



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 06:29 AM UTC

PDB ID : 4JDL / pdb_00004jdl
Title : Crystal structure of native abscisic acid receptor PYL5 at 2.65 Angstrom
Authors : Zhang, X.; Zhang, Q.; Chen, Z.
Deposited on : 2013-02-25
Resolution : 2.65 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

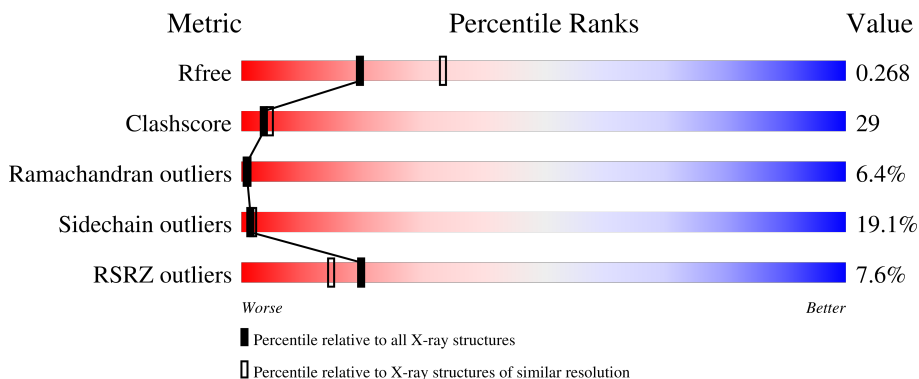
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.65 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}	180053	1110 (2.66-2.66)
Clashscore	190562	1141 (2.66-2.66)
Ramachandran outliers	187476	1126 (2.66-2.66)
Sidechain outliers	187428	1126 (2.66-2.66)
RSRZ outliers	180081	1110 (2.66-2.66)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	223	
1	B	223	
1	C	223	

2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 3837 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 Abscisic acid receptor PYL5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	153	1141	714	213	208	6	0	0	0
1	B	154	1125	697	213	207	8	0	0	0
1	C	126	934	577	168	184	5	0	0	0

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	expression tag	UNP Q9FLB1
A	-18	GLY	-	expression tag	UNP Q9FLB1
A	-17	SER	-	expression tag	UNP Q9FLB1
A	-16	SER	-	expression tag	UNP Q9FLB1
A	-15	HIS	-	expression tag	UNP Q9FLB1
A	-14	HIS	-	expression tag	UNP Q9FLB1
A	-13	HIS	-	expression tag	UNP Q9FLB1
A	-12	HIS	-	expression tag	UNP Q9FLB1
A	-11	HIS	-	expression tag	UNP Q9FLB1
A	-10	SER	-	expression tag	UNP Q9FLB1
A	-9	SER	-	expression tag	UNP Q9FLB1
A	-8	GLY	-	expression tag	UNP Q9FLB1
A	-7	GLU	-	expression tag	UNP Q9FLB1
A	-6	ASN	-	expression tag	UNP Q9FLB1
A	-5	LEU	-	expression tag	UNP Q9FLB1
A	-4	TYR	-	expression tag	UNP Q9FLB1
A	-3	PHE	-	expression tag	UNP Q9FLB1
A	-2	GLN	-	expression tag	UNP Q9FLB1
A	-1	GLY	-	expression tag	UNP Q9FLB1
A	0	HIS	-	expression tag	UNP Q9FLB1
B	-19	MET	-	expression tag	UNP Q9FLB1
B	-18	GLY	-	expression tag	UNP Q9FLB1
B	-17	SER	-	expression tag	UNP Q9FLB1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-16	SER	-	expression tag	UNP Q9FLB1
B	-15	HIS	-	expression tag	UNP Q9FLB1
B	-14	HIS	-	expression tag	UNP Q9FLB1
B	-13	HIS	-	expression tag	UNP Q9FLB1
B	-12	HIS	-	expression tag	UNP Q9FLB1
B	-11	HIS	-	expression tag	UNP Q9FLB1
B	-10	SER	-	expression tag	UNP Q9FLB1
B	-9	SER	-	expression tag	UNP Q9FLB1
B	-8	GLY	-	expression tag	UNP Q9FLB1
B	-7	GLU	-	expression tag	UNP Q9FLB1
B	-6	ASN	-	expression tag	UNP Q9FLB1
B	-5	LEU	-	expression tag	UNP Q9FLB1
B	-4	TYR	-	expression tag	UNP Q9FLB1
B	-3	PHE	-	expression tag	UNP Q9FLB1
B	-2	GLN	-	expression tag	UNP Q9FLB1
B	-1	GLY	-	expression tag	UNP Q9FLB1
B	0	HIS	-	expression tag	UNP Q9FLB1
C	-19	MET	-	expression tag	UNP Q9FLB1
C	-18	GLY	-	expression tag	UNP Q9FLB1
C	-17	SER	-	expression tag	UNP Q9FLB1
C	-16	SER	-	expression tag	UNP Q9FLB1
C	-15	HIS	-	expression tag	UNP Q9FLB1
C	-14	HIS	-	expression tag	UNP Q9FLB1
C	-13	HIS	-	expression tag	UNP Q9FLB1
C	-12	HIS	-	expression tag	UNP Q9FLB1
C	-11	HIS	-	expression tag	UNP Q9FLB1
C	-10	SER	-	expression tag	UNP Q9FLB1
C	-9	SER	-	expression tag	UNP Q9FLB1
C	-8	GLY	-	expression tag	UNP Q9FLB1
C	-7	GLU	-	expression tag	UNP Q9FLB1
C	-6	ASN	-	expression tag	UNP Q9FLB1
C	-5	LEU	-	expression tag	UNP Q9FLB1
C	-4	TYR	-	expression tag	UNP Q9FLB1
C	-3	PHE	-	expression tag	UNP Q9FLB1
C	-2	GLN	-	expression tag	UNP Q9FLB1
C	-1	GLY	-	expression tag	UNP Q9FLB1
C	0	HIS	-	expression tag	UNP Q9FLB1

