



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2026 – 04:15 AM UTC

PDB ID : 4IML / pdb_00004iml
Title : CrossFab binding to human Angiopoietin 2
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Deposited on : 2013-01-03
Resolution : 2.93 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

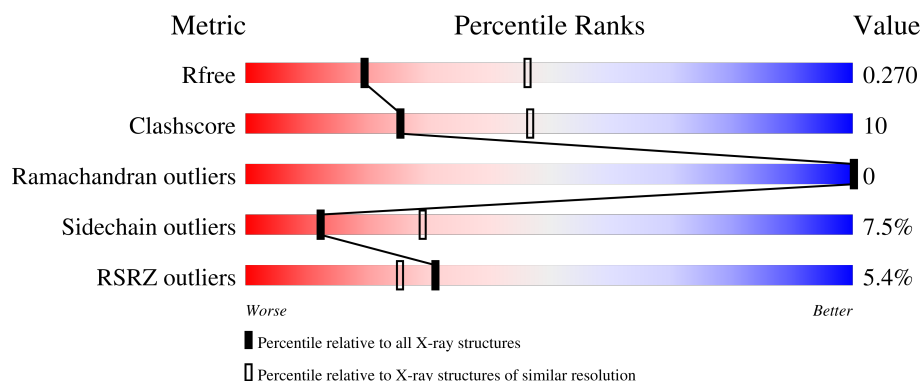
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.93 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	1159 (2.96-2.92)
Clashscore	190562	1184 (2.96-2.92)
Ramachandran outliers	187476	1131 (2.96-2.92)
Sidechain outliers	187428	1131 (2.96-2.92)
RSRZ outliers	180081	1159 (2.96-2.92)

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	245	7% 72% 23% .
1	H	245	5% 68% 27% ..
2	B	213	4% 80% 17% .
2	L	213	5% 77% 20% ..

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 6743 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 Crossed heavy chain (VH-Ckappa).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	H	234	Total	C	N	O	S	81	0	0
			1816	1142	305	360	9			
1	A	234	Total	C	N	O	S	95	0	0
			1816	1142	305	360	9			

- Molecule 2 is a protein called Crossed light chain (VL-CH1).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	L	210	Total	C	N	O	S	18	0	0
			1540	961	260	315	4			
2	B	212	Total	C	N	O	S	16	0	0
			1552	968	262	317	5			

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



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

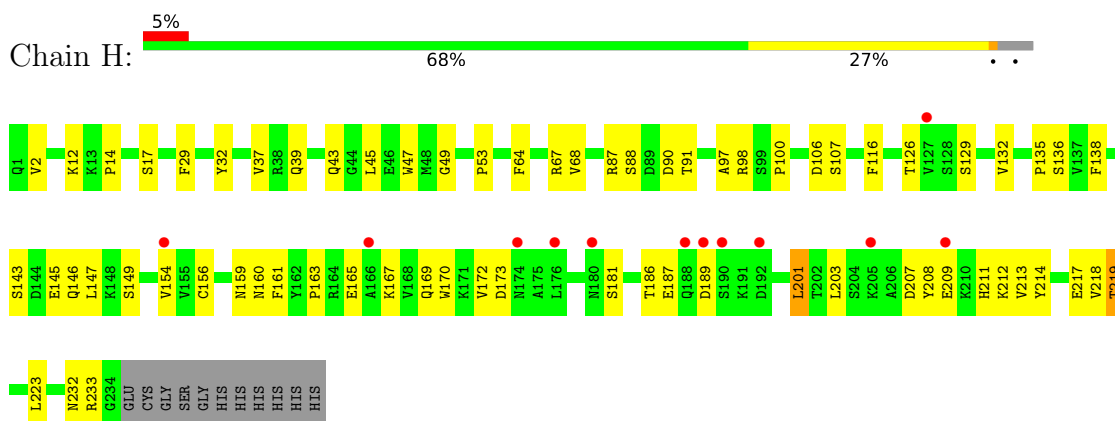
- Molecule 4 is water.

