Full wwPDB X-ray Structure Validation Report ⓘ

Feb 9, 2026 – 04:37 am GMT

PDB ID	:	9SSB / pdb_00009ssb
Title	:	Human angiotensin 1-converting enzyme N-domain in complex with zofenopri-lat
Authors	:	Gregory, K.S.; Acharya, K.R.
Deposited on	:	2025-09-25
Resolution	:	2.00 Å(reported)

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

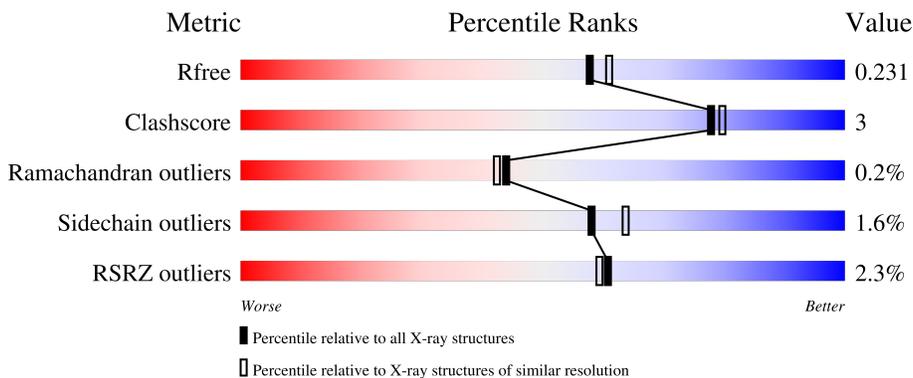|		
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48

1 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 2.00 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.
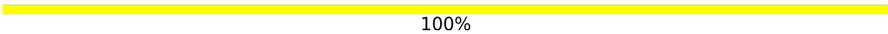
Metric	Percentile Ranks	Value
Rfree		0.231
Clashscore		3
Ramachandran outliers		0.2%
Sidechain outliers		1.6%
RSRZ outliers		2.3%

Worse   *Better*

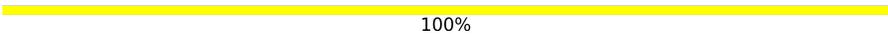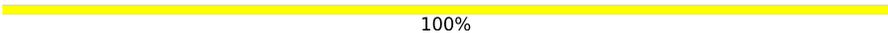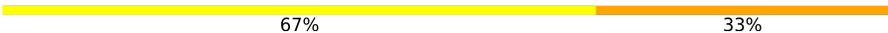▮ Percentile relative to all X-ray structures

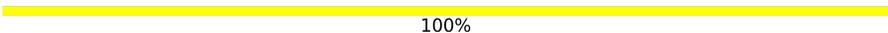▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	9409 (2.00-2.00)
Clashscore	180529	10737 (2.00-2.00)
Ramachandran outliers	177936	10628 (2.00-2.00)
Sidechain outliers	177891	10627 (2.00-2.00)
RSRZ outliers	164620	9409 (2.00-2.00)

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	628	2% ... 89% ... 6% •
1	B	628	4% ... 88% ... 8% • •
1	C	628	% ... 89% ... 7% •
1	D	628	2% ... 89% ... 8% •
2	E	4	25% ... 25% ... 50%

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Mol	Chain	Length	Quality of chain
2	K	4	25% 75%
2	M	4	25% 50% 25%
3	H	2	100%
3	N	2	100%
3	Q	2	100%
4	O	3	100%
5	P	3	67% 33%
6	F	2	100%
6	G	2	100%
6	R	2	50% 50%

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
9	PEG	A	705	-	-	X	-

2 Entry composition ⓘ

There are 21 unique types of molecules in this entry. The entry contains 21759 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 Angiotensin-converting enzyme, soluble form.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	603	Total 4958	C 3186	N 850	O 902	S 20	0	4	0
1	B	607	Total 5012	C 3215	N 861	O 917	S 19	0	7	0
1	C	601	Total 4972	C 3191	N 856	O 905	S 20	0	7	0
1	D	611	Total 5060	C 3244	N 866	O 930	S 20	0	10	0

There are 32 discrepancies between the modelled and reference sequences:

| Chain	Residue	Modelled	Actual	Comment	Reference
A	9	GLN	ASN	conflict	UNP P12821
A	25	GLN	ASN	conflict	UNP P12821
A	82	GLN	ASN	conflict	UNP P12821
A	117	GLN	ASN	conflict	UNP P12821
A	131	GLN	ASN	conflict	UNP P12821
A	289	GLN	ASN	conflict	UNP P12821
A	545	ARG	GLN	conflict	UNP P12821
A	576	LEU	PRO	conflict	UNP P12821
B	9	GLN	ASN	conflict	UNP P12821
B	25	GLN	ASN	conflict	UNP P12821
B	82	GLN	ASN	conflict	UNP P12821
B	117	GLN	ASN	conflict	UNP P12821
B	131	GLN	ASN	conflict	UNP P12821
B	289	GLN	ASN	conflict	UNP P12821
B	545	ARG	GLN	conflict	UNP P12821
B	576	LEU	PRO	conflict	UNP P12821
C	9	GLN	ASN	conflict	UNP P12821
C	25	GLN	ASN	conflict	UNP P12821
C	82	GLN	ASN	conflict	UNP P12821
C	117	GLN	ASN	conflict	UNP P12821
C	131	GLN	ASN	conflict	UNP P12821

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Chain	Residue	Modelled	Actual	Comment	Reference
C	289	GLN	ASN	conflict	UNP P12821
C	545	ARG	GLN	conflict	UNP P12821
C	576	LEU	PRO	conflict	UNP P12821
D	9	GLN	ASN	conflict	UNP P12821
D	25	GLN	ASN	conflict	UNP P12821
D	82	GLN	ASN	conflict	UNP P12821
D	117	GLN	ASN	conflict	UNP P12821
D	131	GLN	ASN	conflict	UNP P12821
D	289	GLN	ASN	conflict	UNP P12821
D	545	ARG	GLN	conflict	UNP P12821
D	576	LEU	PRO	conflict	UNP P12821

- Molecule 2 is an oligosaccharide called alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.
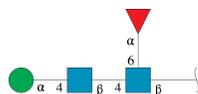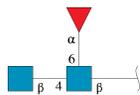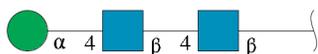

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	4	Total 49	C 28	N 2	O 19	0	0	0
2	K	4	Total 49	C 28	N 2	O 19	0	0	0
2	M	4	Total 49	C 28	N 2	O 19	0	0	0

- Molecule 3 is an oligosaccharide called alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	N	2	Total 24	C 14	N 1	O 9	0	0	0
3	H	2	Total 24	C 14	N 1	O 9	0	0	0
3	Q	2	Total 24	C 14	N 1	O 9	0	0	0

- Molecule 4 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	O	3	Total 38	C 22	N 2	O 14	0	0	0

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
5	P	3	Total 39	C 22	N 2	O 15	0	0	0

- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	F	2	Total 28	C 16	N 2	O 10	0	0	0
6	G	2	Total 28	C 16	N 2	O 10	0	0	0
6	R	2	Total 28	C 16	N 2	O 10	0	0	0

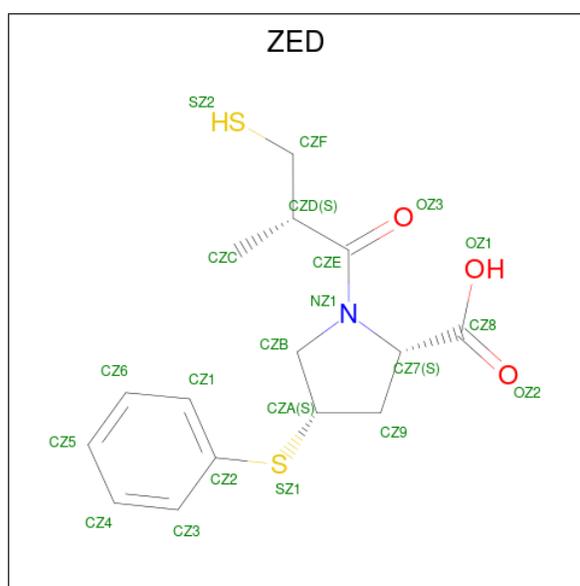- Molecule 7 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

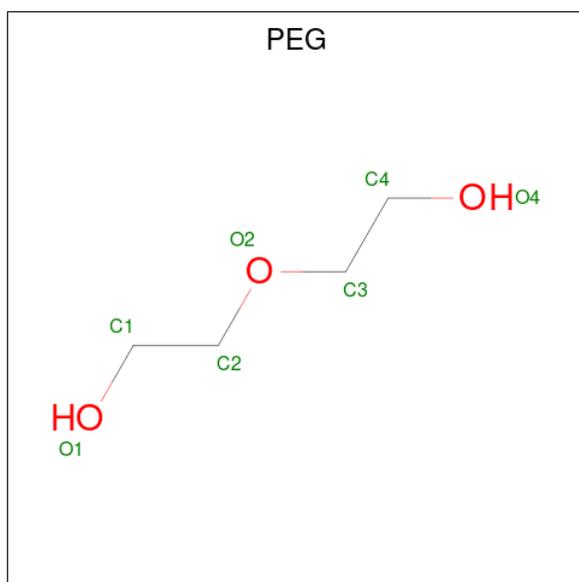| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	1	Total 1	Zn 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	1	Total 1	Zn 1	0	0
7	C	1	Total 1	Zn 1	0	0
7	D	1	Total 1	Zn 1	0	0

- Molecule 8 is L-PROLINE, 1-[(2S)-3-MERCAPTO-2-METHYL-1-OXOPROPYL]-4-(PHE
  NYLTHIO)-, 4S (CCD ID: ZED) (formula: $C_{15}H_{19}NO_3S_2$) (labeled as "Ligand of Interest"
  by depositor).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
8	A	1	Total 21	C 15	N 1	O 3	S 2	0	0
8	B	1	Total 21	C 15	N 1	O 3	S 2	0	0
8	C	1	Total 21	C 15	N 1	O 3	S 2	0	0
8	D	1	Total 21	C 15	N 1	O 3	S 2	0	0

- Molecule 9 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).

