Full wwPDB X-ray Structure Validation Report ⓘ

Nov 17, 2024 – 01:53 PM EST

PDB ID	:	4O3W
Title	:	Crystal structure of the vaccine antigen Transferrin Binding Protein B (TbpB) mutant Tyr-63-Ala from Actinobacillus suis H57
Authors	:	Calmettes, C.; Yu, R.H.; Schryvers, A.B.; Moraes, T.F.
Deposited on	:	2013-12-18
Resolution	:	2.10 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:

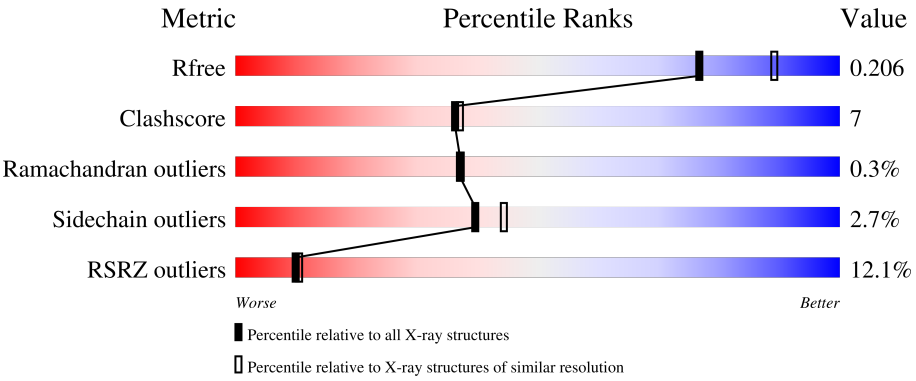
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.10 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}	164625	6234 (2.10-2.10)
Clashscore	180529	6893 (2.10-2.10)
Ramachandran outliers	177936	6839 (2.10-2.10)
Sidechain outliers	177891	6840 (2.10-2.10)
RSRZ outliers	164620	6234 (2.10-2.10)

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 <=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	572	6% 82% 12% • 5%
1	B	572	17% 79% 13% • 6%

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
2	GOL	B	601	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 9062 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.

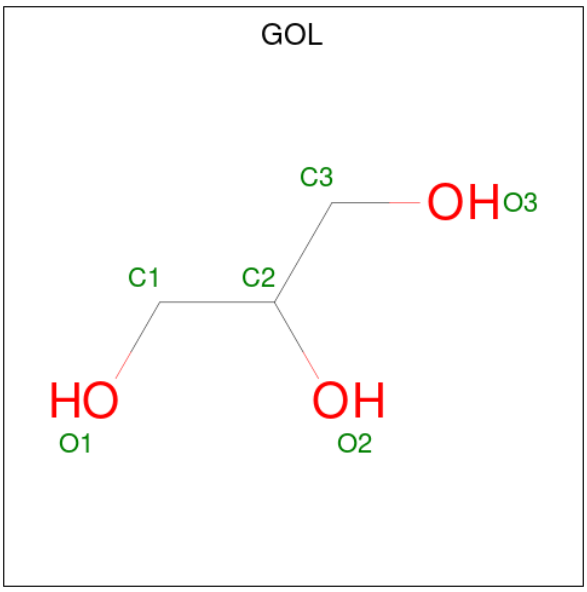
- Molecule 1 is a protein called Transferrin binding protein B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	546	Total	C	N	O	S	0	2	0
			4259	2663	736	852	8			
1	B	535	Total	C	N	O	S	0	2	0
			4171	2610	720	833	8			

There are 6 discrepancies between the modelled and reference sequences:

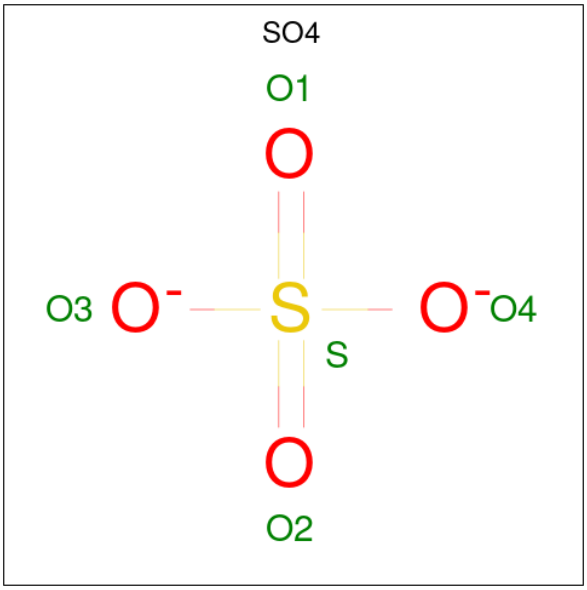
Chain	Residue	Modelled	Actual	Comment	Reference
A	6	GLY	-	expression tag	UNP Q83UA7
A	7	SER	-	expression tag	UNP Q83UA7
A	63	ALA	PHE	engineered mutation	UNP Q83UA7
B	6	GLY	-	expression tag	UNP Q83UA7
B	7	SER	-	expression tag	UNP Q83UA7
B	63	ALA	PHE	engineered mutation	UNP Q83UA7

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



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	B	1	Total C O 6 3 3	0	0

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total O S 5 4 1	0	0

- Molecule 4 is water.

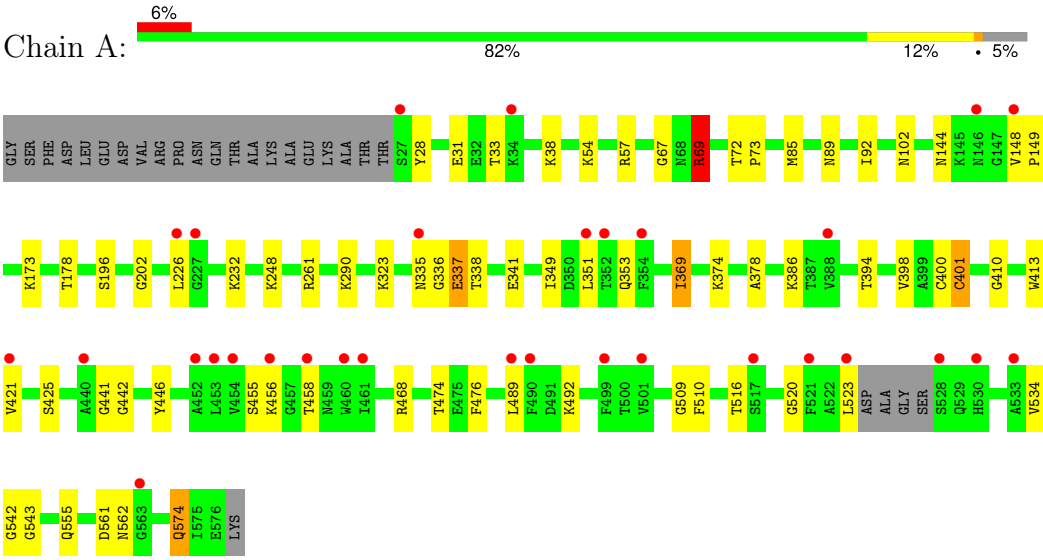
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	345	Total O 345 345	0	0
4	B	264	Total O 264 264	0	0

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.