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

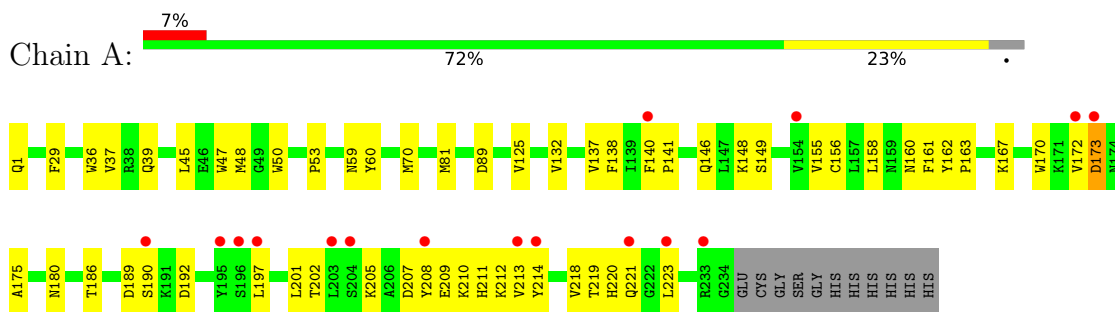
3 Residue-property plots [i](#)

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.

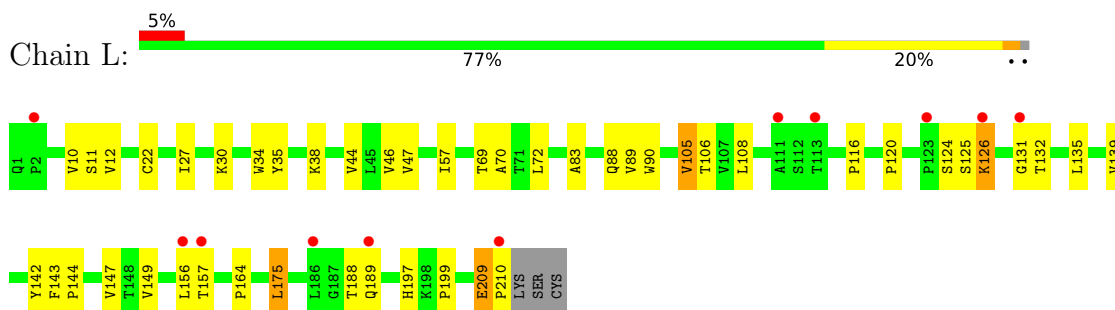
- Molecule 1: Crossed heavy chain (VH-Ckappa)



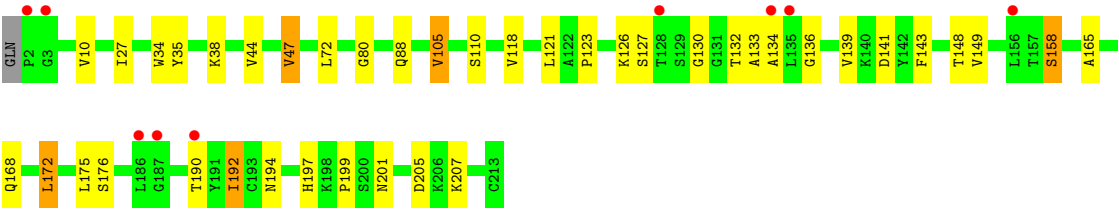
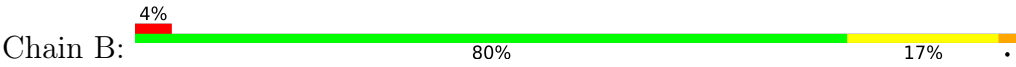
- Molecule 1: Crossed heavy chain (VH-Ckappa)



- Molecule 2: Crossed light chain (VL-CH1)



- Molecule 2: Crossed light chain (VL-CH1)



