Full wwPDB X-ray Structure Validation Report (i)

Aug 10, 2020 – 08:08 AM BST

PDB ID	:	1SXP
Title	:	BGT in complex with a 13mer DNA containing a central A:G mismatch
Authors	:	Lariviere, L.; Morera, S.
Deposited on	:	2004-03-31
Resolution	:	2.50 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The following versions of software and data (see references (i)) 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	:	2.13.1
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)	:	2.13.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.50 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	Percentile Ranks	Value
Rfree		0.255
Clashscore		16
Ramachandran outliers		0.7%
Sidechain outliers		4.1%
RSRZ outliers		6.1%

Worse — *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
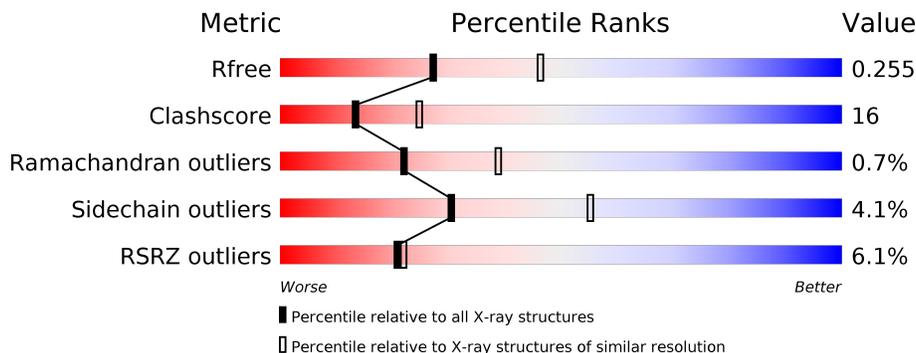
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria 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 <=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	C	13	8% 77% 8% 8% 8%
2	D	13	46% 46% 8%
3	A	351	11% 62% 36% •
3	B	351	2% 67% 30% •

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	GOL	B	353	-	X	-	-
5	GOL	B	354	-	X	-	-
5	GOL	B	355	-	X	-	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 6498 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 DNA chain called 5'-D(*A*AP*TP*AP*CP*TP*AP*AP*GP*AP*TP*AP*G)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	12	Total 246	C 119	N 49	O 67	P 11	0	0	0

- Molecule 2 is a DNA chain called 5'-D(*CP*TP*AP*TP*CP*TP*GP*AP*GP*TP*AP*TP*T)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	12	Total 242	C 118	N 41	O 72	P 11	0	0	0

- Molecule 3 is a protein called DNA beta-glucosyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	A	351	Total 2870	C 1854	N 479	O 526	S 11	0	0	0
3	B	351	Total 2870	C 1854	N 479	O 526	S 11	0	0	0

- Molecule 4 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).

PG4
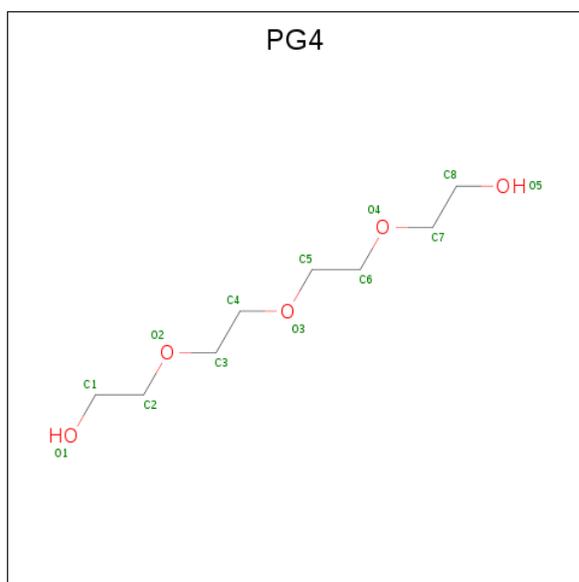
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			13	8	5		

