Full wwPDB X-ray Structure Validation Report (i)

Aug 23, 2023 – 11:34 AM EDT

PDB ID	:	3CQO
Title	:	Crystal structure of a f-lectin (fucolectin) from morone saxatilis (striped bass) serum
Authors	:	Bianchet, M.A.; Amzel, L.M.
Deposited on	:	2008-04-03
Resolution	:	2.32 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	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35
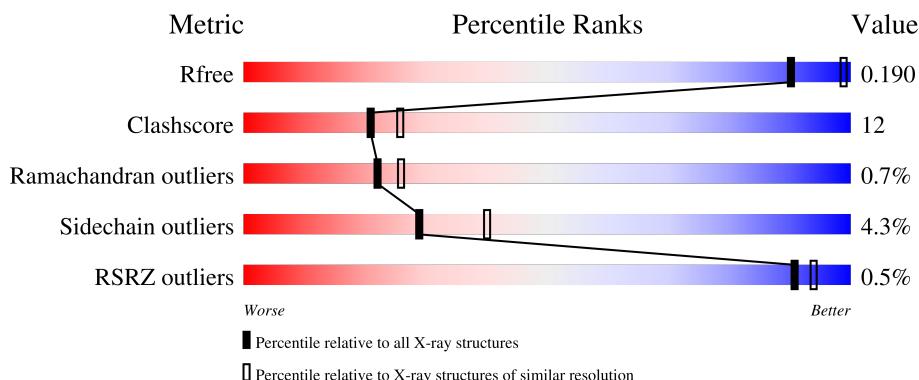
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION
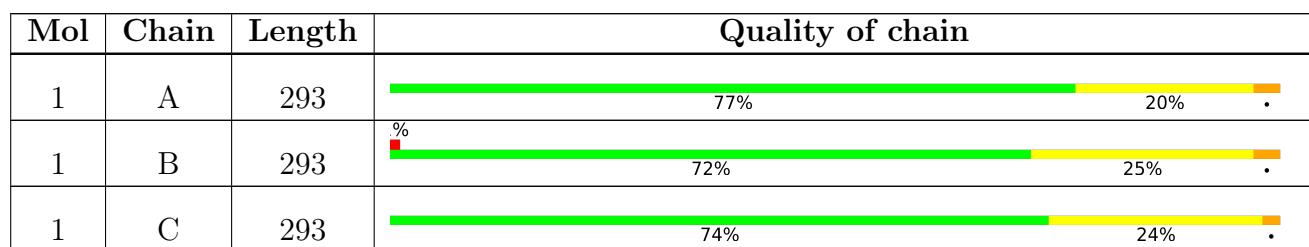
The reported resolution of this entry is 2.32 Å.

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}	130704	5974 (2.34-2.30)
Clashscore	141614	6604 (2.34-2.30)
Ramachandran outliers	138981	6523 (2.34-2.30)
Sidechain outliers	138945	6523 (2.34-2.30)
RSRZ outliers	127900	5855 (2.34-2.30)

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	293	77% 20% •
1	B	293	.% 72% 25% •
1	C	293	74% 24% •

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 7315 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.
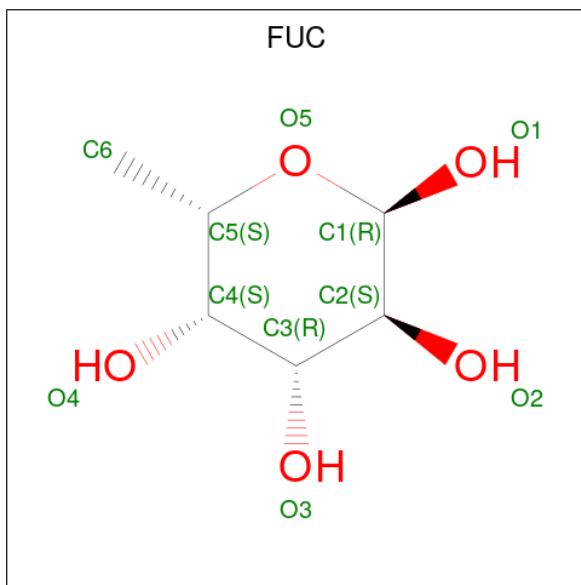
- Molecule 1 is a protein called FBP32.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	293	Total	C	N	O	S	0	0	0
			2274	1406	413	443	12			
1	B	293	Total	C	N	O	S	0	0	0
			2274	1406	413	443	12			
1	C	293	Total	C	N	O	S	0	0	0
			2274	1406	413	443	12			

