HIS:CD2	1:D:41:THR:CG2	3.03	0.42
1:F:248:TYR:CA	4:F:638:HOH:O	2.67	0.42
1:E:390:ILE:O	1:E:392:PRO:HD3	2.20	0.42
1:H:281:ALA:O	1:H:285:LYS:HG2	2.19	0.42
1:D:50:ALA:HB2	1:D:221:MET:HE3	2.00	0.42
1:A:343:GLU:OE1	1:A:362:ARG:HD3	2.20	0.42
1:F:400:ASP:OD2	1:F:425:ARG:HD2	2.20	0.42
1:E:287:SER:HA	1:E:330:LEU:CD1	2.50	0.42
1:D:169:ALA:HB3	1:D:170:PRO:HD3	2.02	0.42
1:E:62:PRO:CB	1:E:206:MET:HE2	2.50	0.42
1:A:222:ILE:HG23	1:A:246:ALA:HB2	2.02	0.42
1:H:322:ASP:HA	1:H:323:PRO:HD3	1.87	0.42
1:H:99:LYS:HE3	4:H:615:HOH:O	2.19	0.42
1:F:277:ASP:OD1	1:F:314:ARG:NE	2.48	0.42
1:C:316:LYS:NZ	4:C:811:HOH:O	2.51	0.42
1:C:50:ALA:CB	1:C:221:MET:HE2	2.36	0.41
1:F:484:TRP:C	4:F:609:HOH:O	2.58	0.41
1:E:71:LYS:HB2	4:E:805:HOH:O	2.19	0.41
1:H:279:ALA:HB1	1:H:297:ILE:HD13	2.02	0.41
1:B:287:SER:HA	1:B:330:LEU:CD1	2.50	0.41
1:E:163:MET:HE2	1:E:163:MET:HA	2.02	0.41
1:C:236:VAL:O	1:C:240:LYS:HG2	2.20	0.41
1:G:480:PHE:HA	1:H:438:VAL:O	2.20	0.41
1:H:358:TYR:CZ	1:H:360:PRO:HG3	2.55	0.41
1:C:264:LEU:HD12	1:C:420:THR:HB	2.01	0.41
1:A:236:VAL:O	1:A:240:LYS:HG2	2.21	0.41
1:C:306:ARG:NH2	4:C:853:HOH:O	2.53	0.41
1:H:240:LYS:HB3	4:H:665:HOH:O	2.19	0.41
1:C:14:PRO:O	1:C:16:ARG:NH1	2.49	0.41
1:G:322:ASP:HA	1:G:323:PRO:HD3	1.93	0.41
1:A:236:VAL:HB	1:A:237:PRO:HD3	2.02	0.41
1:C:203:PRO:HA	1:C:204:PRO:HD3	1.79	0.41
1:B:21:LEU:N	1:F:247:HIS:HE1	2.15	0.41
1:B:13:GLU:HA	1:B:14:PRO:HD3	1.90	0.41
1:G:27:ARG:HA	1:G:27:ARG:HD2	1.79	0.41
1:F:351:GLU:OE2	1:H:215:ALA:HB3	2.16	0.41
1:C:163:MET:HA	1:C:163:MET:CE	2.51	0.41
1:D:133:THR:HB	1:D:134:PRO:CD	2.48	0.41
1:C:247:HIS:CA	4:C:720:HOH:O	2.67	0.41
1:D:27:ARG:HH21	1:D:41:THR:CG2	2.32	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:H:94:GLU:HG3	1:H:188:MET:HE2	2.03	0.41
1:B:133:THR:HB	1:B:134:PRO:CD	2.50	0.41
1:F:380:ASP:OD2	1:H:46:ARG:HD3	2.20	0.41
1:D:350:ALA:HA	1:D:354:ALA:HB3	2.02	0.41
1:B:50:ALA:HB2	1:B:221:MET:HE3	2.01	0.41
1:F:350:ALA:HA	1:F:354:ALA:HB3	2.03	0.41
1:A:12:HIS:CD2	1:A:41:THR:HG21	2.56	0.40
1:B:12:HIS:ND1	1:B:12:HIS:N	2.69	0.40
1:E:163:MET:HA	1:E:163:MET:CE	2.51	0.40
1:B:139:ARG:HD2	1:C:446:TYR:CE2	2.57	0.40
1:H:390:ILE:O	1:H:392:PRO:HD3	2.21	0.40
1:B:254:GLU:HB3	4:B:676:HOH:O	2.21	0.40
1:B:350:ALA:HA	1:B:354:ALA:HB3	2.03	0.40
1:G:88:SER:HB2	1:G:102:SER:OG	2.22	0.40
1:G:32:TYR:HB2	1:G:39:VAL:CG1	2.51	0.40
1:C:377:HIS:C	1:C:377:HIS:CD2	2.94	0.40
1:B:203:PRO:HA	1:B:204:PRO:HD3	1.86	0.40
1:B:50:ALA:CB	1:B:221:MET:HE3	2.51	0.40
1:D:13:GLU:HA	1:D:14:PRO:HD3	1.89	0.40
1:C:161:LEU:HB2	1:C:189:THR:HG21	2.04	0.40
1:B:464:LYS:HE2	4:B:756:HOH:O	2.22	0.40
1:C:27:ARG:HH21	1:C:41:THR:CG2	2.34	0.40
1:D:377:HIS:NE2	1:D:378:GLN:OE1	2.54	0.40
1:F:295:LYS:HE2	1:F:385:GLU:HG3	2.03	0.40
1:B:163:MET:HE2	1:B:163:MET:HA	2.04	0.40
1:B:182:PRO:HD2	1:B:210:VAL:O	2.21	0.40
1:G:308:VAL:HB	1:G:309:PRO:HD3	2.04	0.40