- Molecule 2 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



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

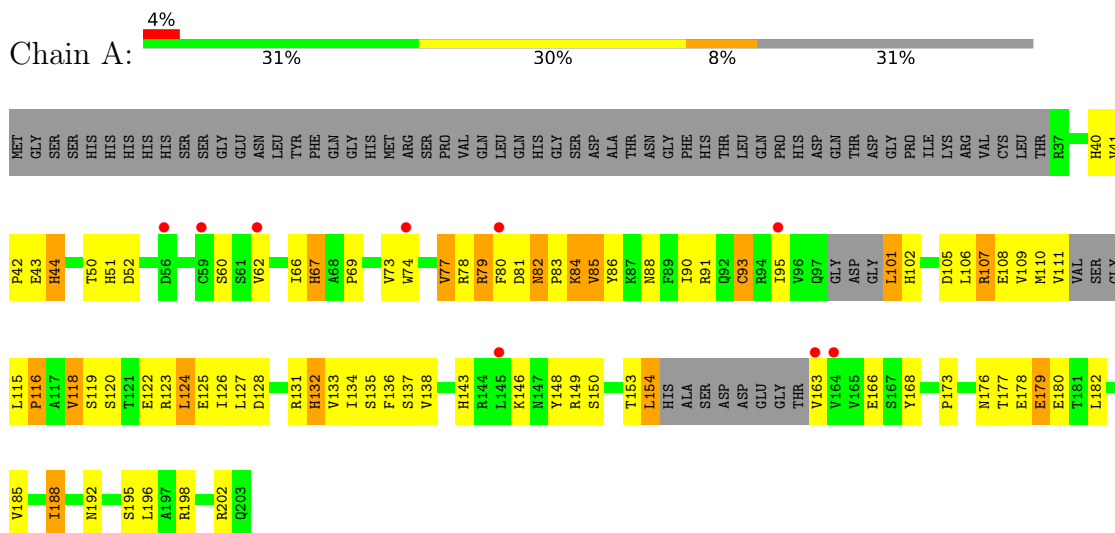
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	213	Total 213	O 213	0	0
3	B	189	Total 189	O 189	0	0
3	C	163	Total 163	O 163	0	0