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	46	VAL	ILE	SEE REMARK 999	UNP Q2LK81
A	90	LEU	ILE	SEE REMARK 999	UNP Q2LK81
A	157	LYS	ARG	SEE REMARK 999	UNP Q2LK81
A	196	ASP	ASN	SEE REMARK 999	UNP Q2LK81
A	205	GLN	LYS	SEE REMARK 999	UNP Q2LK81
A	241	HIS	ASN	SEE REMARK 999	UNP Q2LK81
B	46	VAL	ILE	SEE REMARK 999	UNP Q2LK81
B	90	LEU	ILE	SEE REMARK 999	UNP Q2LK81
B	157	LYS	ARG	SEE REMARK 999	UNP Q2LK81
B	196	ASP	ASN	SEE REMARK 999	UNP Q2LK81
B	205	GLN	LYS	SEE REMARK 999	UNP Q2LK81
B	241	HIS	ASN	SEE REMARK 999	UNP Q2LK81
C	46	VAL	ILE	SEE REMARK 999	UNP Q2LK81
C	90	LEU	ILE	SEE REMARK 999	UNP Q2LK81
C	157	LYS	ARG	SEE REMARK 999	UNP Q2LK81
C	196	ASP	ASN	SEE REMARK 999	UNP Q2LK81
C	205	GLN	LYS	SEE REMARK 999	UNP Q2LK81
C	241	HIS	ASN	SEE REMARK 999	UNP Q2LK81

- Molecule 2 is alpha-L-fucopyranose (three-letter code: FUC) (formula: $C_6H_{12}O_5$).

FUC

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 11	C 6	O 5	0	0
2	A	1	Total 11	C 6	O 5	0	0
2	B	1	Total 11	C 6	O 5	0	0
2	B	1	Total 11	C 6	O 5	0	0
2	C	1	Total 11	C 6	O 5	0	0
2	C	1	Total 11	C 6	O 5	0	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

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

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	3	Total 3	Cl 3	0	0
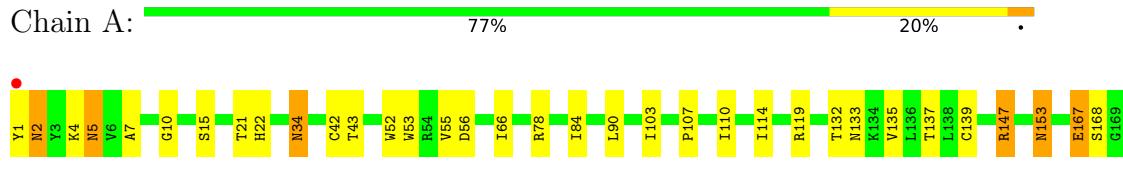
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	139	Total 139	O 139	0	0
5	B	121	Total 121	O 121	0	0
5	C	158	Total 158	O 158	0	0
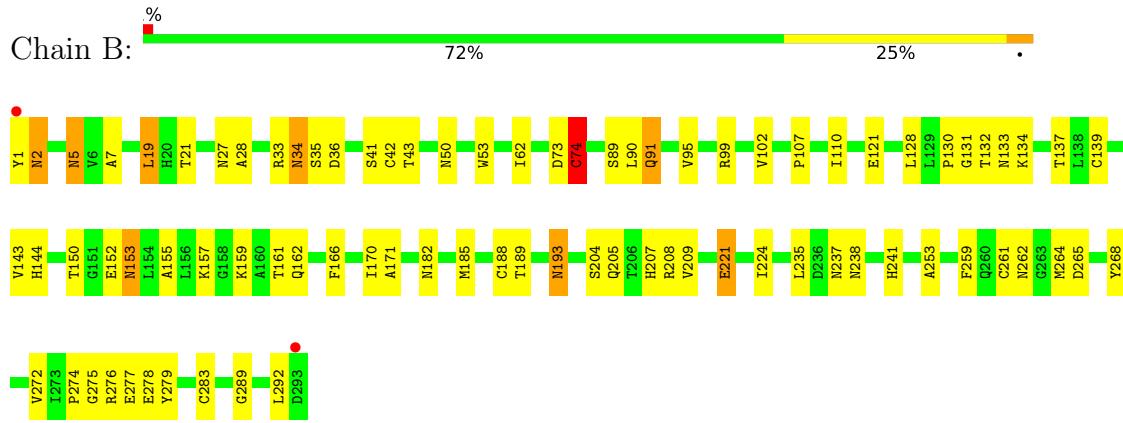
3 Residue-property plots ⓘ

