W O R L D W I D E

wwPDB

PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Mar 9, 2026 – 12:25 PM EDT

PDB ID	:	8FPA / pdb_00008fpa
Title	:	Structure of a chimeric antibody (Fab) fragment bound to de-N-acetyl polysialic acid (dPSA)
Authors	:	Beernink, P.T.; Agirre, J.; Beernink, B.P.; Moe, G.R.
Deposited on	:	2023-01-04
Resolution	:	1.83 Å(reported)

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

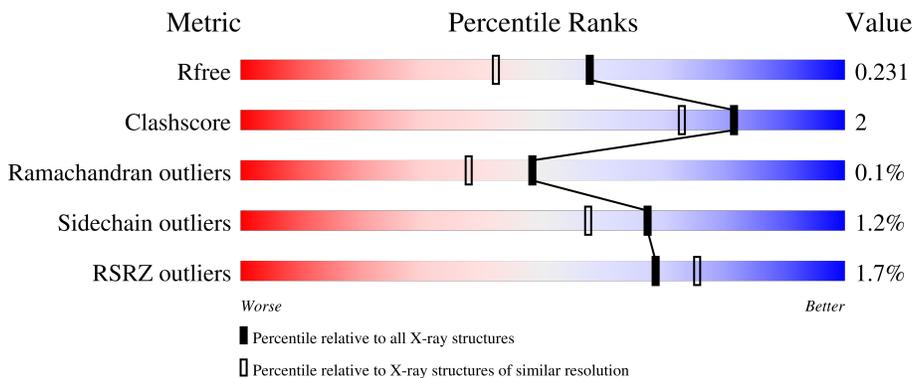|		
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48.1

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 1.83 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		0.231
Clashscore		2
Ramachandran outliers		0.1%
Sidechain outliers		1.2%
RSRZ outliers		1.7%

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}	164625	1150 (1.84-1.84)
Clashscore	180529	1248 (1.84-1.84)
Ramachandran outliers	177936	1240 (1.84-1.84)
Sidechain outliers	177891	1240 (1.84-1.84)
RSRZ outliers	164620	1149 (1.84-1.84)

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	226	88% 8% ·
1	C	226	88% 8% · ·
2	B	219	89% 9% ·
2	D	219	3% 87% 9% · ·
3	E	4	75% 25%

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Mol	Chain	Length	Quality of chain
3	F	4	75% 25%

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
4	ACY	B	307	-	-	X	-

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 13690 atoms, of which 6431 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 Chimeric antibody Fab fragment, Fd chain.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	219	Total 3197	C 1038	H 1550	N 275	O 328	S 6	0	3	0
1	C	219	Total 3183	C 1034	H 1542	N 275	O 326	S 6	0	1	0

- Molecule 2 is a protein called Humanized antibody Fab fragment, light chain.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	B	216	Total 3265	C 1055	H 1595	N 278	O 332	S 5	0	2	0
2	D	211	Total 3193	C 1033	H 1562	N 271	O 322	S 5	0	1	0

- Molecule 3 is an oligosaccharide called 5-amino-3,5-dideoxy-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-8)-3,5-dideoxy-5-(propanoylamino)-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-8)-3,5-dideoxy-5-(propanoylamino)-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-9)-3,5-dideoxy-5-propanamido-D-glycero-D-galacto-non-2-ulosonic acid.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	E	4	Total 135	C 45	H 54	N 4	O 32	0	0	0
3	F	4	Total 135	C 45	H 54	N 4	O 32	0	0	0

- Molecule 4 is ACETIC ACID (CCD ID: ACY) (formula: $C_2H_4O_2$).

ACY
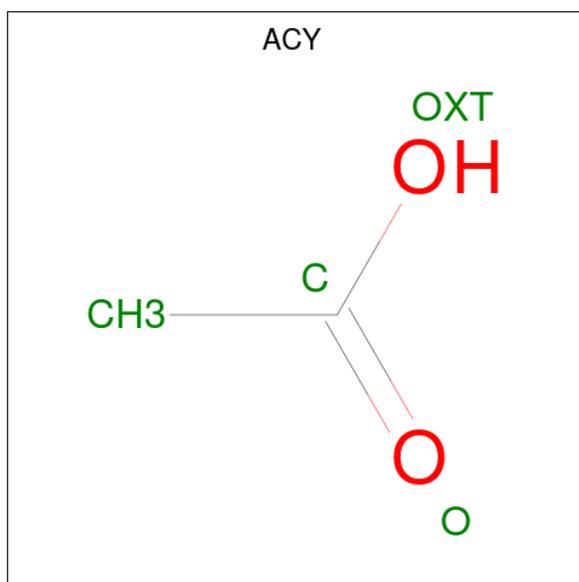
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 4	C 2	O 2	0	0
4	A	1	Total 4	C 2	O 2	0	0
4	B	1	Total 4	C 2	O 2	0	0
4	C	1	Total 4	C 2	O 2	0	0
4	D	1	Total 4	C 2	O 2	0	0

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).