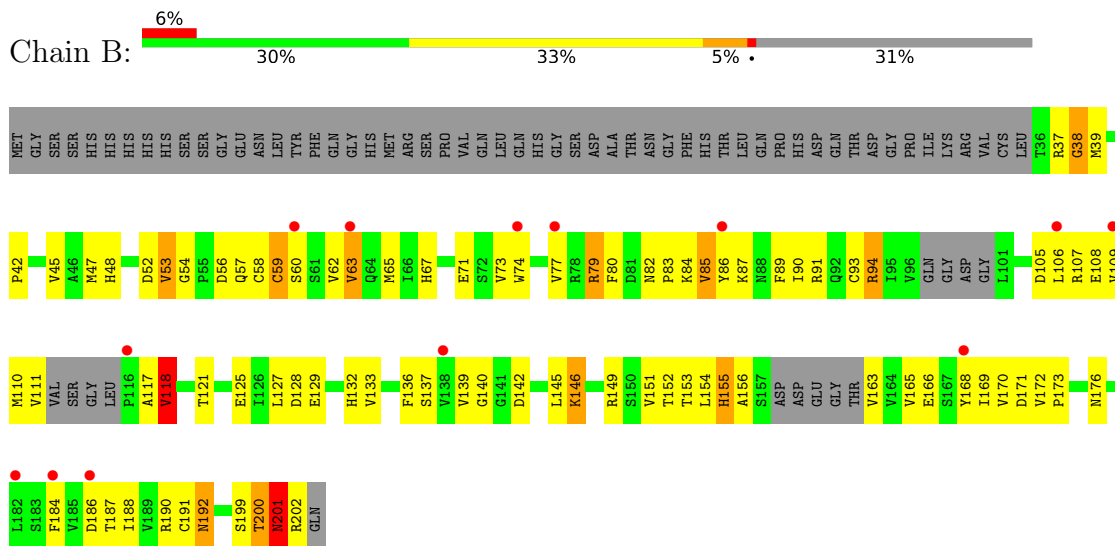
3 Residue-property plots i

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.

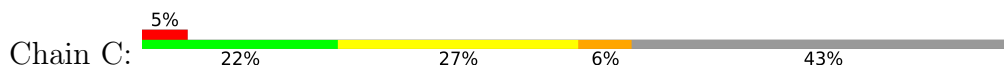
- Molecule 1: Abscisic acid receptor PYL5



- Molecule 1: Abscisic acid receptor PYL5



- Molecule 1: Abscisic acid receptor PYL5



4 Data and refinement statistics

Property	Value	Source
Space group	P 64	Depositor
Cell constants a, b, c, α , β , γ	95.85Å 95.85Å 143.97Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	47.92 – 2.65 47.92 – 2.65	Depositor EDS
% Data completeness (in resolution range)	97.7 (47.92-2.65) 97.6 (47.92-2.65)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.27 (at 2.65Å)	Xtriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.253 , 0.274 0.252 , 0.268	Depositor DCC
R_{free} test set	1087 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å ²)	54.5	Xtriage
Anisotropy	0.061	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 219.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.55$, $\langle L^2 \rangle = 0.39$	Xtriage
Estimated twinning fraction	0.073 for h,-h-k,-l	Xtriage
Reported twinning fraction	0.500 for H, K, L 0.500 for K, H, -L	Depositor
Outliers	4 of 21320 reflections (0.019%)	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	3837	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.92% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: 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	0.71	0/1163	0.99	1/1580 (0.1%)
1	B	0.67	0/1145	1.05	2/1553 (0.1%)
1	C	0.71	0/948	1.06	2/1289 (0.2%)
All	All	0.69	0/3256	1.03	5/4422 (0.1%)

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	B	0	1

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	133	VAL	N-CA-C	6.13	116.92	107.78
1	B	201	ASN	N-CA-C	5.59	122.71	110.80
1	C	184	PHE	N-CA-C	-5.29	107.48	114.04
1	B	173	PRO	N-CA-C	5.18	117.02	110.70
1	A	88	ASN	N-CA-C	5.07	117.40	110.55

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	200	THR	Peptide

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	1141	0	1045	60	0
1	B	1125	0	1015	72	0
1	C	934	0	858	52	0
2	A	42	0	56	0	0
2	B	24	0	32	0	0
2	C	6	0	8	0	0
3	A	213	0	0	5	0
3	B	189	0	0	4	0
3	C	163	0	0	2	0
All	All	3837	0	3014	182	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 29.