All (5) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:319:ARG:NH1	1:C:270:ASP:OD1[2_655]	1.76	0.44
1:D:344:GLU:OE2	1:F:84:LYS:NZ[1_554]	1.82	0.38
4:F:609:HOH:O	4:G:735:HOH:O[1_455]	1.85	0.35
4:A:831:HOH:O	4:C:625:HOH:O[2_655]	2.13	0.07
1:A:12:HIS:CD2	1:C:85:GLU:CB[2_655]	2.14	0.06

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	471/488 (96%)	452 (96%)	17 (4%)	2 (0%)	43	46
1	B	471/488 (96%)	454 (96%)	16 (3%)	1 (0%)	56	63
1	C	471/488 (96%)	453 (96%)	16 (3%)	2 (0%)	43	46
1	D	471/488 (96%)	455 (97%)	16 (3%)	0	100	100
1	E	471/488 (96%)	455 (97%)	15 (3%)	1 (0%)	56	63
1	F	471/488 (96%)	452 (96%)	18 (4%)	1 (0%)	56	63
1	G	471/488 (96%)	456 (97%)	14 (3%)	1 (0%)	56	63
1	H	471/488 (96%)	453 (96%)	16 (3%)	2 (0%)	43	46
All	All	3768/3904 (96%)	3630 (96%)	128 (3%)	10 (0%)	50	54

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	392	PRO
1	H	392	PRO
1	A	392	PRO
1	B	392	PRO
1	E	392	PRO
1	F	392	PRO
1	G	392	PRO
1	H	413	GLY
1	A	413	GLY
1	C	413	GLY

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	389/401 (97%)	376 (97%)	13 (3%)	50	60
1	B	389/401 (97%)	376 (97%)	13 (3%)	50	60
1	C	389/401 (97%)	376 (97%)	13 (3%)	50	60
1	D	389/401 (97%)	377 (97%)	12 (3%)	52	62
1	E	389/401 (97%)	378 (97%)	11 (3%)	56	66
1	F	389/401 (97%)	379 (97%)	10 (3%)	59	70
1	G	389/401 (97%)	377 (97%)	12 (3%)	52	62
1	H	389/401 (97%)	375 (96%)	14 (4%)	47	55
All	All	3112/3208 (97%)	3014 (97%)	98 (3%)	52	62

