



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 15, 2017 – 02:56 am GMT

PDB ID : 3BXX  
Title : Binding of two substrate analogue molecules to dihydroflavonol 4-reductase alters the functional geometry of the catalytic site  
Authors : Trabelsi, N.; Petit, P.; Granier, T.; Langlois d'Estaintot, B.; Delrot, S.; Gallois, B.  
Deposited on : 2008-01-15  
Resolution : 2.90 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity	:	4.02b-467
Mogul	:	1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix)	:	1.9-1692
EDS	:	trunk28620
Percentile statistics	:	20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	recalc28949

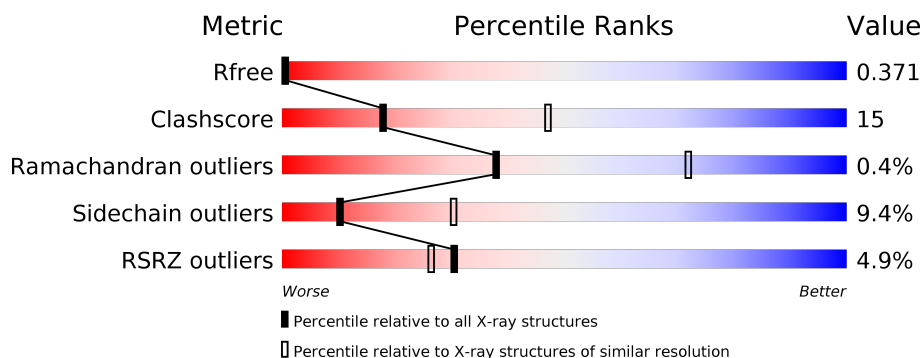
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.90 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))
$R_{free}$	100719	1586 (2.90-2.90)
Clashscore	112137	1807 (2.90-2.90)
Ramachandran outliers	110173	1768 (2.90-2.90)
Sidechain outliers	110143	1770 (2.90-2.90)
RSRZ outliers	101464	1596 (2.90-2.90)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	337	<div> <div>3%</div> <div>65%</div> <div>29%</div> <div>• •</div> </div>
1	B	337	<div> <div>70%</div> <div>24%</div> <div>• •</div> </div>
1	C	337	<div> <div>%</div> <div>66%</div> <div>28%</div> <div>• •</div> </div>
1	D	337	<div> <div>10%</div> <div>56%</div> <div>35%</div> <div>5%</div> <div>•</div> </div>
1	E	337	<div> <div>12%</div> <div>56%</div> <div>36%</div> <div>• •</div> </div>
1	F	337	<div> <div>2%</div> <div>63%</div> <div>29%</div> <div>• •</div> </div>

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	QUE	C	341	-	-	-	X

## 2 Entry composition [i](#)

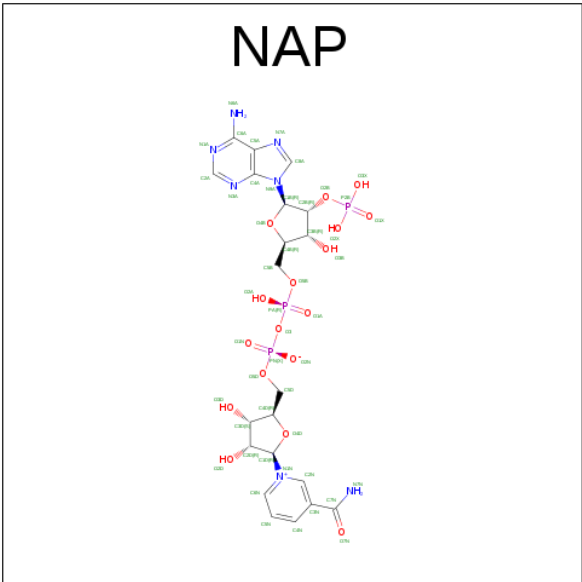
There are 4 unique types of molecules in this entry. The entry contains 15797 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 dihydroflavonol 4-reductase.

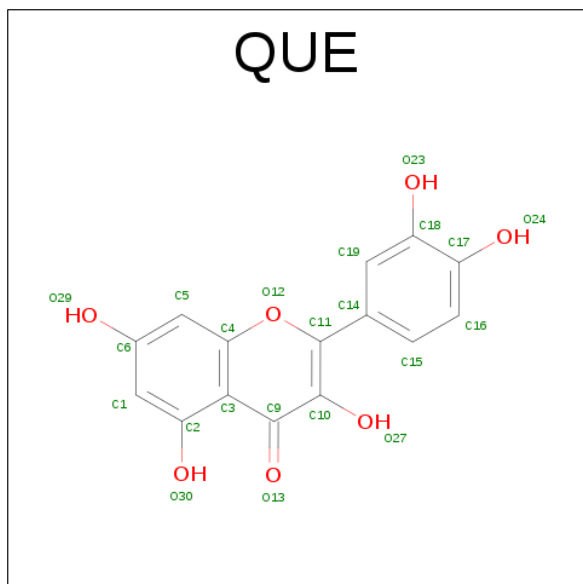
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	B	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	C	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	D	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	E	324	Total	C	N	O	S	0	0	0
			2531	1621	417	473	20			
1	F	324	Total	C	N	O	S	0	0	0
			2527	1619	417	471	20			

- Molecule 2 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: C<sub>21</sub>H<sub>28</sub>N<sub>7</sub>O<sub>17</sub>P<sub>3</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
2	B	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
2	C	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
2	D	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
2	E	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
2	F	1	Total	C	N	O	P	0	0
			48	21	7	17	3		

- Molecule 3 is 3,5,7,3',4'-PENTAHYDROXYFLAVONE (three-letter code: QUE) (formula:  $C_{15}H_{10}O_7$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			22	15	7		
3	B	1	Total	C	O	0	0
			22	15	7		
3	B	1	Total	C	O	0	0
			22	15	7		
3	C	1	Total	C	O	0	0
			22	15	7		
3	C	1	Total	C	O	0	0
			22	15	7		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total	C	O	0	0
			22	15	7		
3	D	1	Total	C	O	0	0
			22	15	7		
3	F	1	Total	C	O	0	0
			22	15	7		
3	F	1	Total	C	O	0	0
			22	15	7		

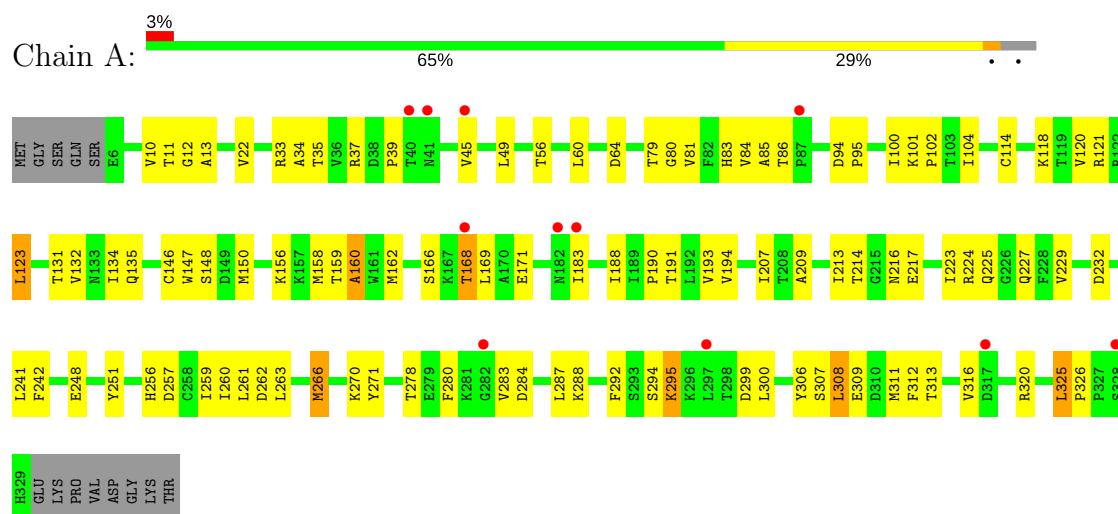
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	19	Total	O	0	0
			19	19		
4	B	15	Total	O	0	0
			15	15		
4	C	16	Total	O	0	0
			16	16		
4	D	29	Total	O	0	0
			29	29		
4	E	33	Total	O	0	0
			33	33		
4	F	17	Total	O	0	0
			17	17		

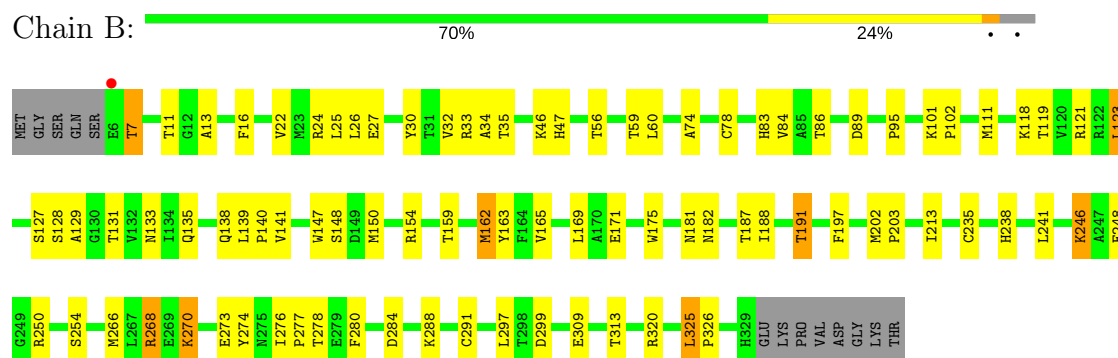
### 3 Residue-property plots

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

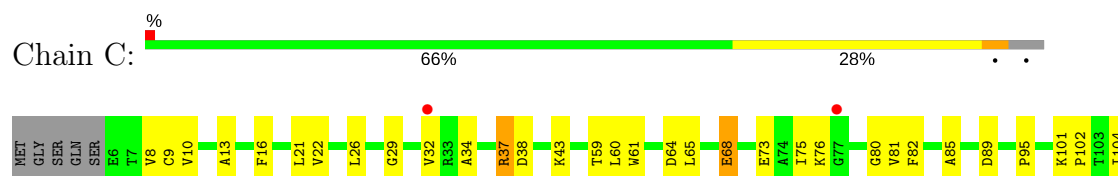
- Molecule 1: dihydroflavonol 4-reductase