GOL
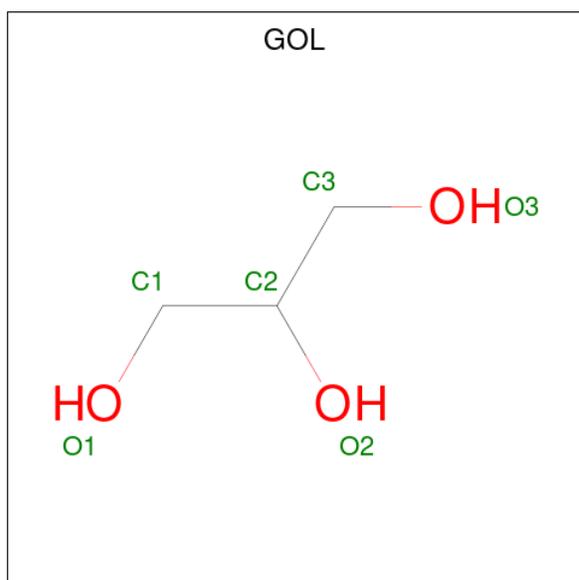
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total 11	C 3	H 5	O 3	0	0
5	B	1	Total 11	C 3	H 5	O 3	0	0
5	B	1	Total 11	C 3	H 5	O 3	0	0
5	B	1	Total 11	C 3	H 5	O 3	0	0
5	B	1	Total 11	C 3	H 5	O 3	0	0
5	B	1	Total 11	C 3	H 5	O 3	0	0
5	B	1	Total 11	C 3	H 5	O 3	0	0
5	C	1	Total 11	C 3	H 5	O 3	0	0
5	D	1	Total 11	C 3	H 5	O 3	0	0
5	D	1	Total 11	C 3	H 5	O 3	0	0

- Molecule 6 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).
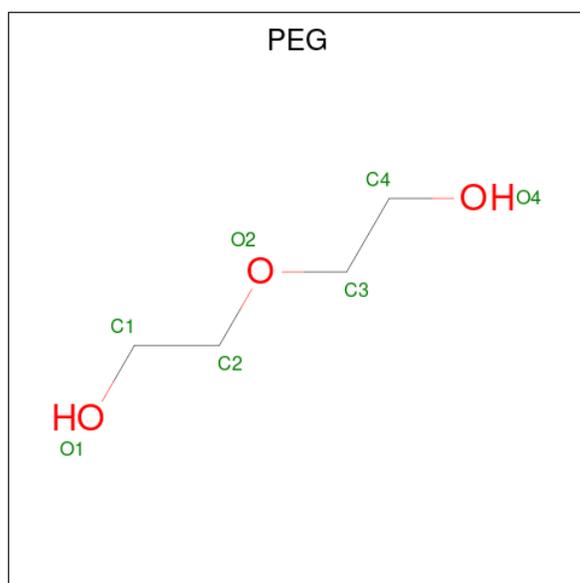
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total 15	C 4	H 8	O 3	0	0
6	A	1	Total 15	C 4	H 8	O 3	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	D	1	Total 15	C 4	H 8	O 3	0	0

• Molecule 7 is water.

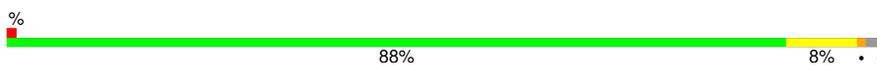| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	101	Total 101	O 101	0	0
7	B	113	Total 113	O 113	0	0
7	C	99	Total 99	O 99	0	0
7	D	94	Total 94	O 94	0	0

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: Chimeric antibody Fab fragment, Fd chain

- Molecule 1: Chimeric antibody Fab fragment, Fd chain

- Molecule 2: Humanized antibody Fab fragment, light chain

- Molecule 2: Humanized antibody Fab fragment, light chain
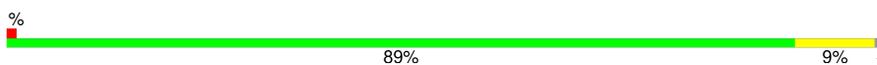
- Molecule 3: 5-amino-3,5-dideoxy-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-8)-3, 5-dideoxy-5-(propanoylamino)-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-8)-3,5-did eoxy-5-(propanoylamino)-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-9)-3,5-dideoxy-5-propanamido-D-glycero-D-galacto-non-2-ulosonic acid