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

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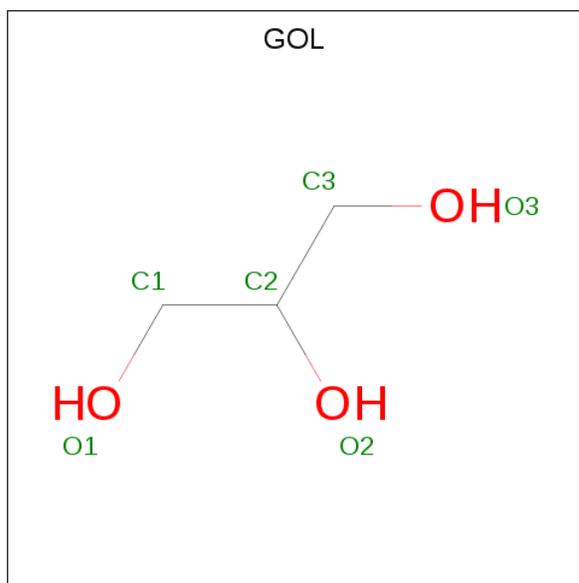
| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		

• Molecule 6 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	C	13	Total 13	O 13	0	0
6	D	13	Total 13	O 13	0	0
6	A	71	Total 71	O 71	0	0
6	B	142	Total 142	O 142	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry 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: 5'-D(*A*AP*TP*AP*CP*TP*AP*AP*GP*AP*TP*AP*G)-3'

Chain C:

8%

77%   8%   8%   8%

DG A2 T3 A7 G13
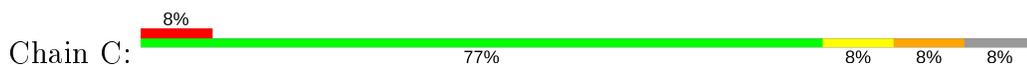
- Molecule 2: 5'-D(*CP*TP*AP*TP*CP*TP*GP*AP*GP*TP*AP*TP*T)-3'

Chain D:

46%   46%   8%

C14 T15 A16 T17 C18 A21 G22 T25 DC

- Molecule 3: DNA beta-glucosyltransferase

Chain A:

11%

62%   36%

M1 A4 I5 I6 N7 M8 N11 V12 I13 N14 F15 K16 T17 V18 P19 L26 F27 K28 V29 I30 M33 N36 V37 D38 I39 I40 T48 K49 V54 D58 Y59 V64 V65 N66 S67 S68 I69 P76 N77 L78 A79 I80 L81 Q84 M87 S92

R102 L103 P104 S108 W109 P110 W117 Y121 E125 S130 K133 L141 K145 H148 V151 D152 M153 V154 I155 E156 E163 Q164 I167 H168 M169 N170 D171 F172 P177 L182 D183 V184 I185 S189 F190 R191 S192 G193 Q194 R195 E196 M199 V200 E201

F202 L203 P204 D205 T206 G207 L208 M209 I210 E211 F212 N215 A216 R217 E218 K219 Q220 F221 K222 N223 P224 K225 Y226 T229 K230 T235 G236 K237 I238 P239 M240 N241 M242 V243 S244 E245 A250 A253 L254 N262 L268 R269 V270 W271 E272 T273 M280 L281 I282 E285 F286

D287 T288 K289 H290 R291 I292 I293 N294 D295 A296 R297 V300 N301 N302 R303 A304 E305 L306 I307 D308 R309 V310 L313 H314 H315 V318 E322 N323 L324 S325 I326 D329 I330 K333 K338 Q342 F345 A348 I349 D350 L351

- Molecule 3: DNA beta-glucosyltransferase

Chain B:

2%

67%   30%

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	87.35Å 172.82Å 60.84Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.50	Depositor
	20.00 – 2.50	EDS
% Data completeness (in resolution range)	(Not available) (20.00-2.50)	Depositor
	96.2 (20.00-2.50)	EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	3.34 (at 2.50Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.212 , 0.272	Depositor
	0.198 , 0.255	DCC
R_{free} test set	1555 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	42.8	Xtriage
Anisotropy	0.233	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 46.5	EDS
L-test for twinning[2]	$< |L| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	6498	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.89% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: GOL, PG4

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	C	0.30	0/277	0.67	0/426
2	D	0.37	0/270	0.68	0/415
3	A	0.36	0/2932	0.58	0/3953
3	B	0.40	0/2932	0.63	1/3953 (0.0%)
All	All	0.38	0/6411	0.61	1/8747 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	266	ILE	N-CA-C	-5.74	95.51	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	2	DA	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	246	0	137	2	0
2	D	242	0	139	6	0
3	A	2870	0	2903	97	0
3	B	2870	0	2903	97	0
4	B	13	0	18	1	0
5	B	18	0	19	3	0
6	A	71	0	0	3	0
6	B	142	0	0	5	0
6	C	13	0	0	0	0
6	D	13	0	0	0	0
All	All	6498	0	6119	199	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 16.

