



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 5, 2023 – 08:28 PM EDT

PDB ID : 4DG1  
Title : Crystal structure of HIV-1 reverse transcriptase (RT) with polymorphism mutation K172A and K173A  
Authors : Tu, X.; Kirby, K.A.; Marchand, B.; Sarafianos, S.G.  
Deposited on : 2012-01-24  
Resolution : 2.15 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.35  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35

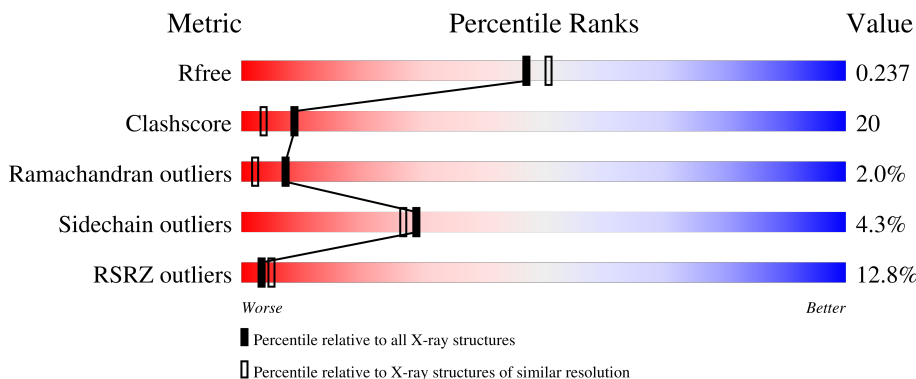
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.15 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))
$R_{free}$	130704	1479 (2.16-2.16)
Clashscore	141614	1585 (2.16-2.16)
Ramachandran outliers	138981	1560 (2.16-2.16)
Sidechain outliers	138945	1559 (2.16-2.16)
RSRZ outliers	127900	1456 (2.16-2.16)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	549	
2	B	427	

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
5	GOL	A	607	-	-	X	-
5	GOL	A	608	-	-	X	-

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 8246 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 Reverse Transcriptase P66 subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	549	4429	2866	733	823	7	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	172	ALA	LYS	engineered mutation	UNP P03366
A	173	ALA	LYS	engineered mutation	UNP P03366
A	280	SER	CYS	engineered mutation	UNP P03366

- Molecule 2 is a protein called Reverse Transcriptase P51 subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	418	3443	2247	568	621	7	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	280	SER	CYS	engineered mutation	UNP P03366

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	3	Total	Mg	0	0
			3	3		
3	B	1	Total	Mg	0	0
			1	1		

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0

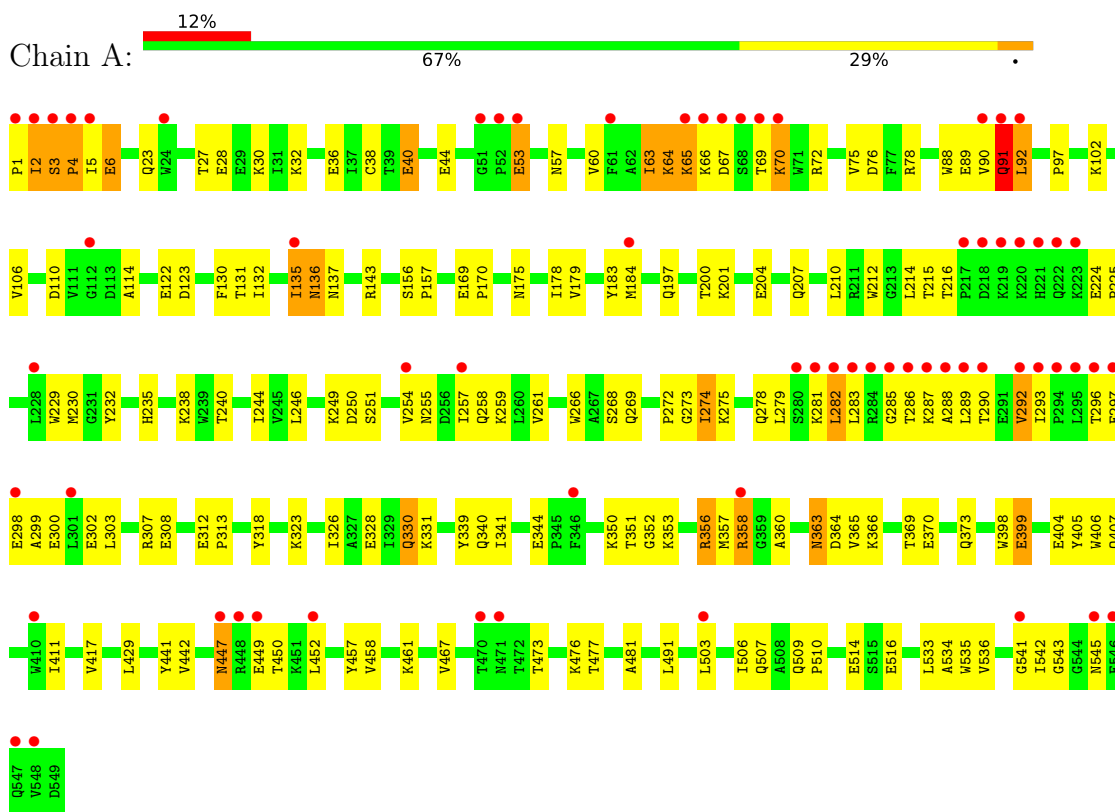
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	142	Total O 142 142	0	0
6	B	136	Total O 136 136	0	0