• Molecule 3: 5-amino-3,5-dideoxy-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-8)-3, 5-dideoxy-5-(propanoylamino)-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-8)-3,5-did eoxy-5-(propanoylamino)-D-glycero-alpha-D-galacto-non-2-ulopyranosonic acid-(2-9)-3,5-dideoxy-5-propanamido-D-glycero-D-galacto-non-2-ulosonic acid

Chain F:

75%   25%

Y8W1
18D2
18D3
Y984

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	74.58Å 71.44Å 91.50Å 90.00° 92.95° 90.00°	Depositor
Resolution (Å)	74.49 – 1.83 74.49 – 1.83	Depositor EDS
% Data completeness (in resolution range)	99.8 (74.49-1.83) 99.8 (74.49-1.83)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.26 (at 1.83Å)	Xtriage
Refinement program	Servalcat 0.4.105	Depositor
R, R_{free}	0.186 , 0.230 0.185 , 0.231	Depositor DCC
R_{free} test set	1458 reflections (1.72%)	wwPDB-VP
Wilson B-factor (Å^2)	33.6	Xtriage
Anisotropy	0.092	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.44 , 44.1	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.029 for h,-k,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	13690	wwPDB-VP
Average B, all atoms (Å^2)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.88% 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: PEG, GOL, Y98, 18D, Y8W, ACY

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	0.83	0/1695	1.22	4/2310 (0.2%)
1	C	0.81	0/1683	1.23	8/2294 (0.3%)
2	B	0.84	0/1712	1.27	11/2327 (0.5%)
2	D	0.78	0/1669	1.22	6/2266 (0.3%)
All	All	0.82	0/6759	1.23	29/9197 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
2	D	0	2
All	All	0	4

There are no bond length outliers.

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	16	ASP	CA-CB-CG	9.32	121.92	112.60
2	B	82	ARG	CB-CA-C	-8.18	98.89	110.34
2	B	212	LYS	CB-CA-C	6.78	122.12	109.71
2	D	99	PHE	CB-CA-C	-6.67	99.46	109.26
2	B	7	THR	CA-CB-OG1	-6.60	99.70	109.60

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	103	ARG	Sidechain
1	C	103	ARG	Sidechain
2	D	216	ARG	Sidechain
2	D	66	ARG	Sidechain

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	1647	1550	1619	7	0
1	C	1641	1542	1609	7	0
2	B	1670	1595	1657	9	0
2	D	1631	1562	1621	7	0
3	E	81	54	36	1	0
3	F	81	54	36	1	0
4	A	8	0	6	0	0
4	B	4	0	3	2	0
4	C	4	0	3	0	0
4	D	4	0	3	0	0
5	A	6	5	8	0	0
5	B	36	30	48	1	0
5	C	6	5	8	0	0
5	D	12	10	16	0	0
6	A	14	16	20	1	0
6	D	7	8	10	1	0
7	A	101	0	0	0	0
7	B	113	0	0	0	0
7	C	99	0	0	0	0
7	D	94	0	0	0	0
All	All	7259	6431	6703	33	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 2.

The worst 5 of 33 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)
6:D:303:PEG:H41	3:F:1:Y8W:O5	1.99	0.62
2:D:154:LYS:HB3	2:D:157:ASN:HA	1.82	0.61
1:A:85:MET:HE2	1:A:88:LEU:HD21	1.86	0.57
2:B:192:GLU:O	2:B:216:ARG:NH2	2.38	0.56
2:B:99:PHE:CZ	5:B:306:GOL:H32	2.42	0.53

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	220/226 (97%)	218 (99%)	2 (1%)	0	100	100
1	C	218/226 (96%)	212 (97%)	6 (3%)	0	100	100
2	B	216/219 (99%)	211 (98%)	5 (2%)	0	100	100
2	D	208/219 (95%)	203 (98%)	4 (2%)	1 (0%)	25	12
All	All	862/890 (97%)	844 (98%)	17 (2%)	1 (0%)	48	38

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	157	ASN

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	186/190 (98%)	183 (98%)	3 (2%)	58	44
1	C	184/190 (97%)	182 (99%)	2 (1%)	70	60
2	B	195/196 (100%)	193 (99%)	2 (1%)	73	64
2	D	190/196 (97%)	188 (99%)	2 (1%)	70	60
All	All	755/772 (98%)	746 (99%)	9 (1%)	67	57

5 of 9 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	141	LEU
2	D	186	LEU
2	B	14	THR
2	B	61	SER
1	C	50	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	56	ASN
1	C	78	GLN
2	D	204	GLN
2	D	194	HIS
2	B	142	ASN