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 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: FBP32

Chain A:

- Molecule 1: FBP32

Chain B:

- Molecule 1: FBP32

Chain C:
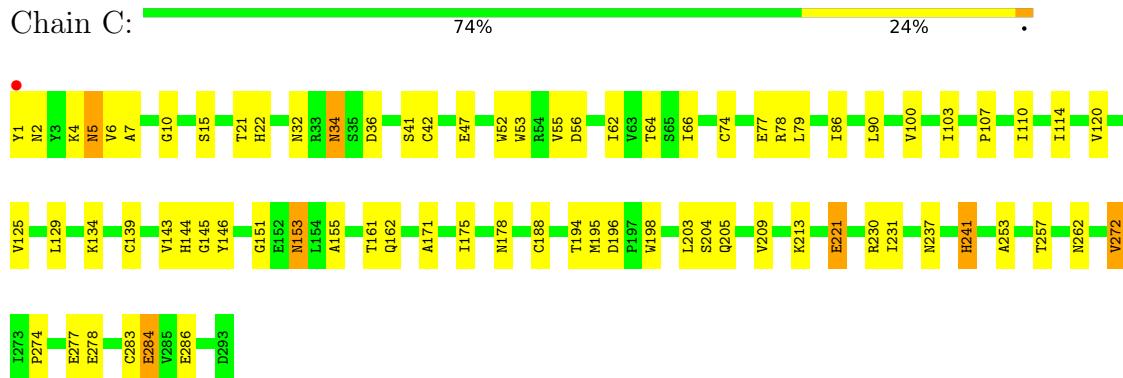
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α, β, γ	88.14Å　　88.14Å　　230.17Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	41.15　–　2.32 41.15　–　2.32	Depositor EDS
% Data completeness (in resolution range)	96.7 (41.15-2.32) 96.8 (41.15-2.32)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	0.11	Depositor
$< I/\sigma(I) >$ [1]	3.66 (at 2.32Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.184　,　0.245 0.178　,　0.190	Depositor DCC
R_{free} test set	3901 reflections (10.03%)	wwPDB-VP
Wilson B-factor (Å^2)	29.9	Xtriage
Anisotropy	0.054	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 41.4	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	7315	wwPDB-VP
Average B, all atoms (Å^2)	28.0	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.*

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[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: CA, CL, FUC

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	0.35	0/2321	0.66	0/3158
1	B	0.34	0/2321	0.63	0/3158
1	C	0.34	0/2321	0.64	0/3158
All	All	0.34	0/6963	0.64	0/9474

There are no bond length outliers.

