



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 27, 2024 – 01:19 AM EDT

PDB ID : 4M01
Title : N terminal fragment(residues 245-575) of binding region of SraP
Authors : Yang, Y.H.; Jiang, Y.L.; Zhang, J.; Wang, L.; Chen, Y.; Zhou, C.Z.
Deposited on : 2013-08-01
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)
Xtrriage (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

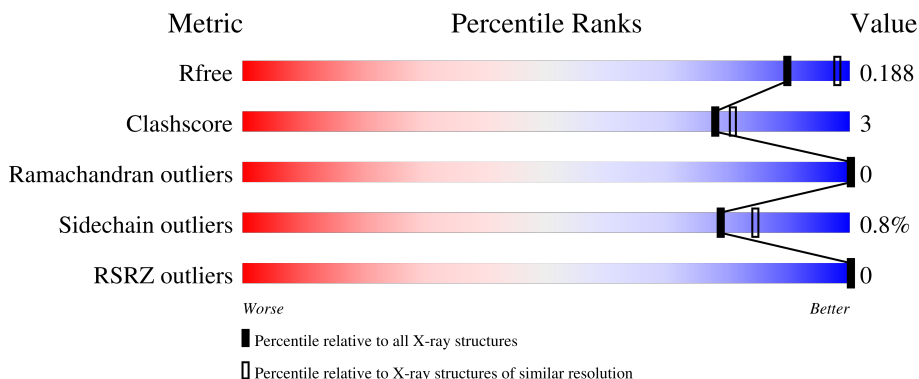
1 Overall quality at a glance

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 $\leq 5\%$. 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	365	 85% 12%
1	B	365	 85% 12%
1	C	365	 83% 12%
1	D	365	 81% 7% 12%

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
3	GOL	B	603	-	-	X	-

2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 11034 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 Serine-rich adhesin for platelets.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	Se			
1	A	321	2388	1479	400	505	4	0	0	0
1	B	321	2388	1479	400	505	4	0	0	0
1	C	322	2395	1484	401	506	4	0	0	0
1	D	322	2395	1484	401	506	4	0	0	0

There are 136 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	211	MSE	-	expression tag	UNP Q2FUW1
A	212	GLY	-	expression tag	UNP Q2FUW1
A	213	SER	-	expression tag	UNP Q2FUW1
A	214	SER	-	expression tag	UNP Q2FUW1
A	215	HIS	-	expression tag	UNP Q2FUW1
A	216	HIS	-	expression tag	UNP Q2FUW1
A	217	HIS	-	expression tag	UNP Q2FUW1
A	218	HIS	-	expression tag	UNP Q2FUW1
A	219	HIS	-	expression tag	UNP Q2FUW1
A	220	HIS	-	expression tag	UNP Q2FUW1
A	221	SER	-	expression tag	UNP Q2FUW1
A	222	SER	-	expression tag	UNP Q2FUW1
A	223	GLY	-	expression tag	UNP Q2FUW1
A	224	LEU	-	expression tag	UNP Q2FUW1
A	225	VAL	-	expression tag	UNP Q2FUW1
A	226	PRO	-	expression tag	UNP Q2FUW1
A	227	ARG	-	expression tag	UNP Q2FUW1
A	228	GLY	-	expression tag	UNP Q2FUW1
A	229	SER	-	expression tag	UNP Q2FUW1
A	230	HIS	-	expression tag	UNP Q2FUW1
A	231	MSE	-	expression tag	UNP Q2FUW1