All (98) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	23	ASP
1	A	41	THR
1	A	74	LEU
1	A	132	LEU
1	A	241	LEU
1	A	247	HIS
1	A	250	ARG
1	A	255	LEU
1	A	359	HIS
1	A	406	LEU
1	A	427	GLN
1	A	434	LYS
1	A	473	SER
1	B	23	ASP
1	B	41	THR
1	B	74	LEU
1	B	132	LEU
1	B	241	LEU
1	B	247	HIS
1	B	255	LEU
1	B	359	HIS
1	B	378	GLN
1	B	406	LEU
1	B	427	GLN
1	B	434	LYS
1	B	465	GLU
1	C	23	ASP

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Mol	Chain	Res	Type
1	C	41	THR
1	C	74	LEU
1	C	132	LEU
1	C	247	HIS
1	C	250	ARG
1	C	255	LEU
1	C	359	HIS
1	C	377	HIS
1	C	406	LEU
1	C	427	GLN
1	C	434	LYS
1	C	473	SER
1	D	23	ASP
1	D	41	THR
1	D	74	LEU
1	D	132	LEU
1	D	241	LEU
1	D	247	HIS
1	D	255	LEU
1	D	359	HIS
1	D	406	LEU
1	D	427	GLN
1	D	434	LYS
1	D	473	SER
1	E	23	ASP
1	E	41	THR
1	E	74	LEU
1	E	132	LEU
1	E	247	HIS
1	E	255	LEU
1	E	359	HIS
1	E	406	LEU
1	E	427	GLN
1	E	434	LYS
1	E	473	SER
1	F	23	ASP
1	F	41	THR
1	F	74	LEU
1	F	94	GLU
1	F	247	HIS
1	F	255	LEU
1	F	359	HIS

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Mol	Chain	Res	Type
1	F	406	LEU
1	F	427	GLN
1	F	434	LYS
1	G	23	ASP
1	G	41	THR
1	G	74	LEU
1	G	132	LEU
1	G	241	LEU
1	G	247	HIS
1	G	250	ARG
1	G	255	LEU
1	G	359	HIS
1	G	406	LEU
1	G	427	GLN
1	G	434	LYS
1	H	23	ASP
1	H	41	THR
1	H	74	LEU
1	H	132	LEU
1	H	241	LEU
1	H	247	HIS
1	H	255	LEU
1	H	359	HIS
1	H	378	GLN
1	H	406	LEU
1	H	427	GLN
1	H	434	LYS
1	H	465	GLU
1	H	473	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	247	HIS
1	B	247	HIS
1	B	289	GLN
1	B	427	GLN
1	C	247	HIS
1	D	247	HIS
1	D	427	GLN
1	E	247	HIS
1	H	247	HIS

5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

15 ligands are modelled in this entry.

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$
2	G3H	A	501	1	9,9,9	0.91	0	12,12,12	1.78	2 (16%)
3	NAD	A	502	-	29,29,48	1.87	8 (27%)	45,45,73	2.23	14 (31%)
2	G3H	B	501	1	9,9,9	0.67	0	12,12,12	2.21	5 (41%)
3	NAD	B	502	-	29,29,48	1.80	7 (24%)	45,45,73	1.97	12 (26%)
2	G3H	C	501	1	9,9,9	0.68	0	12,12,12	2.06	5 (41%)
3	NAD	C	502	-	36,38,48	1.67	9 (25%)	54,58,73	1.99	11 (20%)
2	G3H	D	501	1	9,9,9	0.65	0	12,12,12	1.57	3 (25%)
3	NAD	D	502	-	29,29,48	1.78	9 (31%)	45,45,73	1.86	10 (22%)
2	G3H	E	501	1	9,9,9	0.55	0	12,12,12	2.00	3 (25%)
3	NAD	E	502	-	29,29,48	1.81	6 (20%)	45,45,73	1.94	11 (24%)
2	G3H	F	501	1	9,9,9	0.99	1 (11%)	12,12,12	2.52	7 (58%)
3	NAD	F	502	-	29,29,48	1.80	6 (20%)	45,45,73	1.95	10 (22%)
2	G3H	G	501	1	9,9,9	0.53	0	12,12,12	1.87	4 (33%)
3	NAD	G	502	-	29,29,48	1.79	6 (20%)	45,45,73	2.35	13 (28%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	G3H	H	501	1	9,9,9	0.50	0	12,12,12	1.84	3 (25%)