All (199) 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)
3:B:217:ARG:H	3:B:220:GLN:HE21	1.02	0.95
3:A:217:ARG:H	3:A:220:GLN:HE21	0.96	0.92
3:A:217:ARG:N	3:A:220:GLN:HE21	1.68	0.91
3:A:243:VAL:HG11	3:A:269:ARG:NH2	1.85	0.90
3:B:91:LYS:HA	3:B:91:LYS:HE2	1.55	0.88
3:B:176:LYS:N	3:B:176:LYS:HD2	1.90	0.87
3:A:191:ARG:NH2	3:A:191:ARG:HA	1.88	0.86
3:B:280:MET:HE3	3:B:293:ILE:HD11	1.62	0.81
3:A:215:ASN:OD1	3:A:237:LYS:HE3	1.80	0.80
3:B:324:LEU:HD23	5:B:355:GOL:H12	1.64	0.80
3:B:101:ILE:HD11	3:B:143:ILE:HG22	1.64	0.80
3:B:217:ARG:H	3:B:220:GLN:NE2	1.80	0.80
3:B:217:ARG:N	3:B:220:GLN:HE21	1.80	0.77
3:A:217:ARG:H	3:A:220:GLN:NE2	1.79	0.77
2:D:18:DC:H3'	3:B:16:LYS:HD3	1.66	0.76
3:B:176:LYS:H	3:B:176:LYS:HD2	1.48	0.74
3:B:89:LYS:HE3	3:B:89:LYS:HA	1.68	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:223:ASN:HD22	3:B:224:PRO:N	1.87	0.72
2:D:15:DT:H2"	2:D:16:DA:N7	2.06	0.70
3:B:269:ARG:HG2	6:B:376:HOH:O	1.92	0.69
3:A:205:ASP:HB2	3:A:303:ARG:NH1	2.08	0.68
3:A:184:VAL:HB	3:A:210:ILE:HG12	1.75	0.68
3:B:85:LYS:HE3	3:B:125:GLU:OE1	1.94	0.68
3:B:223:ASN:ND2	3:B:225:LYS:H	1.92	0.67
3:B:223:ASN:HD22	3:B:224:PRO:CD	2.08	0.66
3:B:76:PRO:HG3	3:B:117:TRP:CD2	2.31	0.66
3:A:206:THR:HA	3:A:307:ILE:HD11	1.78	0.65
3:B:200:VAL:HA	3:B:204:PHE:CD1	2.32	0.65
3:A:292:ILE:HG22	3:A:293:ILE:HG13	1.79	0.64
3:B:302:ASN:ND2	3:B:305:GLU:H	1.94	0.64
1:C:2:DA:H2'	1:C:3:DT:H72	1.79	0.64
3:B:84:GLN:HE22	3:B:108:SER:H	1.47	0.63
3:A:84:GLN:HE22	3:A:108:SER:H	1.46	0.63
3:B:324:LEU:HB3	5:B:355:GOL:H2	1.78	0.63
3:A:189:SER:HB3	3:A:215:ASN:HB2	1.81	0.63
3:B:274:MET:HE3	3:B:331:LEU:CA	2.29	0.62
3:B:186:TYR:CE2	3:B:256:ILE:HD13	2.35	0.62
3:B:292:ILE:HG22	3:B:293:ILE:HG13	1.82	0.62
3:B:223:ASN:HD22	3:B:223:ASN:C	2.04	0.61
3:A:230:LYS:HB3	6:A:418:HOH:O	2.00	0.60
3:A:253:ALA:HB3	3:A:273:THR:HG23	1.83	0.60
3:B:238:ILE:HD12	3:B:246:LYS:HG2	1.83	0.60
3:A:262:ASN:ND2	3:A:285:GLU:HB3	2.17	0.60
3:A:133:LYS:HG3	3:A:156:GLU:HB2	1.84	0.59
1:C:2:DA:H2'	1:C:3:DT:C7	2.33	0.59
3:B:131:PRO:HB2	3:B:155:ILE:HD11	1.84	0.59
3:A:155:ILE:HG13	3:A:156:GLU:HG3	1.83	0.59
3:A:39:ILE:CG2	3:A:48:THR:HG22	2.32	0.59
3:A:191:ARG:HB3	3:A:195:ARG:HG3	1.84	0.59
3:A:190:PHE:CZ	3:A:220:GLN:HB3	2.38	0.58