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Chain	Residue	Modelled	Actual	Comment	Reference
A	232	ALA	-	expression tag	UNP Q2FUW1
A	233	SER	-	expression tag	UNP Q2FUW1
A	234	MSE	-	expression tag	UNP Q2FUW1
A	235	THR	-	expression tag	UNP Q2FUW1
A	236	GLY	-	expression tag	UNP Q2FUW1
A	237	GLY	-	expression tag	UNP Q2FUW1
A	238	GLN	-	expression tag	UNP Q2FUW1
A	239	GLN	-	expression tag	UNP Q2FUW1
A	240	MSE	-	expression tag	UNP Q2FUW1
A	241	GLY	-	expression tag	UNP Q2FUW1
A	242	ARG	-	expression tag	UNP Q2FUW1
A	243	GLY	-	expression tag	UNP Q2FUW1
A	244	SER	-	expression tag	UNP Q2FUW1
B	211	MSE	-	expression tag	UNP Q2FUW1
B	212	GLY	-	expression tag	UNP Q2FUW1
B	213	SER	-	expression tag	UNP Q2FUW1
B	214	SER	-	expression tag	UNP Q2FUW1
B	215	HIS	-	expression tag	UNP Q2FUW1
B	216	HIS	-	expression tag	UNP Q2FUW1
B	217	HIS	-	expression tag	UNP Q2FUW1
B	218	HIS	-	expression tag	UNP Q2FUW1
B	219	HIS	-	expression tag	UNP Q2FUW1
B	220	HIS	-	expression tag	UNP Q2FUW1
B	221	SER	-	expression tag	UNP Q2FUW1
B	222	SER	-	expression tag	UNP Q2FUW1
B	223	GLY	-	expression tag	UNP Q2FUW1
B	224	LEU	-	expression tag	UNP Q2FUW1
B	225	VAL	-	expression tag	UNP Q2FUW1
B	226	PRO	-	expression tag	UNP Q2FUW1
B	227	ARG	-	expression tag	UNP Q2FUW1
B	228	GLY	-	expression tag	UNP Q2FUW1
B	229	SER	-	expression tag	UNP Q2FUW1
B	230	HIS	-	expression tag	UNP Q2FUW1
B	231	MSE	-	expression tag	UNP Q2FUW1
B	232	ALA	-	expression tag	UNP Q2FUW1
B	233	SER	-	expression tag	UNP Q2FUW1
B	234	MSE	-	expression tag	UNP Q2FUW1
B	235	THR	-	expression tag	UNP Q2FUW1
B	236	GLY	-	expression tag	UNP Q2FUW1
B	237	GLY	-	expression tag	UNP Q2FUW1
B	238	GLN	-	expression tag	UNP Q2FUW1
B	239	GLN	-	expression tag	UNP Q2FUW1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	240	MSE	-	expression tag	UNP Q2FUW1
B	241	GLY	-	expression tag	UNP Q2FUW1
B	242	ARG	-	expression tag	UNP Q2FUW1
B	243	GLY	-	expression tag	UNP Q2FUW1
B	244	SER	-	expression tag	UNP Q2FUW1
C	211	MSE	-	expression tag	UNP Q2FUW1
C	212	GLY	-	expression tag	UNP Q2FUW1
C	213	SER	-	expression tag	UNP Q2FUW1
C	214	SER	-	expression tag	UNP Q2FUW1
C	215	HIS	-	expression tag	UNP Q2FUW1
C	216	HIS	-	expression tag	UNP Q2FUW1
C	217	HIS	-	expression tag	UNP Q2FUW1
C	218	HIS	-	expression tag	UNP Q2FUW1
C	219	HIS	-	expression tag	UNP Q2FUW1
C	220	HIS	-	expression tag	UNP Q2FUW1
C	221	SER	-	expression tag	UNP Q2FUW1
C	222	SER	-	expression tag	UNP Q2FUW1
C	223	GLY	-	expression tag	UNP Q2FUW1
C	224	LEU	-	expression tag	UNP Q2FUW1
C	225	VAL	-	expression tag	UNP Q2FUW1
C	226	PRO	-	expression tag	UNP Q2FUW1
C	227	ARG	-	expression tag	UNP Q2FUW1
C	228	GLY	-	expression tag	UNP Q2FUW1
C	229	SER	-	expression tag	UNP Q2FUW1
C	230	HIS	-	expression tag	UNP Q2FUW1
C	231	MSE	-	expression tag	UNP Q2FUW1
C	232	ALA	-	expression tag	UNP Q2FUW1
C	233	SER	-	expression tag	UNP Q2FUW1
C	234	MSE	-	expression tag	UNP Q2FUW1
C	235	THR	-	expression tag	UNP Q2FUW1
C	236	GLY	-	expression tag	UNP Q2FUW1
C	237	GLY	-	expression tag	UNP Q2FUW1
C	238	GLN	-	expression tag	UNP Q2FUW1
C	239	GLN	-	expression tag	UNP Q2FUW1
C	240	MSE	-	expression tag	UNP Q2FUW1
C	241	GLY	-	expression tag	UNP Q2FUW1
C	242	ARG	-	expression tag	UNP Q2FUW1
C	243	GLY	-	expression tag	UNP Q2FUW1
C	244	SER	-	expression tag	UNP Q2FUW1
D	211	MSE	-	expression tag	UNP Q2FUW1
D	212	GLY	-	expression tag	UNP Q2FUW1
D	213	SER	-	expression tag	UNP Q2FUW1