PEG

C4

OH O4

O2

O

C3

C1

HO

O1

C2
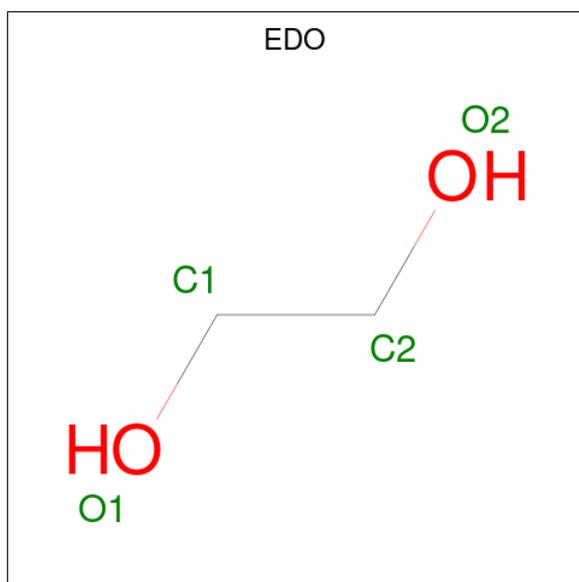
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total 7	C 4	O 3	0	0
9	A	1	Total 7	C 4	O 3	0	0
9	A	1	Total 7	C 4	O 3	0	0
9	B	1	Total 7	C 4	O 3	0	0
9	B	1	Total 7	C 4	O 3	0	0
9	C	1	Total 7	C 4	O 3	0	0
9	C	1	Total 7	C 4	O 3	0	0
9	C	1	Total 7	C 4	O 3	0	0
9	D	1	Total 7	C 4	O 3	0	0

- Molecule 10 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).

W O R L D W I D E

PDB
PROTEIN DATA BANK

EDO

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

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	C	1	Total 4	C 2	O 2	0	0
10	D	1	Total 4	C 2	O 2	0	0
10	D	1	Total 4	C 2	O 2	0	0

- Molecule 11 is ACETATE ION (CCD ID: ACT) (formula: $C_2H_3O_2$).

ACT

OXT

O^-

C

CH3

O

O
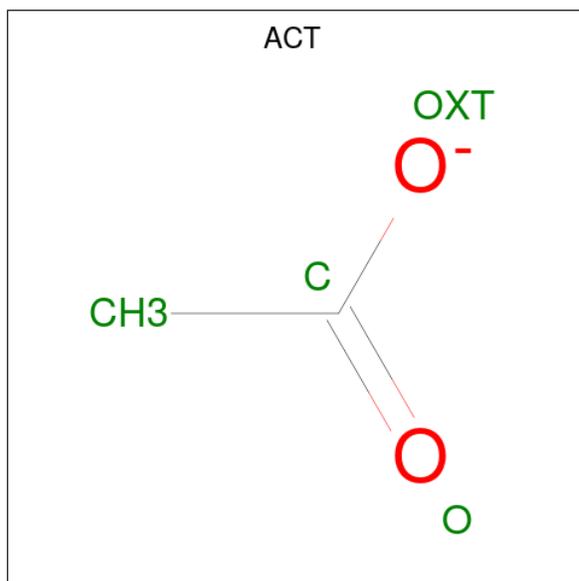
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	A	1	Total 4	C 2	O 2	0	0

- Molecule 12 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: $C_6H_{14}O_4$).

PGE

O4
OH

C5
C6

C4
O
O3

O2
C3

C1
C2

HO
O1
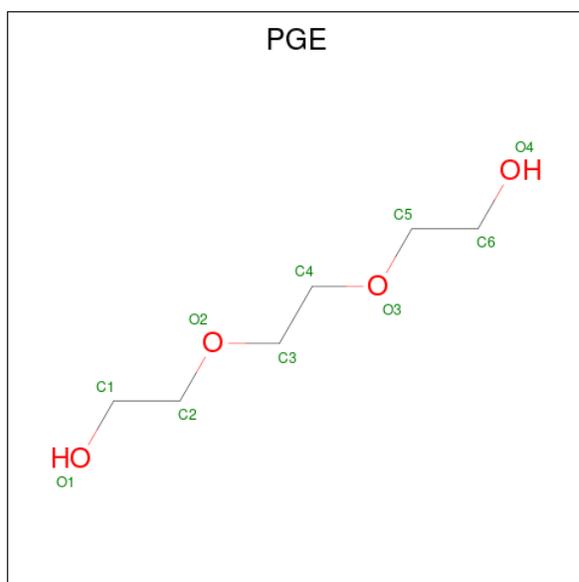
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
12	A	1	Total 10	C 6	O 4	0	0
12	C	1	Total 10	C 6	O 4	0	0
12	D	1	Total 10	C 6	O 4	0	0

- Molecule 13 is CALCIUM ION (CCD ID: CA) (formula: Ca).

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

- Molecule 14 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).
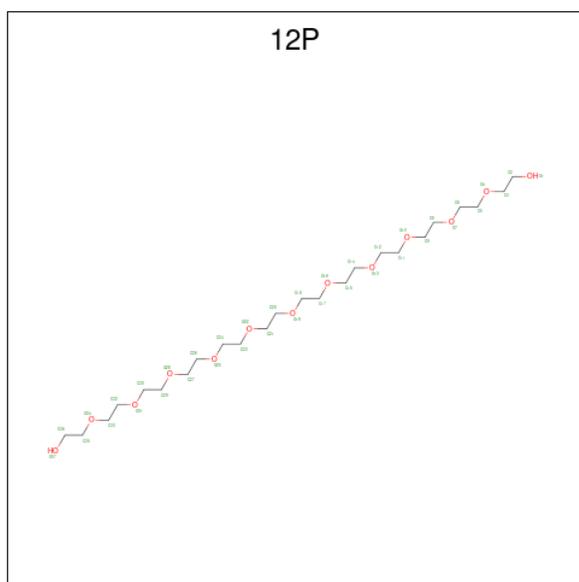
NAG

O6
OH

O1
HO O5
O

C1(R) C5(R)
C6

C2(R) C4(S)
C3(R)

N2
HN OH
O4

C7
OH
O3

C8
O
O7
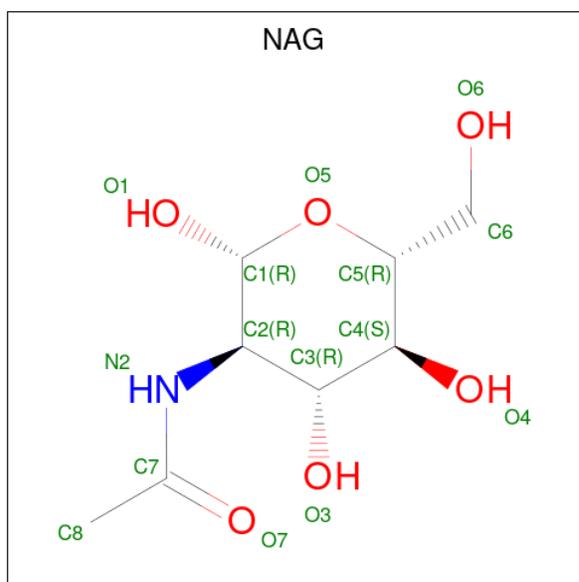
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
14	A	1	Total 14	C 8	N 1	O 5	0	0

- Molecule 15 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
15	A	1	Total 1	Cl 1	0	0
15	B	1	Total 1	Cl 1	0	0
15	C	1	Total 1	Cl 1	0	0
15	D	1	Total 1	Cl 1	0	0

- Molecule 16 is DODECAETHYLENE GLYCOL (CCD ID: 12P) (formula: $C_{24}H_{50}O_{13}$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
16	A	1	Total 74	C 48	O 26	0	1

- Molecule 17 is 3,6,9,12,15,18,21-HEPTAOXATRICOSANE-1,23-DIOL (CCD ID: PE8) (formula: $C_{16}H_{34}O_9$).
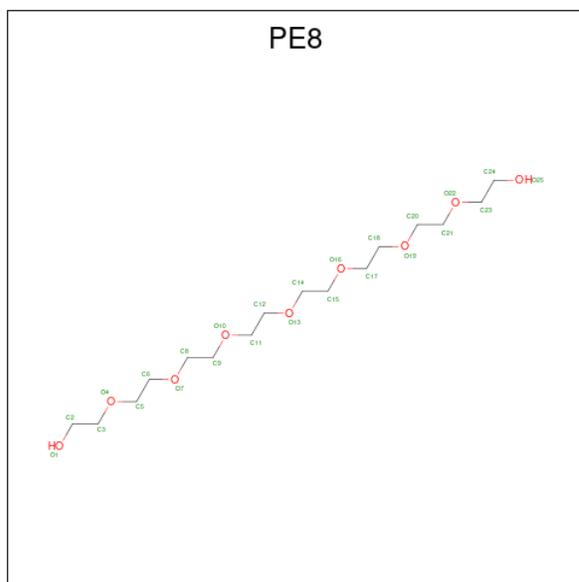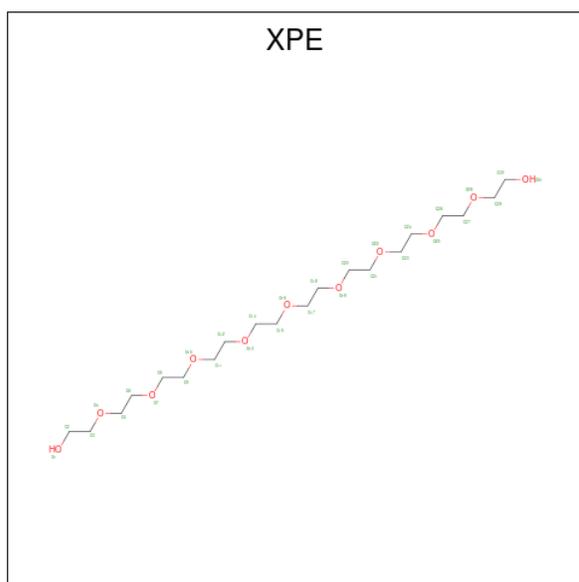

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
17	B	1	Total 25	C 16	O 9	0	0

- Molecule 18 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (CCD ID: TRS) (formula: $C_4H_{12}NO_3$).
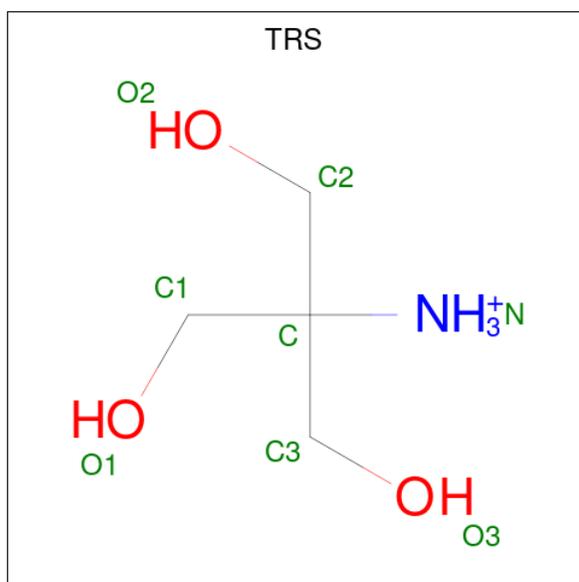
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
18	B	1	Total 8	C 4	N 1	O 3	0	0
18	C	1	Total 8	C 4	N 1	O 3	0	0