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	75.75Å 80.55Å 158.27Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.13 – 2.93 44.13 – 2.93	Depositor EDS
% Data completeness (in resolution range)	98.6 (44.13-2.93) 98.7 (44.13-2.93)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.03 (at 2.96Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.1_743)	Depositor
R, R_{free}	0.237 , 0.269 0.241 , 0.270	Depositor DCC
R_{free} test set	1061 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å ²)	59.0	Xtriage
Anisotropy	0.421	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 71.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6743	wwPDB-VP
Average B, all atoms (Å ²)	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 47.94 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 9.2315e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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	0.30	0/1863	0.81	2/2532 (0.1%)
1	H	0.29	0/1863	0.76	0/2532
2	B	0.30	0/1591	0.77	2/2176 (0.1%)
2	L	0.31	0/1579	0.80	3/2162 (0.1%)
All	All	0.30	0/6896	0.79	7/9402 (0.1%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	158	SER	N-CA-C	7.63	123.88	111.37
1	A	160	ASN	N-CA-C	6.88	119.62	111.02
2	L	131	GLY	N-CA-C	-5.97	107.08	115.32
2	L	57	ILE	CA-C-N	5.96	125.98	119.90
2	L	57	ILE	C-N-CA	5.96	125.98	119.90
1	A	189	ASP	N-CA-C	5.79	117.67	111.36
2	B	136	GLY	N-CA-C	5.74	119.51	111.19

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	1816	0	1729	44	0
1	H	1816	0	1729	37	0
2	B	1552	0	1505	27	0
2	L	1540	0	1492	21	0
3	B	6	0	8	0	0
3	H	6	0	8	0	0
4	A	2	0	0	0	0
4	B	1	0	0	0	0
4	H	2	0	0	0	0
4	L	2	0	0	0	0
All	All	6743	0	6471	122	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 10.