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Chain	Residue	Modelled	Actual	Comment	Reference
D	214	SER	-	expression tag	UNP Q2FUW1
D	215	HIS	-	expression tag	UNP Q2FUW1
D	216	HIS	-	expression tag	UNP Q2FUW1
D	217	HIS	-	expression tag	UNP Q2FUW1
D	218	HIS	-	expression tag	UNP Q2FUW1
D	219	HIS	-	expression tag	UNP Q2FUW1
D	220	HIS	-	expression tag	UNP Q2FUW1
D	221	SER	-	expression tag	UNP Q2FUW1
D	222	SER	-	expression tag	UNP Q2FUW1
D	223	GLY	-	expression tag	UNP Q2FUW1
D	224	LEU	-	expression tag	UNP Q2FUW1
D	225	VAL	-	expression tag	UNP Q2FUW1
D	226	PRO	-	expression tag	UNP Q2FUW1
D	227	ARG	-	expression tag	UNP Q2FUW1
D	228	GLY	-	expression tag	UNP Q2FUW1
D	229	SER	-	expression tag	UNP Q2FUW1
D	230	HIS	-	expression tag	UNP Q2FUW1
D	231	MSE	-	expression tag	UNP Q2FUW1
D	232	ALA	-	expression tag	UNP Q2FUW1
D	233	SER	-	expression tag	UNP Q2FUW1
D	234	MSE	-	expression tag	UNP Q2FUW1
D	235	THR	-	expression tag	UNP Q2FUW1
D	236	GLY	-	expression tag	UNP Q2FUW1
D	237	GLY	-	expression tag	UNP Q2FUW1
D	238	GLN	-	expression tag	UNP Q2FUW1
D	239	GLN	-	expression tag	UNP Q2FUW1
D	240	MSE	-	expression tag	UNP Q2FUW1
D	241	GLY	-	expression tag	UNP Q2FUW1
D	242	ARG	-	expression tag	UNP Q2FUW1
D	243	GLY	-	expression tag	UNP Q2FUW1
D	244	SER	-	expression tag	UNP Q2FUW1

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Ca 1 1	0	0
2	B	1	Total Ca 1 1	0	0
2	C	1	Total Ca 1 1	0	0
2	D	1	Total Ca 1 1	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



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


- Molecule 4 is water.

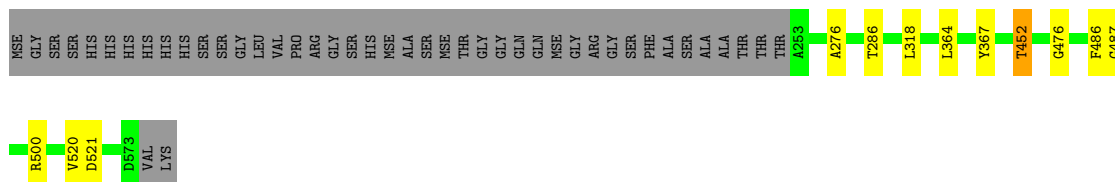
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	369	Total O 369 369	0	0
4	B	358	Total O 358 358	0	0
4	C	349	Total O 349 349	0	0
4	D	352	Total O 352 352	0	0

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.