- Molecule 19 is 3,6,9,12,15,18,21,24,27-NONAOXANONACOSANE-1,29-DIOL (CCD ID: XPE) (formula: $C_{20}H_{42}O_{11}$).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
19	C	1	Total 31	C 20	O 11	0	0

- Molecule 20 is TETRAETHYLENE GLYCOL (CCD ID: PG4) (formula: $C_8H_{18}O_5$).
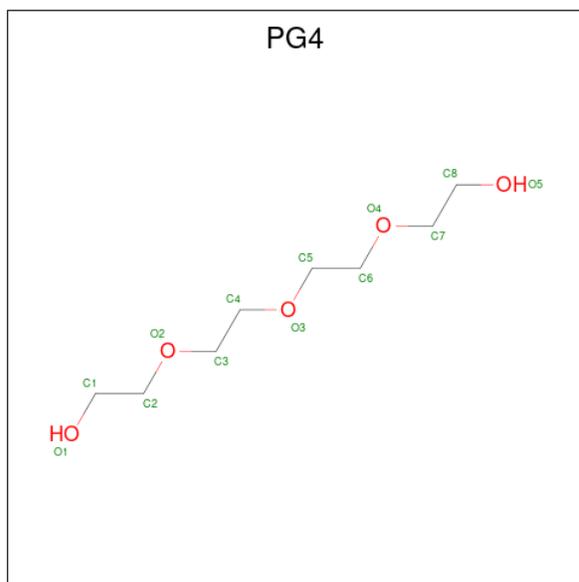
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
20	D	1	Total 13	C 8	O 5	0	0

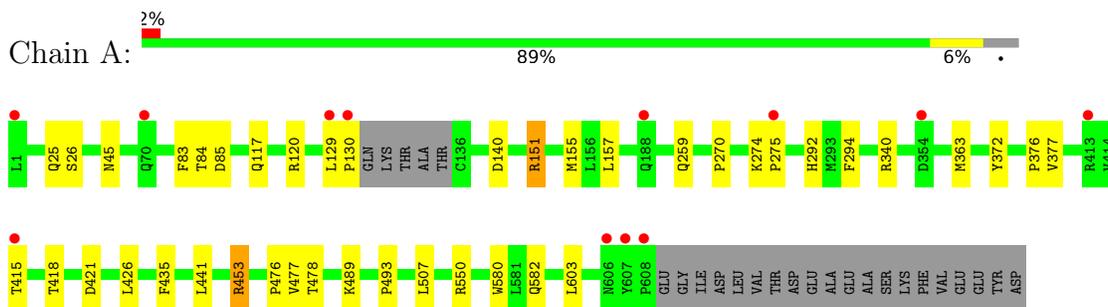- Molecule 21 is water.

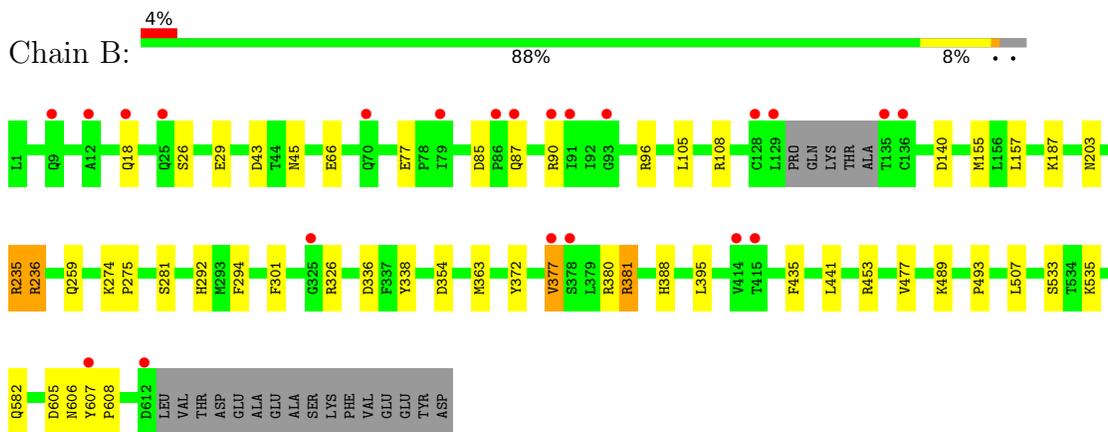| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
21	A	232	Total 232	O 232	0	0
21	B	259	Total 259	O 259	0	0
21	C	186	Total 186	O 186	0	0
21	D	266	Total 266	O 266	0	0

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.
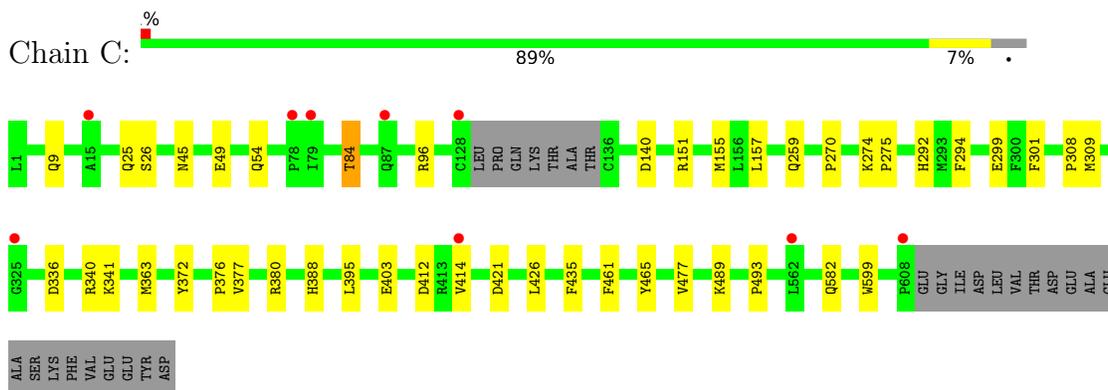
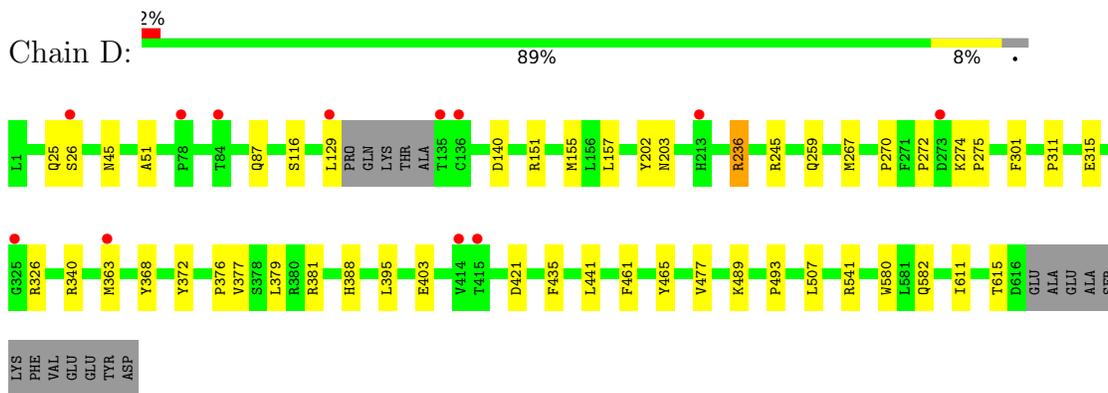• Molecule 1: Angiotensin-converting enzyme, soluble form

Chain A:

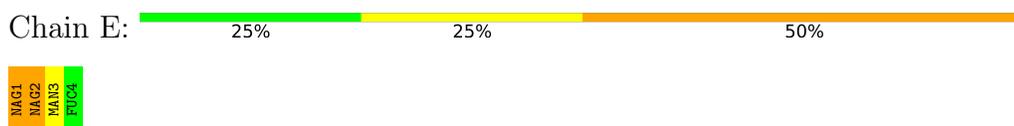• Molecule 1: Angiotensin-converting enzyme, soluble form

Chain B:

• Molecule 1: Angiotensin-converting enzyme, soluble form

Chain C:

● Molecule 1: Angiotensin-converting enzyme, soluble form

Chain D:

● Molecule 2: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:

● Molecule 2: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:

● Molecule 2: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose
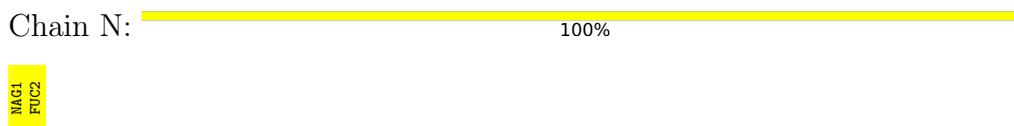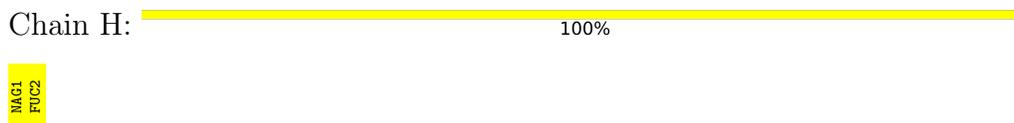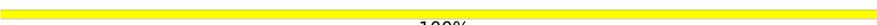
Chain M:

● Molecule 3: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:

● Molecule 3: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:

- Molecule 3: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q: 100%

NAG1
FUC2

- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O: 100%

NAG1
NAG2
FUC3

- Molecule 5: alpha-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P: 67% 33%

NAG1
NAG2
MAN3

- Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F: 100%

NAG1
NAG2

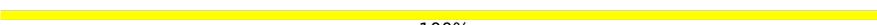- Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G: 100%

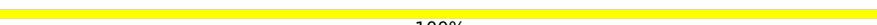NAG1
NAG2

- Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R: 50% 50%

NAG1
NAG2

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	73.53Å 101.88Å 114.27Å 84.90° 85.46° 81.35°	Depositor
Resolution (Å)	72.53 – 2.00 72.53 – 2.00	Depositor EDS
% Data completeness (in resolution range)	98.1 (72.53-2.00) 98.1 (72.53-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	1.64 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.8.0431 (refmacat 0.4.105)	Depositor
R, R_{free}	0.201 , 0.226 0.207 , 0.231	Depositor DCC
R_{free} test set	10583 reflections (4.81%)	wwPDB-VP
Wilson B-factor (Å^2)	24.4	Xtriage
Anisotropy	0.458	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 30.1	EDS
L-test for twinning[2]	$<|L|> = 0.52, <L^2> = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	21759	wwPDB-VP
Average B, all atoms (Å^2)	30.0	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 41.45 % 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 2.3573e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

---

[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: 12P, CL, PGE, PG4, PEG, NAG, ZN, MAN, XPE, PE8, ACT, TRS, FUC, EDO, CA, ZED

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	0.61	0/5114	1.02	9/6966 (0.1%)
1	B	0.62	0/5167	1.04	9/7036 (0.1%)
1	C	0.61	0/5127	1.00	5/6981 (0.1%)
1	D	0.63	0/5215	1.02	5/7102 (0.1%)
All	All	0.62	0/20623	1.02	28/28085 (0.1%)

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	3
1	B	0	4
1	C	0	2
1	D	0	5
All	All	0	14

There are no bond length outliers.