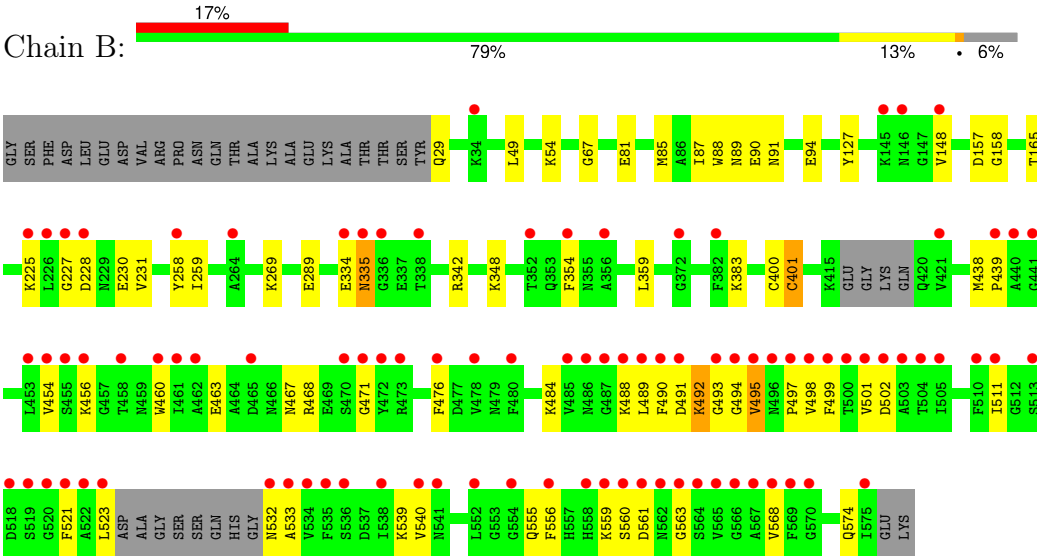
• Molecule 1: Transferrin binding protein B

Chain A:



• Molecule 1: Transferrin binding protein B

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	90.81Å 74.51Å 106.60Å 90.00° 105.80° 90.00°	Depositor
Resolution (Å)	46.28 – 2.10 46.28 – 2.10	Depositor EDS
% Data completeness (in resolution range)	91.4 (46.28-2.10) 91.4 (46.28-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.87 (at 2.10Å)	Xtriage
Refinement program	PHENIX 1.8.4_1496	Depositor
R, R_{free}	0.190 , 0.205 0.193 , 0.206	Depositor DCC
R_{free} test set	1851 reflections (2.53%)	wwPDB-VP
Wilson B-factor (Å^2)	28.3	Xtriage
Anisotropy	0.032	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 49.8	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	0.95	EDS
Total number of atoms	9062	wwPDB-VP
Average B, all atoms (Å^2)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.04% of the height of the origin peak. No significant pseudotranslation is detected.*

[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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, SO4

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	0/4342	0.57	1/5839 (0.0%)
1	B	0.41	0/4251	0.57	0/5718
All	All	0.42	0/8593	0.57	1/11557 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	69	ARG	NE-CZ-NH2	5.69	123.15	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4259	0	4134	50	0
1	B	4171	0	4053	69	0
2	A	12	0	16	2	0
2	B	6	0	8	7	0
3	B	5	0	0	1	0
4	A	345	0	0	13	0
4	B	264	0	0	4	0
All	All	9062	0	8211	118	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 7.