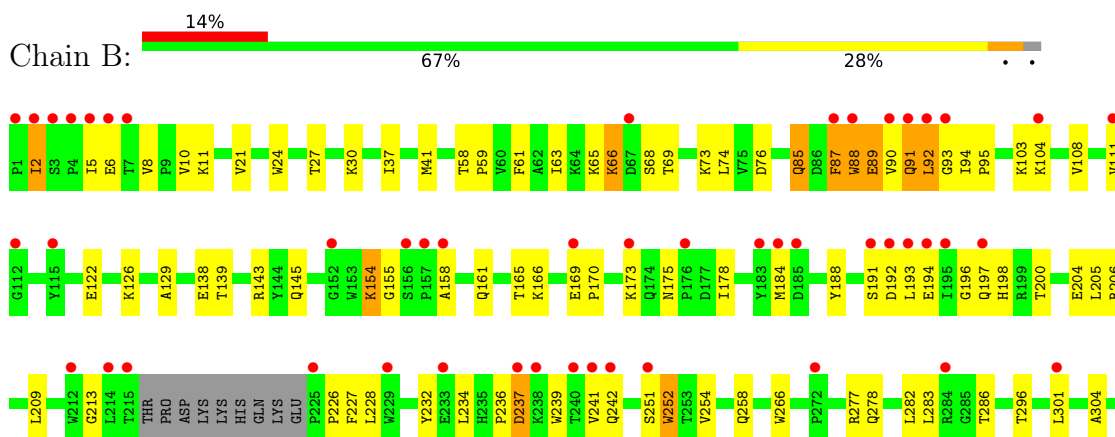
### 3 Residue-property plots [i](#)

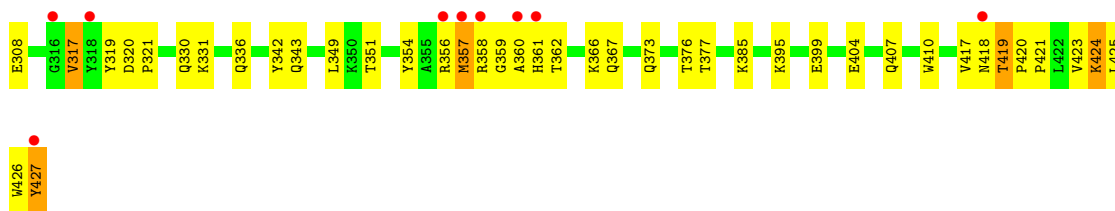
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Reverse Transcriptase P66 subunit



- Molecule 2: Reverse Transcriptase P51 subunit







## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	159.23Å 72.15Å 109.24Å 90.00° 97.52° 90.00°	Depositor
Resolution (Å)	29.08 – 2.15 29.08 – 2.15	Depositor EDS
% Data completeness (in resolution range)	98.4 (29.08-2.15) 98.4 (29.08-2.15)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.05	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.24 (at 2.16Å)	Xtrriage
Refinement program	PHENIX, CNS 1.3	Depositor
R, $R_{free}$	0.232 , 0.247 0.222 , 0.237	Depositor DCC
$R_{free}$ test set	3339 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	38.7	Xtrriage
Anisotropy	0.024	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 49.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	8246	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	49.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.99% of the height of the origin peak. No significant pseudotranslation is detected.*

<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 [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: EDO, MG, GOL

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	0.43	0/4547	0.62	1/6186 (0.0%)
2	B	0.45	0/3545	0.64	0/4819
All	All	0.44	0/8092	0.62	1/11005 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	3	SER	C-N-CD	-9.12	100.54	120.60

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4429	0	4429	186	0
2	B	3443	0	3470	151	0
3	A	3	0	0	0	0
3	B	1	0	0	0	0
4	A	32	0	48	8	0
4	B	24	0	36	6	0
5	A	24	0	32	12	0
5	B	12	0	16	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	A	142	0	0	2	0
6	B	136	0	0	5	0
All	All	8246	0	8031	328	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 20.