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	2274	0	2181	50	0
1	B	2274	0	2181	65	0
1	C	2274	0	2182	56	0
2	A	22	0	24	0	0
2	B	22	0	24	1	0
2	C	22	0	24	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
4	A	3	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	139	0	0	5	0
5	B	121	0	0	2	0
5	C	158	0	0	5	0
All	All	7315	0	6616	165	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 12.

All (165) 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:107:PRO:HG2	1:B:110:ILE:HG13	1.46	0.97
1:C:107:PRO:HG2	1:C:110:ILE:HG13	1.55	0.86
1:A:198:TRP:HB3	1:A:272:VAL:HG13	1.55	0.86
1:C:221:GLU:HG2	1:C:253:ALA:HB2	1.60	0.84
1:A:66:ILE:HD12	1:A:84:ILE:HD13	1.61	0.83
1:C:198:TRP:HB3	1:C:272:VAL:HG13	1.62	0.81
1:A:210:PHE:HA	1:A:262:ASN:O	1.82	0.79
1:A:78:ARG:HD3	1:A:135:VAL:CG2	2.16	0.76
1:B:95:VAL:HG13	1:B:128:LEU:HD22	1.68	0.76
1:B:276:ARG:HD2	1:B:278:GLU:HG2	1.68	0.76
1:B:107:PRO:HG2	1:B:110:ILE:CG1	2.17	0.75
1:B:132:THR:HG23	1:B:133:ASN:H	1.51	0.74
1:B:1:TYR:O	1:B:2:ASN:HB2	1.89	0.71
1:C:194:THR:HG22	1:C:195:MET:O	1.92	0.69
1:A:202:ASP:OD1	1:A:267:ARG:HD3	1.93	0.68
1:B:73:ASP:O	1:B:74:CYS:HB3	1.94	0.68
1:A:78:ARG:HD3	1:A:135:VAL:HG23	1.75	0.68
1:C:34:ASN:HD22	1:C:36:ASP:H	1.43	0.66
1:C:66:ILE:HD11	1:C:86:ILE:HD11	1.75	0.66
1:B:221:GLU:O	1:B:224:ILE:HG22	1.97	0.65
1:B:182:ASN:H	1:B:185:MET:HE2	1.63	0.64
1:C:90:LEU:HD13	1:C:90:LEU:O	1.98	0.64
1:B:34:ASN:ND2	1:B:36:ASP:H	1.96	0.62
1:A:241:HIS:HB2	5:A:5022:HOH:O	1.98	0.62
1:A:153:ASN:ND2	1:A:287:VAL:H	1.98	0.61
1:C:1:TYR:CG	1:C:2:ASN:N	2.69	0.60
1:A:291:VAL:O	1:A:292:LEU:HB2	2.00	0.60
1:B:159:LYS:HG2	1:C:175:ILE:O	2.02	0.60
1:A:21:THR:HG22	1:B:21:THR:HG22	1.82	0.59
1:B:132:THR:HG23	1:B:133:ASN:N	2.17	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1:TYR:O	1:A:2:ASN:HB3	2.01	0.59
1:C:5:ASN:HD21	1:C:7:ALA:HB3	1.66	0.59
1:B:205:GLN:O	1:B:207:HIS:HD2	1.87	0.58
1:B:272:VAL:O	1:B:274:PRO:HD3	2.04	0.58