All (182) 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:C:182:LEU:O	1:C:186:ASP:HB2	1.68	0.94
1:A:123:ARG:O	1:A:136:PHE:HB2	1.73	0.87
1:B:82:ASN:O	1:B:85:VAL:HG13	1.74	0.86
1:C:58:CYS:O	1:C:169:ILE:HD13	1.79	0.82
1:A:43:GLU:HG2	1:A:44:HIS:CD2	2.20	0.76
1:C:187:THR:O	1:C:191:CYS:SG	2.44	0.75
1:A:66:ILE:HG23	1:A:202:ARG:CB	2.19	0.73
1:A:101:LEU:O	1:A:102:HIS:ND1	2.22	0.71
1:B:67:HIS:O	1:B:201:ASN:ND2	2.25	0.69
1:B:187:THR:HG22	1:B:191:CYS:SG	2.32	0.69
1:B:152:THR:HG22	1:B:152:THR:O	1.96	0.66
1:B:187:THR:O	1:B:191:CYS:SG	2.55	0.64
1:B:42:PRO:HD3	1:B:155:HIS:CG	2.33	0.63
1:A:122:GLU:HA	1:A:138:VAL:HA	1.80	0.63
1:B:132:HIS:HB2	1:B:154:LEU:HB2	1.80	0.62
1:C:132:HIS:CD2	1:C:154:LEU:HD22	2.34	0.62
1:A:178:GLU:O	1:A:182:LEU:HD13	2.00	0.61
1:A:120:SER:OG	1:A:122:GLU:OE2	2.16	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:115:LEU:N	3:A:605:HOH:O	2.33	0.61
1:B:80:PHE:CE2	1:B:107:ARG:HB2	2.35	0.61
1:C:53:VAL:HG12	1:C:54:GLY:N	2.16	0.61
1:A:67:HIS:CG	1:A:67:HIS:O	2.55	0.59
1:B:93:CYS:SG	1:B:107:ARG:HG3	2.43	0.59
1:B:121:THR:O	1:B:139:VAL:HG12	2.02	0.59
1:B:151:VAL:HG12	1:B:153:THR:HG23	1.84	0.59
1:B:146:LYS:CB	1:B:171:ASP:HB3	2.33	0.58
1:A:101:LEU:N	3:A:434:HOH:O	2.36	0.58
1:B:152:THR:N	3:B:412:HOH:O	2.28	0.58
1:A:138:VAL:HG11	1:A:143:HIS:CE1	2.39	0.58
1:A:185:VAL:O	1:A:188:ILE:N	2.37	0.58
1:A:80:PHE:CD2	1:A:124:LEU:HD12	2.39	0.58
1:B:42:PRO:HD3	1:B:155:HIS:ND1	2.19	0.57
1:A:82:ASN:ND2	3:A:476:HOH:O	2.38	0.57
1:A:123:ARG:N	1:A:137:SER:O	2.38	0.56
1:C:186:ASP:O	1:C:189:VAL:HG22	2.06	0.56
1:B:91:ARG:HD3	1:B:111:VAL:HA	1.85	0.56
1:C:73:VAL:O	1:C:77:VAL:HG23	2.06	0.55
1:B:94:ARG:NH1	1:C:183:SER:OG	2.39	0.55
1:A:40:HIS:ND1	1:A:40:HIS:O	2.40	0.55
1:C:64:GLN:O	1:C:164:VAL:HB	2.07	0.55
1:A:42:PRO:O	1:A:43:GLU:C	2.49	0.55
1:C:58:CYS:HB3	1:C:182:LEU:HD11	1.89	0.54
1:A:91:ARG:N	1:A:110:MET:O	2.41	0.54
1:B:106:LEU:HD21	1:C:37:ARG:HG3	1.90	0.54
1:C:180:GLU:O	1:C:184:PHE:HB3	2.06	0.54
1:A:84:LYS:O	1:A:85:VAL:C	2.50	0.53
1:B:121:THR:CB	1:B:140:GLY:O	2.56	0.53
1:A:40:HIS:O	1:A:40:HIS:CG	2.61	0.53
1:A:101:LEU:O	1:A:102:HIS:CG	2.62	0.53
1:A:115:LEU:HG	1:A:116:PRO:HD2	1.90	0.53
1:C:131:ARG:O	1:C:132:HIS:HB2	2.09	0.52
1:A:138:VAL:HG23	1:A:148:TYR:HB3	1.92	0.52
1:B:155:HIS:HB3	1:B:163:VAL:HB	1.91	0.52
1:C:74:TRP:CH2	1:C:134:ILE:HG23	2.45	0.51
1:C:178:GLU:CG	3:C:531:HOH:O	2.57	0.51
1:B:58:CYS:O	1:B:59:CYS:HB2	2.09	0.51
1:C:165:VAL:HG12	1:C:166:GLU:N	2.26	0.51
1:A:123:ARG:O	1:A:136:PHE:CB	2.51	0.51
1:C:58:CYS:O	1:C:169:ILE:HA	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:105:ASP:CB	3:B:505:HOH:O	2.60	0.50
1:C:70:PRO:CA	1:C:162:THR:OG1	2.59	0.50