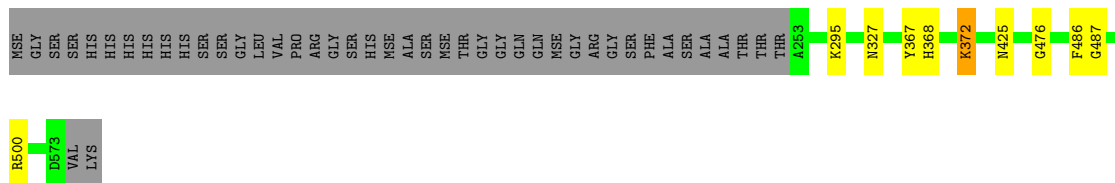
- Molecule 1: Serine-rich adhesin for platelets

Chain A:  85% 12%




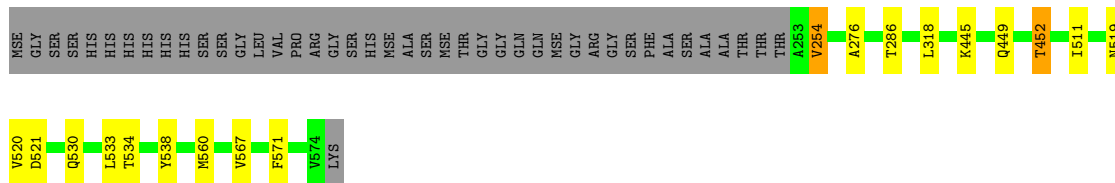
- Molecule 1: Serine-rich adhesin for platelets

Chain B:  85% 12%




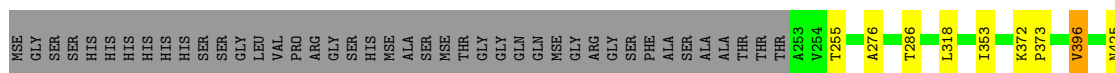
- Molecule 1: Serine-rich adhesin for platelets

Chain C:  83% 12%



- Molecule 1: Serine-rich adhesin for platelets

Chain D:  81% 7% 12%





4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	135.70Å 179.64Å 71.51Å 90.00° 89.77° 90.00°	Depositor
Resolution (Å)	44.91 – 2.10 44.91 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.9 (44.91-2.10) 98.9 (44.91-2.10)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	0.16	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.79 (at 2.10Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.7.1_743)	Depositor
R, R_{free}	0.158 , 0.195 0.152 , 0.188	Depositor DCC
R_{free} test set	4966 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å ²)	21.6	Xtrriage
Anisotropy	0.651	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 33.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.440 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	11034	wwPDB-VP
Average B, all atoms (Å ²)	24.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.72% 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, CA

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	0.56	0/2428	0.65	0/3299
1	B	0.55	0/2428	0.66	1/3299 (0.0%)
1	C	0.54	0/2435	0.64	0/3309
1	D	0.53	0/2435	0.65	0/3309
All	All	0.54	0/9726	0.65	1/13216 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	425	ASN	N-CA-C	5.22	125.11	111.00

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	2388	0	2260	8	0
1	B	2388	0	2260	12	0
1	C	2395	0	2269	10	0
1	D	2395	0	2269	18	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	1	0	0	0	0
2	D	1	0	0	0	0
3	A	12	0	16	3	0
3	B	12	0	16	6	0
3	C	6	0	8	0	0
3	D	6	0	8	2	0
4	A	369	0	0	3	0
4	B	358	0	0	9	0
4	C	349	0	0	2	0
4	D	352	0	0	1	0
All	All	11034	0	9106	51	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 3.