1:A:66:ILE:CD1	1:A:84:ILE:HD13	2.33	0.57
1:B:162:GLN:HG2	1:B:171:ALA:HB2	1.85	0.57
1:B:276:ARG:HG2	1:B:277:GLU:N	2.19	0.57
1:A:205:GLN:O	1:A:207:HIS:HD2	1.87	0.57
1:A:263:GLY:N	5:A:5075:HOH:O	2.36	0.57
1:C:34:ASN:ND2	1:C:36:ASP:H	2.02	0.57
1:B:150:THR:OG1	1:B:152:GLU:HG2	2.06	0.56
1:B:241:HIS:HB2	5:B:4017:HOH:O	2.04	0.56
1:C:162:GLN:HG2	1:C:171:ALA:HB2	1.87	0.56
1:A:167:GLU:HG3	1:A:168:SER:H	1.71	0.56
1:B:153:ASN:HD21	1:B:155:ALA:HB3	1.72	0.55
1:C:194:THR:CG2	1:C:195:MET:N	2.70	0.55
1:A:22:HIS:CE1	1:B:19:LEU:HD12	2.42	0.55
1:C:277:GLU:HG3	5:C:4081:HOH:O	2.06	0.55
1:B:221:GLU:H	1:B:221:GLU:CD	2.10	0.55
1:A:78:ARG:HD3	1:A:135:VAL:HG21	1.88	0.54
1:C:283:CYS:O	1:C:284:GLU:HB2	2.08	0.54
1:B:275:GLY:O	1:B:276:ARG:HB2	2.08	0.54
1:C:257:THR:HG21	5:C:4123:HOH:O	2.08	0.54
1:A:262:ASN:HA	5:A:5126:HOH:O	2.07	0.54
1:A:10:GLY:HA3	1:A:56:ASP:O	2.09	0.53
1:A:147:ARG:O	1:A:290:SER:OG	2.19	0.53
1:B:34:ASN:HD22	1:B:35:SER:N	2.07	0.53
1:C:237:ASN:ND2	5:C:4039:HOH:O	2.42	0.52
1:B:42:CYS:HA	1:B:139:CYS:HA	1.92	0.52
1:C:209:VAL:O	1:C:262:ASN:O	2.28	0.51
1:A:178:ASN:HB2	1:C:161:THR:HG21	1.92	0.51
1:B:50:ASN:ND2	1:B:130:PRO:HA	2.25	0.51
1:A:5:ASN:HD21	1:A:7:ALA:HB3	1.75	0.51
1:A:217:ARG:HG2	1:A:219:SER:H	1.75	0.51
1:B:261:CYS:O	1:B:264:MET:HG3	2.10	0.51
1:C:62:ILE:HD12	1:C:146:TYR:CE1	2.46	0.51
1:B:107:PRO:CG	1:B:110:ILE:HG13	2.30	0.51
1:A:1:TYR:O	1:A:2:ASN:CB	2.59	0.51
1:B:153:ASN:ND2	1:B:155:ALA:H	2.09	0.51
1:B:208:ARG:O	1:B:289:GLY:HA3	2.10	0.51
1:C:221:GLU:HG2	1:C:253:ALA:CB	2.36	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:5:ASN:ND2	1:C:143:VAL:H	2.08	0.50
1:B:5:ASN:ND2	1:B:143:VAL:H	2.09	0.50
1:B:5:ASN:HD21	1:B:7:ALA:HB3	1.76	0.50
1:B:170:ILE:O	1:B:189:THR:HG22	2.11	0.50
1:C:10:GLY:HA3	1:C:56:ASP:O	2.12	0.49
1:B:144:HIS:HD2	5:B:4028:HOH:O	1.95	0.49
1:A:4:LYS:HE3	1:A:293:ASP:C	2.33	0.49
1:A:153:ASN:HD21	1:A:287:VAL:H	1.60	0.49
1:B:208:ARG:HG2	1:B:265:ASP:OD1	2.13	0.49