All (328) 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)
2:B:169:GLU:HG3	2:B:170:PRO:HD3	1.12	1.06
1:A:135:ILE:H	1:A:135:ILE:HD12	1.25	1.01
2:B:320:ASP:H	2:B:343:GLN:HE22	0.97	0.96
2:B:417:VAL:HG12	2:B:418:ASN:N	1.79	0.93
2:B:66:LYS:HG3	2:B:407:GLN:NE2	1.88	0.89
1:A:197:GLN:HB3	4:A:612:EDO:H21	1.56	0.87
2:B:169:GLU:HG3	2:B:170:PRO:CD	2.04	0.85
1:A:406:TRP:CH2	2:B:418:ASN:HA	2.12	0.85
1:A:69:THR:HG22	1:A:70:LYS:H	1.42	0.84
1:A:57:ASN:HD22	1:A:143:ARG:HH21	1.23	0.84
1:A:57:ASN:HD22	1:A:143:ARG:NH2	1.76	0.83
2:B:373:GLN:NE2	2:B:407:GLN:H	1.76	0.82
2:B:373:GLN:HE22	2:B:407:GLN:H	1.25	0.82
2:B:91:GLN:HA	2:B:158:ALA:HB1	1.62	0.81
1:A:91:GLN:O	1:A:92:LEU:HB3	1.81	0.81
1:A:350:LYS:HA	5:A:607:GOL:H2	1.62	0.81
2:B:417:VAL:CG1	2:B:418:ASN:N	2.44	0.80
2:B:424:LYS:NZ	2:B:424:LYS:HB3	1.96	0.80
1:A:330:GLN:HE22	1:A:340:GLN:HE22	1.27	0.80
1:A:175:ASN:HD22	1:A:201:LYS:HZ2	1.29	0.80
2:B:87:PHE:HB2	2:B:91:GLN:H	1.45	0.80
2:B:68:SER:O	2:B:69:THR:HG22	1.81	0.80
1:A:175:ASN:HD22	1:A:201:LYS:NZ	1.79	0.79
1:A:356:ARG:O	1:A:356:ARG:HD3	1.82	0.79
2:B:342:TYR:HA	2:B:349:LEU:HD13	1.63	0.79
2:B:87:PHE:HB2	2:B:91:GLN:CB	2.12	0.79
2:B:320:ASP:H	2:B:343:GLN:NE2	1.80	0.79
2:B:360:ALA:HA	2:B:367:GLN:NE2	1.98	0.78
1:A:2:ILE:N	1:A:2:ILE:HD12	1.97	0.77
2:B:417:VAL:CG1	2:B:418:ASN:H	1.97	0.76
1:A:351:THR:H	5:A:607:GOL:H2	1.50	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:417:VAL:HG12	2:B:418:ASN:H	1.51	0.74
1:A:106:VAL:HG21	4:A:613:EDO:H22	1.69	0.74
1:A:60:VAL:HG12	1:A:75:VAL:HG22	1.69	0.73
2:B:200:THR:O	2:B:204:GLU:HG3	1.89	0.72
1:A:360:ALA:HA	1:A:514:GLU:OE2	1.90	0.71
1:A:66:LYS:HA	1:A:69:THR:O	1.90	0.71
1:A:406:TRP:HH2	2:B:418:ASN:HA	1.53	0.71
1:A:274:ILE:HG22	1:A:275:LYS:H	1.57	0.70
2:B:91:GLN:HA	2:B:158:ALA:CB	2.21	0.70
2:B:197:GLN:O	2:B:200:THR:HG22	1.91	0.70
2:B:424:LYS:HB3	2:B:424:LYS:HZ2	1.57	0.70
1:A:229:TRP:CH2	1:A:230:MET:HE3	2.27	0.70
2:B:87:PHE:HB2	2:B:91:GLN:N	2.06	0.70
1:A:23:GLN:HE22	1:A:60:VAL:H	1.40	0.69
1:A:179:VAL:HG23	5:A:606:GOL:H32	1.75	0.69
1:A:278:GLN:HA	1:A:281:LYS:HD3	1.75	0.69
1:A:254:VAL:O	1:A:258:GLN:HG3	1.92	0.69
1:A:273:GLY:O	1:A:274:ILE:HD13	1.94	0.68
2:B:282:LEU:HD21	2:B:296:THR:HG23	1.76	0.68
1:A:450:THR:HB	1:A:452:LEU:HG	1.76	0.68
1:A:92:LEU:HD12	1:A:92:LEU:O	1.94	0.67
2:B:129:ALA:HB1	2:B:143:ARG:HH21	1.59	0.67
1:A:447:ASN:HB3	1:A:450:THR:OG1	1.94	0.67
2:B:331:LYS:O	4:B:502:EDO:H22	1.94	0.67
1:A:4:PRO:O	1:A:212:TRP:CD1	2.47	0.67
2:B:138:GLU:HG3	2:B:139:THR:HG23	1.76	0.67
1:A:91:GLN:H	1:A:91:GLN:CD	1.97	0.66
1:A:290:THR:HB	1:A:292:VAL:HG13	1.77	0.66
2:B:89:GLU:OE2	2:B:90:VAL:HG13	1.96	0.66
1:A:535:TRP:O	5:A:608:GOL:H11	1.96	0.66
1:A:28:GLU:HG2	1:A:32:LYS:HE3	1.78	0.65
1:A:64:LYS:HG2	1:A:65:LYS:N	2.12	0.65
1:A:64:LYS:HD2	1:A:72:ARG:HG3	1.78	0.65
1:A:274:ILE:HG12	6:A:721:HOH:O	1.97	0.65
1:A:272:PRO:HB3	1:A:352:GLY:HA2	1.78	0.64
1:A:258:GLN:HG2	1:A:282:LEU:HD11	1.78	0.64
2:B:91:GLN:C	2:B:93:GLY:N	2.51	0.64
1:A:4:PRO:O	1:A:212:TRP:HD1	1.79	0.63
1:A:458:VAL:HG21	1:A:545:ASN:HB2	1.78	0.63
2:B:358:ARG:NH1	2:B:366:LYS:NZ	2.46	0.63
1:A:53:GLU:H	1:A:53:GLU:CD	2.01	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:283:LEU:O	1:A:287:LYS:CB	2.46	0.63
1:A:298:GLU:OE1	1:A:298:GLU:HA	1.97	0.63
2:B:87:PHE:H	2:B:91:GLN:CB	2.11	0.63
1:A:135:ILE:H	1:A:135:ILE:CD1	2.03	0.63
1:A:274:ILE:HG22	1:A:275:LYS:N	2.14	0.62
1:A:542:ILE:HG22	1:A:543:GLY:N	2.15	0.62
2:B:93:GLY:O	2:B:95:PRO:HD3	1.99	0.62
2:B:154:LYS:HA	2:B:184:MET:HE1	1.80	0.62
1:A:406:TRP:CH2	2:B:419:THR:N	2.64	0.62
1:A:351:THR:N	5:A:607:GOL:H2	2.15	0.61