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	G3H	A	501	1	-	0/7/8/8	0/0/0/0
3	NAD	A	502	-	-	0/16/32/62	0/1/3/5
2	G3H	B	501	1	-	0/7/8/8	0/0/0/0
3	NAD	B	502	-	-	0/16/32/62	0/1/3/5
2	G3H	C	501	1	-	0/7/8/8	0/0/0/0
3	NAD	C	502	-	-	0/22/51/62	0/2/4/5
2	G3H	D	501	1	-	0/7/8/8	0/0/0/0
3	NAD	D	502	-	-	0/16/32/62	0/1/3/5
2	G3H	E	501	1	-	0/7/8/8	0/0/0/0
3	NAD	E	502	-	-	0/16/32/62	0/1/3/5
2	G3H	F	501	1	-	0/7/8/8	0/0/0/0
3	NAD	F	502	-	-	0/16/32/62	0/1/3/5
2	G3H	G	501	1	-	0/7/8/8	0/0/0/0
3	NAD	G	502	-	-	0/16/32/62	0/1/3/5
2	G3H	H	501	1	-	0/7/8/8	0/0/0/0

All (52) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	502	NAD	PN-O5D	6.34	1.62	1.51
3	A	502	NAD	PN-O5D	5.75	1.61	1.51
3	E	502	NAD	PN-O5D	5.63	1.61	1.51
3	F	502	NAD	PN-O5D	5.19	1.60	1.51
3	D	502	NAD	PN-O5D	5.01	1.60	1.51
3	G	502	NAD	PN-O5D	4.80	1.60	1.51
3	G	502	NAD	C4A-N9A	4.63	1.44	1.37
3	C	502	NAD	C3D-C2D	-4.49	1.47	1.53
3	F	502	NAD	C4A-N9A	4.29	1.44	1.37
3	G	502	NAD	C8A-N9A	4.14	1.42	1.36
3	A	502	NAD	C4A-N9A	3.95	1.43	1.37
3	E	502	NAD	C4A-N9A	3.74	1.43	1.37
3	C	502	NAD	C4A-N9A	3.61	1.43	1.37
3	B	502	NAD	C8A-N9A	3.48	1.41	1.36
3	D	502	NAD	C8A-N9A	3.46	1.41	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	502	NAD	C2B-C3B	-3.32	1.44	1.53
3	D	502	NAD	C4A-N9A	3.23	1.42	1.37
3	F	502	NAD	C2B-C3B	-3.21	1.44	1.53
3	C	502	NAD	PN-O2N	3.21	1.56	1.48
3	E	502	NAD	C8A-N9A	3.10	1.41	1.36
3	B	502	NAD	C4A-N9A	2.79	1.41	1.37
3	A	502	NAD	O4B-C1B	-2.74	1.37	1.41
3	B	502	NAD	C2B-C3B	-2.73	1.45	1.53
3	C	502	NAD	C8A-N9A	2.72	1.40	1.36
3	C	502	NAD	C2B-C3B	-2.65	1.46	1.53
3	D	502	NAD	O2B-C2B	-2.61	1.36	1.43
3	F	502	NAD	C8A-N9A	2.59	1.40	1.36
3	G	502	NAD	C2B-C3B	-2.57	1.46	1.53
3	E	502	NAD	C2B-C3B	-2.48	1.46	1.53
3	F	502	NAD	O2B-C2B	-2.44	1.37	1.43
3	C	502	NAD	C2B-C1B	-2.41	1.50	1.53
3	A	502	NAD	C8A-N9A	2.40	1.40	1.36
3	B	502	NAD	O2B-C2B	-2.33	1.37	1.43
3	G	502	NAD	O2B-C2B	-2.31	1.37	1.43
3	A	502	NAD	PN-O2N	2.28	1.55	1.51
3	C	502	NAD	O2B-C2B	-2.27	1.37	1.43
3	B	502	NAD	C5A-C4A	2.27	1.45	1.40
3	C	502	NAD	C2A-N3A	2.26	1.36	1.32
3	G	502	NAD	C5A-C4A	2.26	1.45	1.40
2	F	501	G3H	C3-C2	-2.25	1.50	1.52
3	D	502	NAD	C2B-C3B	-2.22	1.47	1.53
3	E	502	NAD	O2B-C2B	-2.19	1.37	1.43
3	D	502	NAD	C2A-N3A	2.12	1.36	1.32
3	A	502	NAD	C6A-N6A	2.12	1.41	1.35
3	F	502	NAD	PN-O2N	2.11	1.55	1.51
3	D	502	NAD	C6A-N6A	2.07	1.41	1.35
3	D	502	NAD	C2B-C1B	-2.05	1.50	1.53
3	A	502	NAD	O2B-C2B	-2.05	1.38	1.43
3	C	502	NAD	C5A-C4A	2.05	1.45	1.40
3	D	502	NAD	C5A-C4A	2.03	1.45	1.40
3	B	502	NAD	C6A-N6A	2.03	1.41	1.35
3	E	502	NAD	C6A-N6A	2.03	1.41	1.35

