Full wwPDB X-ray Structure Validation Report (i)

Dec 8, 2021 – 09:39 pm GMT

PDB ID	:	7A3S
Title	:	Crystal structure of dengue 3 virus envelope glycoprotein
Authors	:	Sharma, A.; Vaney, M.C.; Guardado-Calvo, P.; Duquerroy, S.; Rouvinski, A.; Navarro-Sanchez, E.; Rey, F.A.
Deposited on	:	2020-08-18
Resolution	:	2.80 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.24
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0267
CCP4	:	7.1.010 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.24
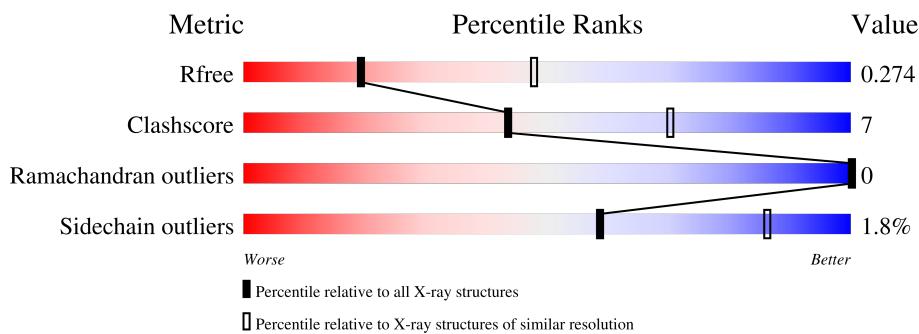
1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Rfree		0.274
Clashscore		7
Ramachandran outliers		0
Sidechain outliers		1.8%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

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%

Mol	Chain	Length	Quality of chain
1	A	394	82%　　　　　　　　15%　　•
1	B	394	80%　　　　　　　　18%　　•
1	C	394	80%　　　　　　　　16%　　•　•

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 9114 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.
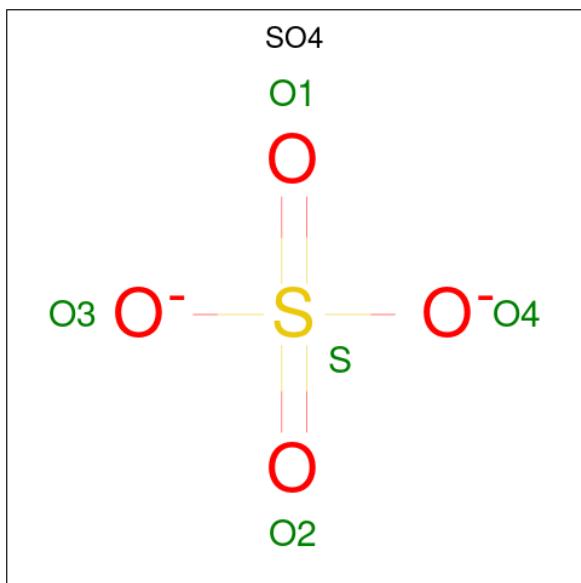
- Molecule 1 is a protein called Genome polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	384	Total	C	N	O	S	0	0	0
			2966	1871	509	565	21			
1	B	383	Total	C	N	O	S	0	2	0
			2978	1879	514	564	21			
1	C	382	Total	C	N	O	S	0	1	0
			2958	1868	509	560	21			

There are 3 discrepancies between the modelled and reference sequences:
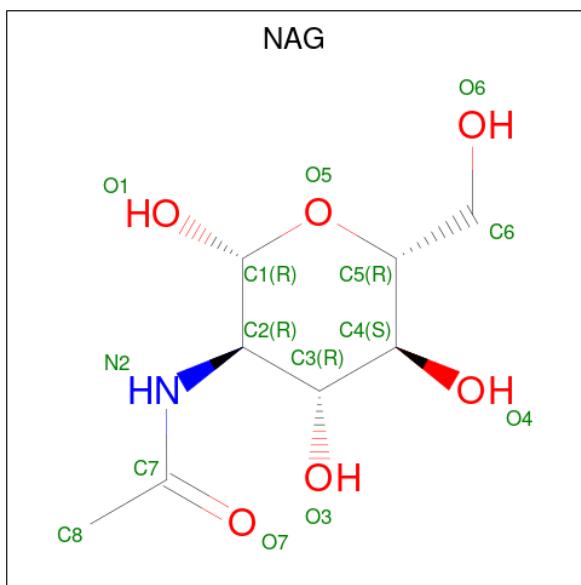
Chain	Residue	Modelled	Actual	Comment	Reference
A	394	PHE	-	expression tag	UNP P27915
B	394	PHE	-	expression tag	UNP P27915
C	394	PHE	-	expression tag	UNP P27915