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 ⓘ

8 monosaccharides 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	Y8W	E	1	3	21,21,21	2.36	4 (19%)	24,28,28	2.12	8 (33%)
3	18D	E	2	3	21,21,22	1.06	1 (4%)	22,29,32	1.69	7 (31%)
3	18D	E	3	3	21,21,22	0.92	0	22,29,32	1.51	3 (13%)
3	Y98	E	4	3	17,17,18	1.24	2 (11%)	19,24,27	1.77	4 (21%)
3	Y8W	F	1	3	21,21,21	2.48	4 (19%)	24,28,28	1.63	4 (16%)
3	18D	F	2	3	21,21,22	0.77	0	22,29,32	1.57	4 (18%)
3	18D	F	3	3	21,21,22	0.90	1 (4%)	22,29,32	1.45	4 (18%)
3	Y98	F	4	3	17,17,18	1.21	2 (11%)	19,24,27	1.71	4 (21%)

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	Y8W	E	1	3	-	4/32/32/32	-
3	18D	E	2	3	-	7/20/36/40	0/1/1/1
3	18D	E	3	3	-	3/20/36/40	0/1/1/1
3	Y98	E	4	3	-	6/14/30/34	0/1/1/1
3	Y8W	F	1	3	-	6/32/32/32	-
3	18D	F	2	3	-	5/20/36/40	0/1/1/1
3	18D	F	3	3	-	3/20/36/40	0/1/1/1
3	Y98	F	4	3	-	6/14/30/34	0/1/1/1

The worst 5 of 14 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	1	Y8W	C7-C8	-9.24	1.39	1.53
3	E	1	Y8W	C7-C8	-8.97	1.40	1.53
3	E	2	18D	C3-C2	-3.29	1.47	1.52
3	E	1	Y8W	C5-C4	2.98	1.57	1.53
3	F	1	Y8W	C11-C10	-2.98	1.48	1.53

The worst 5 of 38 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	1	Y8W	C6-C7-C8	5.08	124.93	115.89
3	E	1	Y8W	C6-C7-C8	4.81	124.47	115.89
3	E	3	18D	C11-C10-N5	4.70	121.92	115.78
3	E	1	Y8W	C2-C3-N1	4.47	121.62	115.78
3	E	4	Y98	C4-C5-N5	-4.29	102.25	111.11

There are no chirality outliers.

5 of 40 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	1	Y8W	C6-C7-C8-O5
3	E	1	Y8W	C5-C6-C7-O3
3	E	1	Y8W	C5-C6-C7-C8
3	E	1	Y8W	O2-C5-C6-C7
3	E	4	Y98	C7-C8-C9-O9

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	1	Y8W	1	0
3	F	1	Y8W	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