All (118) 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:B:81:GLU:HG2	4:B:925:HOH:O	1.59	1.03
1:B:494:GLY:HA2	1:B:495:VAL:HG22	1.49	0.94
1:B:89:ASN:HB2	2:B:601:GOL:H31	1.53	0.88
1:B:88:TRP:H	2:B:601:GOL:H2	1.45	0.82
1:B:81:GLU:CG	4:B:925:HOH:O	2.22	0.82
1:B:87:ILE:HB	2:B:601:GOL:H32	1.60	0.82
1:A:54:LYS:HG2	4:A:888:HOH:O	1.81	0.80
1:A:28:TYR:HB3	1:A:574:GLN:HG2	1.70	0.74
1:B:67:GLY:HA2	1:B:148:VAL:HG11	1.78	0.66
1:B:334:GLU:O	1:B:334:GLU:HG2	1.95	0.66
1:B:490:PHE:CG	1:B:491:ASP:N	2.64	0.66
1:B:334:GLU:O	1:B:335:ASN:ND2	2.29	0.65
1:B:490:PHE:CD1	1:B:491:ASP:N	2.65	0.64
1:B:148:VAL:HA	4:B:955:HOH:O	1.97	0.64
1:B:54:LYS:HZ3	1:B:158:GLY:H	1.45	0.62
1:B:54:LYS:NZ	1:B:158:GLY:H	1.97	0.61
1:A:57:ARG:NE	4:A:964:HOH:O	2.22	0.61
1:B:484:LYS:NZ	1:B:502:ASP:OD1	2.33	0.61
1:A:57:ARG:HB2	4:A:964:HOH:O	2.00	0.61
1:A:69:ARG:HG3	1:A:69:ARG:HH21	1.65	0.61
1:A:323:LYS:NZ	4:A:1031:HOH:O	2.33	0.60
1:B:335:ASN:HD22	1:B:335:ASN:C	2.05	0.60
1:A:349:ILE:HD11	1:A:555:GLN:HG3	1.83	0.59
1:B:471:GLY:HA2	1:B:492:LYS:HG2	1.84	0.59
1:A:232:LYS:NZ	4:A:962:HOH:O	2.36	0.58
1:A:57:ARG:CD	4:A:964:HOH:O	2.50	0.58
1:B:54:LYS:HE2	1:B:157:ASP:OD2	2.05	0.57
1:B:89:ASN:CB	2:B:601:GOL:H31	2.31	0.57
1:B:446:TYR:HB2	1:B:476:PHE:HB2	1.87	0.57
1:A:69:ARG:HH21	1:A:69:ARG:CG	2.17	0.56
1:B:258:TYR:HD1	3:B:602:SO4:O4	1.89	0.56
1:B:460:TRP:HZ2	1:B:491:ASP:HB2	1.70	0.56
1:B:354:PHE:HB2	1:B:559:LYS:HB2	1.89	0.55
1:A:89:ASN:HA	2:A:602:GOL:H31	1.89	0.54
1:A:54:LYS:HE2	4:A:888:HOH:O	2.07	0.54
1:A:561:ASP:OD1	1:A:561:ASP:N	2.39	0.54
1:A:351:LEU:HG	1:A:425:SER:HA	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:72:THR:HG22	1:A:73:PRO:O	2.09	0.53
1:B:383:LYS:NZ	1:B:463:GLU:HG2	2.25	0.52
1:A:369:ILE:HD13	1:A:374[A]:LYS:HG2	1.91	0.52
1:A:57:ARG:HD3	4:A:964:HOH:O	2.10	0.51
1:B:54:LYS:HD2	1:B:158:GLY:O	2.09	0.51
1:A:337:GLU:HG2	1:A:338:THR:HG23	1.93	0.51
1:A:336:GLY:HA2	1:A:338:THR:N	2.26	0.51
1:A:144:ASN:OD1	1:A:148:VAL:HG13	2.11	0.51
1:B:460:TRP:CZ2	1:B:491:ASP:HB2	2.45	0.51
1:B:560:SER:OG	1:B:561:ASP:N	2.44	0.51
1:A:178:THR:OG1	1:B:334:GLU:OE1	2.21	0.50
1:B:467:ASN:HB3	1:B:471:GLY:HA3	1.94	0.50
1:B:511:ILE:HD11	1:B:539:LYS:HE2	1.94	0.50
1:B:468:ARG:HH12	1:B:574:GLN:HE22	1.59	0.50
1:B:89:ASN:H	2:B:601:GOL:H31	1.77	0.49
1:A:474:THR:HG22	1:A:489:LEU:HG	1.95	0.49
1:B:231:VAL:HG22	1:B:259:ILE:HD13	1.94	0.49
1:A:89:ASN:N	2:A:601:GOL:O2	2.46	0.49
1:B:490:PHE:HZ	1:B:493:GLY:H	1.59	0.49
1:A:456:LYS:O	1:A:562:ASN:ND2	2.46	0.49
1:B:383:LYS:HZ1	1:B:463:GLU:HG2	1.76	0.48
1:B:454:VAL:HB	1:B:460:TRP:HB3	1.96	0.48
1:B:490:PHE:HZ	1:B:493:GLY:N	2.11	0.48
1:B:225:LYS:HD2	1:B:230:GLU:HG2	1.96	0.47