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0
2	C	1	Total 5	O 4	S 1	0	0

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total 14	C 8	N 1	O 5	0	0
3	A	1	Total 14	C 8	N 1	O 5	0	0
3	B	1	Total 14	C 8	N 1	O 5	0	0
3	B	1	Total 14	C 8	N 1	O 5	0	0
3	C	1	Total 14	C 8	N 1	O 5	0	0
3	C	1	Total 14	C 8	N 1	O 5	0	0
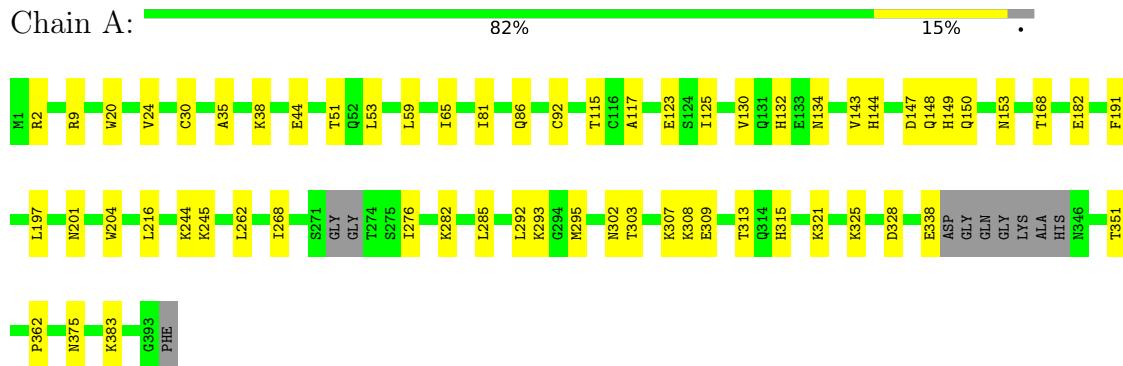
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	46	Total 46	O 46	0	0
4	B	35	Total 35	O 35	0	0
4	C	32	Total 32	O 32	0	0
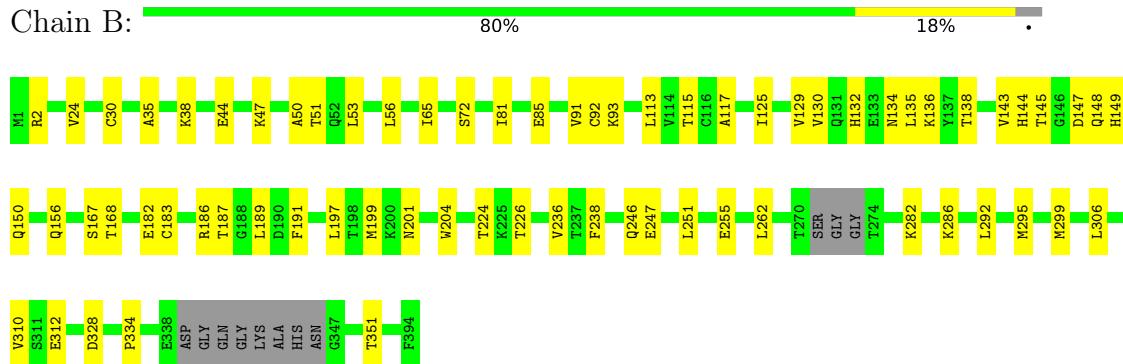
3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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. 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.
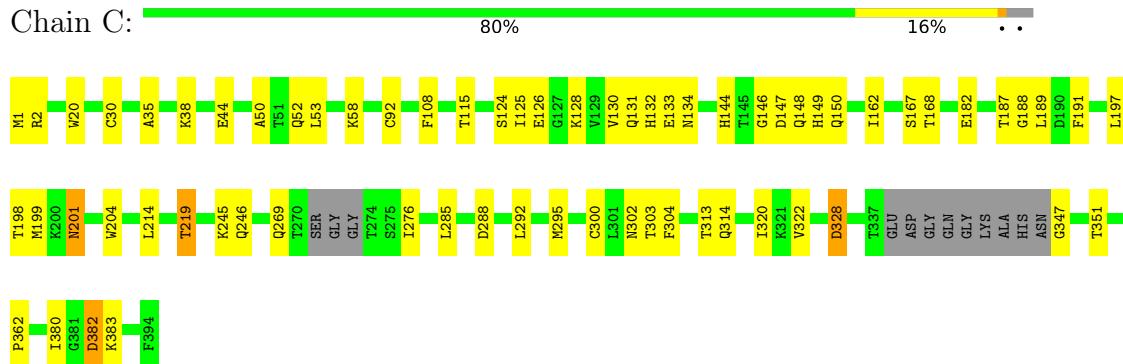
- Molecule 1: Genome polyprotein