All (122) 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:A:173:ASP:H	1:A:213:VAL:CG2	1.51	1.23
1:A:173:ASP:H	1:A:213:VAL:HG23	1.21	1.05
1:A:173:ASP:N	1:A:213:VAL:CG2	2.21	1.04
2:B:127:SER:HB2	2:B:133:ALA:HB2	1.41	1.01
1:A:173:ASP:HA	1:A:213:VAL:HG21	1.58	0.85
1:A:173:ASP:CA	1:A:213:VAL:HG21	2.11	0.80
1:A:173:ASP:N	1:A:213:VAL:HG23	1.93	0.79
1:H:14:PRO:HG2	1:H:129:SER:HB2	1.64	0.79
1:A:213:VAL:O	1:A:214:TYR:CG	2.36	0.79
1:A:213:VAL:O	1:A:214:TYR:CD1	2.38	0.77
1:H:186:THR:HG22	2:L:164:PRO:HD3	1.73	0.70
1:A:173:ASP:HA	1:A:213:VAL:CG2	2.20	0.70
1:A:173:ASP:CA	1:A:213:VAL:CG2	2.68	0.69
2:B:34:TRP:HB2	2:B:47:VAL:HG13	1.75	0.69
1:H:37:VAL:HG22	1:H:47:TRP:HA	1.74	0.68
2:L:46:VAL:HG12	2:L:47:VAL:HG23	1.74	0.67
1:H:212:LYS:O	1:H:232:ASN:ND2	2.26	0.67
1:A:37:VAL:HG22	1:A:47:TRP:HA	1.77	0.65
1:H:181:SER:HB3	1:H:201:LEU:HD23	1.79	0.64
1:A:158:LEU:HD12	1:A:197:LEU:HD22	1.80	0.63
1:H:2:VAL:HG11	1:H:98:ARG:HH21	1.63	0.63
1:H:12:LYS:NZ	1:H:17:SER:O	2.31	0.63
1:A:173:ASP:H	1:A:213:VAL:HG22	1.55	0.63
2:L:30:LYS:NZ	2:L:90:TRP:O	2.29	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:173:ASP:N	1:A:213:VAL:HG21	2.09	0.62
2:B:130:GLY:C	2:B:132:THR:H	2.05	0.62
1:A:205:LYS:O	1:A:209:GLU:HG2	2.00	0.61
1:A:138:PHE:CD1	2:B:126:LYS:HB2	2.35	0.60
1:A:213:VAL:C	1:A:214:TYR:CG	2.81	0.59
1:A:138:PHE:HD1	2:B:126:LYS:HB2	1.67	0.59
2:B:123:PRO:HA	2:B:126:LYS:NZ	2.18	0.58
2:B:38:LYS:NZ	2:B:80:GLY:O	2.36	0.57
1:H:91:THR:HG23	1:H:126:THR:HA	1.86	0.56
2:L:124:SER:OG	2:L:125:SER:N	2.38	0.56
1:H:97:ALA:HB1	1:H:116:PHE:HB3	1.85	0.56
1:H:167:LYS:HB2	1:H:219:THR:HG23	1.87	0.56
1:H:39:GLN:HB3	1:H:45:LEU:HD23	1.88	0.55
1:H:159:ASN:OD1	1:H:160:ASN:ND2	2.35	0.55
1:A:132:VAL:HG13	1:A:163:PRO:HD3	1.87	0.55
1:H:32:TYR:HD1	1:H:100:PRO:HA	1.72	0.55
1:A:172:VAL:O	1:A:175:ALA:N	2.39	0.54
2:B:165:ALA:HB2	2:B:175:LEU:HD23	1.89	0.54
2:L:139:VAL:HB	2:L:175:LEU:HB3	1.90	0.53
1:A:36:TRP:HB3	1:A:48:MET:HE3	1.91	0.53
1:A:36:TRP:CE2	1:A:81:MET:HB2	2.43	0.53
1:A:180:ASN:ND2	1:A:202:THR:O	2.42	0.53
2:B:123:PRO:HA	2:B:126:LYS:HZ1	1.73	0.52
2:B:126:LYS:HD2	2:B:134:ALA:H	1.74	0.52
1:A:207:ASP:HA	1:A:210:LYS:HD3	1.90	0.52
1:A:140:PHE:HB2	1:A:155:VAL:HB	1.90	0.52
2:B:194:ASN:ND2	2:B:205:ASP:OD1	2.43	0.51
1:H:32:TYR:OH	1:H:106:ASP:OD2	2.20	0.51
2:L:147:VAL:HG12	2:L:197:HIS:CD2	2.46	0.51
2:L:34:TRP:CD2	2:L:72:LEU:HB2	2.46	0.51
1:H:212:LYS:HA	1:H:233:ARG:NH1	2.27	0.50
1:H:169:GLN:HG2	1:H:217:GLU:HB3	1.93	0.50
1:A:60:TYR:HH	1:A:70:MET:H	1.56	0.50
1:A:140:PHE:CD1	2:B:121:LEU:HB3	2.47	0.49
1:H:170:TRP:CE2	1:H:201:LEU:HB2	2.48	0.49
2:B:139:VAL:HB	2:B:175:LEU:HB3	1.93	0.49
1:A:167:LYS:HB2	1:A:219:THR:HG22	1.95	0.49
2:B:141:ASP:OD1	2:B:168:GLN:NE2	2.46	0.49
1:A:158:LEU:HB2	1:A:197:LEU:HB3	1.94	0.49
2:L:11:SER:HB3	2:L:108:LEU:HD21	1.94	0.48
1:H:136:SER:HB2	1:H:159:ASN:HB3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:146:GLN:O	1:H:149:SER:OG	2.24	0.48