Oligosaccharide Chain E

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain F

Bond lengths

Bond angles

Torsions

Rings
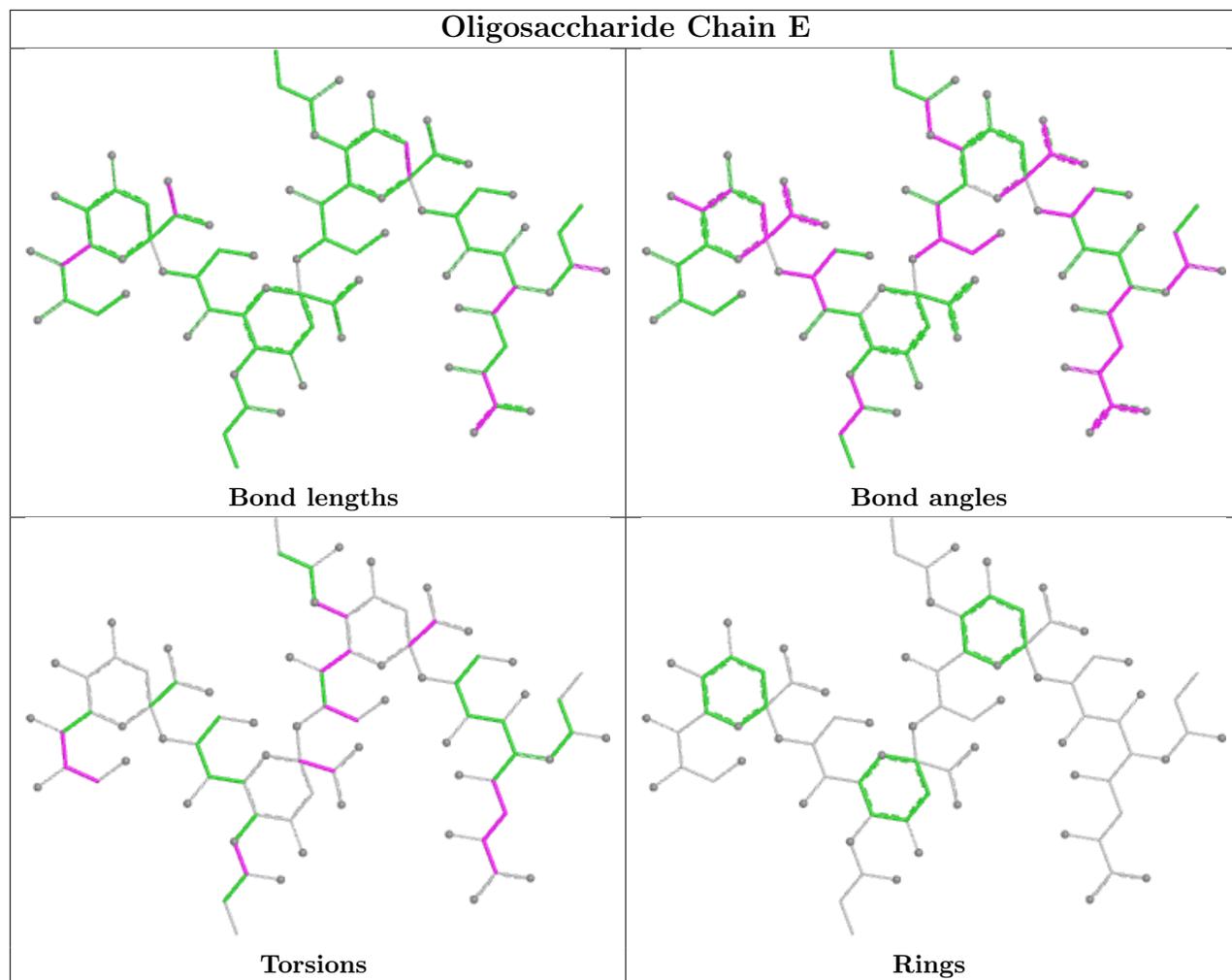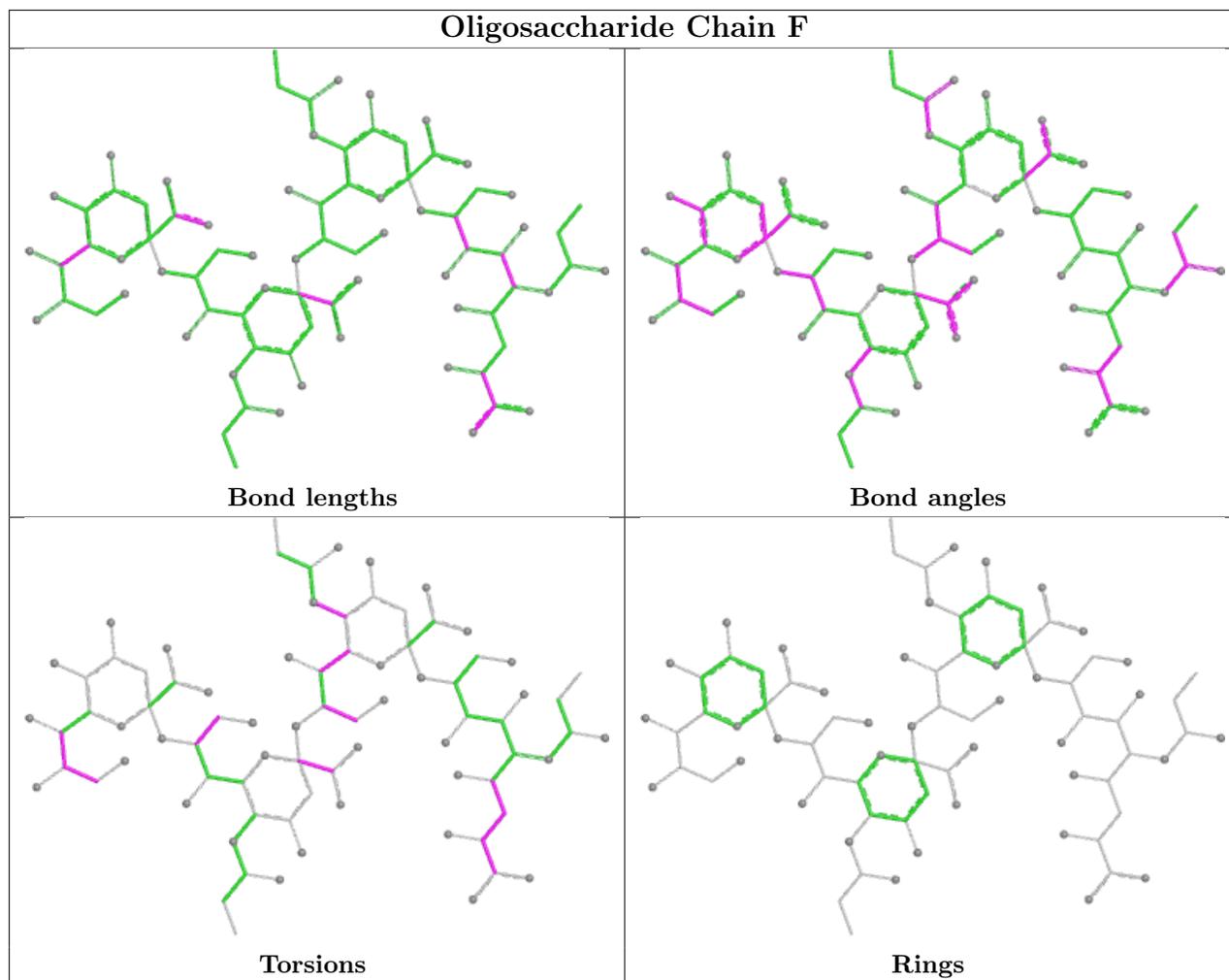
5.6 Ligand geometry ⓘ