1:A:120:SER:OG	1:A:122:GLU:CD	2.55	0.50
1:B:57:GLN:HA	1:B:171:ASP:HA	1.93	0.50
1:A:41:VAL:N	1:A:42:PRO:CD	2.75	0.50
1:C:166:GLU:HG2	1:C:193:LEU:HD11	1.94	0.50
1:A:115:LEU:HG	1:A:116:PRO:CD	2.41	0.50
1:B:62:VAL:HG22	1:B:63:VAL:N	2.27	0.50
1:C:47:MET:SD	1:C:47:MET:N	2.85	0.49
1:C:79:ARG:O	1:C:80:PHE:C	2.55	0.49
1:C:85:VAL:HG22	1:C:85:VAL:O	2.13	0.49
1:C:118:VAL:HG23	1:C:118:VAL:O	2.11	0.49
1:A:90:ILE:HG22	1:A:91:ARG:N	2.28	0.49
1:B:155:HIS:CG	1:B:156:ALA:H	2.30	0.49
1:A:78:ARG:NH1	3:A:434:HOH:O	2.45	0.48
1:C:195:SER:O	1:C:198:ARG:HG3	2.13	0.48
1:A:195:SER:HA	1:A:198:ARG:HG2	1.95	0.48
1:A:179:GLU:C	1:A:180:GLU:OE1	2.55	0.48
1:A:122:GLU:HG3	1:A:138:VAL:HG22	1.96	0.48
1:B:79:ARG:NH2	1:B:82:ASN:HB3	2.28	0.48
1:B:93:CYS:HA	1:B:108:GLU:O	2.13	0.48
1:B:90:ILE:HG23	1:B:109:VAL:HG13	1.94	0.47
1:A:188:ILE:O	3:A:491:HOH:O	2.20	0.47
1:B:118:VAL:HG12	1:B:142:ASP:O	2.14	0.47
1:B:151:VAL:CG1	1:B:153:THR:HG23	2.45	0.47
1:C:125:GLU:HG3	1:C:135:SER:HB3	1.96	0.47
1:C:181:THR:HA	1:C:184:PHE:HB3	1.96	0.47
1:C:53:VAL:CG1	1:C:54:GLY:N	2.77	0.47
1:A:150:SER:OG	1:A:166:GLU:OE1	2.32	0.47
1:B:83:PRO:HG2	1:B:90:ILE:HG21	1.97	0.47
1:A:74:TRP:CE3	1:A:132:HIS:HB3	2.50	0.46
1:A:128:ASP:OD1	1:A:131:ARG:HB2	2.15	0.46
1:C:180:GLU:O	1:C:184:PHE:CB	2.63	0.46
1:C:74:TRP:HH2	1:C:134:ILE:HG23	1.78	0.46
1:B:59:CYS:SG	1:B:169:ILE:CB	3.03	0.46
1:A:51:HIS:C	1:A:51:HIS:CD2	2.93	0.46
1:B:132:HIS:CB	1:B:154:LEU:HB2	2.45	0.46
1:B:133:VAL:HG13	1:B:153:THR:HG22	1.96	0.46
1:B:152:THR:HA	1:B:166:GLU:HB2	1.96	0.46
1:A:125:GLU:C	1:A:126:ILE:HD12	2.41	0.46
1:C:132:HIS:HD2	1:C:154:LEU:HD22	1.77	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:188:ILE:HA	1:C:191:CYS:SG	2.56	0.46
1:C:173:PRO:O	1:C:174:PRO:C	2.58	0.45
1:B:93:CYS:SG	1:B:107:ARG:CD	3.05	0.45
1:B:56:ASP:O	1:B:172:VAL:N	2.48	0.45
1:B:62:VAL:CG1	1:B:166:GLU:H	2.30	0.45
1:B:201:ASN:HB3	3:B:526:HOH:O	2.16	0.45
1:B:89:PHE:O	1:B:91:ARG:NH1	2.42	0.45
1:A:192:ASN:O	1:A:196:LEU:N	2.41	0.45
1:C:138:VAL:HG23	1:C:148:TYR:HB3	1.99	0.45
1:B:62:VAL:HG13	1:B:165:VAL:HA	1.99	0.45
1:B:52:ASP:O	1:B:53:VAL:C	2.60	0.45
1:A:69:PRO:O	1:A:73:VAL:HG23	2.17	0.45
1:B:74:TRP:CD1	1:B:132:HIS:HD1	2.34	0.45
1:C:128:ASP:C	1:C:128:ASP:OD1	2.60	0.45
1:A:86:TYR:C	1:A:86:TYR:CD1	2.94	0.44
1:A:109:VAL:O	1:A:120:SER:O	2.34	0.44
1:B:188:ILE:O	1:B:192:ASN:N	2.51	0.44
1:C:138:VAL:HG12	1:C:139:VAL:N	2.32	0.44
1:A:79:ARG:HB2	1:A:85:VAL:HG21	1.98	0.44
1:A:83:PRO:CD	1:A:93:CYS:SG	3.06	0.44
1:A:153:THR:O	1:A:154:LEU:HD23	2.17	0.44
1:A:95:ILE:HA	1:A:106:LEU:O	2.18	0.44
1:B:65:MET:CG	1:B:163:VAL:HG22	2.47	0.44
1:B:125:GLU:OE2	1:B:137:SER:HB3	2.18	0.44