2:B:34:TRP:CD2	2:B:72:LEU:HB2	2.48	0.48
2:B:192:ILE:HG22	2:B:207:LYS:HA	1.96	0.47
2:B:143:PHE:HB2	2:B:172:LEU:HD12	1.97	0.47
1:A:39:GLN:HB3	1:A:45:LEU:HD23	1.96	0.47
2:B:126:LYS:O	2:B:130:GLY:N	2.47	0.47
1:H:138:PHE:HD1	2:L:126:LYS:HB2	1.80	0.47
1:H:143:SER:OG	2:L:120:PRO:O	2.33	0.46
1:H:138:PHE:CD1	2:L:126:LYS:HB2	2.50	0.46
1:A:172:VAL:HG21	1:A:211:HIS:CE1	2.50	0.46
2:B:35:TYR:HE1	2:B:88:GLN:HB3	1.79	0.46
2:L:197:HIS:CD2	2:L:199:PRO:HD2	2.50	0.46
2:B:127:SER:HB2	2:B:133:ALA:CB	2.29	0.46
1:A:29:PHE:CE2	1:A:53:PRO:HB3	2.51	0.45
1:H:208:TYR:HA	1:H:214:TYR:OH	2.17	0.45
1:A:146:GLN:O	1:A:149:SER:OG	2.30	0.45
2:B:130:GLY:C	2:B:132:THR:N	2.73	0.45
1:H:154:VAL:HG23	1:H:201:LEU:HB3	1.99	0.45
2:L:10:VAL:O	2:L:105:VAL:HA	2.17	0.45
1:H:32:TYR:CD1	1:H:100:PRO:HA	2.51	0.44
1:A:208:TYR:O	1:A:214:TYR:OH	2.35	0.44
2:L:34:TRP:CE2	2:L:72:LEU:HB2	2.53	0.44
1:A:162:TYR:CG	1:A:163:PRO:HA	2.52	0.44
2:L:38:LYS:HG2	2:L:83:ALA:HB2	2.00	0.44
2:B:126:LYS:HD2	2:B:134:ALA:O	2.18	0.44
1:H:106:ASP:OD1	1:H:107:SER:N	2.47	0.43
2:L:116:PRO:HB3	2:L:142:TYR:HB3	2.00	0.43
1:H:163:PRO:HB2	1:H:165:GLU:OE1	2.19	0.43
1:H:29:PHE:CE1	1:H:53:PRO:HB3	2.54	0.43
1:A:220:HIS:CD2	1:A:221:GLN:H	2.36	0.43
2:L:27:ILE:HD13	2:L:27:ILE:HA	1.90	0.42
1:A:161:PHE:HB2	1:A:220:HIS:HE1	1.85	0.42
1:H:173:ASP:N	1:H:173:ASP:OD2	2.53	0.42
2:B:10:VAL:O	2:B:105:VAL:HA	2.19	0.42
1:A:162:TYR:CD1	1:A:163:PRO:HA	2.55	0.42
2:B:197:HIS:CD2	2:B:199:PRO:HD2	2.55	0.42
1:H:64:PHE:O	1:H:68:VAL:HG12	2.19	0.42
2:L:209:GLU:HB2	2:L:210:PRO:HD2	2.01	0.42
1:A:137:VAL:HG13	1:A:158:LEU:HD23	2.02	0.42
1:A:212:LYS:C	1:A:213:VAL:HG13	2.45	0.42
1:H:156:CYS:HB2	1:H:170:TRP:CH2	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:143:PHE:HA	2:L:144:PRO:HA	1.84	0.41
1:H:47:TRP:CZ2	1:H:49:GLY:HA2	2.56	0.41
1:H:67:ARG:NH1	1:H:90:ASP:OD2	2.47	0.41
2:L:35:TYR:HE1	2:L:88:GLN:HB3	1.85	0.41
2:B:126:LYS:O	2:B:130:GLY:HA3	2.20	0.41
2:B:34:TRP:CE2	2:B:72:LEU:HB2	2.56	0.41
1:H:135:PRO:HA	1:H:161:PHE:HB3	2.01	0.41
1:H:212:LYS:HA	1:H:233:ARG:HH12	1.85	0.41
1:A:140:PHE:HA	1:A:141:PRO:HD2	1.94	0.41
1:H:32:TYR:CG	1:H:98:ARG:HD2	2.55	0.41
1:H:207:ASP:O	1:H:211:HIS:ND1	2.46	0.41
1:A:50:TRP:CE2	1:A:59:ASN:HB3	2.56	0.41
2:B:126:LYS:CD	2:B:134:ALA:H	2.32	0.41
2:L:22:CYS:HB3	2:L:70:ALA:HB3	2.02	0.40
1:A:156:CYS:HB2	1:A:170:TRP:CH2	2.56	0.40
1:A:207:ASP:HA	1:A:210:LYS:HG2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	232/245 (95%)	223 (96%)	9 (4%)	0	100	100
1	H	232/245 (95%)	225 (97%)	7 (3%)	0	100	100
2	B	210/213 (99%)	203 (97%)	7 (3%)	0	100	100
2	L	208/213 (98%)	198 (95%)	10 (5%)	0	100	100
All	All	882/916 (96%)	849 (96%)	33 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	199/208 (96%)	188 (94%)	11 (6%)	19	41
1	H	199/208 (96%)	183 (92%)	16 (8%)	11	27
2	B	180/181 (99%)	166 (92%)	14 (8%)	11	28
2	L	178/181 (98%)	162 (91%)	16 (9%)	9	23
All	All	756/778 (97%)	699 (92%)	57 (8%)	12	29