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($°$)	Ideal($°$)
1	B	236	ARG	CG-CD-NE	-7.74	94.97	112.00
1	C	582	GLN	CB-CA-C	-6.83	99.89	110.81
1	A	140	ASP	CA-CB-CG	6.41	119.01	112.60
1	A	582	GLN	CB-CA-C	-6.30	100.74	110.81
1	D	582	GLN	CB-CA-C	-6.30	100.74	110.81
1	C	140	ASP	CA-CB-CG	6.07	118.67	112.60
1	B	326	ARG	CB-CA-C	-6.06	100.04	109.61
1	B	336	ASP	CA-CB-CG	6.04	118.64	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	140	ASP	CA-CB-CG	5.95	118.55	112.60
1	D	140	ASP	CA-CB-CG	5.92	118.53	112.60
1	B	582	GLN	CB-CA-C	-5.90	101.37	110.81
1	C	84	THR	CA-CB-OG1	5.82	118.32	109.60
1	B	507	LEU	N-CA-CB	-5.81	101.59	110.12
1	B	236	ARG	CD-NE-CZ	5.71	132.39	124.40
1	A	84	THR	N-CA-CB	-5.62	101.86	110.12
1	D	403	GLU	CB-CA-C	-5.52	102.21	110.88
1	A	83	PHE	CA-C-N	5.43	127.55	120.28
1	A	83	PHE	C-N-CA	5.43	127.55	120.28
1	A	415	THR	CA-CB-OG1	-5.37	101.55	109.60
1	C	336	ASP	CA-CB-CG	5.36	117.96	112.60
1	D	507	LEU	N-CA-CB	-5.22	102.45	110.12
1	A	507	LEU	N-CA-CB	-5.20	102.47	110.12
1	D	236	ARG	NE-CZ-NH1	-5.19	116.31	121.50
1	B	354	ASP	CA-CB-CG	5.14	117.74	112.60
1	B	203	ASN	CB-CA-C	5.11	119.14	111.89
1	C	341	LYS	CB-CG-CD	5.04	122.89	111.30
1	A	151	ARG	CD-NE-CZ	5.01	131.42	124.40
1	A	85	ASP	CA-CB-CG	5.01	117.61	112.60

There are no chirality outliers.

All (14) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	340	ARG	Sidechain
1	A	453	ARG	Sidechain
1	A	550	ARG	Sidechain
1	B	235	ARG	Sidechain
1	B	236	ARG	Sidechain
1	B	380	ARG	Sidechain
1	B	90	ARG	Sidechain
1	C	340	ARG	Sidechain
1	C	380	ARG	Sidechain
1	D	151	ARG	Sidechain
1	D	245	ARG	Sidechain
1	D	340	ARG	Sidechain
1	D	381	ARG	Sidechain
1	D	541	ARG	Sidechain

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	4958	0	4738	28	0
1	B	5012	0	4783	25	0
1	C	4972	0	4746	23	0
1	D	5060	0	4822	24	0
2	E	49	0	43	1	0
2	K	49	0	43	0	0
2	M	49	0	43	1	0
3	H	24	0	22	0	0
3	N	24	0	22	0	0
3	Q	24	0	22	0	0
4	O	38	0	34	0	0
5	P	39	0	34	1	0
6	F	28	0	25	0	0
6	G	28	0	25	2	0
6	R	28	0	25	0	0
7	A	1	0	0	0	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
7	D	1	0	0	0	0
8	A	21	0	17	0	0
8	B	21	0	17	0	0
8	C	21	0	17	0	0
8	D	21	0	17	0	0
9	A	21	0	30	6	0
9	B	14	0	20	1	0
9	C	21	0	30	1	0
9	D	7	0	10	0	0
10	A	20	0	30	2	0
10	B	16	0	24	0	0
10	C	24	0	36	0	0
10	D	8	0	12	0	0
11	A	4	0	3	1	0
12	A	10	0	14	0	0
12	C	10	0	14	5	0
12	D	10	0	14	0	0
13	A	1	0	0	0	0
13	B	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	C	1	0	0	0	0
13	D	1	0	0	0	0
14	A	14	0	13	0	0
15	A	1	0	0	0	0
15	B	1	0	0	0	0
15	C	1	0	0	0	0
15	D	1	0	0	0	0
16	A	74	0	98	8	0
17	B	25	0	34	2	0
18	B	8	0	12	1	0
18	C	8	0	12	1	0
19	C	31	0	42	1	0
20	D	13	0	18	0	0
21	A	232	0	0	1	1
21	B	259	0	0	5	0
21	C	186	0	0	2	0
21	D	266	0	0	1	1
All	All	21759	0	19961	109	1

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 (109) 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)
16:A:716[A]:12P:O19	16:A:716[A]:12P:H242	1.54	1.07
1:B:235:ARG:HB3	17:B:703:PE8:H22	1.63	0.78
1:D:236:ARG:CD	1:D:267:MET:HE3	2.19	0.71
16:A:716[A]:12P:O19	16:A:716[A]:12P:C24	2.35	0.71
1:C:599:TRP:HA	9:C:706:PEG:H32	1.74	0.70
16:A:716[A]:12P:H151	21:B:837:HOH:O	1.94	0.68
1:D:155[A]:MET:SD	1:D:615:THR:HG22	2.32	0.68
1:A:120:ARG:CD	9:A:705:PEG:H31	2.25	0.66
1:D:236:ARG:NE	1:D:267:MET:HE3	2.13	0.64
1:D:25:GLN:OE1	1:D:376:PRO:HA	1.98	0.62
1:A:418:THR:HG22	2:M:4:FUC:O4	1.99	0.62
1:B:43:ASP:OD2	21:B:801:HOH:O	2.16	0.61
2:E:1:NAG:H61	2:E:2:NAG:H82	1.82	0.60
1:D:155[A]:MET:SD	1:D:615:THR:CG2	2.91	0.58
1:A:120:ARG:HD2	9:A:705:PEG:H31	1.86	0.57
1:D:236:ARG:HD2	1:D:267:MET:HE3	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:274:LYS:HB3	1:D:275:PRO:CD	2.36	0.56
1:C:157:LEU:HD11	1:C:477:VAL:HG13	1.87	0.55
1:B:274:LYS:HB3	1:B:275:PRO:CD	2.37	0.54
1:B:453:ARG:HH21	1:B:453:ARG:HG2	1.73	0.54
1:B:157:LEU:HD11	1:B:477:VAL:HG13	1.89	0.53
5:P:1:NAG:O3	5:P:1:NAG:H83	2.09	0.53
1:C:25:GLN:OE1	1:C:376:PRO:HA	2.09	0.53
1:C:96:ARG:HG3	1:C:96:ARG:HH21	1.72	0.53
16:A:716[B]:12P:O34	1:B:292:HIS:NE2	2.41	0.53
1:D:274:LYS:HB3	1:D:275:PRO:HD2	1.92	0.52
1:B:105:LEU:HD23	1:C:9:GLN:OE1	2.09	0.52
1:B:533:SER:OG	9:B:704:PEG:H31	2.09	0.52
1:A:292:HIS:CD2	16:A:716[A]:12P:H262	2.45	0.52
1:C:308:PRO:HB3	18:C:705:TRS:H22	1.92	0.52
1:B:274:LYS:HB3	1:B:275:PRO:HD2	1.92	0.52
1:A:120:ARG:HD2	9:A:705:PEG:C3	2.41	0.51
1:A:478:THR:H	10:A:711:EDO:H21	1.76	0.51
1:C:270:PRO:HD3	1:C:426:LEU:HD23	1.93	0.51
1:D:155[A]:MET:HA	1:D:155[A]:MET:HE3	1.93	0.51
1:A:117:GLN:NE2	1:A:120:ARG:HH21	2.09	0.51
1:A:25:GLN:OE1	1:A:376:PRO:HA	2.11	0.51
1:C:309:MET:CG	1:C:363[B]:MET:HE1	2.41	0.51
1:A:157:LEU:HD11	1:A:477:VAL:HG13	1.92	0.50
1:A:274:LYS:HB3	1:A:275:PRO:HD2	1.94	0.49
1:D:157:LEU:HD11	1:D:477:VAL:HG13	1.94	0.49
1:A:603:LEU:HD21	10:A:711:EDO:H22	1.95	0.49
1:A:120:ARG:CD	9:A:705:PEG:C3	2.92	0.48
1:A:129:LEU:O	1:A:130:PRO:C	2.57	0.48
1:B:85:ASP:OD1	1:B:87[A]:GLN:OE1	2.31	0.47
1:B:338:TYR:OH	1:B:381:ARG:NH1	2.48	0.47
1:B:18:GLN:HG2	21:B:971:HOH:O	2.14	0.47
1:B:605:ASP:O	1:B:606:ASN:HB2	2.14	0.47
1:C:270:PRO:HD3	1:C:426:LEU:CD2	2.44	0.47
1:B:187:LYS:HE3	21:B:923:HOH:O	2.15	0.47
1:A:270:PRO:HD3	1:A:426:LEU:CD2	2.45	0.46
1:A:489:LYS:O	1:A:493:PRO:HD2	2.16	0.46
1:D:87[B]:GLN:HG3	1:D:379:LEU:HD11	1.98	0.46
1:C:274:LYS:HB3	1:C:275:PRO:HD2	1.97	0.46
1:C:489:LYS:O	1:C:493:PRO:HD2	2.16	0.46
1:A:157:LEU:HD13	1:A:476:PRO:HB2	1.98	0.45
1:B:235:ARG:HD2	17:B:703:PE8:O1	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:299:GLU:OE2	21:C:801:HOH:O	2.20	0.45
1:C:155:MET:HE3	1:C:155:MET:HA	1.98	0.45
1:A:117:GLN:HE21	1:A:120:ARG:HH21	1.63	0.45
18:B:710:TRS:H31	21:B:1044:HOH:O	2.16	0.45
1:D:51:ALA:HB1	1:D:116[B]:SER:OG	2.17	0.45
1:D:259:GLN:O	1:D:435:PHE:HA	2.17	0.45
1:A:270:PRO:HB3	1:A:580:TRP:CH2	2.52	0.45
1:C:465:TYR:CZ	12:C:714:PGE:H32	2.52	0.44
16:A:716[A]:12P:H142	21:A:819:HOH:O	2.17	0.44
12:C:714:PGE:H42	12:C:714:PGE:H6	1.67	0.44
1:D:489:LYS:O	1:D:493:PRO:HD2	2.17	0.44
1:A:117:GLN:HG3	11:A:706:ACT:O	2.18	0.44
1:A:274:LYS:HB3	1:A:275:PRO:CD	2.47	0.44
1:C:49:GLU:HG2	6:G:2:NAG:H82	1.99	0.44
1:C:465:TYR:CE2	12:C:714:PGE:H32	2.52	0.44
1:B:155:MET:HE3	1:B:155:MET:HA	1.99	0.44
1:C:465:TYR:CE1	1:D:461:PHE:CE2	3.05	0.44
1:D:270:PRO:HB3	1:D:580:TRP:CH2	2.53	0.43
1:A:120:ARG:HD3	9:A:705:PEG:H22	2.01	0.43
1:B:489:LYS:O	1:B:493:PRO:HD2	2.17	0.43
1:C:292:HIS:HE2	19:C:703:XPE:H201	1.84	0.43
1:A:120:ARG:HD3	9:A:705:PEG:C2	2.48	0.43
1:B:259:GLN:O	1:B:435:PHE:HA	2.18	0.43
1:C:274:LYS:HB3	1:C:275:PRO:CD	2.48	0.43
1:A:270:PRO:HD3	1:A:426:LEU:HD22	1.99	0.43
1:A:294:PHE:O	1:A:363[A]:MET:HE1	2.19	0.43
1:B:29:GLU:HG2	1:B:377:VAL:HG21	1.99	0.43
1:B:441:LEU:C	1:B:441:LEU:HD12	2.44	0.43
1:B:294:PHE:O	1:B:363:MET:HE1	2.19	0.42
1:A:441:LEU:HD12	1:A:441:LEU:C	2.44	0.42
1:C:461:PHE:CE2	1:D:465:TYR:CE1	3.07	0.42
1:D:236:ARG:HD2	1:D:267:MET:CE	2.49	0.42
1:D:272:PRO:HB3	21:D:1058:HOH:O	2.19	0.42
1:D:441:LEU:C	1:D:441:LEU:HD12	2.45	0.42
16:A:716[A]:12P:H301	16:A:716[A]:12P:H271	1.12	0.42
1:B:66:GLU:CD	1:B:108:ARG:HH22	2.28	0.42
1:D:202:TYR:O	1:D:203[B]:ASN:C	2.62	0.41
1:A:117:GLN:HE22	1:A:120:ARG:HE	1.67	0.41
1:A:259:GLN:O	1:A:435:PHE:HA	2.19	0.41
1:B:607:TYR:CD2	1:B:608:PRO:HA	2.55	0.41
1:C:259:GLN:O	1:C:435:PHE:HA	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:311:PRO:O	1:D:315[B]:GLU:HG3	2.20	0.41
1:D:301:PHE:CZ	1:D:395:LEU:HD22	2.56	0.41
1:B:301:PHE:CZ	1:B:395:LEU:HD22	2.55	0.41
12:C:714:PGE:H3	1:D:465:TYR:CD2	2.56	0.41
12:C:714:PGE:H4	21:C:813:HOH:O	2.19	0.41
6:G:1:NAG:O4	6:G:2:NAG:H61	2.21	0.41
1:A:155:MET:HE3	1:A:155:MET:HA	2.03	0.40
1:C:301:PHE:CZ	1:C:395:LEU:HD22	2.56	0.40
1:C:294:PHE:O	1:C:363[A]:MET:HE1	2.21	0.40
16:A:716[A]:12P:H231	16:A:716[A]:12P:H261	1.33	0.40
1:B:77:GLU:OE1	1:B:96:ARG:HD2	2.21	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:A:996:HOH:O	21:D:845:HOH:O[1_454]	2.19	0.01