18 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	$\#|Z| > 2$
5	GOL	A	303	-	5,5,5	0.13	0	5,5,5	0.61	0
4	ACY	C	302	-	3,3,3	0.95	0	3,3,3	1.45	0
4	ACY	B	307	-	3,3,3	0.63	0	3,3,3	1.29	0
5	GOL	B	302	-	5,5,5	0.14	0	5,5,5	0.29	0
5	GOL	B	303	-	5,5,5	0.17	0	5,5,5	0.60	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	ACY	A	301	-	3,3,3	0.88	0	3,3,3	1.33	0
6	PEG	D	303	-	6,6,6	0.35	0	5,5,5	0.37	0
5	GOL	B	306	-	5,5,5	0.25	0	5,5,5	0.56	0
6	PEG	A	304	-	6,6,6	0.56	0	5,5,5	0.56	0
4	ACY	D	304	-	3,3,3	1.08	0	3,3,3	0.39	0
5	GOL	D	302	-	5,5,5	0.20	0	5,5,5	0.36	0
5	GOL	B	301	-	5,5,5	0.19	0	5,5,5	0.86	0
5	GOL	D	301	-	5,5,5	0.28	0	5,5,5	0.95	0
5	GOL	B	304	-	5,5,5	0.18	0	5,5,5	0.46	0
5	GOL	C	301	-	5,5,5	0.40	0	5,5,5	0.40	0
5	GOL	B	305	-	5,5,5	0.27	0	5,5,5	0.50	0
4	ACY	A	302	-	3,3,3	0.89	0	3,3,3	1.18	0
6	PEG	A	305	-	6,6,6	0.30	0	5,5,5	0.22	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
5	GOL	A	303	-	-	1/4/4/4	-
5	GOL	B	302	-	-	2/4/4/4	-
5	GOL	B	303	-	-	2/4/4/4	-
6	PEG	D	303	-	-	2/4/4/4	-
5	GOL	B	306	-	-	2/4/4/4	-
6	PEG	A	304	-	-	2/4/4/4	-
5	GOL	D	302	-	-	0/4/4/4	-
5	GOL	B	301	-	-	0/4/4/4	-
5	GOL	D	301	-	-	3/4/4/4	-
5	GOL	B	304	-	-	2/4/4/4	-
5	GOL	C	301	-	-	2/4/4/4	-
5	GOL	B	305	-	-	2/4/4/4	-
6	PEG	A	305	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 22 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	302	GOL	O1-C1-C2-C3
5	B	305	GOL	C1-C2-C3-O3
5	B	306	GOL	O1-C1-C2-C3
5	C	301	GOL	C1-C2-C3-O3
5	B	305	GOL	O2-C2-C3-O3

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	307	ACY	2	0
6	D	303	PEG	1	0
5	B	306	GOL	1	0
6	A	304	PEG	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(Å²)	Q<0.9
1	A	219/226 (96%)	-0.23	3 (1%)	73	80	16, 33, 52, 72	3 (1%)
1	C	219/226 (96%)	-0.01	3 (1%)	73	80	17, 37, 58, 77	1 (0%)
2	B	216/219 (98%)	-0.14	2 (0%)	81	87	18, 36, 57, 69	2 (0%)
2	D	211/219 (96%)	0.25	7 (3%)	49	53	20, 41, 64, 95	1 (0%)
All	All	865/890 (97%)	-0.03	15 (1%)	69	75	16, 36, 58, 95	7 (0%)