All (113) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	G	502	NAD	N3A-C2A-N1A	-7.44	122.48	128.71

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	502	NAD	N3A-C2A-N1A	-7.27	122.63	128.71
3	F	502	NAD	N3A-C2A-N1A	-7.21	122.68	128.71
3	A	502	NAD	N3A-C2A-N1A	-7.14	122.74	128.71
3	C	502	NAD	N3A-C2A-N1A	-6.45	123.31	128.71
3	G	502	NAD	O4B-C1B-N9A	6.25	114.25	108.44
3	D	502	NAD	N3A-C2A-N1A	-5.91	123.77	128.71
3	B	502	NAD	N3A-C2A-N1A	-5.82	123.84	128.71
3	A	502	NAD	O4B-C1B-N9A	5.64	113.69	108.44
3	G	502	NAD	O2N-PN-O1N	-5.58	99.90	112.73
3	A	502	NAD	N3A-C4A-N9A	5.56	135.47	125.43
3	C	502	NAD	N3A-C4A-N9A	5.34	135.08	125.43
3	B	502	NAD	O2N-PN-O1N	-5.32	100.49	112.73
3	G	502	NAD	N3A-C4A-N9A	5.27	134.96	125.43
3	E	502	NAD	N3A-C4A-N9A	5.26	134.93	125.43
3	F	502	NAD	N3A-C4A-N9A	5.15	134.73	125.43
3	D	502	NAD	N3A-C4A-N9A	5.00	134.47	125.43
3	A	502	NAD	O2N-PN-O1N	-4.53	102.31	112.73
3	C	502	NAD	O2N-PN-O1N	-4.50	105.13	118.72
3	D	502	NAD	O2N-PN-O1N	-4.44	102.52	112.73
3	B	502	NAD	N3A-C4A-N9A	4.33	133.25	125.43
2	E	501	G3H	C3-C2-C1	-4.30	102.29	110.41
2	C	501	G3H	O1-C1-C2	-4.24	114.66	125.34
2	B	501	G3H	O1-C1-C2	-4.19	114.79	125.34
2	B	501	G3H	C3-C2-C1	-4.08	102.72	110.41
2	E	501	G3H	O1-C1-C2	-4.07	115.08	125.34
3	G	502	NAD	PN-O3-PA	-3.94	119.13	133.31
3	C	502	NAD	O4B-C1B-N9A	3.91	112.08	108.44
2	F	501	G3H	O3P-P-O2P	3.84	123.00	110.44
3	B	502	NAD	O4B-C1B-N9A	3.79	111.97	108.44
3	F	502	NAD	O2N-PN-O1N	-3.75	104.10	112.73
2	A	501	G3H	O1-C1-C2	-3.70	116.00	125.34
3	C	502	NAD	O4D-C4D-C5D	3.70	114.05	109.16
2	G	501	G3H	O1-C1-C2	-3.65	116.15	125.34
3	F	502	NAD	C4A-C5A-N7A	-3.62	106.42	109.52
3	D	502	NAD	C4A-C5A-N7A	-3.60	106.44	109.52
2	F	501	G3H	O2-C2-C1	3.51	116.72	109.03
3	E	502	NAD	C4A-C5A-N7A	-3.42	106.59	109.52
2	H	501	G3H	O1-C1-C2	-3.40	116.77	125.34
3	G	502	NAD	C5A-C4A-N3A	-3.40	118.31	125.70
2	F	501	G3H	C3-C2-C1	-3.34	104.11	110.41
2	F	501	G3H	O1-C1-C2	-3.31	117.01	125.34
2	D	501	G3H	C3-C2-C1	-3.30	104.18	110.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	502	NAD	O4B-C1B-N9A	3.22	111.44	108.44
2	A	501	G3H	C3-C2-C1	-3.21	104.36	110.41
3	B	502	NAD	C4B-O4B-C1B	-3.20	106.28	109.75
2	H	501	G3H	O4P-P-O1P	-3.18	97.88	106.65
3	G	502	NAD	C3B-C2B-C1B	3.16	105.85	100.91
3	E	502	NAD	C4B-O4B-C1B	-3.14	106.34	109.75
3	B	502	NAD	C4A-C5A-N7A	-3.12	106.85	109.52
3	C	502	NAD	C5A-C4A-N3A	-3.09	118.98	125.70
3	C	502	NAD	O4B-C1B-C2B	-3.04	102.11	106.77
3	D	502	NAD	C5A-C4A-N3A	-2.98	119.20	125.70
3	C	502	NAD	C4A-C5A-N7A	-2.98	106.97	109.52
3	A	502	NAD	C4B-O4B-C1B	-2.94	106.56	109.75