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	603/628 (96%)	597 (99%)	5 (1%)	1 (0%)	44	42
1	B	610/628 (97%)	602 (99%)	7 (1%)	1 (0%)	44	42
1	C	604/628 (96%)	595 (98%)	8 (1%)	1 (0%)	44	42
1	D	617/628 (98%)	607 (98%)	9 (2%)	1 (0%)	44	42
All	All	2434/2512 (97%)	2401 (99%)	29 (1%)	4 (0%)	44	42

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	45	ASN
1	D	45	ASN
1	B	45	ASN
1	C	45	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	523/540 (97%)	517 (99%)	6 (1%)	70	76
1	B	529/540 (98%)	522 (99%)	7 (1%)	65	71
1	C	524/540 (97%)	512 (98%)	12 (2%)	45	49
1	D	535/540 (99%)	525 (98%)	10 (2%)	52	57
All	All	2111/2160 (98%)	2076 (98%)	35 (2%)	58	61

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	SER
1	A	151	ARG
1	A	372	TYR
1	A	377	VAL
1	A	421	ASP
1	A	453	ARG
1	B	26	SER
1	B	281	SER
1	B	372	TYR
1	B	377	VAL
1	B	381	ARG
1	B	388	HIS
1	B	535	LYS
1	C	26	SER
1	C	54[A]	GLN
1	C	54[B]	GLN
1	C	84	THR
1	C	151	ARG

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Mol	Chain	Res	Type
1	C	372	TYR
1	C	377	VAL
1	C	388	HIS
1	C	403	GLU
1	C	412	ASP
1	C	414	VAL
1	C	421	ASP
1	D	26	SER
1	D	129	LEU
1	D	326	ARG
1	D	363	MET
1	D	368	TYR
1	D	372	TYR
1	D	377	VAL
1	D	388	HIS
1	D	421	ASP
1	D	611	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	30	GLN
1	A	70	GLN
1	A	82	GLN
1	A	110	GLN
1	A	117	GLN
1	A	371	GLN
1	A	494	ASN
1	A	568	GLN
1	A	579	GLN
1	B	110	GLN
1	B	188	GLN
1	B	213	HIS
1	B	371	GLN
1	B	527	GLN
1	B	579	GLN
1	C	82	GLN
1	C	109	GLN
1	C	213	HIS
1	C	371	GLN
1	C	494	ASN
1	C	568	GLN

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Mol	Chain	Res	Type
1	C	579	GLN
1	D	82	GLN
1	D	188	GLN
1	D	213	HIS
1	D	371	GLN
1	D	579	GLN
1	D	582	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 ⓘ

30 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	$\#\|Z\| > 2$
2	NAG	E	1	2,1	14,14,15	0.48	0	17,19,21	1.42	2 (11%)
2	NAG	E	2	2	14,14,15	0.37	0	17,19,21	1.17	1 (5%)
2	MAN	E	3	2	11,11,12	0.57	0	15,15,17	1.05	1 (6%)
2	FUC	E	4	2	10,10,11	0.42	0	14,14,16	0.58	0
6	NAG	F	1	6,1	14,14,15	0.57	0	17,19,21	1.18	2 (11%)
6	NAG	F	2	6	14,14,15	0.40	0	17,19,21	1.16	2 (11%)
6	NAG	G	1	6,1	14,14,15	0.35	0	17,19,21	1.37	2 (11%)
6	NAG	G	2	6	14,14,15	0.39	0	17,19,21	0.93	1 (5%)
3	NAG	H	1	1,3	14,14,15	0.44	0	17,19,21	1.49	2 (11%)
3	FUC	H	2	3	10,10,11	0.48	0	14,14,16	1.23	2 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
2	NAG	K	1	2,1	14,14,15	0.57	0	17,19,21	1.05	1 (5%)
2	NAG	K	2	2	14,14,15	0.37	0	17,19,21	1.36	1 (5%)
2	MAN	K	3	2	11,11,12	0.54	0	15,15,17	1.79	3 (20%)
2	FUC	K	4	2	10,10,11	0.53	0	14,14,16	0.80	0
2	NAG	M	1	2,1	14,14,15	0.37	0	17,19,21	1.16	2 (11%)
2	NAG	M	2	2	14,14,15	0.26	0	17,19,21	0.76	0
2	MAN	M	3	2	11,11,12	0.55	0	15,15,17	1.08	1 (6%)
2	FUC	M	4	2	10,10,11	0.43	0	14,14,16	1.37	1 (7%)
3	NAG	N	1	1,3	14,14,15	0.41	0	17,19,21	1.04	1 (5%)
3	FUC	N	2	3	10,10,11	0.49	0	14,14,16	1.61	2 (14%)
4	NAG	O	1	1,4	14,14,15	0.69	0	17,19,21	1.01	1 (5%)
4	NAG	O	2	4	14,14,15	0.46	0	17,19,21	1.34	2 (11%)
4	FUC	O	3	4	10,10,11	0.50	0	14,14,16	1.46	3 (21%)
5	NAG	P	1	5,1	14,14,15	0.40	0	17,19,21	1.29	1 (5%)
5	NAG	P	2	5	14,14,15	0.34	0	17,19,21	0.98	1 (5%)
5	MAN	P	3	5	11,11,12	0.66	1 (9%)	15,15,17	1.34	2 (13%)
3	NAG	Q	1	1,3	14,14,15	0.42	0	17,19,21	0.99	1 (5%)
3	FUC	Q	2	3	10,10,11	0.40	0	14,14,16	1.14	1 (7%)
6	NAG	R	1	6,1	14,14,15	0.30	0	17,19,21	0.69	0
6	NAG	R	2	6	14,14,15	0.37	0	17,19,21	0.73	1 (5%)