Chain A:

- Molecule 1: Genome polyprotein

Chain B:

- Molecule 1: Genome polyprotein

Chain C:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	142.03Å 142.03Å 159.59Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.93 – 2.80 19.93 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.8 (19.93-2.80) 99.8 (19.93-2.80)	Depositor EDS
R_{merge}	0.22	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.07 (at 2.79Å)	Xtriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.233 , 0.274 0.233 , 0.274	Depositor DCC
R_{free} test set	2526 reflections (5.49%)	wwPDB-VP
Wilson B-factor (Å^2)	65.1	Xtriage
Anisotropy	0.187	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	(Not available) , (Not available)	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.46, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.000 for -h,-k,l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	9114	wwPDB-VP
Average B, all atoms (Å^2)	82.0	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 31.21 % 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 1.1488e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< \lvert L \rvert >$, $< L^2 >$ 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: SO4, NAG

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	0.28	0/3019	0.50	0/4083
1	B	0.27	0/3032	0.48	0/4100
1	C	0.28	1/3012 (0.0%)	0.49	0/4074
All	All	0.28	1/9063 (0.0%)	0.49	0/12257

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	214	LEU	C-N	-5.25	1.24	1.34

There are no bond angle outliers.

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	2966	0	2979	38	0
1	B	2978	0	2988	44	0
1	C	2958	0	2972	40	0
2	A	5	0	0	1	0
2	B	5	0	0	0	0
2	C	5	0	0	0	0
3	A	28	0	26	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	28	0	26	1	0
3	C	28	0	26	1	0
4	A	46	0	0	2	0
4	B	35	0	0	1	0
4	C	32	0	0	3	0
All	All	9114	0	9017	120	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 (120) 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:149:HIS:HB3	3:A:403:NAG:H82	1.59	0.83
1:C:147:ASP:HB3	1:C:150:GLN:HB2	1.66	0.77
1:B:143:VAL:O	1:B:150:GLN:NE2	2.23	0.71
1:C:328:ASP:OD1	1:C:328:ASP:N	2.23	0.68
1:B:145:THR:H	1:B:150:GLN:HE22	1.41	0.67
1:A:51:THR:HG22	1:A:134:ASN:HB3	1.76	0.67
1:C:149:HIS:HB3	3:C:403:NAG:H2	1.75	0.67
1:C:2:ARG:NH1	1:C:44:GLU:OE1	2.28	0.66
1:C:201:ASN:N	1:C:201:ASN:OD1	2.28	0.66
1:A:125:ILE:HD12	1:A:197:LEU:HD11	1.77	0.66
1:C:144:HIS:HB3	1:C:351:THR:HG23	1.77	0.66
1:A:143:VAL:O	1:A:150:GLN:NE2	2.29	0.65
1:A:144:HIS:HA	1:A:150:GLN:HE22	1.62	0.64