1:C:103:ILE:HG12	1:C:114:ILE:HD11	1.95	0.49
1:B:27:ASN:HB3	1:B:41:SER:C	2.34	0.48
1:A:193:ASN:HB2	1:A:279:TYR:CZ	2.49	0.48
1:C:86:ILE:HG12	1:C:125:VAL:HG22	1.94	0.48
1:B:276:ARG:NH1	1:B:278:GLU:HG3	2.28	0.48
1:C:107:PRO:HG2	1:C:110:ILE:CG1	2.36	0.48
1:B:166:PHE:HE2	2:B:2295:FUC:H62	1.78	0.48
1:B:1:TYR:O	1:B:2:ASN:CB	2.61	0.48
1:B:153:ASN:HD21	1:B:155:ALA:CB	2.26	0.48
1:B:182:ASN:H	1:B:185:MET:CE	2.25	0.48
1:A:210:PHE:HD1	1:A:289:GLY:HA2	1.79	0.47
1:B:43:THR:O	1:B:137:THR:HG23	2.13	0.47
1:B:188:CYS:HA	1:B:283:CYS:HA	1.96	0.47
1:B:153:ASN:ND2	1:B:155:ALA:HB3	2.30	0.47
1:B:259:PHE:CD1	1:B:259:PHE:N	2.83	0.47
1:C:203:LEU:C	1:C:205:GLN:H	2.17	0.47
1:B:193:ASN:HB2	1:B:279:TYR:CZ	2.50	0.47
1:B:34:ASN:HD22	1:B:34:ASN:C	2.18	0.46
1:C:86:ILE:HD12	1:C:100:VAL:HG21	1.98	0.46
1:B:276:ARG:HG2	1:B:277:GLU:H	1.81	0.46
1:C:78:ARG:O	1:C:129:LEU:HD21	2.16	0.46
1:A:188:CYS:HA	1:A:283:CYS:HA	1.98	0.46
1:B:209:VAL:O	1:B:262:ASN:O	2.35	0.45
1:B:235:LEU:HD21	1:B:268:TYR:CE2	2.52	0.45
1:C:100:VAL:HG11	1:C:120:VAL:CG1	2.46	0.45
1:C:100:VAL:HG11	1:C:120:VAL:HG13	1.99	0.45
1:C:194:THR:HG22	1:C:195:MET:N	2.31	0.45
1:A:203:LEU:O	1:A:204:SER:HB3	2.16	0.45
1:A:34:ASN:C	1:A:34:ASN:HD22	2.21	0.45
1:C:196:ASP:OD1	1:C:274:PRO:HA	2.16	0.44
1:B:221:GLU:HG2	1:B:253:ALA:HB2	1.98	0.44
1:C:213:LYS:HD3	1:C:286:GLU:OE2	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:21:THR:HG22	1:C:21:THR:HG22	1.99	0.44
1:A:1:TYR:OH	1:A:293:ASP:C	2.56	0.44
1:B:50:ASN:ND2	1:B:131:GLY:H	2.15	0.44
1:C:151:GLY:HA2	5:C:4034:HOH:O	2.18	0.44
1:C:241:HIS:HB2	5:C:4124:HOH:O	2.16	0.44
1:A:182:ASN:HB3	1:A:185:MET:HG3	2.00	0.44
1:A:170:ILE:O	1:A:189:THR:HG22	2.17	0.44
1:C:103:ILE:CG1	1:C:114:ILE:HD11	2.47	0.44
1:A:262:ASN:HB3	5:A:5075:HOH:O	2.17	0.43
1:B:28:ALA:HB3	1:B:53:TRP:CZ2	2.53	0.43
1:C:153:ASN:ND2	1:C:155:ALA:H	2.16	0.43
1:B:182:ASN:HB3	1:B:185:MET:CE	2.48	0.43
1:B:99:ARG:CZ	1:B:102:VAL:HG21	2.49	0.43