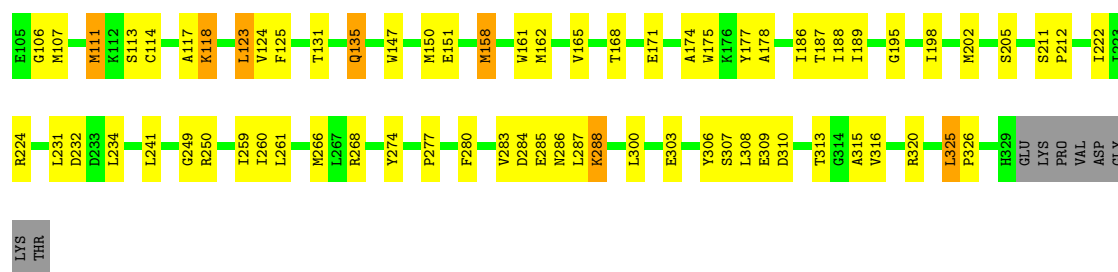


- Molecule 1: dihydroflavonol 4-reductase

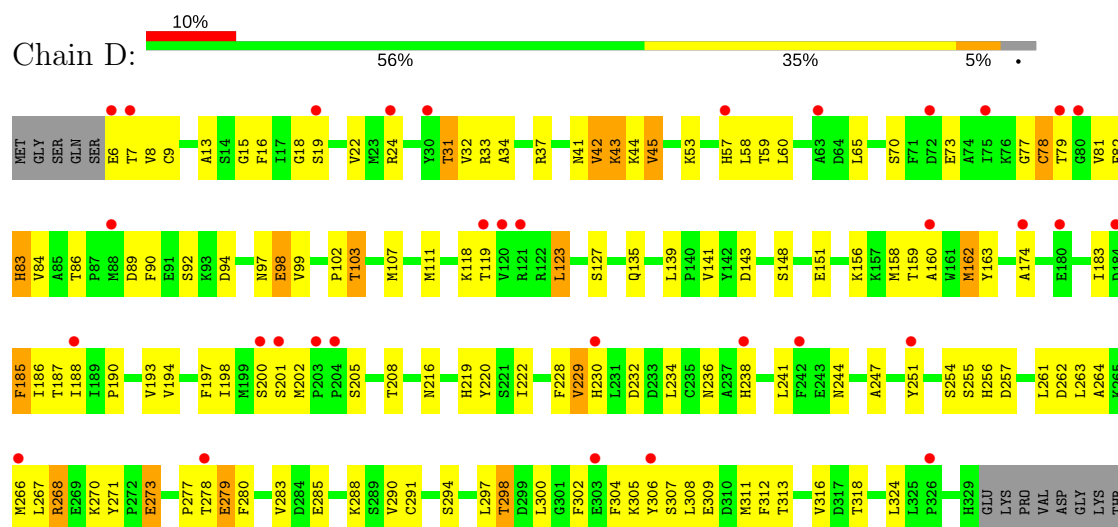


- Molecule 1: dihydroflavonol 4-reductase

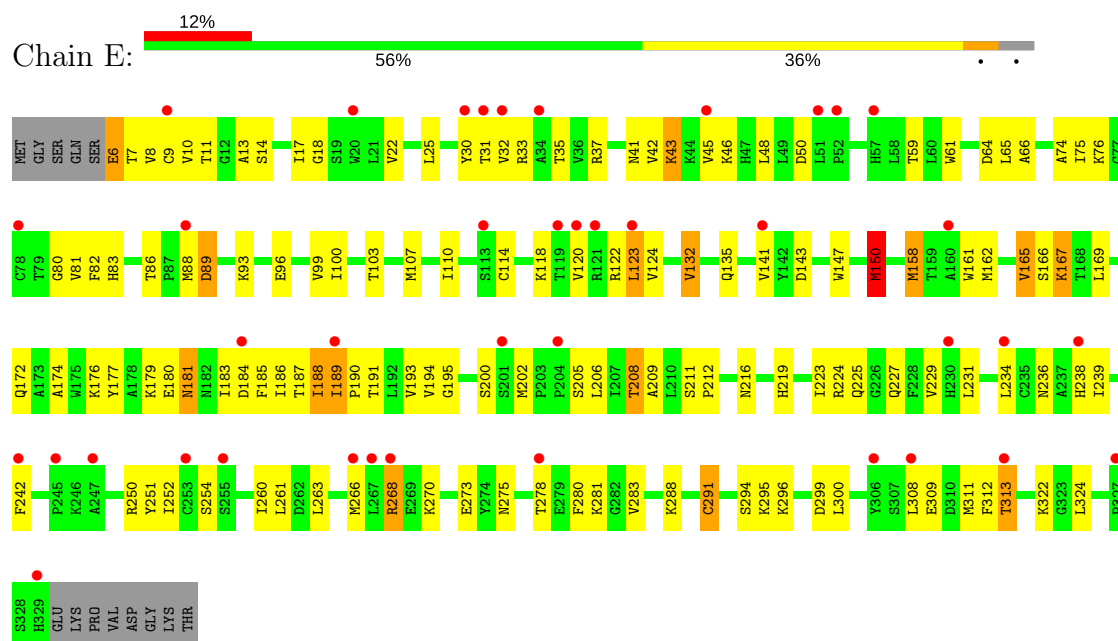




• Molecule 1: dihydroflavonol 4-reductase



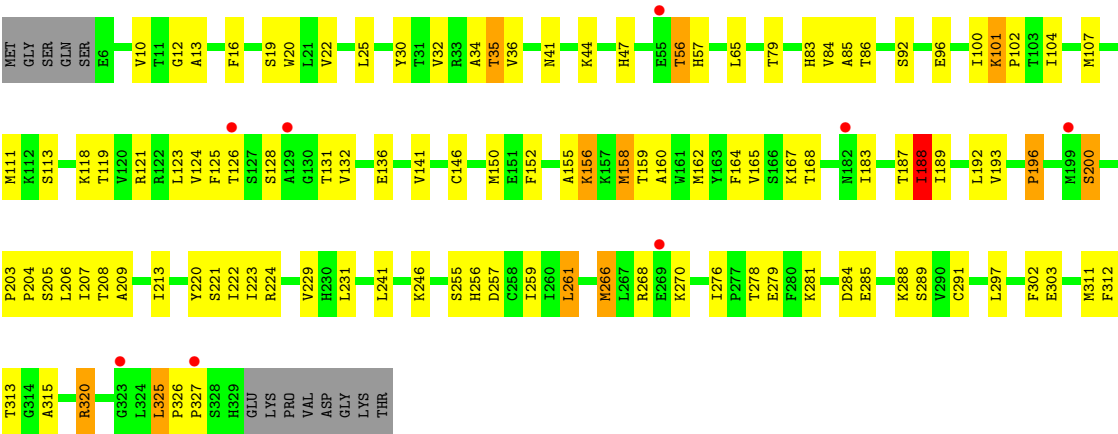
• Molecule 1: dihydroflavonol 4-reductase



• Molecule 1: dihydroflavonol 4-reductase







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	174.94Å 174.94Å 290.17Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	75.81 – 2.90 75.75 – 2.90	Depositor EDS
% Data completeness (in resolution range)	100.0 (75.81-2.90) 100.0 (75.75-2.90)	Depositor EDS
$R_{merge}$	0.15	Depositor
$R_{sym}$	0.15	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	5.65 (at 2.91Å)	Xtrriage
Refinement program	REFMAC 5.2	Depositor
R, $R_{free}$	0.288 , 0.366 0.292 , 0.371	Depositor DCC
$R_{free}$ test set	2967 reflections (5.33%)	DCC
Wilson B-factor (Å <sup>2</sup> )	30.9	Xtrriage
Anisotropy	0.025	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 44.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.35$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.87	EDS
Total number of atoms	15797	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	26.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 28.75 % of the origin peak, indicating pseudo translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo translational symmetry is equal to 1.7460e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: NAP, QUE

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	0.63	0/2591	1.03	7/3513 (0.2%)
1	B	0.62	0/2591	1.10	10/3513 (0.3%)
1	C	0.64	0/2591	1.10	5/3513 (0.1%)
1	D	0.62	0/2591	1.08	5/3513 (0.1%)
1	E	0.66	0/2591	1.13	1/3513 (0.0%)
1	F	0.62	0/2587	1.09	6/3508 (0.2%)
All	All	0.63	0/15542	1.09	34/21073 (0.2%)

There are no bond length outliers.

All (34) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	320	ARG	NE-CZ-NH1	5.92	123.26	120.30
1	D	60	LEU	CA-CB-CG	5.86	128.78	115.30
1	B	299	ASP	CB-CG-OD1	5.85	123.57	118.30
1	C	64	ASP	CB-CG-OD1	5.71	123.44	118.30
1	D	162	MET	CG-SD-CE	5.70	109.32	100.20
1	B	24	ARG	NE-CZ-NH1	5.68	123.14	120.30
1	F	200	SER	N-CA-CB	-5.62	102.06	110.50
1	A	217	GLU	OE1-CD-OE2	-5.62	116.56	123.30
1	D	37	ARG	NE-CZ-NH2	-5.61	117.50	120.30
1	B	89	ASP	CB-CG-OD1	5.60	123.34	118.30
1	B	24	ARG	NE-CZ-NH2	-5.46	117.57	120.30
1	A	320	ARG	NE-CZ-NH1	5.44	123.02	120.30
1	B	121	ARG	NE-CZ-NH1	5.39	123.00	120.30
1	C	38	ASP	CB-CG-OD2	-5.39	113.45	118.30
1	E	150	MET	CG-SD-CE	5.39	108.82	100.20
1	C	232	ASP	CB-CG-OD1	5.36	123.12	118.30
1	A	94	ASP	CB-CG-OD1	5.32	123.08	118.30
1	F	188	ILE	CB-CA-C	-5.27	101.06	111.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	320	ARG	NE-CZ-NH1	5.27	122.94	120.30
1	B	284	ASP	N-CA-CB	-5.26	101.13	110.60
1	A	49	LEU	CB-CG-CD2	5.26	119.94	111.00
1	B	150	MET	CG-SD-CE	5.22	108.56	100.20
1	D	262	ASP	CB-CG-OD2	-5.22	113.61	118.30
1	F	220	TYR	CB-CG-CD1	5.21	124.13	121.00
1	A	60	LEU	CA-CB-CG	5.14	127.12	115.30
1	C	202	MET	CG-SD-CE	5.13	108.41	100.20
1	F	220	TYR	CB-CG-CD2	-5.12	117.93	121.00
1	A	160	ALA	CB-CA-C	-5.09	102.47	110.10
1	F	261	LEU	CA-CB-CG	5.08	126.98	115.30
1	B	191	THR	N-CA-C	-5.05	97.36	111.00
1	A	33	ARG	NE-CZ-NH1	5.05	122.83	120.30
1	D	232	ASP	CB-CG-OD2	5.04	122.83	118.30
1	B	284	ASP	CB-CG-OD1	-5.03	113.78	118.30
1	C	37	ARG	NE-CZ-NH1	5.02	122.81	120.30

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2531	0	2508	62	0
1	B	2531	0	2508	68	0
1	C	2531	0	2508	67	0
1	D	2531	0	2508	101	0
1	E	2531	0	2508	114	0
1	F	2527	0	2504	68	0
2	A	48	0	25	1	0
2	B	48	0	25	1	0
2	C	48	0	25	5	0
2	D	48	0	25	3	0
2	E	48	0	25	6	0
2	F	48	0	25	2	0
3	A	22	0	6	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	44	0	11	4	0
3	C	44	0	14	0	0
3	D	44	0	13	2	0
3	F	44	0	17	5	0
4	A	19	0	0	2	0
4	B	15	0	0	3	0
4	C	16	0	0	2	0
4	D	29	0	0	9	0
4	E	33	0	0	4	0
4	F	17	0	0	0	0
All	All	15797	0	15255	469	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 15.