All (51) 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:530:GLN:HB3	4:C:1049:HOH:O	1.73	0.89
3:A:603:GOL:H2	4:A:945:HOH:O	1.73	0.87
1:D:536:LYS:HG2	1:D:537:GLY:H	1.44	0.82
1:B:327:ASN:OD1	4:B:1018:HOH:O	2.08	0.70
1:C:452:THR:HG22	4:C:948:HOH:O	1.94	0.67
1:B:500:ARG:NH1	4:B:1014:HOH:O	2.17	0.66
1:B:368:HIS:O	3:B:603:GOL:H2	1.96	0.65
1:A:367:TYR:CZ	3:A:603:GOL:H31	2.33	0.64
1:B:367:TYR:CZ	3:B:603:GOL:H11	2.33	0.63
3:B:603:GOL:H32	4:B:969:HOH:O	1.99	0.63
1:B:295:LYS:NZ	4:B:1029:HOH:O	2.33	0.60
1:A:452:THR:HG21	4:A:953:HOH:O	2.04	0.56
1:D:536:LYS:HG2	1:D:537:GLY:N	2.16	0.56
1:B:372:LYS:HD2	4:B:1036:HOH:O	2.05	0.56
1:D:477:GLY:H	3:D:602:GOL:H11	1.72	0.54
3:B:603:GOL:H12	4:B:969:HOH:O	2.08	0.53
1:B:372:LYS:HD3	4:B:1055:HOH:O	2.09	0.53
1:D:531:SER:HA	1:D:534:THR:HG22	1.91	0.52
1:D:574:VAL:O	1:D:574:VAL:HG23	2.10	0.51
1:C:445:LYS:HA	1:C:449:GLN:O	2.13	0.48
1:C:511:ILE:HD13	1:C:533:LEU:HD21	1.96	0.47
1:C:533:LEU:HD12	1:C:571:PHE:CZ	2.50	0.46
1:D:445:LYS:HA	1:D:449:GLN:O	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:327:ASN:ND2	4:B:899:HOH:O	2.05	0.46
1:D:353:ILE:HG21	1:D:396:VAL:HG22	1.98	0.45
1:B:367:TYR:CE2	3:B:603:GOL:H11	2.51	0.45
1:C:520:VAL:O	1:C:521:ASP:HB2	2.16	0.45
1:C:254:VAL:HG22	1:C:254:VAL:O	2.17	0.44
1:A:486:PHE:HA	1:A:487:GLY:HA3	1.87	0.43
1:D:477:GLY:H	3:D:602:GOL:C1	2.31	0.43
1:A:476:GLY:HA3	3:A:602:GOL:O3	2.18	0.43
1:D:539:ASN:HA	4:D:810:HOH:O	2.18	0.43
1:A:500:ARG:NH1	4:A:1005:HOH:O	2.51	0.43
1:D:372:LYS:HA	1:D:373:PRO:HD3	1.83	0.43
1:D:486:PHE:HA	1:D:487:GLY:HA3	1.83	0.43
1:A:276:ALA:HA	1:A:286:THR:O	2.19	0.43
1:B:372:LYS:HE2	4:B:1033:HOH:O	2.19	0.42
1:B:476:GLY:HA3	3:B:602:GOL:O1	2.19	0.42
1:D:276:ALA:HA	1:D:286:THR:O	2.19	0.42
1:B:486:PHE:HA	1:B:487:GLY:HA3	1.79	0.42
1:D:574:VAL:O	1:D:574:VAL:CG2	2.68	0.42
1:A:318:LEU:HD11	1:A:364:LEU:HB3	2.02	0.42
1:A:520:VAL:O	1:A:521:ASP:HB2	2.19	0.41
1:C:276:ALA:HA	1:C:286:THR:O	2.20	0.41
1:C:534:THR:HA	1:C:538:TYR:O	2.20	0.41
1:D:255:THR:HB	1:D:564:GLY:C	2.41	0.41
1:D:425:ASN:O	1:D:426:ASN:HB2	2.19	0.41
1:D:520:VAL:O	1:D:521:ASP:HB2	2.21	0.41
1:D:531:SER:O	1:D:534:THR:HG22	2.21	0.41
1:C:519:ASN:O	1:C:560:MSE:HB2	2.21	0.40
1:D:429:GLN:HB3	1:D:447:ALA:HB2	2.04	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	319/365 (87%)	315 (99%)	4 (1%)	0	100	100
1	B	319/365 (87%)	314 (98%)	5 (2%)	0	100	100
1	C	320/365 (88%)	317 (99%)	3 (1%)	0	100	100
1	D	320/365 (88%)	316 (99%)	4 (1%)	0	100	100
All	All	1278/1460 (88%)	1262 (99%)	16 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	257/282 (91%)	256 (100%)	1 (0%)	89	93
1	B	257/282 (91%)	256 (100%)	1 (0%)	89	93
1	C	258/282 (92%)	254 (98%)	4 (2%)	58	65
1	D	258/282 (92%)	256 (99%)	2 (1%)	79	84
All	All	1030/1128 (91%)	1022 (99%)	8 (1%)	79	84