3:A:243:VAL:HG11	3:A:269:ARG:HH22	1.64	0.58
3:A:191:ARG:HH21	3:A:191:ARG:HA	1.66	0.58
3:A:310:VAL:O	3:A:314:LYS:HG3	2.03	0.58
3:A:195:ARG:O	3:A:199:MET:HG3	2.04	0.58
3:B:311:ASN:HA	3:B:314:LYS:HG2	1.86	0.57
3:B:2:LYS:HG3	3:B:59:TYR:CD1	2.39	0.57
3:B:238:ILE:HG23	3:B:239:PRO:HD2	1.86	0.57
3:B:280:MET:CE	3:B:293:ILE:HD11	2.31	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:219:LYS:HB2	6:A:385:HOH:O	2.04	0.57
3:A:208:LEU:HD11	3:A:307:ILE:HA	1.86	0.56
3:B:101:ILE:HD11	3:B:143:ILE:CG2	2.35	0.56
3:A:326:ILE:O	3:A:330:ILE:HG12	2.05	0.56
3:B:274:MET:HE3	3:B:331:LEU:HA	1.87	0.56
3:B:109:TRP:NE1	3:B:123:GLU:HB2	2.20	0.56
3:B:55:ASP:HB3	3:B:58:ASP:OD2	2.05	0.55
3:A:273:THR:HG22	3:A:280:MET:HB2	1.88	0.55
3:A:202:PHE:HB3	3:A:254:LEU:HD21	1.88	0.55
3:A:297:ARG:HB3	3:A:323:MET:CE	2.37	0.55
3:B:180:LYS:HE2	3:B:248:SER:O	2.07	0.54
3:A:217:ARG:N	3:A:220:GLN:NE2	2.49	0.54
3:A:76:PRO:HG3	3:A:117:TRP:CD2	2.42	0.54
3:B:256:ILE:N	3:B:256:ILE:HD12	2.23	0.54
3:B:317:ASP:OD2	3:B:321:LYS:HE2	2.07	0.54
3:A:329:ASP:OD2	3:A:333:LYS:HE3	2.08	0.53
3:A:200:VAL:HA	3:A:204:PHE:CD1	2.44	0.52
3:B:183:ASP:OD1	4:B:352:PG4:H12	2.08	0.52
3:B:223:ASN:HD22	3:B:224:PRO:HD2	1.73	0.52
3:B:109:TRP:HB3	3:B:110:PRO:HD3	1.92	0.52
3:A:40:ILE:HD12	3:A:54:VAL:HG21	1.91	0.51
3:B:259:LYS:HG2	3:B:259:LYS:O	2.10	0.51
3:A:297:ARG:HB3	3:A:323:MET:HE1	1.92	0.51
3:B:219:LYS:O	3:B:222:LYS:HD3	2.11	0.51
3:A:243:VAL:HG11	3:A:269:ARG:HH21	1.74	0.51
3:A:8:MET:HB3	3:A:67:SER:HB3	1.93	0.51
3:A:196:GLU:OE2	3:A:223:ASN:HB2	2.11	0.51
3:A:1:MET:HG2	3:A:351:LEU:HD21	1.93	0.51
3:A:338:LYS:O	3:A:342:GLN:HG3	2.11	0.51
3:B:19:PRO:HB3	5:B:353:GOL:H31	1.92	0.50
2:D:15:DT:H2"	2:D:16:DA:C8	2.47	0.50
3:A:148:HIS:O	3:A:151:VAL:HG22	2.12	0.50
3:B:90:TYR:CE2	3:B:92:SER:HB3	2.47	0.49
3:A:349:ILE:HG13	3:A:351:LEU:HG	1.94	0.49
3:B:78:LEU:HD23	6:B:460:HOH:O	2.12	0.49
3:A:38:ASP:OD1	3:A:49:LYS:HE2	2.12	0.49
3:B:109:TRP:CE2	3:B:123:GLU:HB2	2.48	0.49
3:B:39:ILE:CG2	3:B:48:THR:HG22	2.42	0.49
3:A:18:VAL:HB	3:A:19:PRO:CD	2.43	0.49
3:A:81:LEU:HD13	3:A:121:TYR:CZ	2.47	0.49
3:B:254:LEU:HG	3:B:256:ILE:HD12	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:3:ILE:HG12	3:B:61:ARG:HB2	1.95	0.48