1:A:102:LYS:HG2	1:A:318:TYR:CD2	2.35	0.61
2:B:251:SER:O	2:B:252:TRP:HB2	2.00	0.61
2:B:154:LYS:HA	2:B:184:MET:CE	2.31	0.61
2:B:277:ARG:NH1	2:B:278:GLN:NE2	2.49	0.61
2:B:377:THR:HG22	2:B:410:TRP:HZ2	1.66	0.60
2:B:37:ILE:HG22	2:B:41:MET:CE	2.31	0.60
1:A:281:LYS:O	1:A:285:GLY:N	2.34	0.60
1:A:356:ARG:HD3	1:A:356:ARG:C	2.21	0.60
2:B:91:GLN:C	2:B:93:GLY:H	2.04	0.60
2:B:91:GLN:O	2:B:93:GLY:N	2.34	0.60
2:B:427:TYR:HB3	6:B:669:HOH:O	2.00	0.60
2:B:166:LYS:O	2:B:169:GLU:HG2	2.02	0.60
2:B:420:PRO:HD2	6:B:627:HOH:O	2.02	0.60
1:A:458:VAL:HG12	2:B:286:THR:HG21	1.83	0.59
2:B:191:SER:HG	2:B:198:HIS:HD1	1.49	0.59
2:B:66:LYS:CG	2:B:407:GLN:NE2	2.65	0.59
2:B:373:GLN:HE22	2:B:407:GLN:N	1.99	0.59
1:A:534:ALA:HB1	5:A:608:GOL:H2	1.84	0.59
2:B:87:PHE:O	2:B:89:GLU:N	2.36	0.59
2:B:87:PHE:CB	2:B:91:GLN:CB	2.80	0.59
1:A:2:ILE:N	1:A:2:ILE:CD1	2.64	0.58
1:A:6:GLU:H	1:A:6:GLU:CD	2.05	0.58
1:A:535:TRP:H	5:A:608:GOL:H31	1.69	0.58
2:B:205:LEU:HD23	2:B:205:LEU:O	2.03	0.58
2:B:11:LYS:O	2:B:85:GLN:HG2	2.04	0.58
2:B:161:GLN:O	2:B:165:THR:HG23	2.04	0.58
1:A:2:ILE:HG22	1:A:3:SER:N	2.19	0.58
1:A:76:ASP:OD2	1:A:78:ARG:HD3	2.04	0.58
2:B:359:GLY:C	2:B:361:HIS:H	2.06	0.58
1:A:102:LYS:HG2	1:A:318:TYR:HD2	1.69	0.57
2:B:304:ALA:O	2:B:308:GLU:HG2	2.03	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:37:ILE:HG22	2:B:41:MET:HE1	1.87	0.57
2:B:277:ARG:NH1	2:B:278:GLN:HE22	2.02	0.57
1:A:535:TRP:H	5:A:608:GOL:C3	2.17	0.57
2:B:426:TRP:O	2:B:427:TYR:HD2	1.87	0.57
1:A:27:THR:OG1	1:A:30:LYS:HE2	2.05	0.57
2:B:193:LEU:HD22	2:B:197:GLN:NE2	2.20	0.57
1:A:298:GLU:C	1:A:300:GLU:N	2.57	0.57
2:B:169:GLU:CG	2:B:170:PRO:HD3	2.07	0.56
2:B:319:TYR:OH	2:B:385:LYS:HE2	2.06	0.56
2:B:143:ARG:HD3	6:B:663:HOH:O	2.04	0.56
1:A:269:GLN:HG2	6:A:823:HOH:O	2.06	0.55
1:A:65:LYS:NZ	1:A:65:LYS:HB3	2.21	0.55
2:B:359:GLY:C	2:B:361:HIS:N	2.59	0.55
1:A:64:LYS:HG2	1:A:65:LYS:H	1.72	0.55
2:B:421:PRO:O	2:B:424:LYS:HG2	2.05	0.55
1:A:357:MET:HE1	1:A:370:GLU:HG2	1.88	0.54
2:B:41:MET:HE1	2:B:73:LYS:HD2	1.88	0.54
2:B:236:PRO:HA	2:B:239:TRP:CD2	2.42	0.54
1:A:135:ILE:HD12	1:A:135:ILE:N	2.09	0.54
1:A:137:ASN:N	1:A:137:ASN:HD22	2.06	0.54
1:A:183:TYR:HB2	1:A:230:MET:HE1	1.89	0.54
2:B:103:LYS:HE3	2:B:192:ASP:OD2	2.07	0.54
1:A:1:PRO:C	1:A:2:ILE:HD12	2.27	0.53
2:B:258:GLN:HG2	2:B:283:LEU:HD13	1.90	0.53
2:B:358:ARG:NH1	2:B:366:LYS:HZ1	2.06	0.53
1:A:268:SER:HA	1:A:274:ILE:HG13	1.90	0.53
1:A:90:VAL:N	1:A:91:GLN:OE1	2.41	0.53
1:A:350:LYS:HA	5:A:607:GOL:C2	2.34	0.53
1:A:53:GLU:CD	1:A:53:GLU:N	2.62	0.53
1:A:398:TRP:CH2	1:A:411:ILE:HG12	2.44	0.53
1:A:156:SER:HB2	1:A:157:PRO:HD3	1.91	0.53
2:B:277:ARG:HH11	2:B:278:GLN:NE2	2.07	0.53
2:B:373:GLN:O	2:B:377:THR:HG23	2.09	0.53
2:B:2:ILE:O	2:B:2:ILE:HG22	2.09	0.53
2:B:30:LYS:HE2	5:B:506:GOL:H32	1.92	0.52
2:B:87:PHE:N	2:B:87:PHE:CD2	2.76	0.52
1:A:238:LYS:HE2	1:A:240:THR:OG1	2.10	0.52
1:A:88:TRP:HB2	2:B:143:ARG:NH1	2.25	0.52
1:A:298:GLU:C	1:A:300:GLU:H	2.12	0.52
2:B:58:THR:HG23	2:B:76:ASP:O	2.10	0.52
2:B:232:TYR:CE2	2:B:234:LEU:HD21	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:175:ASN:HB3	2:B:178:ILE:HG12	1.92	0.51
1:A:255:ASN:O	1:A:259:LYS:HG3	2.10	0.51
1:A:88:TRP:CD2	2:B:143:ARG:NH1	2.78	0.51
2:B:66:LYS:CG	2:B:407:GLN:HE22	2.22	0.51
1:A:2:ILE:HG22	1:A:3:SER:H	1.76	0.51
1:A:76:ASP:OD1	1:A:78:ARG:HD3	2.10	0.51
2:B:88:TRP:HA	2:B:92:LEU:HB3	1.92	0.51
2:B:330:GLN:HB3	4:B:502:EDO:H11	1.93	0.51
2:B:95:PRO:HA	6:B:687:HOH:O	2.10	0.50
1:A:183:TYR:CB	1:A:230:MET:HE1	2.41	0.50
1:A:542:ILE:N	1:A:542:ILE:HD12	2.26	0.50
1:A:200:THR:O	1:A:204:GLU:HG3	2.12	0.50