1:C:58:LYS:HB3	1:C:219:THR:HG22	1.79	0.64
1:B:144:HIS:HB3	1:B:351:THR:HG23	1.78	0.63
1:A:24:VAL:HG22	1:A:282:LYS:HG2	1.79	0.63
2:A:401:SO4:S	4:A:501:HOH:O	2.55	0.63
1:B:150:GLN:HG3	1:B:156:GLN:OE1	2.00	0.61
1:B:51:THR:O	4:B:501:HOH:O	2.16	0.61
1:B:167:SER:OG	1:B:183:CYS:O	2.18	0.61
1:C:146:GLY:H	1:C:150:GLN:HE22	1.49	0.61
1:A:144:HIS:HB3	1:A:351:THR:HG23	1.83	0.60
1:C:168:THR:HG22	1:C:182:GLU:HA	1.83	0.59
1:B:72:SER:HB3	1:B:113:LEU:HD13	1.84	0.59
1:C:131:GLN:NE2	4:C:503:HOH:O	2.36	0.59
1:A:153:ASN:ND2	3:A:403:NAG:H83	2.17	0.59
1:C:58:LYS:HE2	1:C:124:SER:OG	2.05	0.57
1:A:308:LYS:HB2	1:A:321:LYS:HD2	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:93:LYS:HD2	1:B:238:PHE:HB2	1.87	0.56
1:C:382:ASP:OD1	1:C:382:ASP:N	2.39	0.55
1:B:132:HIS:HB2	1:B:187:THR:HG21	1.88	0.55
1:B:186:ARG:HH21	1:B:282:LYS:NZ	2.05	0.55
1:C:125:ILE:HD12	1:C:197:LEU:HD11	1.89	0.53
1:C:269:GLN:HB3	1:C:276:ILE:HB	1.90	0.53
1:C:20:TRP:HA	1:C:285:LEU:O	2.09	0.52
1:A:303:THR:HG23	1:A:383:LYS:HD3	1.92	0.52
1:B:130:VAL:O	1:B:191:PHE:HB3	2.10	0.51
1:B:224:THR:HG22	1:B:226:THR:H	1.76	0.51
1:A:65:ILE:HG23	1:A:117:ALA:HB1	1.93	0.51
1:A:9:ARG:HB3	1:A:315:HIS:CE1	2.46	0.50
1:A:168:THR:HG22	1:A:182:GLU:HA	1.93	0.50
1:B:306:LEU:HD21	1:B:310:VAL:HG23	1.93	0.50
1:C:347:GLY:N	4:C:506:HOH:O	2.44	0.50
1:A:59:LEU:HD23	1:A:216:LEU:HD12	1.93	0.50
1:C:303:THR:HG22	1:C:383:LYS:HB2	1.94	0.49
1:B:182:GLU:OE1	1:B:286:LYS:NZ	2.34	0.49
1:A:147:ASP:HB3	1:A:150:GLN:HB2	1.95	0.49
1:A:313:THR:HG22	1:A:315:HIS:H	1.78	0.49
1:C:50:ALA:HB1	1:C:53:LEU:HD21	1.95	0.48
1:C:35:ALA:HB3	1:C:38:LYS:HB2	1.95	0.48
1:B:299:MET:HG3	1:B:334:PRO:HG3	1.95	0.48
1:A:81:ILE:HD13	1:B:129:VAL:HG11	1.94	0.48
1:C:199:MET:HB2	1:C:204:TRP:HZ3	1.79	0.48
1:A:148:GLN:HG3	1:A:362:PRO:HD2	1.95	0.47
1:B:65:ILE:HG23	1:B:117:ALA:HB1	1.96	0.47
1:A:2:ARG:NH1	1:A:44:GLU:OE1	2.48	0.47
1:A:244:LYS:HG2	1:A:245:LYS:HG3	1.97	0.47
1:A:328:ASP:OD1	1:A:328:ASP:N	2.36	0.47
1:B:292:LEU:HB3	1:B:295:MET:HG2	1.96	0.47
1:C:128:LYS:NZ	4:C:502:HOH:O	2.32	0.47
1:A:92:CYS:HA	1:A:115:THR:O	2.16	0.46
1:C:92:CYS:HA	1:C:115:THR:O	2.15	0.46
1:C:245:LYS:HG3	1:C:246:GLN:H	1.80	0.46
1:A:204:TRP:CE3	1:A:262:LEU:HD13	2.51	0.46
1:B:51:THR:OG1	1:B:134:ASN:O	2.31	0.46
1:A:130:VAL:O	1:A:191:PHE:HB3	2.15	0.45
1:B:53:LEU:HD22	1:B:130:VAL:HG22	1.98	0.45
1:B:328:ASP:OD1	1:B:328:ASP:N	2.37	0.45
1:C:292:LEU:HB3	1:C:295:MET:HG2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:292:LEU:HB3	1:A:295:MET:HG2	1.98	0.45
1:B:125:ILE:HD12	1:B:197:LEU:HD11	1.98	0.45