1:C:66:ILE:HG12	1:C:197:ALA:HA	1.99	0.44
1:A:149:ARG:O	1:A:149:ARG:HG2	2.17	0.44
1:A:180:GLU:OE1	1:A:180:GLU:N	2.51	0.44
1:C:181:THR:O	1:C:185:VAL:N	2.42	0.44
1:C:64:GLN:HG2	1:C:193:LEU:O	2.17	0.44
1:C:138:VAL:CG1	1:C:139:VAL:N	2.81	0.44
1:A:106:LEU:HD12	1:A:122:GLU:O	2.18	0.44
1:B:74:TRP:CE3	1:B:77:VAL:HG23	2.53	0.44
1:B:117:ALA:C	1:B:118:VAL:HG22	2.44	0.43
1:C:57:GLN:HA	1:C:170:VAL:O	2.18	0.43
1:B:62:VAL:HG12	1:B:166:GLU:H	1.83	0.43
1:A:77:VAL:HG11	1:A:154:LEU:HD11	2.00	0.43
1:B:184:PHE:O	1:B:184:PHE:CG	2.72	0.43
1:C:121:THR:HG21	1:C:139:VAL:HG12	2.01	0.43
1:B:83:PRO:HD2	1:B:93:CYS:CB	2.49	0.43
1:C:166:GLU:CG	1:C:193:LEU:HD11	2.49	0.43
1:B:128:ASP:OD1	1:B:129:GLU:N	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:41:VAL:HB	1:A:163:VAL:HG21	2.01	0.42
1:B:58:CYS:O	1:B:169:ILE:HA	2.19	0.42
1:B:67:HIS:HB3	1:B:201:ASN:ND2	2.35	0.42
1:C:162:THR:HG22	1:C:163:VAL:N	2.33	0.42
1:C:121:THR:HB	1:C:139:VAL:O	2.20	0.42
1:A:125:GLU:O	1:A:126:ILE:HD12	2.19	0.42
1:B:86:TYR:CD1	1:B:86:TYR:C	2.98	0.42
1:B:187:THR:O	1:B:191:CYS:N	2.44	0.42
1:B:47:MET:HE3	1:B:47:MET:HB3	1.93	0.42
1:C:78:ARG:NE	1:C:129:GLU:OE2	2.53	0.42
1:B:83:PRO:HB2	1:B:87:LYS:HB2	2.02	0.41
1:A:83:PRO:HD2	1:A:93:CYS:SG	2.61	0.41
1:B:67:HIS:HB3	1:B:202:ARG:C	2.45	0.41
1:B:93:CYS:SG	1:B:107:ARG:HD2	2.60	0.41
1:A:82:ASN:HD22	1:A:82:ASN:HA	1.73	0.41
1:A:107:ARG:HG3	1:A:108:GLU:N	2.35	0.41
1:A:133:VAL:HG13	1:A:153:THR:HG22	2.03	0.41
1:B:39:MET:HE3	1:B:39:MET:HB2	1.95	0.41
1:C:59:CYS:HB3	1:C:168:TYR:O	2.20	0.41
1:C:70:PRO:N	1:C:162:THR:OG1	2.53	0.41
1:A:138:VAL:CG1	1:A:143:HIS:CE1	3.02	0.41
1:B:155:HIS:CG	1:B:156:ALA:N	2.89	0.41
1:C:201:ASN:O	1:C:202:ARG:CB	2.69	0.41
1:B:62:VAL:CG2	1:B:63:VAL:N	2.84	0.41
1:A:90:ILE:HG22	1:A:91:ARG:O	2.20	0.41
1:B:65:MET:HG2	1:B:163:VAL:HA	2.02	0.41
1:B:83:PRO:HD2	1:B:93:CYS:HB3	2.02	0.41
1:B:83:PRO:HD3	1:B:93:CYS:SG	2.61	0.41
1:C:122:GLU:HG3	1:C:123:ARG:H	1.85	0.41
1:C:165:VAL:HG12	1:C:166:GLU:H	1.86	0.41
1:A:84:LYS:O	1:A:86:TYR:N	2.53	0.41
1:B:190:ARG:NH2	3:B:508:HOH:O	2.54	0.40
1:C:49:HIS:NE2	1:C:153:THR:OG1	2.36	0.40
1:A:122:GLU:HA	1:A:137:SER:O	2.21	0.40
1:B:37:ARG:O	1:B:38:GLY:C	2.65	0.40
1:B:48:HIS:HB3	1:B:151:VAL:HG11	2.03	0.40
1:B:54:GLY:HA3	1:B:57:GLN:HB2	2.03	0.40
1:B:125:GLU:OE1	1:B:149:ARG:NE	2.55	0.40
1:C:178:GLU:HG2	3:C:531:HOH:O	2.19	0.40
1:B:65:MET:SD	1:B:163:VAL:HG22	2.61	0.40
1:B:168:TYR:CG	1:B:169:ILE:N	2.90	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	145/223 (65%)	104 (72%)	31 (21%)	10 (7%)	1	0
1	B	146/223 (66%)	106 (73%)	31 (21%)	9 (6%)	1	1
1	C	116/223 (52%)	85 (73%)	24 (21%)	7 (6%)	1	1
All	All	407/669 (61%)	295 (72%)	86 (21%)	26 (6%)	1	1