2:B:404:GLU:HA	5:B:506:GOL:H31	1.92	0.50
1:A:261:VAL:HG11	1:A:279:LEU:HD21	1.92	0.49
2:B:241:VAL:CG1	2:B:242:GLN:N	2.76	0.49
1:A:76:ASP:CG	1:A:78:ARG:HD3	2.33	0.49
1:A:91:GLN:OE1	1:A:91:GLN:N	2.43	0.49
1:A:541:GLY:C	1:A:542:ILE:HD12	2.33	0.49
2:B:21:VAL:HB	2:B:59:PRO:HD3	1.94	0.49
1:A:297:GLU:CD	1:A:298:GLU:N	2.66	0.49
2:B:377:THR:HG22	2:B:410:TRP:CZ2	2.45	0.49
1:A:90:VAL:HG23	1:A:91:GLN:N	2.28	0.49
1:A:449:GLU:HG3	1:A:450:THR:H	1.76	0.49
2:B:104:LYS:HA	2:B:237:ASP:HB3	1.95	0.49
1:A:257:ILE:CG2	1:A:282:LEU:HD23	2.43	0.48
1:A:296:THR:HG23	1:A:299:ALA:HB3	1.95	0.48
2:B:87:PHE:N	2:B:87:PHE:HD2	2.11	0.48
2:B:317:VAL:O	2:B:317:VAL:CG2	2.61	0.48
1:A:272:PRO:HB2	1:A:353:LYS:HG3	1.94	0.48
1:A:40:GLU:O	1:A:44:GLU:HG3	2.13	0.48
1:A:69:THR:HG22	1:A:70:LYS:N	2.19	0.48
1:A:97:PRO:HD3	1:A:232:TYR:CZ	2.48	0.48
1:A:175:ASN:ND2	1:A:201:LYS:NZ	2.57	0.48
2:B:317:VAL:O	2:B:317:VAL:HG23	2.11	0.48
1:A:114:ALA:HB1	1:A:214:LEU:HD22	1.95	0.48
1:A:542:ILE:CG2	1:A:543:GLY:N	2.76	0.48
1:A:449:GLU:HG3	1:A:450:THR:N	2.28	0.48
2:B:424:LYS:HB3	2:B:424:LYS:HZ3	1.76	0.48
2:B:426:TRP:O	2:B:427:TYR:CD2	2.65	0.48
1:A:122:GLU:HB3	4:A:609:EDO:H12	1.96	0.48
1:A:183:TYR:CG	1:A:230:MET:HE1	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:206:ARG:NH2	6:B:667:HOH:O	2.46	0.48
1:A:292:VAL:C	1:A:293:ILE:HD12	2.34	0.48
1:A:292:VAL:HG23	1:A:293:ILE:N	2.29	0.47
1:A:331:LYS:HE3	1:A:364:ASP:OD2	2.14	0.47
1:A:229:TRP:CZ2	1:A:230:MET:HE3	2.49	0.47
1:A:246:LEU:O	1:A:307:ARG:NH1	2.47	0.47
1:A:323:LYS:NZ	1:A:344:GLU:OE2	2.47	0.47
2:B:87:PHE:O	2:B:88:TRP:C	2.52	0.47
1:A:303:LEU:C	1:A:303:LEU:HD23	2.35	0.47
1:A:356:ARG:HG2	1:A:356:ARG:HH11	1.80	0.47
1:A:429:LEU:HD11	1:A:506:ILE:HG22	1.95	0.47
2:B:228:LEU:HD23	2:B:228:LEU:O	2.14	0.47
2:B:319:TYR:CE2	2:B:321:PRO:HG3	2.50	0.47
2:B:356:ARG:HG3	2:B:356:ARG:HH11	1.80	0.47
2:B:8:VAL:O	2:B:10:VAL:HG23	2.14	0.47
1:A:38:CYS:SG	1:A:132:ILE:HD11	2.55	0.46
2:B:175:ASN:HB3	2:B:178:ILE:CG1	2.45	0.46
1:A:88:TRP:CG	2:B:143:ARG:NH1	2.78	0.46
1:A:64:LYS:CG	1:A:65:LYS:N	2.78	0.46
1:A:363:ASN:OD1	1:A:365:VAL:N	2.48	0.46
1:A:406:TRP:CZ2	2:B:418:ASN:HA	2.49	0.46
2:B:395:LYS:O	2:B:399:GLU:HG2	2.15	0.46
1:A:102:LYS:HZ1	1:A:318:TYR:H	1.61	0.46
2:B:87:PHE:H	2:B:87:PHE:HD2	1.63	0.46
2:B:108:VAL:HG22	2:B:188:TYR:CD2	2.51	0.46
1:A:215:THR:HG22	1:A:216:THR:N	2.30	0.46
1:A:326:ILE:O	1:A:341:ILE:HA	2.15	0.46
1:A:356:ARG:NE	1:A:357:MET:O	2.41	0.46
1:A:398:TRP:CZ2	1:A:411:ILE:HG12	2.51	0.46
2:B:356:ARG:O	2:B:357:MET:HB3	2.16	0.46
1:A:303:LEU:HD23	1:A:303:LEU:O	2.16	0.46
2:B:93:GLY:O	2:B:95:PRO:CD	2.64	0.46
1:A:63:ILE:C	1:A:63:ILE:HD12	2.35	0.46
2:B:37:ILE:HG22	2:B:41:MET:HE2	1.98	0.46
2:B:254:VAL:O	2:B:258:GLN:HG3	2.16	0.46
2:B:349:LEU:N	2:B:349:LEU:HD12	2.30	0.46
1:A:36:GLU:OE2	1:A:70:LYS:HE2	2.16	0.45
1:A:28:GLU:O	1:A:32:LYS:HG3	2.16	0.45
1:A:57:ASN:ND2	1:A:131:THR:OG1	2.49	0.45
1:A:88:TRP:CE2	2:B:143:ARG:HD2	2.51	0.45
1:A:137:ASN:N	1:A:137:ASN:ND2	2.64	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:366:LYS:HE2	1:A:405:TYR:OH	2.17	0.45
1:A:249:LYS:HD3	1:A:251:SER:O	2.15	0.45
2:B:427:TYR:CD2	2:B:427:TYR:C	2.90	0.45
1:A:358:ARG:HG2	1:A:358:ARG:HH11	1.82	0.45
1:A:536:VAL:HG21	1:A:542:ILE:HG21	1.97	0.45
2:B:92:LEU:C	2:B:94:ILE:N	2.69	0.45
2:B:90:VAL:HG23	2:B:91:GLN:N	2.31	0.45
1:A:2:ILE:CG2	1:A:3:SER:N	2.80	0.45
1:A:534:ALA:CB	5:A:608:GOL:H2	2.46	0.45
2:B:92:LEU:C	2:B:94:ILE:H	2.19	0.45
2:B:154:LYS:HG3	2:B:155:GLY:N	2.32	0.44
1:A:509:GLN:N	1:A:510:PRO:HD3	2.32	0.44
1:A:63:ILE:O	1:A:64:LYS:HB3	2.18	0.44
1:A:224:GLU:HA	1:A:225:PRO:C	2.37	0.44