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	43	GLN
1	H	87	ARG
1	H	88	SER
1	H	132	VAL
1	H	145	GLU
1	H	147	LEU
1	H	172	VAL
1	H	187	GLU
1	H	189	ASP
1	H	201	LEU
1	H	203	LEU
1	H	209	GLU
1	H	213	VAL
1	H	218	VAL
1	H	219	THR
1	H	223	LEU
2	L	12	VAL
2	L	44	VAL
2	L	69	THR
2	L	89	VAL
2	L	105	VAL
2	L	106	THR
2	L	126	LYS
2	L	132	THR

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Mol	Chain	Res	Type
2	L	135	LEU
2	L	149	VAL
2	L	156	LEU
2	L	157	THR
2	L	175	LEU
2	L	188	THR
2	L	189	GLN
2	L	209	GLU
1	A	1	GLN
1	A	89	ASP
1	A	125	VAL
1	A	148	LYS
1	A	173	ASP
1	A	186	THR
1	A	190	SER
1	A	192	ASP
1	A	201	LEU
1	A	218	VAL
1	A	223	LEU
2	B	27	ILE
2	B	44	VAL
2	B	47	VAL
2	B	105	VAL
2	B	110	SER
2	B	118	VAL
2	B	148	THR
2	B	149	VAL
2	B	158	SER
2	B	172	LEU
2	B	176	SER
2	B	190	THR
2	B	192	ILE
2	B	201	ASN

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

Mol	Chain	Res	Type
1	H	39	GLN
2	L	37	GLN
2	L	196	ASN
1	A	54	ASN
1	A	62	GLN

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Mol	Chain	Res	Type
1	A	146	GLN
1	A	160	ASN
2	B	36	GLN
2	B	196	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](#)

2 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	$\# Z > 2$
3	GOL	B	301	-	5,5,5	0.37	0	5,5,5	0.37	0
3	GOL	H	301	-	5,5,5	0.39	0	5,5,5	0.27	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
3	GOL	B	301	-	-	2/4/4/4	-
3	GOL	H	301	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	301	GOL	O1-C1-C2-C3
3	B	301	GOL	O1-C1-C2-O2

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	234/245 (95%)	0.62	16 (6%)	23 20	32, 66, 130, 154	24 (10%)
1	H	234/245 (95%)	0.61	12 (5%)	33 27	31, 70, 106, 127	21 (8%)
2	B	212/213 (99%)	0.27	9 (4%)	40 32	24, 57, 147, 253	4 (1%)
2	L	210/213 (98%)	0.37	11 (5%)	33 27	27, 54, 130, 180	5 (2%)
All	All	890/916 (97%)	0.48	48 (5%)	31 25	24, 62, 129, 253	54 (6%)

All (48) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	154	VAL	4.1
2	B	3	GLY	4.0
2	B	186	LEU	3.5
1	A	173	ASP	3.4
1	A	233	ARG	3.2
2	B	2	PRO	3.2
2	L	111	ALA	3.1
1	A	223	LEU	3.1
2	L	126	LYS	3.1
1	H	192	ASP	3.1
2	L	131	GLY	3.1
1	H	189	ASP	3.0
1	A	195	TYR	2.9
2	B	135	LEU	2.9
1	A	213	VAL	2.7
1	H	188	GLN	2.7
1	H	166	ALA	2.7
2	L	2	PRO	2.7
1	A	221	GLN	2.7
2	L	157	THR	2.6
1	H	176	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	214	TYR	2.6
2	L	156	LEU	2.6
2	B	128	THR	2.5
1	A	203	LEU	2.5
1	A	204	SER	2.4
1	A	208	TYR	2.4
1	A	196	SER	2.4
1	A	172	VAL	2.3
2	B	187	GLY	2.3
1	A	140	PHE	2.3
1	A	197	LEU	2.3
2	B	134	ALA	2.3
1	A	190	SER	2.2
2	B	156	LEU	2.2
2	L	123	PRO	2.2
2	L	186	LEU	2.2
1	H	180	ASN	2.2
2	L	210	PRO	2.2
1	H	205	LYS	2.2
1	H	209	GLU	2.1
2	L	189	GLN	2.1
1	H	174	ASN	2.1
1	H	127	VAL	2.1
1	H	154	VAL	2.1
2	L	113	THR	2.1
1	H	190	SER	2.0
2	B	190	THR	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
3	GOL	B	301	6/6	0.92	0.12	47,49,51,54	0
3	GOL	H	301	6/6	0.94	0.09	43,44,45,45	0

6.5 Other polymers [i](#)

There are no such residues in this entry.