1:A:378:ALA:O	1:A:386:LYS:NZ	2.39	0.47
1:B:91:ASN:ND2	1:B:94:GLU:HB2	2.31	0.46
1:B:501:VAL:HG12	1:B:514:ALA:HB2	1.98	0.46
1:A:31:GLU:HG3	1:A:33:THR:HG23	1.98	0.46
1:A:561:ASP:HA	1:A:562:ASN:HA	1.37	0.46
1:B:456:LYS:HB2	1:B:523:LEU:HD21	1.97	0.46
1:A:173:LYS:HD3	1:A:341:GLU:HB2	1.97	0.45
1:B:87:ILE:HG22	2:B:601:GOL:H11	1.97	0.45
1:B:516:THR:HG22	1:B:517:SER:H	1.81	0.45
1:A:148:VAL:HA	4:A:1029:HOH:O	2.17	0.45
1:B:227:GLY:HA3	4:B:962:HOH:O	2.17	0.45
1:A:418:LYS:HA	1:A:419:GLN:HA	1.59	0.45
1:B:488:LYS:HB3	1:B:497:PRO:HB3	1.98	0.45
1:A:413:TRP:CD1	1:A:421:VAL:HG13	2.52	0.45
1:B:29:GLN:O	1:B:574:GLN:HG3	2.17	0.45
1:A:492:LYS:HB2	1:A:492:LYS:HE3	1.67	0.45
1:A:57:ARG:HD2	1:A:156:ILE:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:67:GLY:HA2	1:A:148:VAL:HG21	1.98	0.44
1:A:232:LYS:NZ	4:A:1032:HOH:O	2.41	0.44
1:B:540:VAL:HB	1:B:556:PHE:HB3	1.99	0.44
1:B:269:LYS:HD2	1:B:289:GLU:HG3	2.00	0.44
1:A:226:LEU:O	1:A:261:ARG:HA	2.18	0.44
1:B:456:LYS:HG2	1:B:563:GLY:HA2	1.99	0.44
1:B:49:LEU:HA	1:B:49:LEU:HD23	1.81	0.43
1:B:460:TRP:HZ2	1:B:491:ASP:CG	2.21	0.43
1:A:510:PHE:CZ	1:A:542:GLY:HA3	2.53	0.43
1:B:498:VAL:HG23	1:B:499:PHE:HD1	1.83	0.43
1:A:535:PHE:CD1	1:A:538:ILE:HD11	2.53	0.43
1:A:400:CYS:HA	1:A:401:CYS:HA	1.84	0.43
1:B:456:LYS:NZ	1:B:533:ALA:HA	2.33	0.43
1:A:102:ASN:ND2	4:A:875:HOH:O	2.36	0.43
1:B:90:GLU:H	1:B:90:GLU:HG2	1.54	0.43
1:A:441:GLY:HA2	1:A:442:GLY:HA2	1.82	0.42
1:B:460:TRP:HZ2	1:B:491:ASP:CB	2.30	0.42
1:A:38:LYS:HB2	1:A:38:LYS:HE2	1.84	0.42
1:B:348:LYS:HB2	1:B:359:LEU:HD21	2.01	0.42
1:B:521:PHE:O	1:B:532:ASN:HB2	2.20	0.42
1:B:225:LYS:HZ2	1:B:228:ASP:HA	1.85	0.42
1:A:148:VAL:HA	1:A:149:PRO:HD3	1.89	0.41
1:B:127:TYR:O	1:B:165:THR:HG22	2.19	0.41
1:B:438:MET:HA	1:B:439:PRO:HD3	1.87	0.41
1:B:450:TRP:CE3	1:B:489:LEU:HD23	2.55	0.41
1:B:488:LYS:HG2	1:B:497:PRO:HG3	2.02	0.41
1:B:400:CYS:HA	1:B:401:CYS:HA	1.87	0.41
1:B:456:LYS:HB2	1:B:523:LEU:HD11	2.02	0.41
1:A:446:TYR:HB2	1:A:476:PHE:HB2	2.03	0.41
1:A:398:VAL:O	1:A:410:GLY:HA3	2.21	0.41
1:B:490:PHE:CZ	1:B:492:LYS:N	2.89	0.41
1:A:248:LYS:HE2	4:A:980:HOH:O	2.20	0.41
1:A:57:ARG:NH2	4:A:805:HOH:O	2.50	0.40
1:B:170:GLU:HG2	1:B:342:ARG:HG3	2.03	0.40
1:A:509:GLY:HA2	1:A:543:GLY:HA2	2.03	0.40
1:B:335:ASN:ND2	1:B:335:ASN:C	2.73	0.40
1:A:54:LYS:HG3	1:A:159:TYR:CE1	2.57	0.40
1:A:520:GLY:HA3	1:A:534:VAL:HG22	2.04	0.40
1:B:450:TRP:HB2	1:B:568:VAL:O	2.21	0.40
1:B:89:ASN:H	2:B:601:GOL:C3	2.34	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	544/572 (95%)	521 (96%)	22 (4%)	1 (0%)	44	45
1	B	531/572 (93%)	502 (94%)	27 (5%)	2 (0%)	30	29
All	All	1075/1144 (94%)	1023 (95%)	49 (5%)	3 (0%)	37	37