3	F	502	NAD	C5A-C4A-N3A	-2.93	119.31	125.70
2	F	501	G3H	O1P-P-O2P	-2.93	98.13	106.71
3	E	502	NAD	C5A-C4A-N3A	-2.92	119.34	125.70
3	A	502	NAD	C5A-C4A-N3A	-2.91	119.36	125.70
2	C	501	G3H	O3P-P-O1P	-2.89	98.68	106.65
3	B	502	NAD	PN-O3-PA	-2.88	122.92	133.31
2	D	501	G3H	O1-C1-C2	-2.87	118.11	125.34
2	C	501	G3H	O4P-P-O3P	2.86	118.74	107.61
3	G	502	NAD	C4A-C5A-N7A	-2.85	107.08	109.52
3	A	502	NAD	PN-O3-PA	-2.79	123.27	133.31
3	C	502	NAD	O2N-PN-O3	2.72	116.11	108.79
3	B	502	NAD	C8A-N9A-C4A	2.69	108.95	106.90
2	B	501	G3H	O4P-P-O1P	-2.69	99.22	106.65
3	E	502	NAD	PN-O3-PA	-2.60	123.94	133.31
3	A	502	NAD	C8A-N9A-C4A	2.59	108.87	106.90
3	G	502	NAD	C2A-N3A-C4A	2.58	121.34	114.01
2	C	501	G3H	C3-C2-C1	-2.56	105.58	110.41
3	A	502	NAD	C4A-C5A-N7A	-2.53	107.36	109.52
2	F	501	G3H	O4P-P-O1P	-2.50	99.75	106.65
3	D	502	NAD	O2N-PN-O3	2.50	114.07	105.27
3	F	502	NAD	PN-O3-PA	-2.48	124.36	133.31
3	E	502	NAD	O2N-PN-O1N	-2.49	107.01	112.73
3	F	502	NAD	C4B-O4B-C1B	-2.46	107.07	109.75
2	H	501	G3H	O4P-P-O3P	2.42	117.05	107.61
2	B	501	G3H	O4P-P-O2P	2.41	118.31	110.44
3	D	502	NAD	O4B-C1B-C2B	-2.40	103.10	106.77
3	E	502	NAD	C2B-C1B-N9A	2.38	119.38	113.27
3	E	502	NAD	O4B-C1B-C2B	-2.37	103.14	106.77
3	G	502	NAD	O2A-PA-O3	2.31	116.08	105.14
2	G	501	G3H	O4P-P-O3P	2.30	116.56	107.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	F	502	NAD	C8A-N7A-C5A	2.29	110.67	103.58
2	G	501	G3H	O2-C2-C1	2.28	114.03	109.03
3	F	502	NAD	O4B-C1B-N9A	2.27	110.55	108.44
2	F	501	G3H	O2-C2-C3	-2.27	104.24	109.56
3	A	502	NAD	N6A-C6A-N1A	2.26	123.80	119.36
3	E	502	NAD	C8A-N7A-C5A	2.26	110.58	103.58
2	B	501	G3H	O4P-P-O3P	2.21	116.23	107.61
3	D	502	NAD	C8A-N7A-C5A	2.21	110.44	103.58
3	A	502	NAD	O2N-PN-O3	2.21	113.06	105.27
3	D	502	NAD	O3-PA-O5B	2.19	113.20	103.41
3	E	502	NAD	C2A-N3A-C4A	2.19	120.23	114.01
2	C	501	G3H	O2-C2-C1	2.16	113.76	109.03
3	A	502	NAD	O4B-C1B-C2B	-2.15	103.48	106.77
3	F	502	NAD	C2A-N3A-C4A	2.13	120.08	114.01
3	G	502	NAD	O3-PN-O1N	2.13	113.19	106.91
2	G	501	G3H	O1P-P-O2P	-2.11	100.52	106.71
3	B	502	NAD	C2A-N1A-C6A	2.10	122.57	118.77
3	C	502	NAD	C8A-N7A-C5A	2.10	110.08	103.58
3	A	502	NAD	C8A-N7A-C5A	2.09	110.05	103.58
3	B	502	NAD	C5A-C4A-N3A	-2.08	121.16	125.70
3	B	502	NAD	C8A-N7A-C5A	2.07	110.00	103.58
3	C	502	NAD	PN-O3-PA	-2.06	124.12	132.95
3	A	502	NAD	N7A-C8A-N9A	-2.05	108.56	114.36
2	D	501	G3H	O4P-P-O3P	2.03	115.53	107.61
3	B	502	NAD	N7A-C8A-N9A	-2.03	108.60	114.36
3	G	502	NAD	O2A-PA-O1A	-2.03	100.90	112.21
3	G	502	NAD	O4B-C4B-C3B	2.03	109.28	105.17
2	E	501	G3H	O4P-P-O3P	2.02	115.49	107.61