3:A:11:ASN:HD21	3:A:13:ILE:HD11	1.79	0.48
3:B:184:VAL:HB	3:B:210:ILE:HG12	1.95	0.48
3:B:223:ASN:ND2	3:B:224:PRO:HD2	2.28	0.48
3:B:271:TRP:HZ3	3:B:274:MET:CE	2.27	0.48
3:B:274:MET:CE	3:B:331:LEU:HA	2.43	0.47
3:B:269:ARG:HD2	6:B:424:HOH:O	2.13	0.47
2:D:21:DA:H2"	2:D:22:DG:C8	2.50	0.47
3:B:254:LEU:HD12	3:B:281:LEU:O	2.14	0.47
3:A:151:VAL:HG21	3:A:154:VAL:CG2	2.45	0.47
3:A:14:ASN:OD1	3:A:16:LYS:HB2	2.15	0.47
3:A:309:ARG:O	3:A:313:LEU:HG	2.15	0.47
3:A:84:GLN:NE2	3:A:108:SER:OG	2.48	0.46
3:A:295:ASP:OD1	3:A:297:ARG:HB2	2.14	0.46
3:A:191:ARG:O	3:A:192:SER:HB3	2.15	0.46
3:A:27:PHE:CE1	3:A:37:VAL:HG13	2.50	0.46
3:A:322:GLU:O	3:A:326:ILE:HG13	2.16	0.46
3:A:182:LEU:HD22	3:A:211:GLU:HB2	1.98	0.46
3:B:160:PHE:HE1	3:B:344:ALA:HB3	1.81	0.46
3:B:259:LYS:HD2	3:B:260:ASN:ND2	2.31	0.46
3:A:26:LEU:O	3:A:29:VAL:HG12	2.16	0.46
3:A:238:ILE:HB	3:A:239:PRO:CD	2.46	0.45
3:A:163:GLU:HG2	3:A:271:TRP:CD1	2.51	0.45
3:B:133:LYS:HG3	3:B:156:GLU:HB2	1.98	0.45
3:B:4:ALA:HB2	3:B:59:TYR:CG	2.50	0.45
3:A:92:SER:O	3:A:130:SER:HB3	2.17	0.45
3:B:91:LYS:HE2	3:B:91:LYS:CA	2.38	0.45
3:A:224:PRO:HA	6:A:381:HOH:O	2.16	0.45
3:B:262:ASN:OD1	3:B:286:PHE:HA	2.17	0.45
3:B:274:MET:HE3	3:B:331:LEU:CB	2.47	0.45
3:B:55:ASP:OD2	3:B:57:ASN:HB2	2.17	0.45
3:B:253:ALA:HB3	3:B:273:THR:HG23	1.99	0.44
3:B:139:ILE:HA	3:B:159:TYR:CD1	2.52	0.44
3:A:199:MET:HE1	3:A:212:PHE:HZ	1.83	0.44
3:A:11:ASN:ND2	3:A:13:ILE:HD11	2.32	0.44
3:A:69:ILE:HA	3:A:80:ILE:HD13	2.00	0.44
3:B:271:TRP:HZ3	3:B:274:MET:HE1	1.83	0.44
3:B:274:MET:HE2	3:B:331:LEU:HG	2.00	0.44
3:A:102:ARG:C	3:A:104:PRO:HD3	2.37	0.44
3:A:121:TYR:HA	3:A:125:GLU:OE1	2.18	0.44
3:B:191:ARG:HB3	3:B:195:ARG:CB	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:169:MET:C	3:A:171:ASP:H	2.20	0.43
3:A:182:LEU:O	3:A:250:ALA:HA	2.18	0.43
3:B:308:ASP:O	3:B:312:GLU:HG3	2.18	0.43
3:B:4:ALA:HB2	3:B:59:TYR:CD1	2.53	0.43
3:A:191:ARG:CZ	3:A:191:ARG:HA	2.45	0.43
3:B:176:LYS:N	3:B:176:LYS:CD	2.69	0.43
3:A:262:ASN:HD21	3:A:285:GLU:HB3	1.83	0.43
3:A:6:ILE:HG22	3:A:40:ILE:HB	2.00	0.43
3:A:167:ILE:HA	3:A:172:PHE:CD2	2.53	0.43
3:A:211:GLU:CD	3:A:235:THR:HG21	2.39	0.43
3:A:163:GLU:OE1	3:A:163:GLU:N	2.48	0.43
3:A:184:VAL:HG12	3:A:185:ILE:N	2.34	0.43