1:A:297:GLU:OE2	1:A:298:GLU:N	2.49	0.44
1:A:369:THR:HG23	1:A:411:ILE:HD11	1.99	0.44
1:A:357:MET:HE2	1:A:370:GLU:CD	2.38	0.44
2:B:58:THR:HA	2:B:59:PRO:HD3	1.85	0.44
2:B:241:VAL:HG13	2:B:351:THR:OG1	2.18	0.44
2:B:87:PHE:N	2:B:91:GLN:CB	2.78	0.44
2:B:241:VAL:HG12	2:B:242:GLN:N	2.33	0.44
2:B:376:THR:HG21	2:B:410:TRP:CZ3	2.52	0.44
2:B:423:VAL:HG21	4:B:502:EDO:O2	2.17	0.44
1:A:63:ILE:O	1:A:64:LYS:CB	2.65	0.44
2:B:184:MET:HE2	4:B:503:EDO:H11	2.00	0.44
1:A:229:TRP:CZ2	1:A:230:MET:CE	3.01	0.43
2:B:5:ILE:O	2:B:6:GLU:C	2.55	0.43
2:B:87:PHE:HB2	2:B:91:GLN:CA	2.47	0.43
2:B:205:LEU:HD23	2:B:205:LEU:C	2.38	0.43
1:A:417:VAL:O	1:A:417:VAL:HG13	2.18	0.43
2:B:358:ARG:NH1	4:B:505:EDO:H11	2.33	0.43
1:A:2:ILE:CG2	1:A:3:SER:H	2.31	0.43
1:A:244:ILE:HD11	1:A:266:TRP:HZ3	1.82	0.43
4:A:610:EDO:H22	2:B:27:THR:HG21	2.00	0.43
2:B:226:PRO:HG2	2:B:227:PHE:CD2	2.53	0.43
2:B:417:VAL:O	2:B:418:ASN:OD1	2.37	0.43
1:A:175:ASN:O	1:A:178:ILE:HG12	2.18	0.43
1:A:312:GLU:HA	1:A:313:PRO:HD3	1.87	0.43
1:A:358:ARG:HG2	1:A:358:ARG:NH1	2.34	0.43
1:A:473:THR:H	1:A:476:LYS:HB2	1.84	0.43
2:B:108:VAL:HB	2:B:232:TYR:HB3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:286:THR:C	1:A:289:LEU:H	2.22	0.43
1:A:442:VAL:HB	1:A:481:ALA:HB1	2.01	0.43
1:A:543:GLY:HA3	4:A:604:EDO:H11	1.99	0.43
2:B:166:LYS:O	2:B:169:GLU:CG	2.66	0.43
1:A:406:TRP:CE2	1:A:407:GLN:HG3	2.54	0.43
2:B:24:TRP:CD2	4:B:504:EDO:H12	2.54	0.43
1:A:288:ALA:C	1:A:290:THR:H	2.22	0.42
1:A:461:LYS:HD3	1:A:461:LYS:HA	1.84	0.42
2:B:61:PHE:CZ	2:B:74:LEU:HD23	2.53	0.42
4:A:610:EDO:H22	2:B:27:THR:CG2	2.49	0.42
2:B:126:LYS:HA	2:B:145:GLN:NE2	2.34	0.42
1:A:60:VAL:HG11	1:A:130:PHE:CD1	2.54	0.42
2:B:90:VAL:O	2:B:161:GLN:OE1	2.37	0.42
2:B:104:LYS:HB3	2:B:192:ASP:HA	2.01	0.42
1:A:64:LYS:CG	1:A:65:LYS:H	2.31	0.42
1:A:429:LEU:HD11	1:A:506:ILE:CG2	2.50	0.42
1:A:357:MET:HG3	1:A:370:GLU:OE1	2.18	0.42
1:A:503:LEU:O	1:A:507:GLN:HG3	2.20	0.42
1:A:70:LYS:HB2	1:A:70:LYS:NZ	2.35	0.42
1:A:302:GLU:HG3	1:A:303:LEU:N	2.34	0.42
1:A:473:THR:O	1:A:477:THR:HG23	2.20	0.42
1:A:169:GLU:N	1:A:170:PRO:HD2	2.34	0.42
2:B:266:TRP:CG	2:B:425:LEU:HD13	2.55	0.41
1:A:441:TYR:CD2	1:A:543:GLY:HA2	2.56	0.41
2:B:360:ALA:O	2:B:362:THR:N	2.50	0.41
1:A:350:LYS:CA	5:A:607:GOL:H2	2.43	0.41
1:A:356:ARG:HG2	1:A:356:ARG:NH1	2.36	0.41
1:A:457:TYR:CD1	1:A:457:TYR:C	2.94	0.41
2:B:194:GLU:CD	2:B:196:GLY:H	2.21	0.41
1:A:72:ARG:HH11	1:A:72:ARG:HG2	1.85	0.41
1:A:299:ALA:O	1:A:302:GLU:HG3	2.21	0.41
2:B:417:VAL:HG13	2:B:418:ASN:H	1.83	0.41
1:A:136:ASN:ND2	1:A:136:ASN:N	2.68	0.41
1:A:467:VAL:O	1:A:467:VAL:HG23	2.20	0.41
1:A:183:TYR:CB	1:A:230:MET:CE	2.98	0.41
1:A:5:ILE:CG2	1:A:6:GLU:N	2.82	0.41
1:A:235:HIS:HB2	1:A:238:LYS:O	2.21	0.41
1:A:254:VAL:HG21	1:A:290:THR:O	2.21	0.41
1:A:373:GLN:C	4:A:614:EDO:H12	2.41	0.41
2:B:173:LYS:HA	2:B:173:LYS:HD3	1.89	0.41
1:A:399:GLU:HG3	5:A:611:GOL:H12	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:92:LEU:O	2:B:94:ILE:N	2.53	0.41
2:B:111:VAL:O	2:B:111:VAL:HG22	2.21	0.41
1:A:328:GLU:O	1:A:339:TYR:HA	2.21	0.40
1:A:330:GLN:NE2	1:A:340:GLN:HE22	2.06	0.40
2:B:349:LEU:N	2:B:349:LEU:CD1	2.85	0.40
1:A:175:ASN:HD22	1:A:201:LYS:HZ3	1.66	0.40
1:A:201:LYS:HE2	4:A:612:EDO:H22	2.03	0.40
2:B:63:ILE:HA	5:B:506:GOL:H12	2.02	0.40
2:B:111:VAL:HG23	2:B:209:LEU:HD13	2.03	0.40
2:B:336:GLN:HA	2:B:354:TYR:O	2.21	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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	547/549 (100%)	518 (95%)	19 (4%)	10 (2%)	8	3
2	B	414/427 (97%)	377 (91%)	28 (7%)	9 (2%)	6	2
All	All	961/976 (98%)	895 (93%)	47 (5%)	19 (2%)	7	2