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

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	473/488 (96%)	-0.25	3 (0%) 86 89	11, 20, 37, 59	0
1	B	473/488 (96%)	-0.18	4 (0%) 83 86	12, 20, 39, 60	0
1	C	473/488 (96%)	-0.27	1 (0%) 93 96	12, 20, 38, 56	0
1	D	473/488 (96%)	-0.15	3 (0%) 86 89	12, 22, 40, 61	0
1	E	473/488 (96%)	-0.29	0 100 100	12, 21, 39, 60	0
1	F	473/488 (96%)	-0.16	5 (1%) 77 81	11, 22, 40, 60	0
1	G	473/488 (96%)	-0.12	10 (2%) 60 64	13, 22, 41, 60	0
1	H	473/488 (96%)	0.90	84 (17%) 2 1	12, 25, 44, 61	0
All	All	3784/3904 (96%)	-0.06	110 (2%) 49 54	11, 22, 40, 61	0

All (110) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	215	ALA	11.4
1	H	365	ALA	6.3
1	H	216	ASP	5.8
1	H	248	TYR	5.8
1	H	312	LEU	5.8
1	H	213	TRP	5.5
1	H	349	ALA	5.5
1	H	244	ALA	5.1
1	H	340	ALA	4.9
1	H	243	ALA	4.7
1	H	219	MET	4.6
1	H	317	ARG	4.2
1	H	364	GLY	4.2
1	H	366	LEU	4.1
1	H	47	ALA	4.0
1	H	370	ILE	4.0