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	495	VAL
1	A	202	GLY
1	B	202	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	453/471 (96%)	436 (96%)	17 (4%)	28	30
1	B	444/471 (94%)	437 (98%)	7 (2%)	58	65
All	All	897/942 (95%)	873 (97%)	24 (3%)	40	44

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	69	ARG
1	A	85	MET
1	A	92	ILE

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Mol	Chain	Res	Type
1	A	196	SER
1	A	290	LYS
1	A	335	ASN
1	A	337	GLU
1	A	353	GLN
1	A	369	ILE
1	A	394	THR
1	A	401	CYS
1	A	455	SER
1	A	458	THR
1	A	468	ARG
1	A	516	THR
1	A	523	LEU
1	A	574	GLN
1	B	85	MET
1	B	335	ASN
1	B	401	CYS
1	B	450	TRP
1	B	492	LYS
1	B	516	THR
1	B	555	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	246	ASN
1	A	381	ASN
1	A	414	GLN
1	A	529	GLN
1	A	557	HIS
1	B	29	GLN
1	B	229	ASN
1	B	262	ASN
1	B	335	ASN
1	B	391	ASN
1	B	574	GLN

5.3.3 RNA

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)

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	$\#\|Z\| > 2$
2	GOL	A	602	-	5,5,5	0.33	0	5,5,5	0.32	0
2	GOL	A	601	-	5,5,5	0.49	0	5,5,5	0.23	0
3	SO4	B	602	-	4,4,4	0.32	0	6,6,6	0.24	0
2	GOL	B	601	-	5,5,5	0.45	0	5,5,5	0.91	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	602	-	-	2/4/4/4	-
2	GOL	A	601	-	-	2/4/4/4	-
2	GOL	B	601	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	601	GOL	O1-C1-C2-C3
2	A	602	GOL	O1-C1-C2-C3
2	A	601	GOL	O1-C1-C2-O2
2	A	602	GOL	O1-C1-C2-O2

There are no ring outliers.

4 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	602	GOL	1	0
2	A	601	GOL	1	0
3	B	602	SO4	1	0
2	B	601	GOL	7	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^{th} 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	546/572 (95%)	0.19	33 (6%) 29 31	13, 38, 81, 125	2 (0%)
1	B	535/572 (93%)	0.68	98 (18%) 4 5	18, 46, 109, 134	2 (0%)
All	All	1081/1144 (94%)	0.43	131 (12%) 10 10	13, 42, 94, 134	4 (0%)

All (131) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	523	LEU	6.2
1	B	490	PHE	6.1
1	B	501	VAL	5.4
1	B	533	ALA	5.2
1	B	535	PHE	4.6
1	B	523	LEU	4.5
1	A	440	ALA	4.4
1	B	499	PHE	4.4
1	B	565	VAL	4.3
1	B	495	VAL	4.1
1	B	485	VAL	4.0
1	B	575	ILE	4.0
1	B	534	VAL	3.9
1	B	487	GLY	3.9
1	A	458	THR	3.8
1	B	564	SER	3.8
1	B	498	VAL	3.7
1	A	489	LEU	3.7
1	B	521	PHE	3.7
1	B	453	LEU	3.7
1	B	540	VAL	3.6
1	B	454	VAL	3.6
1	B	522	ALA	3.5
1	B	566	GLY	3.5