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4	PRO
1	A	70	LYS
1	A	91	GLN
1	A	135	ILE
2	B	88	TRP
2	B	91	GLN
1	A	64	LYS
1	A	67	ASP

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Mol	Chain	Res	Type
1	A	184	MET
2	B	92	LEU
2	B	213	GLY
1	A	274	ILE
1	A	292	VAL
1	A	63	ILE
2	B	2	ILE
2	B	65	LYS
2	B	252	TRP
2	B	357	MET
2	B	419	THR

### 5.3.2 Protein sidechains [i](#)

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	479/489 (98%)	453 (95%)	26 (5%)	22	18
2	B	377/389 (97%)	366 (97%)	11 (3%)	42	42
All	All	856/878 (98%)	819 (96%)	37 (4%)	29	27

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	ILE
1	A	6	GLU
1	A	40	GLU
1	A	53	GLU
1	A	65	LYS
1	A	89	GLU
1	A	91	GLN
1	A	92	LEU
1	A	110	ASP
1	A	123	ASP
1	A	136	ASN
1	A	207	GLN

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Mol	Chain	Res	Type
1	A	210	LEU
1	A	250	ASP
1	A	282	LEU
1	A	308	GLU
1	A	330	GLN
1	A	356	ARG
1	A	358	ARG
1	A	363	ASN
1	A	399	GLU
1	A	404	GLU
1	A	447	ASN
1	A	491	LEU
1	A	516	GLU
1	A	533	LEU
2	B	66	LYS
2	B	85	GLN
2	B	87	PHE
2	B	89	GLU
2	B	122	GLU
2	B	154	LYS
2	B	237	ASP
2	B	301	LEU
2	B	317	VAL
2	B	424	LYS
2	B	427	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	23	GLN
1	A	57	ASN
1	A	136	ASN
1	A	137	ASN
1	A	145	GLN
1	A	175	ASN
1	A	269	GLN
1	A	330	GLN
1	A	361	HIS
1	A	428	GLN
1	A	464	GLN
1	A	475	GLN
1	A	480	GLN

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Mol	Chain	Res	Type
1	A	500	GLN
1	A	545	ASN
1	A	547	GLN
2	B	85	GLN
2	B	145	GLN
2	B	182	GLN
2	B	197	GLN
2	B	278	GLN
2	B	343	GLN
2	B	373	GLN
2	B	407	GLN

### 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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 24 ligands modelled in this entry, 4 are monoatomic - leaving 20 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
5	GOL	B	506	-	5,5,5	0.39	0	5,5,5	0.38	0
4	EDO	A	615	-	3,3,3	0.58	0	2,2,2	0.35	0
4	EDO	A	609	-	3,3,3	0.89	0	2,2,2	0.04	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	EDO	B	504	-	3,3,3	0.39	0	2,2,2	0.43	0
4	EDO	A	605	-	3,3,3	0.55	0	2,2,2	0.27	0
5	GOL	A	607	-	5,5,5	0.49	0	5,5,5	0.31	0
4	EDO	B	507	-	3,3,3	0.60	0	2,2,2	0.38	0
5	GOL	A	611	-	5,5,5	0.64	0	5,5,5	0.31	0
5	GOL	A	608	-	5,5,5	0.47	0	5,5,5	0.18	0
4	EDO	B	505	-	3,3,3	0.51	0	2,2,2	0.31	0
4	EDO	A	612	-	3,3,3	0.54	0	2,2,2	0.26	0
4	EDO	A	613	-	3,3,3	0.38	0	2,2,2	0.43	0
4	EDO	B	502	-	3,3,3	0.51	0	2,2,2	0.27	0
4	EDO	B	503	-	3,3,3	0.51	0	2,2,2	0.35	0
4	EDO	A	604	-	3,3,3	0.49	0	2,2,2	0.37	0
4	EDO	A	610	-	3,3,3	0.50	0	2,2,2	0.27	0
4	EDO	B	509	-	3,3,3	0.67	0	2,2,2	0.20	0
5	GOL	A	606	-	5,5,5	0.32	0	5,5,5	0.29	0
5	GOL	B	508	-	5,5,5	0.42	0	5,5,5	0.25	0
4	EDO	A	614	-	3,3,3	0.62	0	2,2,2	0.18	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	B	506	-	-	0/4/4/4	-
4	EDO	A	615	-	-	0/1/1/1	-
4	EDO	A	609	-	-	1/1/1/1	-
4	EDO	B	504	-	-	1/1/1/1	-
4	EDO	A	605	-	-	1/1/1/1	-
5	GOL	A	607	-	-	0/4/4/4	-
4	EDO	B	507	-	-	1/1/1/1	-
5	GOL	A	611	-	-	0/4/4/4	-
5	GOL	A	608	-	-	0/4/4/4	-
4	EDO	B	505	-	-	1/1/1/1	-
4	EDO	A	612	-	-	0/1/1/1	-
4	EDO	A	613	-	-	1/1/1/1	-
4	EDO	B	502	-	-	1/1/1/1	-
4	EDO	B	503	-	-	1/1/1/1	-
4	EDO	A	604	-	-	0/1/1/1	-
4	EDO	A	610	-	-	1/1/1/1	-
4	EDO	B	509	-	-	0/1/1/1	-
5	GOL	A	606	-	-	0/4/4/4	-
5	GOL	B	508	-	-	0/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	A	614	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	503	EDO	O1-C1-C2-O2
4	A	609	EDO	O1-C1-C2-O2
4	A	614	EDO	O1-C1-C2-O2
4	B	507	EDO	O1-C1-C2-O2
4	A	605	EDO	O1-C1-C2-O2
4	A	610	EDO	O1-C1-C2-O2
4	B	502	EDO	O1-C1-C2-O2
4	A	613	EDO	O1-C1-C2-O2
4	B	504	EDO	O1-C1-C2-O2
4	B	505	EDO	O1-C1-C2-O2

There are no ring outliers.