All (469) 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:E:236:ASN:HA	1:E:239:ILE:HD12	1.36	1.06
1:F:132:VAL:HG22	1:F:146:CYS:O	1.57	1.02
1:E:193:VAL:HG21	1:E:234:LEU:HD22	1.41	0.99
1:B:141:VAL:HG22	1:B:291:CYS:HB3	1.44	0.99
1:B:95:PRO:HB3	1:B:162:MET:HE2	1.46	0.95
1:B:95:PRO:HB3	1:B:162:MET:CE	2.00	0.92
1:B:95:PRO:CB	1:B:162:MET:HE2	2.00	0.91
1:D:270:LYS:HE2	1:D:313:THR:HG22	1.51	0.91
1:B:95:PRO:CB	1:B:162:MET:CE	2.49	0.90
1:C:171:GLU:O	1:C:174:ALA:HB3	1.70	0.90
1:F:204:PRO:HA	1:F:207:ILE:HD12	1.52	0.90
1:D:31:THR:HG23	1:D:57:HIS:ND1	1.88	0.89
1:F:10:VAL:HG11	1:F:22:VAL:HG23	1.55	0.88
1:D:7:THR:HG22	1:D:78:CYS:HB3	1.60	0.83
1:E:35:THR:HG22	1:E:61:TRP:HB2	1.58	0.83
1:B:325:LEU:HD23	1:B:326:PRO:HD2	1.62	0.81
1:A:168:THR:HG22	1:A:169:LEU:HD23	1.61	0.81
1:C:288:LYS:HE3	1:D:139:LEU:HD22	1.60	0.81
1:E:141:VAL:HG22	1:E:291:CYS:HB3	1.64	0.80
1:D:77:GLY:O	1:D:119:THR:HG21	1.81	0.79
1:E:174:ALA:HB1	1:E:185:PHE:CZ	2.19	0.78
1:E:193:VAL:CG2	1:E:234:LEU:HD22	2.13	0.77
1:F:132:VAL:HG13	1:F:146:CYS:HB2	1.66	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:236:ASN:CA	1:E:239:ILE:HD12	2.15	0.77
1:E:309:GLU:O	1:E:313:THR:HG23	1.86	0.76
1:B:11:THR:OG1	1:B:83:HIS:HA	1.85	0.76
1:B:188:ILE:HD12	1:B:238:HIS:CD2	2.22	0.74
1:A:325:LEU:HD23	1:A:326:PRO:HD2	1.70	0.74
1:E:225:GLN:O	1:E:227:GLN:NE2	2.21	0.74
1:B:268:ARG:CZ	1:B:278:THR:HG22	2.18	0.73
1:F:203:PRO:HG2	1:F:206:LEU:HD12	1.69	0.73
1:B:165:VAL:HG12	1:B:169:LEU:HD12	1.71	0.73
1:F:22:VAL:HG22	1:F:32:VAL:HG11	1.70	0.73
1:A:261:LEU:HD13	1:A:283:VAL:HG12	1.72	0.71
1:D:89:ASP:HB3	4:D:351:HOH:O	1.90	0.70
1:C:125:PHE:HB3	1:C:187:THR:HG22	1.71	0.70
1:C:22:VAL:HG22	1:C:32:VAL:HG11	1.74	0.69
1:D:279:GLU:HB3	4:D:366:HOH:O	1.91	0.69
1:E:193:VAL:HG21	1:E:234:LEU:CD2	2.19	0.69
1:B:191:THR:HG21	1:B:254:SER:HB2	1.74	0.69
1:C:158:MET:HE2	1:C:161:TRP:HB3	1.73	0.69
1:E:273:GLU:OE1	1:E:273:GLU:N	2.25	0.69
1:C:325:LEU:HD22	1:C:326:PRO:HD2	1.73	0.69
1:E:188:ILE:HD12	1:E:238:HIS:CD2	2.27	0.69
1:A:260:ILE:HG23	1:A:280:PHE:CD2	2.27	0.68
1:D:244:ASN:HD21	1:D:300:LEU:HD22	1.59	0.68
1:E:236:ASN:HA	1:E:239:ILE:CD1	2.20	0.68
1:E:64:ASP:OD1	1:E:66:ALA:N	2.26	0.68
1:C:284:ASP:OD1	1:C:286:ASN:N	2.27	0.68
1:F:125:PHE:HB3	1:F:187:THR:HG22	1.76	0.67
1:F:111:MET:HE2	1:F:183:ILE:HD12	1.77	0.67
1:D:306:TYR:HA	4:D:361:HOH:O	1.95	0.66
1:B:129:ALA:HB3	3:B:341:QUE:C19	2.24	0.66
1:D:244:ASN:ND2	1:D:300:LEU:HD22	2.12	0.65
1:B:309:GLU:O	1:B:313:THR:HG23	1.96	0.65
1:E:275:ASN:CB	4:E:366:HOH:O	2.44	0.65
1:C:81:VAL:HG21	1:C:114:CYS:SG	2.36	0.64
1:E:89:ASP:CG	1:E:89:ASP:O	2.36	0.64
1:C:288:LYS:HE2	1:D:139:LEU:HD13	1.79	0.63
1:A:188:ILE:HD11	1:A:241:LEU:HD12	1.81	0.63
1:D:111:MET:HE2	1:D:183:ILE:HD12	1.81	0.63
1:E:75:ILE:HD11	1:E:110:ILE:HG23	1.80	0.62
1:C:189:ILE:HD11	1:C:250:ARG:NH2	2.13	0.62
1:A:193:VAL:HG13	1:A:229:VAL:HG13	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:150:MET:HA	1:E:150:MET:CE	2.30	0.62
1:A:309:GLU:O	1:A:313:THR:HG23	1.99	0.62
1:B:141:VAL:HG22	1:B:291:CYS:CB	2.24	0.62
1:E:17:ILE:HD12	2:E:338:NAP:H51N	1.82	0.62
1:D:174:ALA:HB1	1:D:185:PHE:CE2	2.36	0.61
1:D:270:LYS:CE	1:D:313:THR:HG22	2.26	0.61
1:E:208:THR:HG23	1:E:219:HIS:HB3	1.82	0.61
1:E:96:GLU:HA	1:E:100:ILE:HD12	1.82	0.61
1:E:174:ALA:HB1	1:E:185:PHE:CE2	2.35	0.61
1:B:191:THR:CG2	1:B:254:SER:HB2	2.30	0.61
1:E:167:LYS:NZ	2:E:338:NAP:O3D	2.34	0.61
1:D:186:ILE:HG22	1:D:187:THR:N	2.15	0.61
1:D:229:VAL:HG11	1:D:234:LEU:HB2	1.83	0.61
1:D:222:ILE:O	1:D:222:ILE:HG22	2.00	0.60
1:A:12:GLY:HA3	1:A:85:ALA:HB2	1.84	0.60
1:F:96:GLU:HA	1:F:100:ILE:HD12	1.83	0.60
1:C:158:MET:CE	1:C:158:MET:H	2.15	0.60
1:E:75:ILE:O	1:E:75:ILE:CG2	2.48	0.60
1:D:98:GLU:HG2	4:D:353:HOH:O	2.01	0.60
1:A:100:ILE:HG23	1:A:166:SER:HA	1.84	0.59
1:B:141:VAL:CG2	1:B:291:CYS:HB3	2.26	0.59
1:E:180:GLU:C	1:E:181:ASN:HD22	2.05	0.59
1:F:141:VAL:HG22	1:F:291:CYS:HB3	1.83	0.59
1:B:33:ARG:CZ	4:B:348:HOH:O	2.50	0.59
1:F:325:LEU:HD23	1:F:326:PRO:HD2	1.84	0.59
1:B:213:ILE:HG12	1:B:276:ILE:HD11	1.85	0.59
1:C:101:LYS:HB3	1:C:102:PRO:HD3	1.85	0.59
1:D:94:ASP:CG	1:D:97:ASN:HD22	2.04	0.59
1:E:81:VAL:HG21	1:E:114:CYS:SG	2.43	0.59
1:E:191:THR:HG21	1:E:254:SER:HB2	1.83	0.59
1:A:261:LEU:HD13	1:A:283:VAL:CG1	2.33	0.58
1:A:295:LYS:NZ	1:A:299:ASP:OD2	2.36	0.58
1:E:33:ARG:HD2	1:E:74:ALA:O	2.02	0.58
1:F:189:ILE:N	1:F:189:ILE:HD12	2.18	0.58
1:E:93:LYS:O	1:F:156:LYS:HG2	2.03	0.58
1:A:194:VAL:HG11	1:A:312:PHE:CE1	2.39	0.58
1:A:84:VAL:HG12	2:A:338:NAP:H4D	1.85	0.58
1:F:123:LEU:HD23	1:F:124:VAL:N	2.19	0.58
1:F:266:MET:HE1	1:F:270:LYS:HG3	1.84	0.58
1:A:194:VAL:HG11	1:A:312:PHE:CD1	2.38	0.58
1:C:75:ILE:HD12	1:C:113:SER:HB3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:81:VAL:HB	1:D:123:LEU:HD23	1.86	0.58
1:F:128:SER:OG	3:F:342:QUE:O24	2.21	0.58
1:C:13:ALA:CB	1:C:34:ALA:HB1	2.34	0.58
1:A:13:ALA:CB	1:A:34:ALA:HB1	2.34	0.57
1:F:188:ILE:HD11	1:F:241:LEU:HD12	1.85	0.57
1:D:263:LEU:HD11	1:D:312:PHE:CZ	2.39	0.57
1:D:186:ILE:CG2	1:D:187:THR:N	2.68	0.57
1:E:13:ALA:CB	1:E:48:LEU:HD11	2.34	0.57
1:E:64:ASP:C	1:E:64:ASP:OD1	2.43	0.57
1:B:128:SER:OG	3:B:342:QUE:O24	2.23	0.56
1:D:8:VAL:HG23	1:D:9:CYS:O	2.05	0.56
1:E:75:ILE:O	1:E:75:ILE:HG22	2.05	0.56
1:E:13:ALA:HB1	1:E:48:LEU:HD11	1.86	0.56
1:F:111:MET:CE	1:F:183:ILE:HD12	2.35	0.56
1:E:165:VAL:HG13	1:E:169:LEU:HD11	1.87	0.56
1:E:322:LYS:HB2	1:E:324:LEU:HD12	1.88	0.56
1:E:11:THR:HA	1:E:35:THR:OG1	2.05	0.56
1:C:65:LEU:HD22	1:C:106:GLY:HA3	1.87	0.56
1:D:261:LEU:HD13	1:D:283:VAL:CG1	2.36	0.56
1:E:123:LEU:HD13	1:E:185:PHE:CD1	2.41	0.56
1:E:8:VAL:HG21	1:E:82:PHE:CE2	2.40	0.55
1:B:277:PRO:HG2	1:B:280:PHE:CZ	2.41	0.55
1:E:189:ILE:HD12	1:E:252:ILE:HA	1.87	0.55
1:E:194:VAL:HG22	1:E:209:ALA:HB2	1.88	0.55
1:B:140:PRO:O	1:B:141:VAL:HG23	2.07	0.55
1:B:95:PRO:HB2	1:B:162:MET:HE2	1.85	0.55
1:C:75:ILE:HD12	1:C:113:SER:CB	2.37	0.55
1:D:41:ASN:O	1:D:44:LYS:N	2.38	0.55
1:E:17:ILE:HD12	2:E:338:NAP:C5D	2.35	0.55
1:E:100:ILE:HG23	1:E:166:SER:HA	1.89	0.55
1:D:24:ARG:HD2	1:D:236:ASN:HD21	1.71	0.55
1:D:267:LEU:HD21	1:D:312:PHE:CD2	2.42	0.55
1:E:252:ILE:HG22	1:E:294:SER:OG	2.07	0.55
1:D:53:LYS:HB3	4:D:360:HOH:O	2.05	0.54
1:E:194:VAL:HG12	1:E:195:GLY:H	1.71	0.54
1:A:10:VAL:HG11	1:A:22:VAL:HG23	1.88	0.54
1:E:65:LEU:HD21	1:E:83:HIS:HE1	1.72	0.54
1:B:95:PRO:CG	1:B:162:MET:CE	2.85	0.54
1:E:65:LEU:HD21	1:E:83:HIS:CE1	2.43	0.54
1:D:229:VAL:HG13	1:D:230:HIS:O	2.07	0.54
1:F:164:PHE:HE1	3:F:342:QUE:H16	1.71	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:111:MET:HE1	1:C:178:ALA:HB2	1.90	0.54
1:E:150:MET:CE	1:E:165:VAL:HG22	2.38	0.53
1:E:188:ILE:HD12	1:E:238:HIS:NE2	2.23	0.53
2:F:338:NAP:O5D	2:F:338:NAP:H2N	2.09	0.53
1:B:165:VAL:CG1	1:B:169:LEU:CD1	2.87	0.53
1:E:123:LEU:HD13	1:E:185:PHE:CE1	2.43	0.53
1:C:131:THR:HA	1:C:168:THR:OG1	2.09	0.53
1:A:251:TYR:OH	1:A:300:LEU:HD11	2.08	0.53
1:C:309:GLU:O	1:C:313:THR:HG23	2.08	0.53
1:C:111:MET:CE	1:C:178:ALA:HB2	2.39	0.53