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	NAG	E	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	2/6/23/26	0/1/1/1
2	MAN	E	3	2	-	2/2/19/22	0/1/1/1
2	FUC	E	4	2	-	-	0/1/1/1
6	NAG	F	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	F	2	6	-	3/6/23/26	0/1/1/1
6	NAG	G	1	6,1	-	2/6/23/26	0/1/1/1
6	NAG	G	2	6	-	2/6/23/26	0/1/1/1
3	NAG	H	1	1,3	-	1/6/23/26	0/1/1/1
3	FUC	H	2	3	-	-	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	K	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	K	2	2	-	4/6/23/26	0/1/1/1
2	MAN	K	3	2	-	1/2/19/22	0/1/1/1
2	FUC	K	4	2	-	-	0/1/1/1
2	NAG	M	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	M	2	2	-	0/6/23/26	0/1/1/1
2	MAN	M	3	2	-	2/2/19/22	0/1/1/1
2	FUC	M	4	2	-	-	0/1/1/1
3	NAG	N	1	1,3	-	1/6/23/26	0/1/1/1
3	FUC	N	2	3	-	-	0/1/1/1
4	NAG	O	1	1,4	-	1/6/23/26	0/1/1/1
4	NAG	O	2	4	-	4/6/23/26	0/1/1/1
4	FUC	O	3	4	-	-	0/1/1/1
5	NAG	P	1	5,1	-	6/6/23/26	0/1/1/1
5	NAG	P	2	5	-	2/6/23/26	0/1/1/1
5	MAN	P	3	5	-	0/2/19/22	1/1/1/1
3	NAG	Q	1	1,3	-	1/6/23/26	0/1/1/1
3	FUC	Q	2	3	-	-	0/1/1/1
6	NAG	R	1	6,1	-	1/6/23/26	0/1/1/1
6	NAG	R	2	6	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	P	3	MAN	O5-C5	2.04	1.47	1.43

All (40) bond angle outliers are listed below:

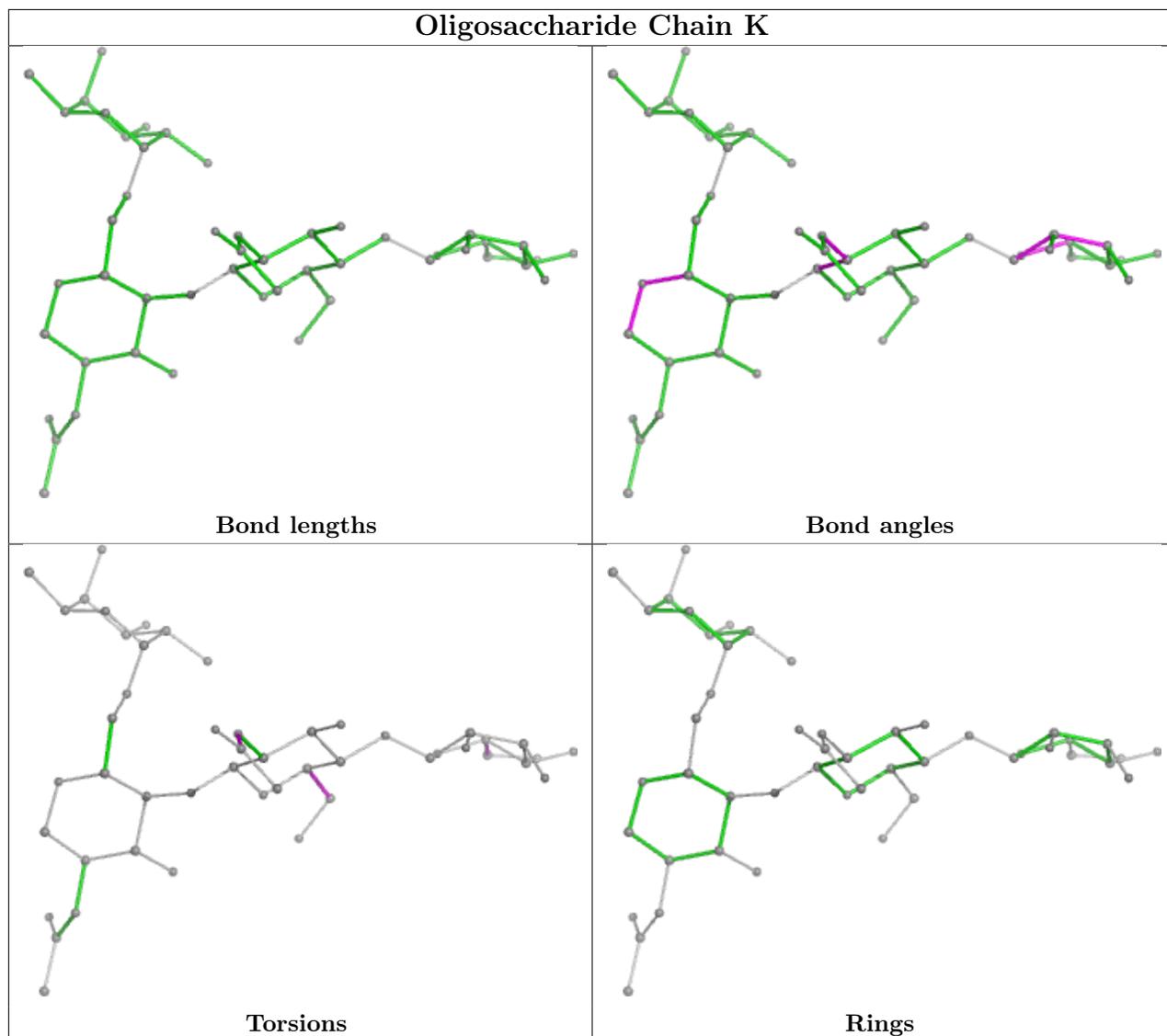| Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	K	3	MAN	C1-O5-C5	4.52	118.32	112.19
3	N	2	FUC	C1-C2-C3	4.41	115.09	109.67
2	K	3	MAN	C1-C2-C3	4.31	114.97	109.67
2	E	1	NAG	C2-N2-C7	4.13	128.78	122.90
2	K	2	NAG	C1-C2-N2	4.09	117.47	110.49
5	P	3	MAN	C1-O5-C5	3.94	117.53	112.19
6	G	1	NAG	C1-O5-C5	3.86	117.42	112.19
5	P	1	NAG	C2-N2-C7	3.83	128.36	122.90
2	M	1	NAG	C2-N2-C7	3.77	128.27	122.90
3	H	1	NAG	C1-C2-N2	3.72	116.84	110.49
4	O	2	NAG	C4-C3-C2	3.51	116.16	111.02
3	Q	2	FUC	C1-C2-C3	3.39	113.83	109.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	G	2	NAG	C1-O5-C5	3.16	116.48	112.19
2	M	4	FUC	O2-C2-C3	3.06	116.28	110.14
2	E	2	NAG	C1-O5-C5	3.04	116.31	112.19
6	G	1	NAG	C1-C2-N2	2.97	115.56	110.49
2	M	3	MAN	C1-O5-C5	2.88	116.09	112.19
2	K	1	NAG	C1-O5-C5	2.65	115.78	112.19
6	F	1	NAG	C2-N2-C7	2.64	126.66	122.90
4	O	2	NAG	C2-N2-C7	2.57	126.56	122.90
4	O	3	FUC	O5-C1-C2	2.52	114.67	110.77
5	P	3	MAN	C1-C2-C3	2.49	112.72	109.67
4	O	1	NAG	C1-C2-N2	2.48	114.72	110.49
6	F	2	NAG	O5-C5-C4	-2.46	104.85	110.83
3	N	1	NAG	C1-C2-N2	2.46	114.68	110.49
2	E	3	MAN	C1-C2-C3	2.44	112.66	109.67
3	H	1	NAG	C3-C4-C5	-2.42	105.92	110.24
6	F	1	NAG	C1-O5-C5	2.38	115.41	112.19
3	N	2	FUC	O5-C1-C2	2.33	114.37	110.77
4	O	3	FUC	C1-C2-C3	2.29	112.48	109.67
3	H	2	FUC	O2-C2-C1	2.27	113.80	109.15
3	Q	1	NAG	C1-C2-N2	2.23	114.30	110.49
2	K	3	MAN	O5-C1-C2	2.22	114.20	110.77
2	M	1	NAG	C1-O5-C5	2.21	115.18	112.19
4	O	3	FUC	C2-C3-C4	-2.17	107.13	110.89
6	R	2	NAG	C2-N2-C7	2.15	125.96	122.90
2	E	1	NAG	C1-C2-N2	2.12	114.10	110.49
3	H	2	FUC	O2-C2-C3	2.11	114.36	110.14
5	P	2	NAG	C2-N2-C7	2.09	125.88	122.90
6	F	2	NAG	C2-N2-C7	2.05	125.83	122.90

There are no chirality outliers.

All (37) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	P	1	NAG	C8-C7-N2-C2
5	P	1	NAG	O7-C7-N2-C2
6	F	1	NAG	C8-C7-N2-C2
6	F	2	NAG	C1-C2-N2-C7
6	F	2	NAG	C8-C7-N2-C2
6	F	2	NAG	O7-C7-N2-C2
6	G	1	NAG	C8-C7-N2-C2
6	G	1	NAG	O7-C7-N2-C2
2	K	2	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
2	E	2	NAG	C8-C7-N2-C2
4	O	2	NAG	C8-C7-N2-C2
2	K	2	NAG	C4-C5-C6-O6
2	M	3	MAN	O5-C5-C6-O6
6	G	2	NAG	O5-C5-C6-O6
5	P	2	NAG	C4-C5-C6-O6
2	E	2	NAG	O7-C7-N2-C2
4	O	2	NAG	O7-C7-N2-C2
6	F	1	NAG	O7-C7-N2-C2
2	E	3	MAN	C4-C5-C6-O6
6	G	2	NAG	C4-C5-C6-O6
2	K	2	NAG	C8-C7-N2-C2
2	K	2	NAG	O7-C7-N2-C2
4	O	2	NAG	O5-C5-C6-O6
4	O	2	NAG	C4-C5-C6-O6
2	E	3	MAN	O5-C5-C6-O6
2	K	3	MAN	O5-C5-C6-O6
5	P	2	NAG	O5-C5-C6-O6
2	M	3	MAN	C4-C5-C6-O6
5	P	1	NAG	C1-C2-N2-C7
5	P	1	NAG	C4-C5-C6-O6
5	P	1	NAG	O5-C5-C6-O6
3	Q	1	NAG	C3-C2-N2-C7
4	O	1	NAG	C3-C2-N2-C7
6	R	1	NAG	C4-C5-C6-O6
3	H	1	NAG	C1-C2-N2-C7
3	N	1	NAG	C3-C2-N2-C7
5	P	1	NAG	C3-C2-N2-C7

All (1) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	P	3	MAN	C1-C2-C3-C4-C5-O5

6 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	1	NAG	1	0
2	M	4	FUC	1	0
2	E	2	NAG	1	0
6	G	2	NAG	2	0
5	P	1	NAG	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	G	1	NAG	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 K