1:A:53:LEU:HD22	1:A:130:VAL:HG22	1.98	0.45
1:B:149:HIS:HB3	3:B:403:NAG:H2	1.99	0.45
1:C:1:MET:HG3	1:C:150:GLN:NE2	2.32	0.45
1:A:86:GLN:HG3	1:B:56:LEU:HD23	1.98	0.44
1:C:52:GLN:HB3	1:C:134:ASN:ND2	2.32	0.44
1:C:313:THR:HG22	1:C:314:GLN:N	2.32	0.44
1:B:147:ASP:HB3	1:B:150:GLN:HB2	1.99	0.44
1:B:292:LEU:HD23	1:B:292:LEU:HA	1.80	0.44
1:C:125:ILE:CG2	1:C:199:MET:HG2	2.48	0.44
1:A:307:LYS:HA	1:A:307:LYS:HD2	1.72	0.44
1:B:91:VAL:HG11	1:B:236:VAL:HG11	1.98	0.44
1:C:162:ILE:HG23	1:C:167:SER:HA	1.99	0.44
1:B:147:ASP:OD1	1:B:148:GLN:N	2.51	0.44
1:C:130:VAL:O	1:C:191:PHE:HB3	2.17	0.44
1:B:47:LYS:HG2	1:B:138:THR:HB	2.00	0.44
1:C:380:ILE:HD12	1:C:380:ILE:HA	1.83	0.43
1:A:309:GLU:H	1:A:309:GLU:CD	2.21	0.43
1:B:251:LEU:HD12	1:B:251:LEU:HA	1.86	0.43
1:A:20:TRP:HA	1:A:285:LEU:O	2.18	0.43
1:A:35:ALA:HB3	1:A:38:LYS:HB2	2.01	0.43
1:C:126:GLU:HB2	1:C:198:THR:CG2	2.48	0.43
1:B:24:VAL:HG22	1:B:282:LYS:HG2	2.01	0.43
1:B:92:CYS:HA	1:B:115:THR:O	2.18	0.43
1:A:303:THR:HG22	1:A:383:LYS:HB2	2.00	0.43
1:B:199:MET:HB3	1:B:204:TRP:HZ3	1.84	0.43
1:A:302:ASN:HB3	1:A:303:THR:H	1.57	0.42
1:B:199:MET:HE1	1:B:255:GLU:HA	2.00	0.42
1:B:35:ALA:HB3	1:B:38:LYS:HB2	2.01	0.42
1:A:293:LYS:HB3	4:A:525:HOH:O	2.18	0.42
1:B:2:ARG:NH1	1:B:44:GLU:OE1	2.52	0.42
1:A:268:ILE:HG23	1:A:276:ILE:O	2.19	0.42
1:B:81:ILE:HA	1:B:85:GLU:OE2	2.19	0.42
1:C:148:GLN:HG3	1:C:362:PRO:HD2	2.02	0.42
1:A:303:THR:OG1	1:A:325:LYS:HB2	2.19	0.41
1:B:145:THR:H	1:B:150:GLN:NE2	2.15	0.41
1:B:168:THR:HG22	1:B:182:GLU:HA	2.01	0.41
1:C:300:CYS:SG	1:C:304:PHE:HZ	2.44	0.41
1:B:150:GLN:HA	1:B:156:GLN:NE2	2.35	0.41
1:B:312:GLU:O	1:C:108:PHE:HB2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:50:ALA:HB1	1:B:53:LEU:HD21	2.02	0.41
1:B:135:LEU:HD23	1:B:135:LEU:HA	1.91	0.41
1:A:338:GLU:HB2	1:A:375:ASN:HB2	2.03	0.40
1:A:197:LEU:HD23	1:A:262:LEU:HD21	2.02	0.40
1:B:204:TRP:CD2	1:B:262:LEU:HD13	2.56	0.40
1:C:53:LEU:HD22	1:C:130:VAL:HG22	2.02	0.40
1:C:302:ASN:HB3	1:C:303:THR:H	1.58	0.40
1:C:133:GLU:H	1:C:133:GLU:HG3	1.73	0.40
1:C:187:THR:OG1	1:C:188:GLY:N	2.54	0.40
1:C:320:ILE:HG22	1:C:322:VAL:HG13	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	378/394 (96%)	370 (98%)	8 (2%)	0	100	100
1	B	379/394 (96%)	371 (98%)	8 (2%)	0	100	100
1	C	377/394 (96%)	368 (98%)	9 (2%)	0	100	100
All	All	1134/1182 (96%)	1109 (98%)	25 (2%)	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	327/332 (98%)	323 (99%)	4 (1%)	71	92
1	B	327/332 (98%)	321 (98%)	6 (2%)	59	86
1	C	325/332 (98%)	317 (98%)	8 (2%)	47	80
All	All	979/996 (98%)	961 (98%)	18 (2%)	59	86