1:C:288:LYS:CE	1:D:139:LEU:HD13	2.39	0.53
1:E:280:PHE:HB3	4:E:339:HOH:O	2.08	0.53
1:C:277:PRO:HG2	1:C:280:PHE:CZ	2.44	0.53
1:D:159:THR:O	1:D:160:ALA:HB3	2.09	0.53
1:E:180:GLU:C	1:E:181:ASN:ND2	2.62	0.53
1:C:316:VAL:O	1:C:320:ARG:HG3	2.09	0.53
1:F:119:THR:O	1:F:119:THR:HG22	2.08	0.53
1:A:271:TYR:CE2	1:A:316:VAL:HG21	2.45	0.52
1:B:246:LYS:HB2	1:B:246:LYS:NZ	2.24	0.52
1:E:147:TRP:CZ3	1:E:172:GLN:HG3	2.44	0.52
1:E:189:ILE:CD1	1:E:252:ILE:HG13	2.39	0.52
1:E:189:ILE:HD12	1:E:252:ILE:CG1	2.40	0.52
1:E:141:VAL:HG22	1:E:291:CYS:CB	2.38	0.52
1:B:309:GLU:OE1	1:B:309:GLU:N	2.42	0.52
1:C:150:MET:HE3	1:C:168:THR:HG21	1.92	0.52
1:A:101:LYS:HB3	1:A:102:PRO:HD3	1.91	0.52
1:B:95:PRO:HG3	1:B:162:MET:CE	2.40	0.52
1:A:225:GLN:CG	1:A:287:LEU:HD21	2.39	0.52
1:B:26:LEU:HD23	1:B:32:VAL:HG23	1.92	0.52
1:B:163:TYR:HB3	3:B:342:QUE:C19	2.40	0.52
1:C:37:ARG:HB2	2:C:338:NAP:O3X	2.09	0.52
1:C:259:ILE:HG21	1:C:287:LEU:O	2.09	0.52
1:D:271:TYR:CE2	1:D:316:VAL:HG21	2.44	0.52
1:E:46:LYS:NZ	1:E:50:ASP:OD2	2.40	0.52
1:C:307:SER:O	1:C:308:LEU:C	2.46	0.51
1:B:165:VAL:CG1	1:B:169:LEU:HD12	2.40	0.51
1:B:33:ARG:HD2	1:B:74:ALA:O	2.11	0.51
1:C:325:LEU:HD22	1:C:326:PRO:CD	2.39	0.51
1:E:224:ARG:HA	1:E:260:ILE:HB	1.93	0.51
1:D:107:MET:HE3	1:D:107:MET:HA	1.91	0.51
1:C:10:VAL:HG11	1:C:22:VAL:HG23	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:7:THR:HG22	1:B:78:CYS:HA	1.92	0.51
1:A:312:PHE:O	1:A:316:VAL:HG23	2.11	0.51
1:D:188:ILE:HD11	1:D:238:HIS:HA	1.93	0.51
1:E:150:MET:HE1	1:E:165:VAL:HG22	1.93	0.51
1:D:53:LYS:CB	4:D:360:HOH:O	2.59	0.50
1:E:194:VAL:HG12	1:E:195:GLY:N	2.26	0.50
1:E:14:SER:OG	2:E:338:NAP:O2X	2.20	0.50
1:F:101:LYS:HB3	1:F:102:PRO:HD3	1.93	0.50
1:F:126:THR:O	1:F:167:LYS:NZ	2.41	0.50
1:B:268:ARG:NE	1:B:278:THR:HG22	2.25	0.50
1:F:131:THR:HG22	1:F:168:THR:N	2.27	0.50
1:F:213:ILE:HG21	1:F:325:LEU:HD21	1.92	0.50
1:D:99:VAL:O	1:D:103:THR:OG1	2.23	0.50
1:F:65:LEU:HD21	1:F:83:HIS:CE1	2.46	0.50
1:E:190:PRO:HB2	2:E:338:NAP:H5N	1.93	0.50
1:A:188:ILE:O	1:A:190:PRO:HD3	2.11	0.50
1:D:18:GLY:O	1:D:22:VAL:HG23	2.12	0.50
1:D:77:GLY:HA3	4:D:369:HOH:O	2.10	0.50
1:E:80:GLY:HA3	1:E:242:PHE:CZ	2.46	0.50
1:D:111:MET:CE	1:D:183:ILE:HD12	2.42	0.50
1:A:188:ILE:CD1	1:A:241:LEU:HD12	2.41	0.50
1:C:261:LEU:HD13	1:C:283:VAL:CG1	2.41	0.50
1:D:94:ASP:OD1	1:D:97:ASN:ND2	2.41	0.50
1:A:37:ARG:HD2	1:A:64:ASP:OD2	2.12	0.49
1:A:214:THR:OG1	1:A:216:ASN:ND2	2.44	0.49
1:A:263:LEU:HD21	1:A:312:PHE:CE2	2.47	0.49
1:D:257:ASP:OD1	1:D:257:ASP:O	2.30	0.49
1:E:165:VAL:HG13	1:E:169:LEU:CD1	2.42	0.49
1:F:192:LEU:HD21	1:F:209:ALA:HB2	1.93	0.49
1:A:213:ILE:HG21	1:A:325:LEU:HD21	1.93	0.49
1:C:95:PRO:HD2	4:C:346:HOH:O	2.11	0.49
1:D:174:ALA:HB1	1:D:185:PHE:CZ	2.46	0.49
1:E:31:THR:HG22	1:E:32:VAL:N	2.27	0.49
1:A:223:ILE:HD12	1:A:260:ILE:HG13	1.95	0.49
1:A:95:PRO:HD2	4:A:350:HOH:O	2.13	0.49
1:F:16:PHE:CZ	1:F:231:LEU:HD22	2.47	0.49
1:A:270:LYS:HD3	1:A:313:THR:CG2	2.43	0.49
1:E:124:VAL:CG1	1:E:188:ILE:HD11	2.43	0.49
1:E:124:VAL:HG11	1:E:188:ILE:HD11	1.95	0.49
1:E:7:THR:O	1:E:7:THR:HG22	2.13	0.49
1:E:88:MET:O	1:E:99:VAL:HG22	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:128:SER:OG	3:B:342:QUE:O23	2.23	0.48
1:D:163:TYR:HB3	3:D:342:QUE:C19	2.42	0.48
1:B:95:PRO:HB3	1:B:162:MET:HE1	1.93	0.48
1:C:26:LEU:O	1:C:29:GLY:N	2.46	0.48
1:D:127:SER:O	2:D:338:NAP:H6N	2.12	0.48
1:D:268:ARG:CZ	1:D:278:THR:HG22	2.43	0.48
1:F:152:PHE:O	1:F:155:ALA:HB3	2.13	0.48
1:A:261:LEU:CD1	1:A:283:VAL:HG12	2.42	0.48
1:B:101:LYS:HB3	1:B:102:PRO:HD3	1.96	0.48
1:E:96:GLU:HA	1:E:100:ILE:CD1	2.43	0.48
1:F:257:ASP:OD2	1:F:289:SER:OG	2.30	0.48
1:E:205:SER:HB3	2:E:338:NAP:O7N	2.13	0.48
1:E:93:LYS:O	1:F:156:LYS:CG	2.61	0.48
1:E:99:VAL:O	1:E:103:THR:OG1	2.24	0.48
1:D:185:PHE:O	1:D:186:ILE:HD13	2.12	0.48
1:A:81:VAL:O	1:A:123:LEU:HD23	2.14	0.48
1:B:175:TRP:CZ2	1:B:187:THR:HG23	2.49	0.48
1:C:81:VAL:HG12	1:C:81:VAL:O	2.13	0.48
1:F:266:MET:O	1:F:266:MET:HE1	2.14	0.48
1:D:255:SER:HB3	1:D:304:PHE:CD1	2.49	0.47
1:D:41:ASN:O	1:D:43:LYS:N	2.47	0.47
1:D:256:HIS:CE1	1:D:307:SER:HA	2.49	0.47
1:E:188:ILE:CD1	1:E:238:HIS:CD2	2.97	0.47
1:E:268:ARG:CZ	1:E:278:THR:HG22	2.44	0.47
1:A:225:GLN:HG3	1:A:287:LEU:HD21	1.96	0.47
1:C:211:SER:N	1:C:212:PRO:CD	2.77	0.47
1:E:268:ARG:NE	1:E:278:THR:HG22	2.30	0.47
1:E:25:LEU:O	1:E:30:TYR:HB2	2.15	0.47
1:F:266:MET:O	1:F:266:MET:CE	2.63	0.47
1:A:270:LYS:HD3	1:A:313:THR:HG22	1.97	0.47
1:A:224:ARG:CZ	1:A:287:LEU:HD11	2.45	0.47
1:D:58:LEU:HD12	1:D:59:THR:H	1.79	0.47
1:F:19:SER:OG	1:F:20:TRP:N	2.48	0.47
1:B:119:THR:HG22	1:B:119:THR:O	2.14	0.47
1:B:127:SER:O	2:B:338:NAP:H6N	2.15	0.47
1:C:165:VAL:O	1:C:165:VAL:HG12	2.13	0.47
1:C:231:LEU:O	1:C:234:LEU:HB3	2.14	0.47
1:C:205:SER:CB	2:C:338:NAP:H72N	2.28	0.46
1:E:37:ARG:NH1	1:F:281:LYS:NZ	2.64	0.46
1:A:100:ILE:HG22	1:A:104:ILE:HD12	1.97	0.46
1:C:81:VAL:O	1:C:123:LEU:HD23	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:193:VAL:HG22	1:F:229:VAL:HG13	1.97	0.46
1:A:11:THR:OG1	1:A:84:VAL:N	2.49	0.46
1:A:227:GLN:OE1	1:A:292:PHE:CE1	2.69	0.46
1:C:195:GLY:O	1:C:315:ALA:CA	2.64	0.46
1:D:141:VAL:HG13	1:D:291:CYS:HB3	1.97	0.46
1:D:31:THR:HG23	1:D:57:HIS:CG	2.50	0.46
1:B:34:ALA:HB3	1:B:60:LEU:HD22	1.98	0.46
1:C:37:ARG:HD3	2:C:338:NAP:C6A	2.46	0.46
1:E:181:ASN:N	1:E:181:ASN:HD22	2.14	0.46
1:E:25:LEU:HD11	1:E:82:PHE:CE2	2.50	0.46
1:C:261:LEU:HD13	1:C:283:VAL:HG12	1.96	0.46
1:E:194:VAL:HA	1:E:206:LEU:HD21	1.98	0.46
1:E:191:THR:CG2	1:E:254:SER:HB2	2.44	0.46
1:F:192:LEU:HD22	1:F:223:ILE:HG22	1.97	0.46
1:D:82:PHE:O	1:D:84:VAL:HG23	2.16	0.46
1:E:251:TYR:OH	1:E:300:LEU:HD11	2.16	0.46
1:A:12:GLY:CA	1:A:85:ALA:HB2	2.45	0.46
1:B:22:VAL:HG22	1:B:32:VAL:HG11	1.98	0.46
1:D:241:LEU:HD21	1:D:251:TYR:CE2	2.51	0.46
1:E:8:VAL:HG21	1:E:82:PHE:HE2	1.79	0.46
1:E:216:ASN:ND2	1:F:207:ILE:HD13	2.31	0.46
1:A:147:TRP:CH2	1:A:171:GLU:OE1	2.69	0.45
1:B:325:LEU:CD2	1:B:326:PRO:HD2	2.40	0.45
1:C:307:SER:O	1:C:310:ASP:N	2.49	0.45
1:E:122:ARG:NE	1:E:184:ASP:OD2	2.48	0.45
1:F:128:SER:HG	3:F:342:QUE:C17	2.29	0.45
1:A:232:ASP:OD2	1:A:306:TYR:OH	2.25	0.45
1:B:274:TYR:OH	1:B:326:PRO:O	2.24	0.45
1:D:31:THR:CG2	1:D:57:HIS:ND1	2.72	0.45
1:A:150:MET:SD	1:A:168:THR:HG21	2.56	0.45
1:C:188:ILE:CD1	1:C:241:LEU:HD12	2.46	0.45
1:E:8:VAL:HG23	1:E:80:GLY:O	2.16	0.45
1:B:13:ALA:HB3	1:B:34:ALA:HB1	1.97	0.45
1:F:44:LYS:O	1:F:47:HIS:CE1	2.70	0.45
1:A:147:TRP:HH2	1:A:171:GLU:OE1	1.99	0.45
1:B:147:TRP:CH2	1:B:250:ARG:CZ	3.00	0.45
1:E:296:LYS:O	1:E:299:ASP:HB2	2.16	0.45
1:F:266:MET:CE	1:F:270:LYS:HG3	2.47	0.45
1:A:207:ILE:HG21	1:D:216:ASN:HD21	1.81	0.45
1:D:94:ASP:CG	1:D:97:ASN:ND2	2.70	0.45
1:A:207:ILE:HD13	1:D:216:ASN:ND2	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:60:LEU:C	1:C:61:TRP:CD1	2.90	0.45
1:D:16:PHE:HE1	1:D:197:PHE:HB3	1.81	0.45
1:B:138:GLN:HG2	4:B:349:HOH:O	2.16	0.45
1:B:202:MET:HA	1:B:203:PRO:HD3	1.84	0.45
1:B:270:LYS:HD3	1:B:313:THR:HG22	1.99	0.45
1:B:84:VAL:HG12	1:B:84:VAL:O	2.17	0.45