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain M

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain N

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain H

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain Q

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain O

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain P

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain F

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain G

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain R

Bond lengths

Bond angles

Torsions

Rings

5.6 Ligand geometry ⓘ

Of 54 ligands modelled in this entry, 12 are monoatomic - leaving 42 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	#$|Z| > 2$
9	PEG	C	708	-	6,6,6	0.24	0	5,5,5	0.20	0
16	12P	A	716[A]	-	36,36,36	0.25	0	35,35,35	0.20	0
10	EDO	C	712	-	3,3,3	0.17	0	2,2,2	0.15	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$\|Z\|>2$	Counts	RMSZ	#$\|Z\|>2$
10	EDO	B	707	-	3,3,3	0.08	0	2,2,2	0.20	0
10	EDO	A	707	-	3,3,3	0.29	0	2,2,2	0.22	0
9	PEG	D	706	-	6,6,6	0.33	0	5,5,5	0.18	0
8	ZED	A	702	7	21,22,22	0.72	0	24,30,30	0.76	1 (4%)
17	PE8	B	703	-	24,24,24	0.39	0	23,23,23	0.27	0
8	ZED	B	702	7	21,22,22	0.64	0	24,30,30	1.65	2 (8%)
18	TRS	C	705	-	7,7,7	0.28	0	9,9,9	0.42	0
10	EDO	A	710	-	3,3,3	0.26	0	2,2,2	0.44	0
8	ZED	D	702	7	21,22,22	0.49	0	24,30,30	0.83	0
8	ZED	C	702	7	21,22,22	0.66	0	24,30,30	0.74	0
12	PGE	A	712	-	9,9,9	0.22	0	8,8,8	0.18	0
10	EDO	D	703	-	3,3,3	0.13	0	2,2,2	0.23	0
9	PEG	A	705	-	6,6,6	0.38	0	5,5,5	0.55	0
11	ACT	A	706	-	3,3,3	1.07	0	3,3,3	0.74	0
12	PGE	D	709	-	9,9,9	0.23	0	8,8,8	0.09	0
20	PG4	D	704	-	12,12,12	0.32	0	11,11,11	0.15	0
18	TRS	B	710	-	7,7,7	0.17	0	9,9,9	0.31	0
9	PEG	B	706	-	6,6,6	0.21	0	5,5,5	0.06	0
10	EDO	C	713	-	3,3,3	0.17	0	2,2,2	0.14	0
10	EDO	C	709	-	3,3,3	0.40	0	2,2,2	0.21	0
9	PEG	B	704	-	6,6,6	0.35	0	5,5,5	0.23	0
10	EDO	B	709	-	3,3,3	0.09	0	2,2,2	0.11	0
9	PEG	C	706	-	6,6,6	0.38	0	5,5,5	0.36	0
12	PGE	C	714	-	9,9,9	0.35	0	8,8,8	0.55	0
9	PEG	C	707	-	6,6,6	0.18	0	5,5,5	0.20	0
10	EDO	A	708	-	3,3,3	0.09	0	2,2,2	0.10	0
9	PEG	A	709	-	6,6,6	0.19	0	5,5,5	0.16	0
10	EDO	A	704	-	3,3,3	0.07	0	2,2,2	0.17	0
10	EDO	D	705	-	3,3,3	0.32	0	2,2,2	0.14	0
10	EDO	B	708	-	3,3,3	0.10	0	2,2,2	0.19	0
10	EDO	B	705	-	3,3,3	0.14	0	2,2,2	0.12	0
16	12P	A	716[B]	-	36,36,36	0.30	0	35,35,35	0.15	0
10	EDO	C	710	-	3,3,3	0.10	0	2,2,2	0.24	0
10	EDO	C	704	-	3,3,3	0.06	0	2,2,2	0.19	0
14	NAG	A	714	1	14,14,15	0.43	0	17,19,21	1.09	2 (11%)
10	EDO	A	711	-	3,3,3	0.26	0	2,2,2	0.49	0
19	XPE	C	703	-	30,30,30	0.31	0	29,29,29	0.29	0
10	EDO	C	711	-	3,3,3	0.23	0	2,2,2	0.17	0
9	PEG	A	703	-	6,6,6	0.33	0	5,5,5	0.18	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
9	PEG	C	708	-	-	2/4/4/4	-
16	12P	A	716[A]	-	-	20/34/34/34	-
10	EDO	C	712	-	-	0/1/1/1	-
10	EDO	B	707	-	-	1/1/1/1	-
10	EDO	A	707	-	-	1/1/1/1	-
9	PEG	D	706	-	-	3/4/4/4	-
8	ZED	A	702	7	-	2/18/30/30	0/2/2/2
17	PE8	B	703	-	-	6/22/22/22	-
8	ZED	B	702	7	-	2/18/30/30	0/2/2/2
18	TRS	C	705	-	-	3/9/9/9	-
10	EDO	A	710	-	-	0/1/1/1	-
8	ZED	D	702	7	-	1/18/30/30	0/2/2/2
8	ZED	C	702	7	-	1/18/30/30	0/2/2/2
12	PGE	A	712	-	-	4/7/7/7	-
10	EDO	D	703	-	-	1/1/1/1	-
9	PEG	A	705	-	-	4/4/4/4	-
12	PGE	D	709	-	-	3/7/7/7	-
20	PG4	D	704	-	-	5/10/10/10	-
18	TRS	B	710	-	-	3/9/9/9	-
9	PEG	B	706	-	-	2/4/4/4	-
10	EDO	C	713	-	-	1/1/1/1	-
10	EDO	C	709	-	-	1/1/1/1	-
9	PEG	B	704	-	-	1/4/4/4	-
10	EDO	B	709	-	-	1/1/1/1	-
9	PEG	C	706	-	-	3/4/4/4	-
12	PGE	C	714	-	-	5/7/7/7	-
9	PEG	C	707	-	-	3/4/4/4	-
10	EDO	A	708	-	-	1/1/1/1	-
9	PEG	A	709	-	-	3/4/4/4	-
10	EDO	A	704	-	-	1/1/1/1	-
10	EDO	D	705	-	-	0/1/1/1	-
10	EDO	B	708	-	-	0/1/1/1	-
10	EDO	B	705	-	-	1/1/1/1	-
16	12P	A	716[B]	-	-	21/34/34/34	-
10	EDO	C	710	-	-	0/1/1/1	-
10	EDO	C	704	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
14	NAG	A	714	1	-	2/6/23/26	0/1/1/1
10	EDO	A	711	-	-	0/1/1/1	-
19	XPE	C	703	-	-	14/28/28/28	-
10	EDO	C	711	-	-	0/1/1/1	-
9	PEG	A	703	-	-	3/4/4/4	-

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	B	702	ZED	CZD-CZF-SZ2	-6.59	105.27	114.05
14	A	714	NAG	C1-O5-C5	3.08	116.36	112.19
8	B	702	ZED	CZ9-CZ7-CZ8	2.57	114.52	110.92
8	A	702	ZED	CZD-CZF-SZ2	-2.54	110.66	114.05
14	A	714	NAG	C1-C2-N2	2.01	113.93	110.49

There are no chirality outliers.

All (126) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	702	ZED	CZC-CZD-CZF-SZ2
8	A	702	ZED	CZE-CZD-CZF-SZ2
8	B	702	ZED	CZC-CZD-CZF-SZ2
8	B	702	ZED	CZE-CZD-CZF-SZ2
14	A	714	NAG	C8-C7-N2-C2
14	A	714	NAG	O7-C7-N2-C2
18	B	710	TRS	C3-C-C1-O1
18	B	710	TRS	N-C-C1-O1
16	A	716[A]	12P	C23-C24-O25-C26
16	A	716[A]	12P	C30-C29-O28-C27
16	A	716[B]	12P	C26-C27-O28-C29
12	C	714	PGE	C6-C5-O3-C4
16	A	716[A]	12P	C11-C12-O13-C14
16	A	716[A]	12P	O25-C26-C27-O28
16	A	716[B]	12P	C5-C6-O7-C8
12	D	709	PGE	O2-C3-C4-O3
16	A	716[B]	12P	O4-C5-C6-O7
16	A	716[A]	12P	O16-C17-C18-O19
20	D	704	PG4	O2-C3-C4-O3
12	C	714	PGE	O2-C3-C4-O3