3:A:4:ALA:HB2	3:A:59:TYR:CG	2.53	0.43
3:A:306:LEU:C	3:A:306:LEU:HD13	2.39	0.43
3:B:268:LEU:O	3:B:272:GLU:HG3	2.19	0.43
3:A:238:ILE:HB	3:A:239:PRO:HD2	2.01	0.42
3:A:203:LEU:HD21	3:A:254:LEU:HD23	2.02	0.42
3:A:30:ILE:O	3:A:33:MET:HB2	2.19	0.42
3:B:131:PRO:HB2	3:B:155:ILE:CD1	2.49	0.42
3:B:223:ASN:ND2	3:B:223:ASN:C	2.72	0.42
3:B:81:LEU:HD13	3:B:121:TYR:CZ	2.54	0.42
3:A:151:VAL:HG21	3:A:154:VAL:HG21	2.01	0.42
3:B:148:HIS:C	3:B:150:LYS:H	2.21	0.42
3:B:76:PRO:HG3	3:B:117:TRP:CE2	2.54	0.42
3:A:280:MET:CE	3:A:293:ILE:HD11	2.49	0.42
3:B:56:VAL:HG23	3:B:86:PHE:CE2	2.54	0.42
3:B:78:LEU:HD22	3:B:78:LEU:N	2.35	0.42
3:A:345:PHE:O	3:A:348:ALA:HB3	2.19	0.42
3:B:27:PHE:CB	3:B:39:ILE:HD11	2.50	0.42
2:D:16:DA:H5'	3:B:217:ARG:HH22	1.85	0.42
3:A:191:ARG:HG2	3:A:195:ARG:NH1	2.35	0.42
3:B:9:GLY:N	3:B:67:SER:OG	2.53	0.42
3:A:302:ASN:ND2	3:A:304:ALA:H	2.18	0.42
3:B:326:ILE:O	3:B:330:ILE:HG12	2.20	0.42
3:A:109:TRP:HB3	3:A:110:PRO:HD3	2.02	0.41
3:B:180:LYS:NZ	6:B:356:HOH:O	2.53	0.41
3:B:202:PHE:HB3	3:B:254:LEU:CD2	2.50	0.41
3:B:338:LYS:O	3:B:341:TRP:HB3	2.20	0.41
3:A:169:MET:C	3:A:171:ASP:N	2.74	0.41
3:A:192:SER:O	3:A:195:ARG:HG2	2.19	0.41
3:B:343:ASP:O	3:B:347:LYS:HB2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1:MET:HG2	3:A:351:LEU:CD2	2.50	0.41
3:B:71:PHE:HD2	3:B:111:ASN:ND2	2.19	0.41
3:B:238:ILE:HA	3:B:239:PRO:HD3	1.93	0.41
3:B:295:ASP:HB3	3:B:298:PHE:CD1	2.55	0.41
3:A:196:GLU:HG3	3:A:221:PHE:CD2	2.55	0.41
3:B:273:THR:HG22	3:B:280:MET:HB2	2.02	0.41
3:A:141:LEU:O	3:A:145:LYS:HG3	2.20	0.41
3:A:170:ASN:HD21	3:A:338:LYS:NZ	2.19	0.41
3:B:176:LYS:O	3:B:177:PRO:C	2.59	0.41
2:D:17:DT:OP1	3:B:236:GLY:HA3	2.21	0.41
3:B:271:TRP:CZ3	3:B:274:MET:CE	3.04	0.41
3:A:215:ASN:CG	3:A:237:LYS:HE3	2.40	0.41
3:A:64:VAL:HG21	3:A:87:MET:CE	2.50	0.40
3:B:237:LYS:HB2	6:B:420:HOH:O	2.22	0.40
3:A:164:GLN:HB3	3:A:168:HIS:CD2	2.56	0.40
3:A:287:ASP:OD2	3:A:290:HIS:HA	2.21	0.40
3:A:205:ASP:O	3:A:303:ARG:HD3	2.21	0.40
3:B:309:ARG:HH11	3:B:309:ARG:HG2	1.87	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	
3	A	349/351 (99%)	306 (88%)	38 (11%)	5 (1%)	11	20
3	B	349/351 (99%)	331 (95%)	18 (5%)	0	100	100
All	All	698/702 (99%)	637 (91%)	56 (8%)	5 (1%)	22	39