1:D:197:PHE:CZ	1:D:318:THR:HG22	2.52	0.45
1:D:297:LEU:CD2	1:D:302:PHE:CD2	3.00	0.45
1:F:13:ALA:CB	1:F:34:ALA:HB1	2.47	0.45
1:C:147:TRP:CH2	1:C:250:ARG:CZ	2.99	0.45
1:B:139:LEU:HA	1:B:139:LEU:HD23	1.83	0.44
1:E:33:ARG:NH1	1:E:61:TRP:CZ2	2.85	0.44
1:B:159:THR:OG1	1:C:89:ASP:OD2	2.28	0.44
1:D:294:SER:O	1:D:297:LEU:N	2.50	0.44
1:E:150:MET:HA	1:E:150:MET:HE3	1.99	0.44
1:F:206:LEU:HD21	1:F:315:ALA:HB1	2.00	0.44
1:B:111:MET:HG2	1:B:123:LEU:HD12	1.99	0.44
1:C:117:ALA:O	1:C:118:LYS:HB2	2.18	0.44
1:D:41:ASN:O	1:D:42:VAL:C	2.54	0.44
1:E:158:MET:HB2	1:F:92:SER:O	2.17	0.44
1:D:273:GLU:N	1:D:273:GLU:OE1	2.47	0.44
1:F:12:GLY:N	1:F:85:ALA:HB2	2.33	0.44
1:D:15:GLY:O	1:D:19:SER:OG	2.25	0.44
1:E:189:ILE:HD12	1:E:252:ILE:HG13	1.98	0.44
1:E:263:LEU:HD11	1:E:312:PHE:CZ	2.52	0.44
1:B:95:PRO:HB2	1:B:162:MET:CE	2.42	0.44
1:C:158:MET:HE2	1:C:158:MET:H	1.82	0.44
1:E:308:LEU:O	1:E:308:LEU:HD23	2.18	0.44
1:E:6:GLU:HA	4:E:364:HOH:O	2.17	0.44
1:A:11:THR:OG1	1:A:83:HIS:HA	2.18	0.44
1:C:68:GLU:OE1	1:C:68:GLU:N	2.51	0.44
1:D:98:GLU:O	1:D:102:PRO:HG2	2.17	0.44
1:D:309:GLU:O	1:D:313:THR:HG23	2.17	0.44
1:D:6:GLU:HA	4:D:358:HOH:O	2.17	0.44
1:E:186:ILE:HG22	1:E:187:THR:N	2.33	0.44
1:B:241:LEU:HD11	1:B:297:LEU:HD13	2.00	0.43
1:E:9:CYS:SG	1:E:10:VAL:N	2.92	0.43
1:E:37:ARG:HG2	1:E:64:ASP:HB2	1.99	0.43
1:F:159:THR:O	1:F:160:ALA:HB3	2.17	0.43
1:C:9:CYS:O	1:C:82:PHE:N	2.41	0.43
1:D:42:VAL:HA	1:D:45:VAL:HG23	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:193:VAL:HG22	1:E:229:VAL:CG1	2.48	0.43
1:B:273:GLU:N	1:B:273:GLU:OE1	2.37	0.43
1:D:65:LEU:HD21	1:D:83:HIS:CE1	2.53	0.43
1:F:193:VAL:HG22	1:F:229:VAL:CG1	2.49	0.43
1:A:39:PRO:HA	1:A:45:VAL:HG11	2.01	0.43
1:D:13:ALA:CB	1:D:34:ALA:HB1	2.49	0.43
1:D:7:THR:HA	1:D:31:THR:O	2.18	0.43
1:E:93:LYS:N	4:E:356:HOH:O	2.51	0.43
1:B:246:LYS:NZ	1:B:246:LYS:CB	2.82	0.43
1:D:222:ILE:O	1:D:222:ILE:CG2	2.66	0.43
1:D:228:PHE:HE2	1:D:263:LEU:HD13	1.83	0.43
1:F:203:PRO:HA	1:F:204:PRO:HD3	1.91	0.43
1:A:259:ILE:HG21	1:A:287:LEU:O	2.18	0.43
1:C:150:MET:CE	1:C:168:THR:HG21	2.49	0.43
1:C:16:PHE:CE1	1:C:231:LEU:HD22	2.54	0.43
1:C:135:GLN:HB3	1:C:135:GLN:HE21	1.67	0.43
1:D:264:ALA:HB2	1:D:280:PHE:CZ	2.54	0.43
1:F:56:THR:HB	1:F:57:HIS:CD2	2.54	0.43
1:A:194:VAL:HG12	1:A:311:MET:CB	2.49	0.43
1:B:270:LYS:HD3	1:B:313:THR:CG2	2.48	0.43
1:B:46:LYS:O	1:B:47:HIS:C	2.57	0.43
1:E:260:ILE:CG2	1:E:283:VAL:HG11	2.48	0.43
1:F:224:ARG:O	1:F:259:ILE:HA	2.19	0.43
1:C:8:VAL:HG12	1:C:80:GLY:H	1.84	0.42
1:F:20:TRP:CH2	1:F:196:PRO:HG2	2.54	0.42
1:A:283:VAL:HG23	4:A:345:HOH:O	2.19	0.42
1:D:261:LEU:HD13	1:D:283:VAL:HG12	2.00	0.42
1:D:58:LEU:HD12	1:D:59:THR:N	2.34	0.42
1:F:104:ILE:O	1:F:107:MET:HB3	2.19	0.42
1:A:262:ASP:O	1:A:266:MET:HB2	2.20	0.42
1:D:257:ASP:HB2	1:D:290:VAL:O	2.20	0.42
1:D:98:GLU:CG	4:D:353:HOH:O	2.65	0.42
1:A:114:CYS:HB3	1:A:120:VAL:HG11	2.01	0.42
1:C:124:VAL:HA	1:C:186:ILE:O	2.20	0.42
1:C:13:ALA:HB3	1:C:34:ALA:HB1	2.01	0.42
1:D:119:THR:HG22	1:D:119:THR:O	2.19	0.42
1:D:261:LEU:HD12	1:D:280:PHE:HD1	1.84	0.42
1:D:32:VAL:HG12	1:D:33:ARG:N	2.34	0.42
1:E:193:VAL:HG13	1:E:231:LEU:HA	2.01	0.42
1:D:89:ASP:HB2	1:D:99:VAL:HG21	2.00	0.42
1:E:260:ILE:HG21	1:E:283:VAL:HG21	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:209:ALA:HB1	1:F:312:PHE:CZ	2.54	0.42
1:B:154:ARG:NH2	1:B:169:LEU:HD11	2.35	0.42
1:C:195:GLY:O	1:C:315:ALA:HA	2.19	0.42
1:E:31:THR:CG2	1:E:32:VAL:N	2.83	0.42
1:D:228:PHE:CE2	1:D:263:LEU:HD13	2.55	0.42
1:B:248:GLU:HG2	4:B:351:HOH:O	2.20	0.42
1:D:247:ALA:HB1	1:D:251:TYR:OH	2.19	0.42
1:E:132:VAL:HG23	1:E:250:ARG:HH22	1.84	0.42
1:F:35:THR:C	1:F:36:VAL:HG13	2.40	0.42
1:A:266:MET:SD	1:A:308:LEU:HD23	2.59	0.42
1:A:256:HIS:CE1	1:A:307:SER:HA	2.55	0.42
1:C:205:SER:HB3	2:C:338:NAP:H72N	1.85	0.42
1:D:219:HIS:O	1:D:220:TYR:C	2.58	0.42
1:E:114:CYS:SG	1:E:120:VAL:HG11	2.60	0.42
1:B:181:ASN:O	1:B:182:ASN:OD1	2.38	0.41
1:D:254:SER:H	1:D:294:SER:HG	1.64	0.41
1:F:268:ARG:HD3	1:F:278:THR:HG22	2.02	0.41
1:C:10:VAL:HG13	1:C:21:LEU:HD23	2.02	0.41
1:C:175:TRP:CH2	1:C:249:GLY:HA2	2.55	0.41
1:C:68:GLU:N	1:C:68:GLU:CD	2.72	0.41
1:F:136:GLU:HG3	1:F:136:GLU:O	2.19	0.41
1:C:104:ILE:O	1:C:107:MET:HB3	2.20	0.41
1:D:208:THR:HG23	1:D:219:HIS:HB3	2.02	0.41
1:D:261:LEU:HD12	1:D:280:PHE:CD1	2.55	0.41
1:E:161:TRP:CE3	1:E:165:VAL:HG21	2.55	0.41
1:F:150:MET:SD	1:F:165:VAL:HG22	2.60	0.41
1:A:80:GLY:HA3	1:A:242:PHE:CZ	2.55	0.41
1:C:59:THR:HB	4:C:358:HOH:O	2.20	0.41
1:D:127:SER:O	1:D:190:PRO:HD2	2.21	0.41
1:D:193:VAL:C	1:D:194:VAL:HG23	2.40	0.41
1:D:294:SER:O	1:D:298:THR:HG23	2.20	0.41
1:C:85:ALA:HB1	2:C:338:NAP:N3A	2.35	0.41
1:A:150:MET:CE	1:A:168:THR:HG21	2.51	0.41
1:B:16:PHE:HE1	1:B:197:PHE:HB3	1.86	0.41
1:E:165:VAL:CG1	1:E:169:LEU:CD1	2.98	0.41
1:E:211:SER:N	1:E:212:PRO:CD	2.84	0.41
1:F:297:LEU:HD23	1:F:302:PHE:CD1	2.56	0.41
1:D:90:PHE:CD1	1:D:90:PHE:C	2.94	0.41
1:E:42:VAL:O	1:E:43:LYS:C	2.59	0.41
1:F:192:LEU:HD11	1:F:208:THR:HB	2.02	0.41
1:A:134:ILE:HD12	1:A:134:ILE:HG23	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:ALA:HB1	1:A:312:PHE:CZ	2.56	0.41
1:F:158:MET:O	1:F:159:THR:C	2.59	0.41
1:F:320:ARG:NH1	1:F:327:PRO:O	2.53	0.41
1:B:131:THR:O	1:B:148:SER:N	2.51	0.41
1:A:159:THR:O	1:A:160:ALA:HB3	2.21	0.41
1:B:34:ALA:HB3	1:B:60:LEU:CD2	2.49	0.41
1:C:274:TYR:OH	1:C:326:PRO:O	2.21	0.41
1:D:186:ILE:HD11	1:D:247:ALA:O	2.20	0.41
1:D:193:VAL:HG23	2:D:338:NAP:C7N	2.50	0.41
1:D:202:MET:N	1:D:324:LEU:HD13	2.36	0.41
1:D:205:SER:HB3	2:D:338:NAP:N7N	2.36	0.41
1:A:132:VAL:HG13	1:A:146:CYS:HB2	2.03	0.40
1:C:224:ARG:O	1:C:260:ILE:N	2.51	0.40
1:E:41:ASN:O	1:E:45:VAL:HG22	2.21	0.40
1:B:171:GLU:OE2	1:B:187:THR:HG21	2.21	0.40
1:E:18:GLY:O	1:E:22:VAL:HG23	2.21	0.40
1:F:268:ARG:HG3	1:F:276:ILE:HB	2.03	0.40
1:A:131:THR:O	1:A:148:SER:N	2.52	0.40
1:B:25:LEU:O	1:B:30:TYR:HB2	2.20	0.40
1:D:277:PRO:HG2	1:D:280:PHE:CE2	2.56	0.40
1:E:141:VAL:HG22	1:E:291:CYS:SG	2.62	0.40
1:B:235:CYS:O	1:B:238:HIS:HB2	2.22	0.40
1:B:246:LYS:HZ2	1:B:246:LYS:HB2	1.86	0.40
1:D:163:TYR:HB3	3:D:342:QUE:H19	2.03	0.40
1:D:270:LYS:HG2	1:D:271:TYR:CE2	2.56	0.40
1:D:230:HIS:CD2	1:D:311:MET:HA	2.57	0.40
1:E:107:MET:O	1:E:107:MET:HE2	2.20	0.40
1:F:255:SER:O	1:F:256:HIS:ND1	2.54	0.40
1:F:25:LEU:O	1:F:30:TYR:HB2	2.21	0.40
1:E:37:ARG:NH1	1:F:281:LYS:HZ2	2.19	0.40
1:F:84:VAL:O	2:F:338:NAP:H4D	2.21	0.40
1:F:205:SER:HA	3:F:341:QUE:O29	2.21	0.40
1:F:128:SER:OG	3:F:342:QUE:O23	2.39	0.40
1:A:11:THR:HA	1:A:35:THR:OG1	2.22	0.40
1:C:158:MET:N	1:C:158:MET:HE2	2.37	0.40
1:F:297:LEU:CD2	1:F:302:PHE:CD1	3.05	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	322/337 (96%)	297 (92%)	25 (8%)	0	100	100
1	B	322/337 (96%)	297 (92%)	25 (8%)	0	100	100
1	C	322/337 (96%)	300 (93%)	22 (7%)	0	100	100
1	D	322/337 (96%)	280 (87%)	37 (12%)	5 (2%)	11	37
1	E	322/337 (96%)	278 (86%)	43 (13%)	1 (0%)	44	77
1	F	322/337 (96%)	292 (91%)	29 (9%)	1 (0%)	44	77
All	All	1932/2022 (96%)	1744 (90%)	181 (9%)	7 (0%)	38	72