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	62	VAL
1	A	116	PRO
1	A	118	VAL
1	C	170	VAL
1	A	79	ARG
1	A	81	ASP
1	A	132	HIS
1	A	146	LYS
1	B	118	VAL
1	B	145	LEU
1	C	46	ALA
1	B	146	LYS
1	B	155	HIS
1	C	39	MET
1	C	132	HIS
1	C	174	PRO
1	A	50	THR
1	A	85	VAL
1	B	170	VAL
1	C	48	HIS
1	B	45	VAL

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Mol	Chain	Res	Type
1	B	59	CYS
1	A	173	PRO
1	B	79	ARG
1	C	118	VAL
1	B	38	GLY

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	116/200 (58%)	92 (79%)	24 (21%)	1	1
1	B	112/200 (56%)	94 (84%)	18 (16%)	2	3
1	C	101/200 (50%)	80 (79%)	21 (21%)	1	1
All	All	329/600 (55%)	266 (81%)	63 (19%)	1	2

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	HIS
1	A	52	ASP
1	A	60	SER
1	A	67	HIS
1	A	77	VAL
1	A	82	ASN
1	A	84	LYS
1	A	93	CYS
1	A	101	LEU
1	A	105	ASP
1	A	107	ARG
1	A	111	VAL
1	A	118	VAL
1	A	119	SER
1	A	124	LEU
1	A	127	LEU
1	A	134	ILE

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Mol	Chain	Res	Type
1	A	135	SER
1	A	154	LEU
1	A	168	TYR
1	A	176	ASN
1	A	177	THR
1	A	179	GLU
1	A	188	ILE
1	B	53	VAL
1	B	60	SER
1	B	63	VAL
1	B	71	GLU
1	B	73	VAL
1	B	84	LYS
1	B	85	VAL
1	B	94	ARG
1	B	110	MET
1	B	118	VAL
1	B	127	LEU
1	B	136	PHE
1	B	176	ASN
1	B	186	ASP
1	B	192	ASN
1	B	199	SER
1	B	200	THR
1	B	201	ASN
1	C	43	GLU
1	C	58	CYS
1	C	59	CYS
1	C	65	MET
1	C	77	VAL
1	C	126	ILE
1	C	127	LEU
1	C	130	GLU
1	C	133	VAL
1	C	134	ILE
1	C	150	SER
1	C	166	GLU
1	C	169	ILE
1	C	171	ASP
1	C	177	THR
1	C	182	LEU
1	C	184	PHE

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Mol	Chain	Res	Type
1	C	190	ARG
1	C	191	CYS
1	C	198	ARG
1	C	200	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	44	HIS
1	A	51	HIS
1	A	82	ASN
1	A	92	GLN
1	A	194	GLN
1	A	201	ASN
1	B	67	HIS
1	B	102	HIS
1	B	143	HIS
1	B	176	ASN
1	B	192	ASN
1	B	201	ASN
1	C	132	HIS
1	C	201	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