The worst 5 of 15 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	173	SER	4.1
2	D	158	ALA	2.9
2	D	157	ASN	2.8
1	C	167	SER	2.6
1	A	42	GLY	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 ⓘ

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(Å²)	Q<0.9
3	Y98	E	4	17/18	0.76	0.15	57,78,83,84	0
3	Y98	F	4	17/18	0.80	0.14	48,69,76,76	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
3	18D	E	3	21/22	0.87	0.12	46,54,85,85	0
3	18D	F	3	21/22	0.93	0.08	34,39,47,53	0
3	Y8W	F	1	22/22	0.94	0.12	29,36,58,78	0
3	18D	E	2	21/22	0.95	0.08	30,39,43,49	0
3	Y8W	E	1	22/22	0.95	0.08	28,39,74,88	0
3	18D	F	2	21/22	0.96	0.06	24,34,36,44	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.
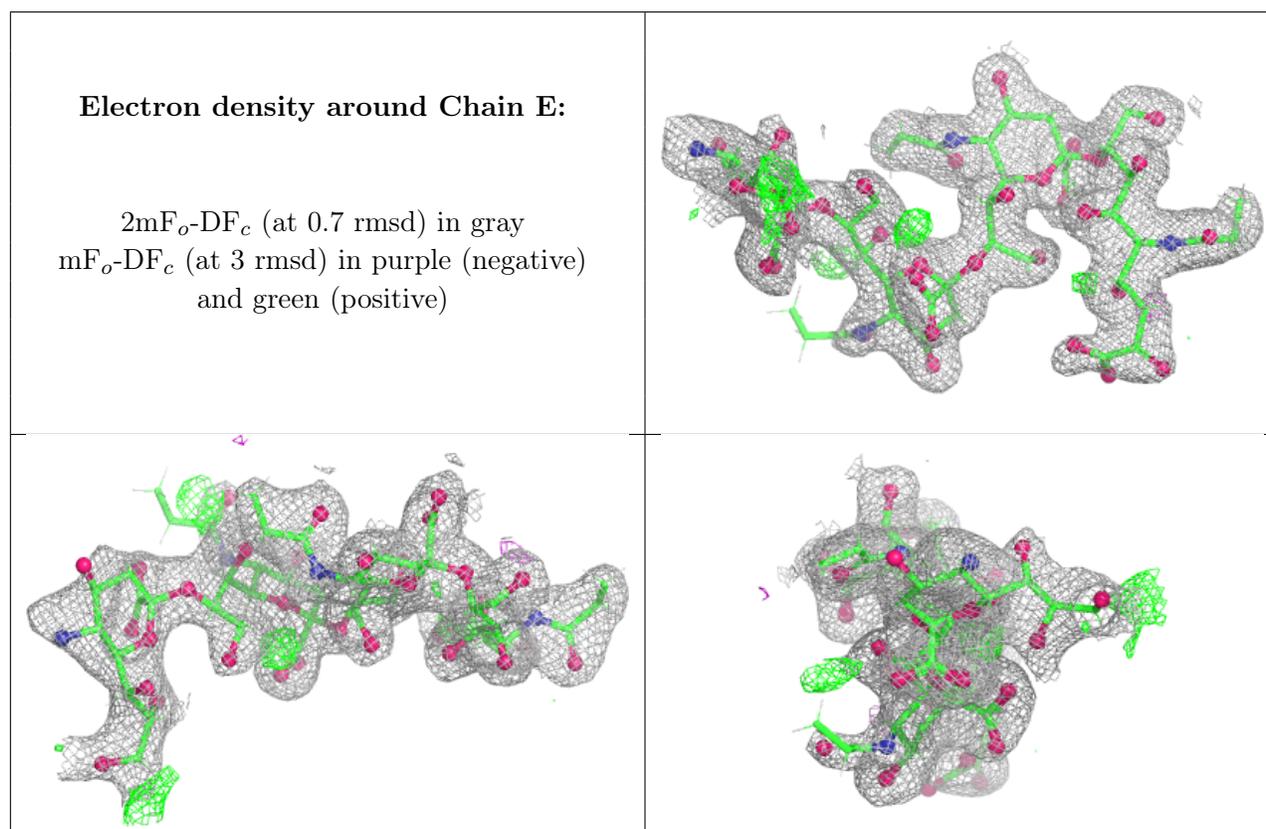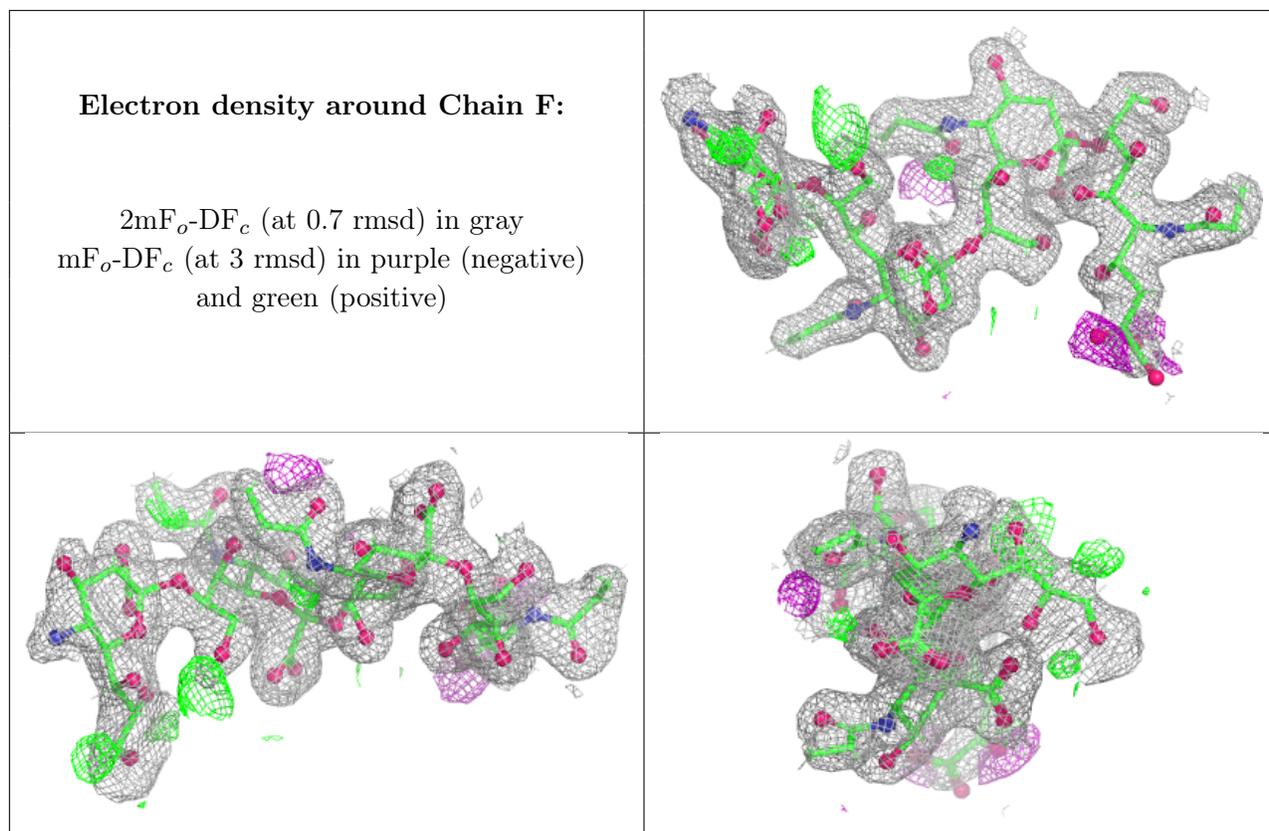
Electron density around Chain E:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)