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	70	SER
1	D	42	VAL
1	D	273	GLU
1	D	83	HIS
1	D	148	SER
1	E	165	VAL
1	F	196	PRO

### 5.3.2 Protein sidechains

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	278/293 (95%)	255 (92%)	23 (8%)	13	36

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	278/293 (95%)	261 (94%)	17 (6%)	22	53
1	C	278/293 (95%)	256 (92%)	22 (8%)	14	39
1	D	278/293 (95%)	247 (89%)	31 (11%)	7	21
1	E	278/293 (95%)	242 (87%)	36 (13%)	5	15
1	F	277/293 (94%)	250 (90%)	27 (10%)	9	29
All	All	1667/1758 (95%)	1511 (91%)	156 (9%)	10	30

All (156) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	56	THR
1	A	79	THR
1	A	86	THR
1	A	118	LYS
1	A	121	ARG
1	A	123	LEU
1	A	135	GLN
1	A	156	LYS
1	A	158	MET
1	A	162	MET
1	A	168	THR
1	A	183	ILE
1	A	191	THR
1	A	248	GLU
1	A	257	ASP
1	A	266	MET
1	A	278	THR
1	A	284	ASP
1	A	288	LYS
1	A	294	SER
1	A	295	LYS
1	A	308	LEU
1	A	325	LEU
1	B	7	THR
1	B	27	GLU
1	B	35	THR
1	B	56	THR
1	B	59	THR
1	B	86	THR
1	B	118	LYS

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Mol	Chain	Res	Type
1	B	123	LEU
1	B	133	ASN
1	B	135	GLN
1	B	162	MET
1	B	246	LYS
1	B	266	MET
1	B	268	ARG
1	B	270	LYS
1	B	288	LYS
1	B	325	LEU
1	C	43	LYS
1	C	68	GLU
1	C	73	GLU
1	C	76	LYS
1	C	111	MET
1	C	118	LYS
1	C	123	LEU
1	C	135	GLN
1	C	151	GLU
1	C	158	MET
1	C	162	MET
1	C	177	TYR
1	C	198	ILE
1	C	222	ILE
1	C	266	MET
1	C	268	ARG
1	C	285	GLU
1	C	288	LYS
1	C	300	LEU
1	C	303	GLU
1	C	306	TYR
1	C	325	LEU
1	D	31	THR
1	D	43	LYS
1	D	45	VAL
1	D	73	GLU
1	D	78	CYS
1	D	79	THR
1	D	86	THR
1	D	92	SER
1	D	98	GLU
1	D	103	THR

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Mol	Chain	Res	Type
1	D	118	LYS
1	D	123	LEU
1	D	135	GLN
1	D	143	ASP
1	D	151	GLU
1	D	156	LYS
1	D	158	MET
1	D	162	MET
1	D	185	PHE
1	D	198	ILE
1	D	200	SER
1	D	201	SER
1	D	229	VAL
1	D	266	MET
1	D	268	ARG
1	D	279	GLU
1	D	285	GLU
1	D	288	LYS
1	D	298	THR
1	D	305	LYS
1	D	308	LEU
1	E	6	GLU
1	E	43	LYS
1	E	59	THR
1	E	76	LYS
1	E	86	THR
1	E	89	ASP
1	E	118	LYS
1	E	123	LEU
1	E	132	VAL
1	E	135	GLN
1	E	143	ASP
1	E	150	MET
1	E	158	MET
1	E	162	MET
1	E	167	LYS
1	E	176	LYS
1	E	177	TYR
1	E	179	LYS
1	E	181	ASN
1	E	183	ILE
1	E	188	ILE

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Mol	Chain	Res	Type
1	E	189	ILE
1	E	200	SER
1	E	202	MET
1	E	208	THR
1	E	223	ILE
1	E	261	LEU
1	E	266	MET
1	E	268	ARG
1	E	270	LYS
1	E	281	LYS
1	E	288	LYS
1	E	291	CYS
1	E	295	LYS
1	E	311	MET
1	E	313	THR
1	F	35	THR
1	F	41	ASN
1	F	56	THR
1	F	79	THR
1	F	86	THR
1	F	101	LYS
1	F	113	SER
1	F	118	LYS
1	F	121	ARG
1	F	156	LYS
1	F	158	MET
1	F	162	MET
1	F	188	ILE
1	F	200	SER
1	F	221	SER
1	F	222	ILE
1	F	246	LYS
1	F	261	LEU
1	F	266	MET
1	F	279	GLU
1	F	284	ASP
1	F	285	GLU
1	F	288	LYS
1	F	303	GLU
1	F	311	MET
1	F	313	THR
1	F	325	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	181	ASN
1	A	216	ASN
1	B	97	ASN
1	B	133	ASN
1	B	138	GLN
1	B	236	ASN
1	C	181	ASN
1	D	97	ASN
1	D	216	ASN
1	D	219	HIS
1	D	236	ASN
1	D	329	HIS
1	E	181	ASN
1	E	236	ASN
1	F	57	HIS
1	F	329	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

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	NAP	A	338	-	44,52,52	1.71	3 (6%)	51,80,80	1.51	6 (11%)
3	QUE	A	342	-	22,24,24	2.33	7 (31%)	27,36,36	1.92	9 (33%)
2	NAP	B	338	-	44,52,52	1.72	5 (11%)	51,80,80	2.17	7 (13%)
3	QUE	B	341	-	22,24,24	1.81	5 (22%)	27,36,36	2.01	5 (18%)
3	QUE	B	342	-	22,24,24	2.06	4 (18%)	27,36,36	2.58	10 (37%)
2	NAP	C	338	-	44,52,52	1.65	5 (11%)	51,80,80	1.95	14 (27%)
3	QUE	C	341	-	22,24,24	2.01	6 (27%)	27,36,36	1.93	8 (29%)
3	QUE	C	342	-	22,24,24	2.03	6 (27%)	27,36,36	2.18	9 (33%)
2	NAP	D	338	-	44,52,52	1.52	3 (6%)	51,80,80	2.42	14 (27%)
3	QUE	D	341	-	22,24,24	2.49	5 (22%)	27,36,36	1.77	6 (22%)
3	QUE	D	342	-	22,24,24	2.59	6 (27%)	27,36,36	2.13	9 (33%)
2	NAP	E	338	-	44,52,52	1.56	4 (9%)	51,80,80	2.95	19 (37%)
2	NAP	F	338	-	44,52,52	1.59	3 (6%)	51,80,80	1.67	12 (23%)
3	QUE	F	341	-	22,24,24	2.47	5 (22%)	27,36,36	2.05	7 (25%)
3	QUE	F	342	-	22,24,24	2.12	6 (27%)	27,36,36	2.43	10 (37%)