12 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	GOL	A	301	-	5,5,5	0.33	0	5,5,5	0.55	0
2	GOL	A	305	-	5,5,5	0.36	0	5,5,5	0.41	0
2	GOL	A	303	-	5,5,5	0.57	0	5,5,5	0.49	0
2	GOL	A	306	-	5,5,5	0.51	0	5,5,5	0.58	0
2	GOL	A	307	-	5,5,5	0.42	0	5,5,5	0.68	0
2	GOL	C	301	-	5,5,5	0.61	0	5,5,5	0.57	0
2	GOL	A	302	-	5,5,5	0.50	0	5,5,5	0.74	0
2	GOL	B	303	-	5,5,5	0.50	0	5,5,5	0.42	0
2	GOL	B	302	-	5,5,5	0.52	0	5,5,5	0.21	0
2	GOL	B	304	-	5,5,5	0.43	0	5,5,5	0.46	0
2	GOL	A	304	-	5,5,5	0.40	0	5,5,5	0.38	0
2	GOL	B	301	-	5,5,5	0.28	0	5,5,5	0.20	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	A	301	-	-	4/4/4/4	-
2	GOL	A	305	-	-	2/4/4/4	-
2	GOL	A	303	-	-	2/4/4/4	-
2	GOL	A	306	-	-	2/4/4/4	-
2	GOL	A	307	-	-	0/4/4/4	-
2	GOL	C	301	-	-	2/4/4/4	-
2	GOL	A	302	-	-	2/4/4/4	-
2	GOL	B	303	-	-	2/4/4/4	-
2	GOL	B	302	-	-	1/4/4/4	-
2	GOL	B	304	-	-	0/4/4/4	-
2	GOL	A	304	-	-	2/4/4/4	-
2	GOL	B	301	-	-	4/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	GOL	C1-C2-C3-O3
2	A	303	GOL	O1-C1-C2-O2
2	A	303	GOL	O1-C1-C2-C3
2	A	304	GOL	O1-C1-C2-O2
2	A	304	GOL	O1-C1-C2-C3
2	A	305	GOL	C1-C2-C3-O3
2	B	301	GOL	O1-C1-C2-C3
2	B	301	GOL	C1-C2-C3-O3
2	A	301	GOL	O1-C1-C2-C3
2	A	302	GOL	O1-C1-C2-C3
2	A	306	GOL	O1-C1-C2-C3
2	B	303	GOL	C1-C2-C3-O3
2	A	301	GOL	O2-C2-C3-O3
2	A	301	GOL	O1-C1-C2-O2
2	A	305	GOL	O2-C2-C3-O3
2	B	301	GOL	O1-C1-C2-O2
2	B	301	GOL	O2-C2-C3-O3
2	B	303	GOL	O2-C2-C3-O3
2	C	301	GOL	O2-C2-C3-O3
2	A	302	GOL	O1-C1-C2-O2
2	C	301	GOL	C1-C2-C3-O3
2	A	306	GOL	O1-C1-C2-O2
2	B	302	GOL	O2-C2-C3-O3

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	153/223 (68%)	0.89	9 (5%) 28 21	33, 50, 68, 79	0
1	B	154/223 (69%)	0.93	13 (8%) 17 12	34, 48, 62, 76	1 (0%)
1	C	126/223 (56%)	0.90	11 (8%) 16 12	34, 49, 65, 79	0
All	All	433/669 (64%)	0.91	33 (7%) 20 15	33, 49, 65, 79	1 (0%)

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	163	VAL	4.2
1	B	182	LEU	4.2
1	A	164	VAL	4.2
1	C	182	LEU	4.1
1	B	168	TYR	4.0
1	A	62	VAL	3.9
1	B	116	PRO	3.5
1	C	62	VAL	3.3
1	A	56	ASP	3.0
1	C	63	VAL	3.0
1	C	124	LEU	2.9
1	B	86	TYR	2.9
1	C	119	SER	2.8
1	B	74	TRP	2.8
1	C	196	LEU	2.8
1	B	138	VAL	2.8
1	B	109	VAL	2.7
1	C	139	VAL	2.7
1	C	183	SER	2.6
1	A	74	TRP	2.6
1	B	77	VAL	2.5
1	B	186	ASP	2.5
1	A	80	PHE	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	184	PHE	2.5
1	A	95	ILE	2.4
1	C	61	SER	2.3
1	B	106	LEU	2.3
1	B	60	SER	2.1
1	A	145	LEU	2.1
1	B	63	VAL	2.1
1	C	115	LEU	2.0
1	A	59	CYS	2.0
1	C	138	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 oligosaccharides 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.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	GOL	A	306	6/6	0.76	0.13	42,45,47,47	0
2	GOL	A	307	6/6	0.84	0.10	37,39,42,45	0
2	GOL	A	303	6/6	0.85	0.11	30,33,34,34	0
2	GOL	B	302	6/6	0.86	0.11	40,46,48,48	0
2	GOL	B	304	6/6	0.86	0.08	44,45,47,47	0
2	GOL	B	303	6/6	0.87	0.09	37,40,41,41	0
2	GOL	B	301	6/6	0.87	0.09	39,39,43,43	0
2	GOL	A	302	6/6	0.91	0.09	28,30,32,33	0
2	GOL	A	304	6/6	0.91	0.07	40,41,43,43	0
2	GOL	C	301	6/6	0.91	0.09	24,24,25,26	0
2	GOL	A	305	6/6	0.93	0.07	30,32,33,34	0
2	GOL	A	301	6/6	0.97	0.04	15,15,16,16	0

6.5 Other polymers [i](#)

There are no such residues in this entry.