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	192	SER
3	A	172	PHE
3	A	306	LEU
3	A	239	PRO
3	A	292	ILE

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	
3	A	317/317 (100%)	305 (96%)	12 (4%)	33	58
3	B	317/317 (100%)	303 (96%)	14 (4%)	28	52
All	All	634/634 (100%)	608 (96%)	26 (4%)	30	55

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	A	36	ASN
3	A	66	ASN
3	A	78	LEU
3	A	152	ASP
3	A	171	ASP
3	A	190	PHE
3	A	191	ARG
3	A	217	ARG
3	A	226	TYR
3	A	268	LEU
3	A	305	GLU
3	A	325	SER
3	B	29	VAL
3	B	36	ASN
3	B	66	ASN
3	B	89	LYS
3	B	124	GLU
3	B	142	ASP
3	B	176	LYS

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Mol	Chain	Res	Type
3	B	191	ARG
3	B	212	PHE
3	B	217	ARG
3	B	223	ASN
3	B	268	LEU
3	B	302	ASN
3	B	331	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
3	A	11	ASN
3	A	36	ASN
3	A	84	GLN
3	A	170	ASN
3	A	194	GLN
3	A	220	GLN
3	A	260	ASN
3	A	302	ASN
3	A	311	ASN
3	A	332	ASN
3	B	36	ASN
3	B	84	GLN
3	B	170	ASN
3	B	194	GLN
3	B	209	ASN
3	B	220	GLN
3	B	223	ASN
3	B	260	ASN
3	B	302	ASN
3	B	332	ASN

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)

4 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	#$|Z| > 2$
5	GOL	B	353	-	5,5,5	4.20	5 (100%)	5,5,5	2.22	2 (40%)
5	GOL	B	355	-	5,5,5	4.03	5 (100%)	5,5,5	2.25	2 (40%)
4	PG4	B	352	-	12,12,12	0.70	0	11,11,11	0.83	0
5	GOL	B	354	-	5,5,5	4.25	5 (100%)	5,5,5	2.13	2 (40%)

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	353	-	-	2/4/4/4	-
5	GOL	B	355	-	-	2/4/4/4	-
4	PG4	B	352	-	-	5/10/10/10	-
5	GOL	B	354	-	-	2/4/4/4	-