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Mol	Chain	Res	Type	RSRZ
1	H	12	HIS	3.9
1	H	363	SER	3.9
1	H	316	LYS	3.9
1	H	344	GLU	3.8
1	G	12	HIS	3.8
1	H	350	ALA	3.7
1	H	342	PHE	3.7
1	H	359	HIS	3.7
1	H	25	ASP	3.6
1	H	245	ASN	3.5
1	G	355	ASP	3.5
1	D	12	HIS	3.4
1	F	351	GLU	3.4
1	H	241	LEU	3.4
1	H	24	THR	3.4
1	H	28	VAL	3.3
1	G	248	TYR	3.3
1	H	341	LEU	3.2
1	H	358	TYR	3.2
1	H	326	ARG	3.2
1	H	269	ASP	3.2
1	H	402	ALA	3.1
1	B	377	HIS	3.1
1	H	354	ALA	3.1
1	H	320	PHE	3.1
1	B	216	ASP	3.1
1	H	31	ARG	3.1
1	G	215	ALA	3.0
1	F	344	GLU	3.0
1	H	362	ARG	3.0
1	D	215	ALA	2.9
1	H	351	GLU	2.9
1	H	217	ILE	2.9
1	H	327	SER	2.9
1	H	246	ALA	2.9
1	H	324	MET	2.8
1	H	310	LEU	2.8
1	H	338	ALA	2.8
1	H	48	GLU	2.8
1	A	247	HIS	2.7
1	D	377	HIS	2.7
1	B	12	HIS	2.7

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Mol	Chain	Res	Type	RSRZ
1	H	380	ASP	2.7
1	H	33	PRO	2.7
1	H	311	VAL	2.6
1	H	321	GLY	2.6
1	G	247	HIS	2.6
1	F	317	ARG	2.6
1	H	360	PRO	2.5
1	H	32	TYR	2.5
1	H	305	ASP	2.5
1	F	247	HIS	2.5
1	G	349	ALA	2.5
1	H	50	ALA	2.5
1	H	357	LEU	2.4
1	H	323	PRO	2.4
1	H	322	ASP	2.4
1	H	335	HIS	2.4
1	H	367	LEU	2.4
1	G	27	ARG	2.4
1	H	240	LYS	2.4
1	H	318	LEU	2.4
1	H	187	PRO	2.3
1	H	34	TRP	2.3
1	H	406	LEU	2.3
1	H	55	ALA	2.3
1	H	306	ARG	2.3
1	H	348	ARG	2.3
1	H	95	LEU	2.3
1	H	39	VAL	2.3
1	H	270	ASP	2.3
1	F	12	HIS	2.2
1	H	325	ASP	2.2
1	H	223	THR	2.2
1	G	241	LEU	2.2
1	G	246	ALA	2.2
1	A	378	GLN	2.2
1	H	319	ARG	2.2
1	C	12	HIS	2.2
1	H	377	HIS	2.2
1	H	93	LEU	2.1
1	H	334	ILE	2.1
1	B	378	GLN	2.1
1	H	237	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
1	H	315	ALA	2.1
1	A	377	HIS	2.1
1	H	211	THR	2.1
1	H	189	THR	2.1
1	G	383	LEU	2.1
1	H	409	SER	2.0
1	H	30	VAL	2.0
1	H	355	ASP	2.0
1	H	398	ASP	2.0
1	H	22	VAL	2.0

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

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	RSR	LLDF	B-factors(Å ²)	Q<0.9
2	G3H	G	501	10/10	0.21	2.42	26,36,46,50	0
2	G3H	D	501	10/10	0.20	1.83	23,30,45,48	0
3	NAD	F	502	27/44	0.17	1.18	19,31,67,78	7
3	NAD	E	502	27/44	0.17	1.08	25,43,57,70	0
3	NAD	B	502	27/44	0.14	0.85	18,26,38,49	0
3	NAD	G	502	27/44	0.15	0.81	22,38,63,92	0
2	G3H	H	501	10/10	0.17	0.66	31,38,46,51	0
2	G3H	B	501	10/10	0.17	0.57	20,30,43,44	0
2	G3H	F	501	10/10	0.14	0.32	21,28,38,42	0
3	NAD	D	502	27/44	0.13	0.07	24,34,47,77	0
2	G3H	A	501	10/10	0.16	-0.05	20,28,37,41	0

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Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
2	G3H	E	501	10/10	0.14	-0.37	18,32,45,47	0
2	G3H	C	501	10/10	0.14	-0.93	17,29,40,44	0
3	NAD	C	502	35/44	0.11	-0.99	16,28,50,63	0
3	NAD	A	502	27/44	0.10	-1.74	12,25,37,49	0

6.5 Other polymers ⓘ

There are no such residues in this entry.