Electron density around Chain F:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

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
6	PEG	D	303	7/7	0.84	0.15	53,55,66,77	0
6	PEG	A	304	7/7	0.85	0.17	43,57,69,69	0
4	ACY	D	304	4/4	0.85	0.21	47,52,64,72	0
4	ACY	B	307	4/4	0.86	0.18	54,57,71,72	0
5	GOL	C	301	6/6	0.87	0.13	40,44,47,58	0
5	GOL	D	301	6/6	0.87	0.17	42,58,65,70	0
4	ACY	A	301	4/4	0.87	0.19	32,41,41,52	0
4	ACY	A	302	4/4	0.87	0.19	55,61,63,83	0
5	GOL	B	303	6/6	0.88	0.14	38,49,57,60	0
5	GOL	B	302	6/6	0.89	0.12	46,51,54,61	0
4	ACY	C	302	4/4	0.90	0.17	38,53,54,55	0
5	GOL	B	305	6/6	0.90	0.13	44,51,60,64	0
6	PEG	A	305	7/7	0.91	0.13	57,62,69,70	0
5	GOL	B	304	6/6	0.91	0.11	43,49,55,65	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	GOL	D	302	6/6	0.92	0.10	31,39,43,43	0
5	GOL	A	303	6/6	0.94	0.10	35,49,54,61	0
5	GOL	B	306	6/6	0.95	0.10	31,44,44,67	0
5	GOL	B	301	6/6	0.96	0.07	30,33,35,42	0

6.5 Other polymers ⓘ

There are no such residues in this entry.