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	452	THR
1	B	372	LYS
1	C	254	VAL
1	C	318	LEU
1	C	452	THR
1	C	567	VAL
1	D	318	LEU
1	D	396	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	325	HIS

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](#)

Of 10 ligands modelled in this entry, 4 are monoatomic - leaving 6 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	GOL	B	602	-	5,5,5	0.49	0	5,5,5	0.65	0
3	GOL	A	602	-	5,5,5	0.49	0	5,5,5	0.89	0
3	GOL	B	603	-	5,5,5	0.37	0	5,5,5	0.86	0
3	GOL	C	602	-	5,5,5	0.44	0	5,5,5	0.87	0
3	GOL	D	602	-	5,5,5	0.51	0	5,5,5	0.71	0
3	GOL	A	603	-	5,5,5	0.38	0	5,5,5	0.51	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	602	-	-	2/4/4/4	-
3	GOL	A	602	-	-	4/4/4/4	-
3	GOL	B	603	-	-	1/4/4/4	-
3	GOL	C	602	-	-	2/4/4/4	-
3	GOL	D	602	-	-	1/4/4/4	-
3	GOL	A	603	-	-	4/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	603	GOL	O1-C1-C2-C3
3	A	603	GOL	C1-C2-C3-O3
3	B	602	GOL	O1-C1-C2-C3
3	A	602	GOL	O1-C1-C2-O2
3	A	602	GOL	O1-C1-C2-C3
3	C	602	GOL	O1-C1-C2-C3
3	D	602	GOL	O1-C1-C2-C3
3	A	603	GOL	O2-C2-C3-O3
3	A	603	GOL	O1-C1-C2-O2
3	B	602	GOL	O1-C1-C2-O2
3	A	602	GOL	O2-C2-C3-O3
3	B	603	GOL	O1-C1-C2-O2
3	C	602	GOL	O1-C1-C2-O2
3	A	602	GOL	C1-C2-C3-O3

There are no ring outliers.

5 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	602	GOL	1	0
3	A	602	GOL	1	0
3	B	603	GOL	5	0
3	D	602	GOL	2	0
3	A	603	GOL	2	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	A	317/365 (86%)	-1.68	0 100 100	13, 20, 39, 50	0
1	B	317/365 (86%)	-1.69	0 100 100	13, 20, 38, 49	0
1	C	318/365 (87%)	-1.66	0 100 100	14, 21, 41, 55	0
1	D	318/365 (87%)	-1.65	0 100 100	14, 21, 40, 54	0
All	All	1270/1460 (86%)	-1.67	0 100 100	13, 21, 40, 55	0

There are no RSRZ outliers to report.

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.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	GOL	A	603	6/6	0.98	0.04	28,32,33,34	0
3	GOL	A	602	6/6	0.99	0.04	20,29,31,32	0
3	GOL	B	602	6/6	0.99	0.03	19,26,31,33	0
3	GOL	B	603	6/6	0.99	0.04	27,31,33,34	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	GOL	D	602	6/6	0.99	0.04	22,26,33,41	0
2	CA	B	601	1/1	1.00	0.01	15,15,15,15	0
2	CA	C	601	1/1	1.00	0.01	18,18,18,18	0
2	CA	D	601	1/1	1.00	0.01	18,18,18,18	0
3	GOL	C	602	6/6	1.00	0.04	19,28,32,40	0
2	CA	A	601	1/1	1.00	0.01	14,14,14,14	0

6.5 Other polymers [i](#)

There are no such residues in this entry.