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	CYS
1	A	123	GLU
1	A	132	HIS
1	A	201	ASN
1	B	30	CYS
1	B	136	LYS
1	B	189	LEU
1	B	201	ASN
1	B	246	GLN
1	B	247	GLU
1	C	30	CYS
1	C	132	HIS
1	C	189	LEU
1	C	201	ASN
1	C	219	THR
1	C	288	ASP
1	C	328	ASP
1	C	382	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	132	HIS
1	B	52	GLN
1	B	134	ASN
1	B	150	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

9 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	NAG	B	402	1	14,14,15	1.40	2 (14%)	17,19,21	0.99	1 (5%)
3	NAG	A	402	1	14,14,15	0.24	0	17,19,21	1.07	1 (5%)
2	SO4	C	401	-	4,4,4	0.14	0	6,6,6	0.09	0
3	NAG	C	402	1	14,14,15	0.82	1 (7%)	17,19,21	0.58	0
3	NAG	B	403	1	14,14,15	0.43	0	17,19,21	0.38	0
2	SO4	A	401	-	4,4,4	0.13	0	6,6,6	0.09	0
3	NAG	A	403	1	14,14,15	0.82	1 (7%)	17,19,21	1.48	2 (11%)
2	SO4	B	401	-	4,4,4	0.14	0	6,6,6	0.11	0
3	NAG	C	403	1	14,14,15	0.32	0	17,19,21	0.59	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	NAG	B	402	1	-	0/6/23/26	0/1/1/1
3	NAG	A	402	1	-	2/6/23/26	0/1/1/1
3	NAG	C	402	1	-	3/6/23/26	0/1/1/1
3	NAG	B	403	1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	A	403	1	-	4/6/23/26	0/1/1/1
3	NAG	C	403	1	-	0/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	402	NAG	O5-C1	-3.83	1.37	1.43
3	B	402	NAG	C1-C2	3.03	1.56	1.52
3	A	403	NAG	C1-C2	2.66	1.56	1.52
3	C	402	NAG	C1-C2	2.53	1.56	1.52

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	403	NAG	C1-O5-C5	4.02	117.64	112.19
3	A	403	NAG	C2-N2-C7	3.85	128.39	122.90
3	A	402	NAG	C1-O5-C5	3.06	116.33	112.19
3	B	402	NAG	C4-C3-C2	2.76	115.07	111.02

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	403	NAG	C4-C5-C6-O6
3	A	403	NAG	C8-C7-N2-C2
3	A	403	NAG	O7-C7-N2-C2
3	C	402	NAG	C8-C7-N2-C2
3	C	402	NAG	O7-C7-N2-C2
3	A	403	NAG	O5-C5-C6-O6
3	A	402	NAG	O5-C5-C6-O6
3	A	402	NAG	C3-C2-N2-C7
3	C	402	NAG	C4-C5-C6-O6

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	403	NAG	1	0
2	A	401	SO4	1	0
3	A	403	NAG	2	0
3	C	403	NAG	1	0

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.