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	NAP	A	338	-	-	0/27/67/67	0/5/5/5
3	QUE	A	342	-	-	0/4/4/4	0/3/3/3
2	NAP	B	338	-	-	0/27/67/67	0/5/5/5
3	QUE	B	341	-	-	0/4/4/4	0/3/3/3
3	QUE	B	342	-	-	0/4/4/4	0/3/3/3
2	NAP	C	338	-	-	0/27/67/67	0/5/5/5
3	QUE	C	341	-	-	0/4/4/4	0/3/3/3
3	QUE	C	342	-	-	0/4/4/4	0/3/3/3
2	NAP	D	338	-	-	0/27/67/67	0/5/5/5
3	QUE	D	341	-	-	0/4/4/4	0/3/3/3
3	QUE	D	342	-	-	0/4/4/4	0/3/3/3
2	NAP	E	338	-	-	0/27/67/67	0/5/5/5
2	NAP	F	338	-	-	0/27/67/67	0/5/5/5
3	QUE	F	341	-	-	0/4/4/4	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	QUE	F	342	-	-	0/4/4/4	0/3/3/3

All (73) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	338	NAP	O4B-C1B	-2.64	1.37	1.41
2	B	338	NAP	O4B-C4B	-2.15	1.40	1.45
2	C	338	NAP	C3B-C2B	-2.04	1.48	1.53
3	C	342	QUE	C14-C11	2.00	1.49	1.46
3	B	341	QUE	C9-C10	2.02	1.48	1.41
3	D	342	QUE	C9-C10	2.06	1.48	1.41
2	E	338	NAP	C2N-C3N	2.07	1.42	1.39
3	A	342	QUE	C5-C6	2.12	1.41	1.37
3	F	341	QUE	C9-C10	2.21	1.48	1.41
3	B	341	QUE	C2-C3	2.25	1.47	1.43
3	A	342	QUE	C9-C10	2.32	1.49	1.41
2	D	338	NAP	C2A-N1A	2.32	1.38	1.33
2	C	338	NAP	P2B-O2B	2.42	1.63	1.59
3	C	342	QUE	C9-C10	2.51	1.49	1.41
3	F	342	QUE	C9-C10	2.51	1.49	1.41
3	D	342	QUE	C14-C11	2.52	1.50	1.46
2	B	338	NAP	C2A-N1A	2.55	1.38	1.33
3	D	341	QUE	C9-C10	2.57	1.49	1.41
2	E	338	NAP	C2A-N1A	2.60	1.38	1.33
3	C	341	QUE	C9-C10	2.62	1.50	1.41
3	F	342	QUE	C14-C11	2.72	1.51	1.46
3	C	341	QUE	C2-C3	2.77	1.48	1.43
3	A	342	QUE	C14-C11	2.78	1.51	1.46
2	C	338	NAP	C2A-N1A	2.94	1.39	1.33
3	C	341	QUE	C14-C11	2.97	1.51	1.46
2	F	338	NAP	C2A-N1A	3.14	1.39	1.33
3	A	342	QUE	C2-C3	3.21	1.49	1.43
2	A	338	NAP	C2A-N1A	3.28	1.40	1.33
3	F	342	QUE	C2-C3	3.38	1.49	1.43
2	D	338	NAP	C2A-N3A	3.53	1.38	1.32
2	F	338	NAP	C2A-N3A	3.58	1.38	1.32
3	D	341	QUE	C2-C3	3.76	1.50	1.43
2	B	338	NAP	C2A-N3A	3.77	1.38	1.32
3	C	342	QUE	C18-C17	3.94	1.46	1.40
3	F	342	QUE	C3-C4	3.95	1.46	1.41
3	C	341	QUE	C3-C4	3.96	1.46	1.41
2	E	338	NAP	C2A-N3A	4.01	1.38	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	342	QUE	C2-C3	4.02	1.50	1.43
3	B	342	QUE	C2-C3	4.07	1.51	1.43
3	B	341	QUE	C3-C4	4.09	1.47	1.41
3	F	341	QUE	C2-C3	4.14	1.51	1.43
3	C	342	QUE	C3-C4	4.17	1.47	1.41
3	B	341	QUE	C9-C3	4.18	1.47	1.41
3	D	342	QUE	C18-C17	4.22	1.47	1.40
3	C	341	QUE	C18-C17	4.28	1.47	1.40
3	F	342	QUE	C18-C17	4.40	1.47	1.40
3	B	342	QUE	C18-C17	4.47	1.47	1.40
3	A	342	QUE	C18-C17	4.54	1.47	1.40
3	C	342	QUE	C9-C3	4.54	1.47	1.41
3	D	342	QUE	C2-C3	4.56	1.52	1.43
2	A	338	NAP	C2A-N3A	4.57	1.39	1.32
3	B	342	QUE	C9-C3	4.58	1.47	1.41
3	B	341	QUE	C18-C17	4.62	1.47	1.40
2	C	338	NAP	C2A-N3A	4.64	1.39	1.32
3	A	342	QUE	C3-C4	5.11	1.48	1.41
3	C	341	QUE	C9-C3	5.20	1.48	1.41
3	B	342	QUE	C3-C4	5.26	1.48	1.41
3	D	341	QUE	C18-C17	5.33	1.48	1.40
3	F	342	QUE	C9-C3	5.44	1.49	1.41
3	F	341	QUE	C18-C17	5.51	1.49	1.40
3	F	341	QUE	C9-C3	5.60	1.49	1.41
3	D	341	QUE	C3-C4	5.97	1.49	1.41
3	A	342	QUE	C9-C3	6.02	1.49	1.41
3	F	341	QUE	C3-C4	6.27	1.50	1.41
3	D	341	QUE	C9-C3	6.37	1.50	1.41
3	D	342	QUE	C9-C3	6.37	1.50	1.41
3	D	342	QUE	C3-C4	6.74	1.50	1.41
2	C	338	NAP	O7N-C7N	6.86	1.38	1.24
2	E	338	NAP	O7N-C7N	7.62	1.39	1.24
2	D	338	NAP	O7N-C7N	7.79	1.40	1.24
2	F	338	NAP	O7N-C7N	8.21	1.41	1.24
2	A	338	NAP	O7N-C7N	8.36	1.41	1.24
2	B	338	NAP	O7N-C7N	8.46	1.41	1.24

All (145) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	338	NAP	N3A-C2A-N1A	-12.58	117.91	128.86
2	E	338	NAP	N3A-C2A-N1A	-12.30	118.14	128.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	338	NAP	N3A-C2A-N1A	-10.82	119.43	128.86
3	B	342	QUE	C9-C3-C4	-6.89	112.59	118.81
2	B	338	NAP	C1B-N9A-C4A	-6.11	116.08	126.64
2	A	338	NAP	N3A-C2A-N1A	-5.93	123.69	128.86
3	B	342	QUE	C5-C4-C3	-5.83	116.60	123.05
3	B	341	QUE	C5-C4-C3	-5.62	116.83	123.05
2	E	338	NAP	O7N-C7N-C3N	-5.10	113.66	119.62
3	D	341	QUE	C5-C4-C3	-5.07	117.43	123.05
2	D	338	NAP	C1B-N9A-C4A	-4.83	118.28	126.64
2	C	338	NAP	O7N-C7N-N7N	-4.67	115.94	122.58
3	A	342	QUE	C5-C4-C3	-4.62	117.94	123.05
3	F	342	QUE	C9-C3-C4	-4.58	114.68	118.81
3	C	342	QUE	C5-C4-C3	-4.50	118.06	123.05
3	F	341	QUE	C5-C4-C3	-4.40	118.18	123.05
2	B	338	NAP	C4B-O4B-C1B	-4.31	105.18	109.77
2	F	338	NAP	N3A-C2A-N1A	-4.26	125.15	128.86
3	F	341	QUE	C19-C18-C17	-4.21	116.04	119.84
2	E	338	NAP	C1B-N9A-C4A	-4.16	119.44	126.64
3	C	342	QUE	C16-C17-C18	-4.15	115.02	119.66
3	C	341	QUE	C5-C4-C3	-4.10	118.51	123.05
2	E	338	NAP	C4N-C3N-C7N	-3.99	110.47	121.07
2	C	338	NAP	N3A-C2A-N1A	-3.96	125.41	128.86
3	D	342	QUE	C5-C4-C3	-3.93	118.70	123.05
2	C	338	NAP	C4B-O4B-C1B	-3.89	105.62	109.77
2	F	338	NAP	C3N-C2N-N1N	-3.87	116.53	120.43
3	F	341	QUE	C1-C2-C3	-3.82	116.24	120.51
2	E	338	NAP	O2X-P2B-O2B	-3.58	89.74	106.00
3	D	342	QUE	C19-C18-C17	-3.56	116.63	119.84
2	A	338	NAP	O7N-C7N-C3N	-3.55	115.47	119.62
2	C	338	NAP	O5B-C5B-C4B	-3.53	96.47	109.00
2	E	338	NAP	C5N-C4N-C3N	-3.51	116.22	120.35
3	C	342	QUE	C9-C3-C4	-3.29	115.84	118.81
2	C	338	NAP	C1B-N9A-C4A	-3.22	121.07	126.64
3	B	341	QUE	C16-C17-C18	-3.01	116.29	119.66
3	C	341	QUE	C9-C3-C4	-3.01	116.09	118.81
2	E	338	NAP	O2B-C2B-C1B	-3.00	98.87	110.06
3	F	342	QUE	C5-C4-C3	-2.82	119.93	123.05
2	F	338	NAP	C4N-C3N-C7N	-2.78	113.68	121.07
3	B	341	QUE	C10-C9-C3	-2.77	117.44	121.28
3	D	342	QUE	C9-C3-C4	-2.75	116.33	118.81
3	D	341	QUE	C19-C18-C17	-2.71	117.40	119.84
3	A	342	QUE	C19-C18-C17	-2.65	117.45	119.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	341	QUE	C10-C9-C3	-2.61	117.67	121.28
3	B	342	QUE	O23-C18-C17	-2.54	111.89	118.51
2	B	338	NAP	O2B-C2B-C3B	-2.52	102.30	111.63
2	C	338	NAP	O2B-C2B-C3B	-2.51	102.34	111.63
2	C	338	NAP	C5A-C6A-N6A	-2.49	115.39	120.47
3	F	342	QUE	O24-C17-C18	-2.40	112.25	118.51
2	E	338	NAP	O3D-C3D-C4D	-2.38	104.12	111.09
2	D	338	NAP	C5B-C4B-C3B	-2.37	106.25	115.29
3	F	342	QUE	O29-C6-C5	-2.37	114.08	121.05
2	F	338	NAP	O7N-C7N-C3N	-2.35	116.87	119.62
2	E	338	NAP	C3N-C2N-N1N	-2.33	118.09	120.43
3	F	342	QUE	O12-C4-C3	-2.33	119.02	121.11
2	D	338	NAP	C4A-C5A-N7A	-2.23	107.25	109.41
3	A	342	QUE	C10-C9-C3	-2.20	118.23	121.28
2	B	338	NAP	O7N-C7N-C3N	-2.18	117.08	119.62
2	E	338	NAP	O4D-C4D-C3D	-2.13	100.94	105.17
3	A	342	QUE	C9-C3-C4	-2.11	116.91	118.81
2	C	338	NAP	C3N-C2N-N1N	-2.10	118.32	120.43
2	D	338	NAP	O7N-C7N-N7N	-2.09	119.62	122.58
2	D	338	NAP	C4N-C3N-C7N	-2.08	115.54	121.07
3	B	342	QUE	C19-C18-C17	-2.01	118.03	119.84
2	C	338	NAP	C4D-O4D-C1D	-2.00	107.64	109.77
2	A	338	NAP	N6A-C6A-N1A	2.01	122.75	118.77
3	B	342	QUE	O24-C17-C16	2.01	124.82	119.35
2	D	338	NAP	C3B-C2B-C1B	2.03	106.71	102.75
2	D	338	NAP	C2D-C3D-C4D	2.04	106.59	102.62
3	D	341	QUE	C9-C3-C2	2.05	125.36	121.85
3	C	341	QUE	C14-C19-C18	2.06	122.33	120.64
2	F	338	NAP	C3B-C2B-C1B	2.07	106.80	102.75
2	E	338	NAP	O2A-PA-O5B	2.07	117.92	108.14
2	E	338	NAP	C2N-C3N-C7N	2.11	125.47	119.34
2	D	338	NAP	O4B-C4B-C5B	2.11	116.53	109.40
3	B	341	QUE	C14-C11-C10	2.12	124.02	120.17
2	C	338	NAP	C2N-C3N-C4N	2.12	120.68	118.26
2	D	338	NAP	C5A-C6A-N6A	2.14	124.83	120.47
3	B	342	QUE	O12-C4-C3	2.15	123.05	121.11
3	C	342	QUE	C9-C3-C2	2.17	125.56	121.85
3	F	341	QUE	O12-C11-C14	2.19	120.28	114.00
2	E	338	NAP	C3B-C2B-C1B	2.21	107.08	102.75
3	D	342	QUE	O24-C17-C16	2.23	125.42	119.35
3	C	341	QUE	O12-C11-C14	2.25	120.45	114.00
2	E	338	NAP	O4B-C4B-C3B	2.27	109.68	105.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	338	NAP	C3N-C7N-N7N	2.27	120.37	117.77
2	C	338	NAP	O3B-C3B-C4B	2.27	117.72	111.09
2	C	338	NAP	N6A-C6A-N1A	2.28	123.28	118.77
2	F	338	NAP	O2A-PA-O1A	2.29	124.14	112.28
3	F	341	QUE	O24-C17-C18	2.30	124.50	118.51
3	C	341	QUE	C14-C11-C10	2.30	124.36	120.17
3	C	341	QUE	C2-C1-C6	2.31	121.74	119.65
2	A	338	NAP	C3B-C2B-C1B	2.35	107.35	102.75
2	D	338	NAP	C3N-C7N-N7N	2.38	120.49	117.77
3	C	342	QUE	C15-C16-C17	2.40	122.93	120.51
2	F	338	NAP	O2D-C2D-C1D	2.40	119.12	111.61
3	A	342	QUE	C9-C3-C2	2.45	126.05	121.85
3	A	342	QUE	O12-C11-C14	2.56	121.34	114.00
3	D	341	QUE	C15-C14-C19	2.58	121.50	118.16
3	F	342	QUE	O29-C6-C1	2.59	126.59	119.82
2	A	338	NAP	O2D-C2D-C3D	2.62	120.21	111.83
3	F	341	QUE	C2-C1-C6	2.63	122.03	119.65
2	F	338	NAP	O5B-PA-O1A	2.66	119.98	109.25
3	A	342	QUE	O24-C17-C16	2.67	126.62	119.35
2	E	338	NAP	O3X-P2B-O2B	2.67	118.14	106.00
2	D	338	NAP	C4D-O4D-C1D	2.73	112.68	109.77
3	D	342	QUE	C9-C3-C2	2.76	126.57	121.85
2	A	338	NAP	C3N-C7N-N7N	2.80	120.97	117.77
2	D	338	NAP	C2N-C3N-C4N	2.83	121.49	118.26
2	C	338	NAP	O4B-C1B-C2B	2.84	111.57	106.59
3	C	342	QUE	C14-C11-C10	2.87	125.39	120.17
3	B	342	QUE	C14-C11-C10	2.89	125.42	120.17
2	F	338	NAP	O5D-C5D-C4D	2.90	119.27	109.00
2	F	338	NAP	O5D-PN-O1N	2.90	120.93	109.25
3	D	342	QUE	C14-C11-C10	2.91	125.45	120.17
2	F	338	NAP	C2N-C3N-C4N	3.03	121.72	118.26
3	C	341	QUE	C9-C3-C2	3.17	127.28	121.85
3	C	342	QUE	C14-C19-C18	3.25	123.31	120.64
3	D	342	QUE	O23-C18-C19	3.37	128.47	119.47
2	B	338	NAP	O5D-PN-O1N	3.45	123.18	109.25
2	D	338	NAP	O2X-P2B-O1X	3.48	124.13	110.50
3	F	341	QUE	O12-C4-C5	3.58	120.30	116.11
3	F	342	QUE	O24-C17-C16	3.59	129.14	119.35
3	B	342	QUE	O12-C4-C5	3.63	120.36	116.11
3	C	342	QUE	O24-C17-C16	3.75	129.56	119.35
3	D	342	QUE	C14-C19-C18	3.82	123.78	120.64
3	A	342	QUE	O12-C4-C5	3.84	120.60	116.11