1:B:131:GLY:HA3	1:B:134:LYS:HD3	2.00	0.43
1:C:64:THR:HG22	1:C:144:HIS:O	2.18	0.43
1:B:33:ARG:O	1:B:34:ASN:C	2.56	0.43
1:C:6:VAL:HG22	1:C:143:VAL:O	2.19	0.43
1:A:181:ASN:OD1	1:A:218:ASP:HB3	2.19	0.43
1:A:198:TRP:HB3	1:A:272:VAL:CG1	2.35	0.42
1:B:1:TYR:CZ	1:B:292:LEU:HB3	2.54	0.42
1:C:221:GLU:CG	1:C:253:ALA:HB2	2.39	0.42
1:B:224:ILE:O	1:B:224:ILE:HG13	2.19	0.42
1:A:103:ILE:CG1	1:A:114:ILE:HD11	2.49	0.42
1:C:194:THR:O	1:C:277:GLU:HA	2.20	0.42
1:B:1:TYR:CE2	1:B:292:LEU:HB3	2.54	0.42
1:C:32:ASN:HB3	1:C:41:SER:OG	2.19	0.42
1:C:230:ARG:C	1:C:231:ILE:HG13	2.39	0.42
1:A:42:CYS:HA	1:A:139:CYS:HA	2.02	0.42
1:A:53:TRP:CH2	1:A:55:VAL:HB	2.54	0.42
1:B:50:ASN:HD22	1:B:130:PRO:HA	1.83	0.42
1:B:62:ILE:HG12	1:B:121:GLU:HG3	2.01	0.42
1:A:107:PRO:HB2	1:A:110:ILE:HG13	2.02	0.42
1:C:34:ASN:HD22	1:C:34:ASN:C	2.22	0.42
1:C:42:CYS:HA	1:C:139:CYS:HA	2.01	0.42
1:A:78:ARG:CD	1:A:135:VAL:CG2	2.93	0.41
1:C:64:THR:HG22	1:C:145:GLY:HA2	2.02	0.41
1:B:89:SER:OG	1:B:91:GLN:CG	2.68	0.41
1:B:161:THR:HG21	1:C:178:ASN:HB2	2.02	0.41
1:A:43:THR:O	1:A:137:THR:HG23	2.20	0.41
1:A:193:ASN:HB2	1:A:279:TYR:CE2	2.55	0.41
1:C:53:TRP:CH2	1:C:55:VAL:HB	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:213:LYS:HB3	1:C:286:GLU:HB2	2.01	0.41
1:A:248:ILE:HG12	1:A:259:PHE:CZ	2.56	0.41
1:C:4:LYS:O	1:C:144:HIS:HA	2.20	0.41
1:C:15:SER:HB3	1:C:52:TRP:CD1	2.55	0.41
1:C:188:CYS:HA	1:C:283:CYS:HA	2.03	0.41
1:A:132:THR:HG22	1:A:133:ASN:N	2.36	0.41
1:A:15:SER:HB3	1:A:52:TRP:CD1	2.56	0.41
1:A:147:ARG:HG2	5:A:5118:HOH:O	2.21	0.41
1:C:66:ILE:CD1	1:C:86:ILE:HD11	2.48	0.40
1:A:135:VAL:HG23	1:A:135:VAL:O	2.21	0.40
1:B:237:ASN:O	1:B:238:ASN:HB2	2.22	0.40
1:C:47:GLU:HA	1:C:134:LYS:O	2.20	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	291/293 (99%)	272 (94%)	17 (6%)	2 (1%)	22	26
1	B	291/293 (99%)	263 (90%)	26 (9%)	2 (1%)	22	26
1	C	291/293 (99%)	275 (94%)	14 (5%)	2 (1%)	22	26
All	All	873/879 (99%)	810 (93%)	57 (6%)	6 (1%)	22	26