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Mol	Chain	Res	Type	RSRZ
1	B	516	THR	3.5
1	B	462	ALA	3.4
1	B	421	VAL	3.4
1	A	563	GLY	3.4
1	B	560	SER	3.4
1	B	505	ILE	3.3
1	A	460	TRP	3.3
1	B	461	ILE	3.3
1	B	538	ILE	3.3
1	B	476	PHE	3.3
1	B	510	PHE	3.2
1	B	440	ALA	3.2
1	B	450	TRP	3.2
1	A	521	PHE	3.2
1	B	145	LYS	3.2
1	A	453	LEU	3.1
1	B	458	THR	3.1
1	B	500	THR	3.1
1	B	563	GLY	3.0
1	B	561	ASP	3.0
1	B	556	PHE	3.0
1	B	441	GLY	3.0
1	B	511	ILE	2.9
1	B	558	HIS	2.9
1	A	454	VAL	2.9
1	B	478	VAL	2.9
1	B	489	LEU	2.9
1	B	354	PHE	2.9
1	B	470	SER	2.9
1	A	499	PHE	2.8
1	B	480	PHE	2.8
1	B	519	SER	2.8
1	B	336	GLY	2.8
1	B	567	ALA	2.7
1	B	569	PHE	2.7
1	A	27	SER	2.7
1	A	148	VAL	2.7
1	A	227	GLY	2.7
1	B	520	GLY	2.7
1	B	472	TYR	2.6
1	B	497	PRO	2.6
1	A	352	THR	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	528	SER	2.6
1	B	494	GLY	2.6
1	A	452	ALA	2.6
1	B	225	LYS	2.6
1	B	338	THR	2.6
1	A	461	ILE	2.6
1	B	455	SER	2.6
1	B	554	GLY	2.5
1	A	421	VAL	2.5
1	B	504	THR	2.5
1	A	335	ASN	2.5
1	B	562	ASN	2.5
1	B	517	SER	2.5
1	B	514	ALA	2.5
1	B	334	GLU	2.5
1	B	226	LEU	2.5
1	B	465	ASP	2.5
1	B	502	ASP	2.5
1	B	471	GLY	2.5
1	B	460	TRP	2.5
1	B	491	ASP	2.4
1	B	496	ASN	2.4
1	A	535	PHE	2.4
1	B	552	LEU	2.4
1	A	456	LYS	2.4
1	A	530	HIS	2.4
1	B	570	GLY	2.4
1	A	226	LEU	2.4
1	A	533	ALA	2.4
1	B	356	ALA	2.4
1	B	34	LYS	2.4
1	A	517	SER	2.4
1	A	354	PHE	2.4
1	B	493	GLY	2.4
1	B	503	ALA	2.3
1	B	352	THR	2.3
1	B	148	VAL	2.3
1	B	456	LYS	2.3
1	B	227	GLY	2.2
1	B	382	PHE	2.2
1	B	488	LYS	2.2
1	B	486	ASN	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	446	TYR	2.2
1	B	264	ALA	2.2
1	B	513	SER	2.2
1	A	146	ASN	2.2
1	A	538	ILE	2.2
1	A	351	LEU	2.1
1	B	146	ASN	2.1
1	B	335	ASN	2.1
1	B	541	ASN	2.1
1	B	473	ARG	2.1
1	A	501	VAL	2.1
1	B	372	GLY	2.1
1	B	258	TYR	2.1
1	A	34	LYS	2.1
1	B	559	LYS	2.1
1	B	518	ASP	2.1
1	A	490	PHE	2.1
1	B	532	ASN	2.0
1	A	388	VAL	2.0
1	B	228	ASP	2.0
1	B	536	SER	2.0
1	B	439	PRO	2.0
1	B	568	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, 95^{th} 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(Å^2)	Q<0.9

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	SO4	B	602	5/5	0.60	0.13	94,96,129,180	0
2	GOL	B	601	6/6	0.79	0.14	45,46,59,60	0
2	GOL	A	602	6/6	0.79	0.13	57,60,63,76	0
2	GOL	A	601	6/6	0.87	0.15	38,47,50,50	0

6.5 Other polymers (i)

There are no such residues in this entry.