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	338	NAP	O2X-P2B-O1X	3.85	125.56	110.50
3	B	342	QUE	C9-C3-C2	3.87	128.49	121.85
2	F	338	NAP	C3N-C7N-N7N	3.91	122.24	117.77
3	A	342	QUE	C14-C19-C18	3.94	123.87	120.64
3	B	342	QUE	O23-C18-C19	3.97	130.07	119.47
3	D	341	QUE	O12-C4-C5	4.07	120.88	116.11
3	F	342	QUE	O12-C4-C5	4.22	121.05	116.11
3	C	342	QUE	O12-C4-C5	4.32	121.17	116.11
3	F	342	QUE	C9-C3-C2	4.46	129.49	121.85
2	E	338	NAP	C2N-C3N-C4N	4.60	123.51	118.26
3	C	341	QUE	O12-C4-C5	4.97	121.93	116.11
3	D	342	QUE	O12-C4-C5	4.98	121.94	116.11
2	C	338	NAP	C3N-C7N-N7N	4.98	123.46	117.77
2	E	338	NAP	C3N-C7N-N7N	5.68	124.26	117.77
3	F	342	QUE	C14-C11-C10	5.92	130.92	120.17
3	B	341	QUE	O12-C4-C5	6.32	123.51	116.11
2	E	338	NAP	C4D-O4D-C1D	7.47	117.72	109.77

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

11 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	338	NAP	1	0
2	B	338	NAP	1	0
3	B	341	QUE	1	0
3	B	342	QUE	3	0
2	C	338	NAP	5	0
2	D	338	NAP	3	0
3	D	342	QUE	2	0
2	E	338	NAP	6	0
2	F	338	NAP	2	0
3	F	341	QUE	1	0
3	F	342	QUE	4	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	324/337 (96%)	0.45	11 (3%) 46 39	14, 28, 41, 46	0
1	B	324/337 (96%)	0.19	1 (0%) 93 93	4, 20, 38, 43	0
1	C	324/337 (96%)	0.18	2 (0%) 89 88	4, 19, 38, 42	0
1	D	324/337 (96%)	0.89	33 (10%) 7 5	13, 28, 42, 47	0
1	E	324/337 (96%)	0.97	40 (12%) 5 3	13, 29, 43, 48	0
1	F	324/337 (96%)	0.37	8 (2%) 58 53	12, 28, 42, 46	0
All	All	1944/2022 (96%)	0.51	95 (4%) 30 26	4, 26, 41, 48	0

All (95) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	182	ASN	4.7
1	D	120	VAL	4.5
1	D	278	THR	4.5
1	D	230	HIS	4.4
1	E	20	TRP	4.4
1	E	308	LEU	4.1
1	D	266	MET	3.8
1	E	278	THR	3.7
1	E	119	THR	3.7
1	D	88	MET	3.5
1	E	266	MET	3.5
1	E	184	ASP	3.5
1	E	329	HIS	3.4
1	D	121	ARG	3.4
1	F	55	GLU	3.3
1	D	251	TYR	3.3
1	E	201	SER	3.2
1	D	201	SER	3.2
1	E	253	CYS	3.2

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Mol	Chain	Res	Type	RSRZ
1	E	78	CYS	3.2
1	E	52	PRO	3.1
1	E	189	ILE	3.1
1	D	79	THR	3.1
1	A	87	PRO	3.0
1	E	141	VAL	3.0
1	D	119	THR	3.0
1	E	313	THR	2.9
1	D	75	ILE	2.9
1	D	188	ILE	2.9
1	D	6	GLU	2.9
1	E	230	HIS	2.9
1	D	303	GLU	2.8
1	D	203	PRO	2.8
1	F	323	GLY	2.8
1	D	204	PRO	2.8
1	D	242	PHE	2.8
1	D	7	THR	2.8
1	D	57	HIS	2.7
1	F	129	ALA	2.7
1	D	160	ALA	2.7
1	E	160	ALA	2.7
1	E	238	HIS	2.7
1	D	19	SER	2.6
1	B	6	GLU	2.6
1	A	317	ASP	2.6
1	D	72	ASP	2.6
1	D	200	SER	2.6
1	E	34	ALA	2.6
1	A	183	ILE	2.6
1	E	255	SER	2.6
1	E	306	TYR	2.6
1	E	113	SER	2.5
1	E	267	LEU	2.5
1	F	182	ASN	2.5
1	E	327	PRO	2.5
1	E	88	MET	2.5
1	D	63	ALA	2.4
1	E	247	ALA	2.4
1	E	268	ARG	2.4
1	C	77	GLY	2.4
1	E	51	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	E	242	PHE	2.4
1	D	24	ARG	2.4
1	E	204	PRO	2.4
1	A	297	LEU	2.3
1	A	41	ASN	2.3
1	E	123	LEU	2.3
1	D	238	HIS	2.3
1	A	45	VAL	2.2
1	E	234	LEU	2.2
1	D	180	GLU	2.2
1	A	328	SER	2.2
1	E	31	THR	2.2
1	C	32	VAL	2.2
1	E	121	ARG	2.2
1	F	199	MET	2.2
1	A	168	THR	2.2
1	E	57	HIS	2.2
1	F	327	PRO	2.2
1	E	45	VAL	2.2
1	E	9	CYS	2.2
1	E	30	TYR	2.2
1	D	306	TYR	2.2
1	D	174	ALA	2.1
1	D	184	ASP	2.1
1	E	32	VAL	2.1
1	E	245	PRO	2.1
1	D	30	TYR	2.1
1	E	120	VAL	2.1
1	F	126	THR	2.0
1	D	326	PRO	2.0
1	A	282	GLY	2.0
1	A	40	THR	2.0
1	D	80	GLY	2.0
1	F	269	GLU	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 [i](#)

There are no carbohydrates 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. 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, 95<sup>th</sup> 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
3	QUE	C	341	22/22	0.95	0.26	2.29	8,9,10,10	0
3	QUE	F	341	22/22	0.88	0.34	1.96	18,19,20,21	0
3	QUE	B	342	22/22	0.93	0.23	1.56	11,11,12,13	0
3	QUE	D	341	22/22	0.90	0.32	1.17	24,25,26,26	0
3	QUE	C	342	22/22	0.89	0.24	0.82	10,12,13,13	0
3	QUE	B	341	22/22	0.94	0.23	0.66	11,11,12,12	0
3	QUE	D	342	22/22	0.85	0.31	0.34	24,24,25,25	0
3	QUE	F	342	22/22	0.84	0.26	0.06	22,23,23,24	0
2	NAP	A	338	48/48	0.92	0.22	-0.10	17,20,26,27	0
3	QUE	A	342	22/22	0.89	0.21	-0.28	18,19,20,20	0
2	NAP	F	338	48/48	0.93	0.20	-0.36	14,18,21,22	0
2	NAP	B	338	48/48	0.96	0.17	-0.72	4,6,13,14	0
2	NAP	C	338	48/48	0.97	0.17	-0.74	4,4,9,10	0
2	NAP	D	338	48/48	0.94	0.20	-1.07	11,18,21,22	0
2	NAP	E	338	48/48	0.93	0.19	-2.06	14,17,21,21	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.