15 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	506	GOL	3	0
4	A	609	EDO	1	0
4	B	504	EDO	1	0
5	A	607	GOL	5	0
5	A	611	GOL	1	0
5	A	608	GOL	5	0
4	B	505	EDO	1	0
4	A	612	EDO	2	0
4	A	613	EDO	1	0
4	B	502	EDO	3	0
4	B	503	EDO	1	0
4	A	604	EDO	1	0
4	A	610	EDO	2	0
5	A	606	GOL	1	0
4	A	614	EDO	1	0



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	549/549 (100%)	0.62	66 (12%) <b>4</b> <b>6</b>	24, 47, 92, 119	0
2	B	418/427 (97%)	0.79	58 (13%) <b>2</b> <b>3</b>	22, 43, 83, 138	0
All	All	967/976 (99%)	0.69	124 (12%) <b>3</b> <b>5</b>	22, 45, 88, 138	0

All (124) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	2	ILE	9.4
2	B	3	SER	9.3
2	B	214	LEU	8.9
1	A	283	LEU	8.5
2	B	4	PRO	8.3
2	B	1	PRO	8.1
1	A	285	GLY	7.9
1	A	288	ALA	7.5
1	A	287	LYS	7.2
1	A	69	THR	7.0
1	A	286	THR	6.3
1	A	68	SER	6.1
2	B	237	ASP	6.1
2	B	238	LYS	6.1
2	B	93	GLY	5.8
2	B	92	LEU	5.8
1	A	70	LYS	5.5
1	A	67	ASP	5.3
1	A	218	ASP	5.2
2	B	358	ARG	5.2
2	B	229	TRP	4.9
1	A	295	LEU	4.8
1	A	3	SER	4.8
1	A	220	LYS	4.7

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	290	THR	4.6
1	A	449	GLU	4.5
2	B	215	THR	4.3
2	B	427	TYR	4.2
1	A	61	PHE	4.1
2	B	197	GLN	4.0
1	A	282	LEU	4.0
1	A	280	SER	3.8
1	A	448	ARG	3.7
1	A	92	LEU	3.6
2	B	242	GLN	3.6
2	B	111	VAL	3.6
2	B	169	GLU	3.6
1	A	284	ARG	3.5
1	A	91	GLN	3.5
1	A	292	VAL	3.5
2	B	418	ASN	3.4
2	B	240	THR	3.4
2	B	91	GLN	3.4
1	A	221	HIS	3.4
2	B	88	TRP	3.3
1	A	548	VAL	3.3
2	B	5	ILE	3.3
1	A	135	ILE	3.3
1	A	281	LYS	3.2
1	A	2	ILE	3.1
1	A	219	LYS	3.1
1	A	51	GLY	3.1
1	A	52	PRO	3.1
1	A	546	GLU	3.0
2	B	360	ALA	3.0
1	A	24	TRP	3.0
2	B	195	ILE	3.0
1	A	471	ASN	2.9
2	B	301	LEU	2.9
1	A	5	ILE	2.9
2	B	87	PHE	2.9
2	B	112	GLY	2.8
2	B	241	VAL	2.8
1	A	222	GLN	2.8
1	A	184	MET	2.8
2	B	361	HIS	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	B	158	ALA	2.8
2	B	173	LYS	2.8
1	A	541	GLY	2.8
2	B	225	PRO	2.8
2	B	67	ASP	2.7
1	A	410	TRP	2.7
1	A	547	GLN	2.7
1	A	297	GLU	2.7
1	A	4	PRO	2.7
2	B	191	SER	2.7
1	A	65	LYS	2.6
2	B	251	SER	2.6
1	A	223	LYS	2.6
2	B	194	GLU	2.5
2	B	272	PRO	2.5
2	B	152	GLY	2.5
2	B	176	PRO	2.5
2	B	193	LEU	2.5
1	A	90	VAL	2.5
2	B	357	MET	2.5
1	A	358	ARG	2.5
1	A	289	LEU	2.4
1	A	470	THR	2.4
2	B	90	VAL	2.4
2	B	104	LYS	2.4
2	B	6	GLU	2.4
2	B	356	ARG	2.4
1	A	66	LYS	2.4
1	A	294	PRO	2.3
1	A	545	ASN	2.3
2	B	183	TYR	2.3
1	A	298	GLU	2.3
2	B	316	GLY	2.3
2	B	318	TYR	2.3
1	A	447	ASN	2.3
2	B	185	ASP	2.3
1	A	503	LEU	2.3
1	A	296	THR	2.3
2	B	192	ASP	2.3
2	B	212	TRP	2.3
2	B	157	PRO	2.3
2	B	115	TYR	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	254	VAL	2.2
1	A	112	GLY	2.2
2	B	284	ARG	2.2
2	B	184	MET	2.2
1	A	293	ILE	2.1
1	A	53	GLU	2.1
2	B	156	SER	2.1
1	A	257	ILE	2.1
1	A	228	LEU	2.1
1	A	1	PRO	2.1
1	A	346	PHE	2.1
2	B	7	THR	2.1
2	B	233	GLU	2.0
1	A	452	LEU	2.0
1	A	217	PRO	2.0
1	A	301	LEU	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	B-factors(Å <sup>2</sup> )	Q<0.9
3	MG	A	603	1/1	0.61	0.18	67,67,67,67	0
4	EDO	A	609	4/4	0.62	0.29	41,53,60,62	0
4	EDO	A	605	4/4	0.63	0.25	63,65,72,72	0
4	EDO	A	614	4/4	0.68	0.35	39,49,49,53	0
5	GOL	A	606	6/6	0.74	0.39	55,75,80,84	0
4	EDO	B	507	4/4	0.81	0.19	43,56,57,58	0
5	GOL	A	607	6/6	0.81	0.28	41,45,52,57	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
5	GOL	B	506	6/6	0.82	0.20	43,54,56,59	0
5	GOL	A	611	6/6	0.83	0.51	42,51,61,62	0
5	GOL	A	608	6/6	0.85	0.18	36,50,52,55	0
4	EDO	B	505	4/4	0.85	0.17	52,57,59,62	0
4	EDO	A	615	4/4	0.85	0.20	45,51,51,52	0
4	EDO	B	503	4/4	0.86	0.20	41,41,45,56	0
3	MG	A	601	1/1	0.86	0.11	52,52,52,52	0
5	GOL	B	508	6/6	0.86	0.27	51,66,74,74	0
4	EDO	B	509	4/4	0.87	0.46	42,51,52,53	0
4	EDO	A	612	4/4	0.89	0.53	45,56,65,66	0
3	MG	A	602	1/1	0.89	0.18	67,67,67,67	0
4	EDO	B	504	4/4	0.89	0.16	36,44,47,53	0
4	EDO	A	604	4/4	0.91	0.25	42,51,51,63	0
4	EDO	B	502	4/4	0.92	0.39	33,44,48,62	0
4	EDO	A	610	4/4	0.92	0.21	42,43,50,61	0
4	EDO	A	613	4/4	0.95	0.17	48,53,55,63	0
3	MG	B	501	1/1	0.98	0.11	29,29,29,29	1

## 6.5 Other polymers [i](#)

There are no such residues in this entry.