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2	ASN
1	B	2	ASN
1	B	74	CYS
1	C	204	SER
1	A	167	GLU

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Mol	Chain	Res	Type
1	C	284	GLU

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	248/248 (100%)	238 (96%)	10 (4%)	31	44
1	B	248/248 (100%)	237 (96%)	11 (4%)	28	39
1	C	248/248 (100%)	237 (96%)	11 (4%)	28	39
All	All	744/744 (100%)	712 (96%)	32 (4%)	29	40

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	ASN
1	A	34	ASN
1	A	90	LEU
1	A	119	ARG
1	A	147	ARG
1	A	153	ASN
1	A	241	HIS
1	A	267	ARG
1	A	272	VAL
1	A	278	GLU
1	B	5	ASN
1	B	19	LEU
1	B	34	ASN
1	B	74	CYS
1	B	90	LEU
1	B	91	GLN
1	B	153	ASN
1	B	157	LYS
1	B	193	ASN
1	B	204	SER
1	B	221	GLU

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Mol	Chain	Res	Type
1	C	5	ASN
1	C	22	HIS
1	C	34	ASN
1	C	74	CYS
1	C	77	GLU
1	C	79	LEU
1	C	153	ASN
1	C	221	GLU
1	C	241	HIS
1	C	272	VAL
1	C	278	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	ASN
1	A	34	ASN
1	A	48	GLN
1	A	91	GLN
1	A	153	ASN
1	A	207	HIS
1	A	270	ASN
1	B	5	ASN
1	B	34	ASN
1	B	50	ASN
1	B	133	ASN
1	B	144	HIS
1	B	153	ASN
1	B	193	ASN
1	B	207	HIS
1	B	241	HIS
1	C	2	ASN
1	C	5	ASN
1	C	34	ASN
1	C	48	GLN
1	C	153	ASN
1	C	237	ASN

5.3.3 RNA (i)

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 ⓘ

Of 15 ligands modelled in this entry, 9 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	$\#|Z| > 2$
2	FUC	C	3295	-	11,11,11	0.39	0	15,16,16	0.39	0
2	FUC	B	2295	-	11,11,11	0.46	0	15,16,16	0.43	0
2	FUC	A	1295	-	11,11,11	0.41	0	15,16,16	0.44	0
2	FUC	C	3294	-	11,11,11	0.44	0	15,16,16	0.52	0
2	FUC	A	1294	-	11,11,11	0.41	0	15,16,16	0.38	0
2	FUC	B	2294	-	11,11,11	0.41	0	15,16,16	0.37	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	FUC	C	3295	-	-	-	0/1/1/1
2	FUC	B	2295	-	-	-	0/1/1/1
2	FUC	A	1295	-	-	-	0/1/1/1
2	FUC	C	3294	-	-	-	0/1/1/1
2	FUC	A	1294	-	-	-	0/1/1/1
2	FUC	B	2294	-	-	-	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2295	FUC	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 ⓘ

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	293/293 (100%)	-0.54	1 (0%)	94	96	15, 24, 39, 52	0
1	B	293/293 (100%)	-0.33	2 (0%)	87	91	15, 29, 41, 58	0
1	C	293/293 (100%)	-0.35	1 (0%)	94	96	17, 26, 39, 59	0
All	All	879/879 (100%)	-0.40	4 (0%)	91	94	15, 27, 40, 59	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1	TYR	3.5
1	C	1	TYR	3.2
1	B	293	ASP	2.8
1	A	1	TYR	2.6

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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	FUC	B	2294	11/11	0.92	0.13	22,28,31,31	0
2	FUC	C	3294	11/11	0.94	0.10	27,28,30,32	0
2	FUC	A	1294	11/11	0.96	0.10	27,28,30,32	0
2	FUC	B	2295	11/11	0.96	0.08	32,34,36,38	0
2	FUC	A	1295	11/11	0.96	0.11	33,35,37,38	0
2	FUC	C	3295	11/11	0.97	0.10	27,28,33,33	0
3	CA	A	4004	1/1	0.98	0.06	24,24,24,24	0
3	CA	B	4006	1/1	0.98	0.07	27,27,27,27	0
3	CA	B	4002	1/1	0.99	0.07	21,21,21,21	0
3	CA	A	4001	1/1	0.99	0.07	21,21,21,21	0
3	CA	C	4005	1/1	0.99	0.08	25,25,25,25	0
4	CL	A	5001	1/1	0.99	0.29	18,18,18,18	0
4	CL	A	5002	1/1	0.99	0.10	25,25,25,25	0
3	CA	C	4003	1/1	1.00	0.06	17,17,17,17	0
4	CL	A	5003	1/1	1.00	0.11	22,22,22,22	0

6.5 Other polymers ⓘ

There are no such residues in this entry.