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	354	GOL	C1-C2	-5.01	1.31	1.51
5	B	354	GOL	C3-C2	-4.94	1.31	1.51
5	B	353	GOL	C3-C2	-4.89	1.31	1.51
5	B	353	GOL	C1-C2	-4.74	1.32	1.51
5	B	355	GOL	C3-C2	-4.71	1.32	1.51
5	B	355	GOL	C1-C2	-4.45	1.33	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	353	GOL	O1-C1	4.15	1.59	1.42
5	B	353	GOL	O3-C3	4.12	1.59	1.42
5	B	354	GOL	O3-C3	4.10	1.59	1.42
5	B	354	GOL	O1-C1	4.03	1.59	1.42
5	B	355	GOL	O3-C3	4.00	1.59	1.42
5	B	355	GOL	O1-C1	3.95	1.59	1.42
5	B	353	GOL	O2-C2	-2.75	1.35	1.43
5	B	355	GOL	O2-C2	-2.74	1.35	1.43
5	B	354	GOL	O2-C2	-2.74	1.35	1.43

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	B	355	GOL	O1-C1-C2	3.59	127.39	110.20
5	B	353	GOL	O1-C1-C2	3.49	126.96	110.20
5	B	354	GOL	O3-C3-C2	3.49	126.94	110.20
5	B	353	GOL	O3-C3-C2	3.45	126.73	110.20
5	B	355	GOL	O3-C3-C2	3.37	126.38	110.20
5	B	354	GOL	O1-C1-C2	3.17	125.40	110.20

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	353	GOL	C1-C2-C3-O3
5	B	353	GOL	O2-C2-C3-O3
5	B	355	GOL	O1-C1-C2-C3
5	B	355	GOL	O1-C1-C2-O2
4	B	352	PG4	O1-C1-C2-O2
5	B	354	GOL	O1-C1-C2-C3
5	B	354	GOL	O1-C1-C2-O2
4	B	352	PG4	C4-C3-O2-C2
4	B	352	PG4	C8-C7-O4-C6
4	B	352	PG4	C5-C6-O4-C7
4	B	352	PG4	O2-C3-C4-O3

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	353	GOL	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	355	GOL	2	0
4	B	352	PG4	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 (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	C	12/13 (92%)	0.30	1 (8%)	11	11	41, 54, 61, 82	0
2	D	12/13 (92%)	-0.05	0	100	100	41, 47, 58, 59	0
3	A	351/351 (100%)	0.40	37 (10%)	6	6	23, 50, 93, 103	0
3	B	351/351 (100%)	-0.11	6 (1%)	70	72	17, 33, 54, 67	0
All	All	726/728 (99%)	0.15	44 (6%)	21	22	17, 39, 88, 103	0

All (44) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	A	224	PRO	5.2
3	A	194	GLN	4.9
3	A	217	ARG	4.6
3	A	240	MET	4.4
3	B	194	GLN	3.4
3	A	218	GLU	3.4
3	A	219	LYS	3.2
3	A	193	GLY	3.2
3	A	229	THR	3.1
3	B	73	GLY	3.0
3	B	72	PHE	3.0
3	A	242	MET	2.9
3	A	282	ILE	2.9
3	A	230	LYS	2.8
3	B	1	MET	2.8
3	A	281	LEU	2.7
3	A	221	PHE	2.6
3	A	236	GLY	2.6
3	A	301	ASN	2.6
3	A	289	LYS	2.6
3	A	102	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
3	A	235	THR	2.4
3	A	225	LYS	2.4
3	A	237	LYS	2.3
3	A	192	SER	2.3
3	A	315	HIS	2.3
3	A	1	MET	2.3
3	A	308	ASP	2.3
3	A	183	ASP	2.3
3	A	171	ASP	2.2
3	A	215	ASN	2.2
3	A	58	ASP	2.2
3	B	173	GLN	2.2
3	A	200	VAL	2.2
1	C	7	DA	2.1
3	A	302	ASN	2.1
3	A	177	PRO	2.1
3	A	245	GLU	2.1
3	A	253	ALA	2.1
3	A	300	VAL	2.0
3	B	241	ASN	2.0
3	A	190	PHE	2.0
3	A	294	ASN	2.0
3	A	318	VAL	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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
5	GOL	B	353	6/6	0.68	0.26	56,61,62,63	0
5	GOL	B	355	6/6	0.72	0.39	49,52,53,55	0
4	PG4	B	352	13/13	0.80	0.24	64,71,75,75	0
5	GOL	B	354	6/6	0.88	0.31	57,60,61,61	0

6.5 Other polymers (i)

There are no such residues in this entry.