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Mol	Chain	Res	Type	Atoms
16	A	716[B]	12P	C8-C9-O10-C11
17	B	703	PE8	O4-C5-C6-O7
9	A	705	PEG	O1-C1-C2-O2
9	C	706	PEG	O1-C1-C2-O2
9	C	706	PEG	O2-C3-C4-O4
9	D	706	PEG	O2-C3-C4-O4
16	A	716[A]	12P	O4-C5-C6-O7
16	A	716[A]	12P	O22-C23-C24-O25
19	C	703	XPE	O7-C8-C9-O10
16	A	716[B]	12P	O7-C8-C9-O10
17	B	703	PE8	O7-C8-C9-O10
16	A	716[A]	12P	O28-C29-C30-O31
9	A	703	PEG	O1-C1-C2-O2
9	B	706	PEG	O1-C1-C2-O2
9	B	706	PEG	O2-C3-C4-O4
9	C	708	PEG	O1-C1-C2-O2
9	D	706	PEG	O1-C1-C2-O2
12	C	714	PGE	O3-C5-C6-O4
12	D	709	PGE	O3-C5-C6-O4
19	C	703	XPE	O28-C29-C30-O31
16	A	716[B]	12P	O25-C26-C27-O28
16	A	716[B]	12P	O10-C11-C12-O13
9	A	703	PEG	O2-C3-C4-O4
19	C	703	XPE	O4-C5-C6-O7
16	A	716[B]	12P	O28-C29-C30-O31
16	A	716[B]	12P	O1-C2-C3-O4
10	A	707	EDO	O1-C1-C2-O2
10	B	705	EDO	O1-C1-C2-O2
10	B	707	EDO	O1-C1-C2-O2
10	B	709	EDO	O1-C1-C2-O2
19	C	703	XPE	O19-C20-C21-O22
19	C	703	XPE	O25-C26-C27-O28
16	A	716[B]	12P	O22-C23-C24-O25
16	A	716[A]	12P	O13-C14-C15-O16
9	A	705	PEG	O2-C3-C4-O4
9	A	709	PEG	O1-C1-C2-O2
9	A	709	PEG	O2-C3-C4-O4
9	B	704	PEG	O2-C3-C4-O4
12	A	712	PGE	O1-C1-C2-O2
20	D	704	PG4	O4-C7-C8-O5
12	A	712	PGE	O2-C3-C4-O3
10	C	704	EDO	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
10	D	703	EDO	O1-C1-C2-O2
19	C	703	XPE	O1-C2-C3-O4
16	A	716[A]	12P	O7-C8-C9-O10
16	A	716[B]	12P	O34-C35-C36-O37
9	A	705	PEG	C1-C2-O2-C3
9	C	708	PEG	C1-C2-O2-C3
17	B	703	PE8	C9-C8-O7-C6
16	A	716[A]	12P	C6-C5-O4-C3
16	A	716[B]	12P	C36-C35-O34-C33
12	D	709	PGE	O1-C1-C2-O2
20	D	704	PG4	O1-C1-C2-O2
16	A	716[B]	12P	C27-C26-O25-C24
9	A	705	PEG	C4-C3-O2-C2
12	C	714	PGE	C1-C2-O2-C3
19	C	703	XPE	C8-C9-O10-C11
16	A	716[A]	12P	C18-C17-O16-C15
16	A	716[B]	12P	C15-C14-O13-C12
16	A	716[B]	12P	C20-C21-O22-C23
16	A	716[B]	12P	C21-C20-O19-C18
16	A	716[B]	12P	C2-C3-O4-C5
19	C	703	XPE	C9-C8-O7-C6
18	B	710	TRS	C2-C-C1-O1
18	C	705	TRS	C3-C-C2-O2
18	C	705	TRS	N-C-C2-O2
9	C	706	PEG	C4-C3-O2-C2
17	B	703	PE8	O1-C2-C3-O4
16	A	716[B]	12P	C6-C5-O4-C3
12	A	712	PGE	C1-C2-O2-C3
20	D	704	PG4	C6-C5-O3-C4
9	D	706	PEG	C1-C2-O2-C3
20	D	704	PG4	C4-C3-O2-C2
16	A	716[A]	12P	C14-C15-O16-C17
12	C	714	PGE	O1-C1-C2-O2
10	A	704	EDO	O1-C1-C2-O2
10	A	708	EDO	O1-C1-C2-O2
10	C	713	EDO	O1-C1-C2-O2
19	C	703	XPE	C20-C21-O22-C23
9	C	707	PEG	C1-C2-O2-C3
19	C	703	XPE	C2-C3-O4-C5
16	A	716[A]	12P	C21-C20-O19-C18
16	A	716[A]	12P	O10-C11-C12-O13
9	A	703	PEG	C4-C3-O2-C2

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Mol	Chain	Res	Type	Atoms
9	A	709	PEG	C4-C3-O2-C2
16	A	716[A]	12P	C26-C27-O28-C29
8	C	702	ZED	CZE-CZD-CZF-SZ2
19	C	703	XPE	C5-C6-O7-C8
16	A	716[A]	12P	C24-C23-O22-C21
16	A	716[A]	12P	C9-C8-O7-C6
18	C	705	TRS	C1-C-C2-O2
16	A	716[B]	12P	O13-C14-C15-O16
19	C	703	XPE	C12-C11-O10-C9
16	A	716[A]	12P	C20-C21-O22-C23
16	A	716[A]	12P	C27-C26-O25-C24
12	A	712	PGE	C3-C4-O3-C5
9	C	707	PEG	O2-C3-C4-O4
17	B	703	PE8	C6-C5-O4-C3
16	A	716[B]	12P	C23-C24-O25-C26
10	C	709	EDO	O1-C1-C2-O2
8	D	702	ZED	CZE-CZD-CZF-SZ2
9	C	707	PEG	C4-C3-O2-C2
17	B	703	PE8	O22-C23-C24-O25
16	A	716[B]	12P	O16-C17-C18-O19
19	C	703	XPE	O10-C11-C12-O13
19	C	703	XPE	C14-C15-O16-C17

There are no ring outliers.

12 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
16	A	716[A]	12P	7	0
17	B	703	PE8	2	0
18	C	705	TRS	1	0
9	A	705	PEG	6	0
11	A	706	ACT	1	0
18	B	710	TRS	1	0
9	B	704	PEG	1	0
9	C	706	PEG	1	0
12	C	714	PGE	5	0
16	A	716[B]	12P	1	0
10	A	711	EDO	2	0
19	C	703	XPE	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 all instances of the Ligand of Interest. In

addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand 12P A 716 (A)

Bond lengths

Bond angles

Torsions

Rings

Ligand ZED A 702

Bond lengths

Bond angles

Torsions

Rings

Ligand PE8 B 703

Bond lengths

Bond angles

Torsions

Rings

Ligand ZED B 702

Bond lengths

Bond angles

Torsions

Rings

Ligand ZED D 702

Bond lengths

Bond angles

Torsions

Rings

Ligand ZED C 702

Bond lengths

Bond angles

Torsions

Rings

Ligand 12P A 716 (B)

Bond lengths

Bond angles

Torsions

Rings

Ligand XPE C 703

Bond lengths

Bond angles

Torsions

Rings

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	603/628 (96%)	0.04	12 (1%)	64	63	12, 28, 48, 76	4 (0%)
1	B	607/628 (96%)	0.05	22 (3%)	46	44	10, 27, 48, 74	7 (1%)
1	C	601/628 (95%)	0.14	9 (1%)	71	70	11, 29, 49, 70	7 (1%)
1	D	611/628 (97%)	-0.06	12 (1%)	64	63	9, 25, 44, 74	10 (1%)
All	All	2422/2512 (96%)	0.04	55 (2%)	61	59	9, 28, 48, 76	28 (1%)

All (55) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	414	VAL	5.8
1	D	135	THR	4.8
1	B	135	THR	4.4
1	A	130	PRO	4.2
1	D	129	LEU	4.2
1	C	608	PRO	4.0
1	C	128	CYS	3.8
1	D	415	THR	3.7
1	A	608	PRO	3.6
1	B	325	GLY	3.6
1	A	129	LEU	3.6
1	B	129	LEU	3.5
1	B	91	ILE	3.4
1	B	90	ARG	3.2
1	D	325	GLY	3.1
1	C	78	PRO	3.1
1	B	25	GLN	3.0
1	B	87[A]	GLN	3.0
1	B	612	ASP	2.9
1	B	414	VAL	2.9
1	B	18	GLN	2.9

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Mol	Chain	Res	Type	RSRZ
1	C	79	ILE	2.9
1	C	325	GLY	2.8
1	C	414	VAL	2.7
1	B	86	PRO	2.7
1	A	275	PRO	2.7
1	A	607	TYR	2.7
1	C	562	LEU	2.6
1	B	377	VAL	2.6
1	B	415	THR	2.6
1	D	273	ASP	2.6
1	A	606	ASN	2.6
1	A	188	GLN	2.6
1	A	415	THR	2.5
1	B	128	CYS	2.5
1	B	79	ILE	2.5
1	D	84	THR	2.4
1	D	78	PRO	2.4
1	A	1	LEU	2.3
1	B	70	GLN	2.3
1	C	15	ALA	2.2
1	B	607	TYR	2.2
1	B	136	CYS	2.2
1	A	413	ARG	2.2
1	D	363	MET	2.2
1	B	9	GLN	2.1
1	D	136	CYS	2.1
1	B	378	SER	2.1
1	D	213	HIS	2.1
1	C	87[A]	GLN	2.1
1	A	354	ASP	2.1
1	B	12	ALA	2.0
1	B	93	GLY	2.0
1	D	26	SER	2.0
1	A	70	GLN	2.0

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 (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
2	NAG	K	2	14/15	0.64	0.15	34,42,56,56	0
2	MAN	E	3	11/12	0.65	0.17	79,86,89,89	0
2	NAG	M	2	14/15	0.79	0.15	46,53,58,61	0
2	NAG	K	1	14/15	0.81	0.13	26,31,40,42	0
2	FUC	E	4	10/11	0.82	0.17	38,43,46,48	10
3	NAG	N	1	14/15	0.82	0.12	34,39,53,53	0
2	MAN	K	3	11/12	-	-	56,64,74,74	0
2	FUC	K	4	10/11	-	-	32,38,41,43	10
3	FUC	H	2	10/11	0.84	0.13	55,63,68,68	0
4	NAG	O	1	14/15	0.85	0.13	29,33,42,54	0
2	MAN	M	3	11/12	-	-	63,69,76,78	0
2	FUC	M	4	10/11	-	-	55,61,63,66	0
3	FUC	N	2	10/11	0.86	0.14	47,54,59,60	0
6	NAG	F	2	14/15	0.87	0.14	57,77,90,93	0
2	NAG	M	1	14/15	0.88	0.11	39,47,54,63	0
6	NAG	G	2	14/15	0.88	0.10	60,81,86,87	0
3	NAG	Q	1	14/15	-	-	32,42,48,49	0
3	FUC	Q	2	10/11	-	-	48,52,54,56	0
6	NAG	G	1	14/15	0.89	0.10	39,50,60,70	0
4	NAG	O	2	14/15	-	-	56,72,80,82	0
4	FUC	O	3	10/11	-	-	41,45,50,53	0
5	NAG	P	1	14/15	-	-	47,54,86,100	0
5	NAG	P	2	14/15	-	-	46,60,63,67	0
5	MAN	P	3	11/12	-	-	66,72,79,79	0
2	NAG	E	2	14/15	0.90	0.12	41,53,64,64	0
3	NAG	H	1	14/15	0.91	0.09	27,38,49,58	0
6	NAG	F	1	14/15	0.93	0.08	39,46,57,64	0
2	NAG	E	1	14/15	0.93	0.09	26,34,42,52	0
6	NAG	R	1	14/15	-	-	31,36,42,53	14
6	NAG	R	2	14/15	-	-	53,59,65,66	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.
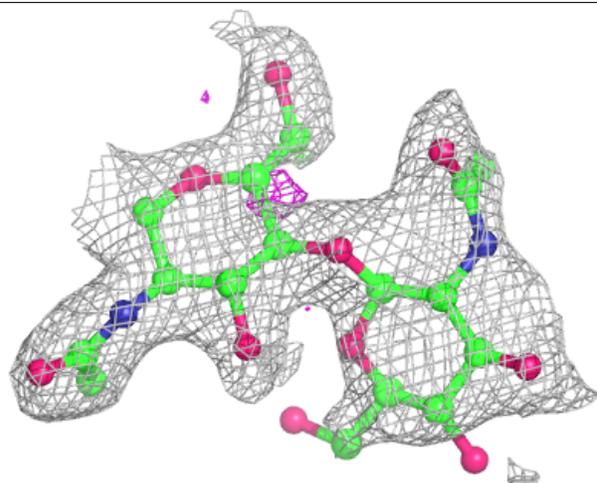
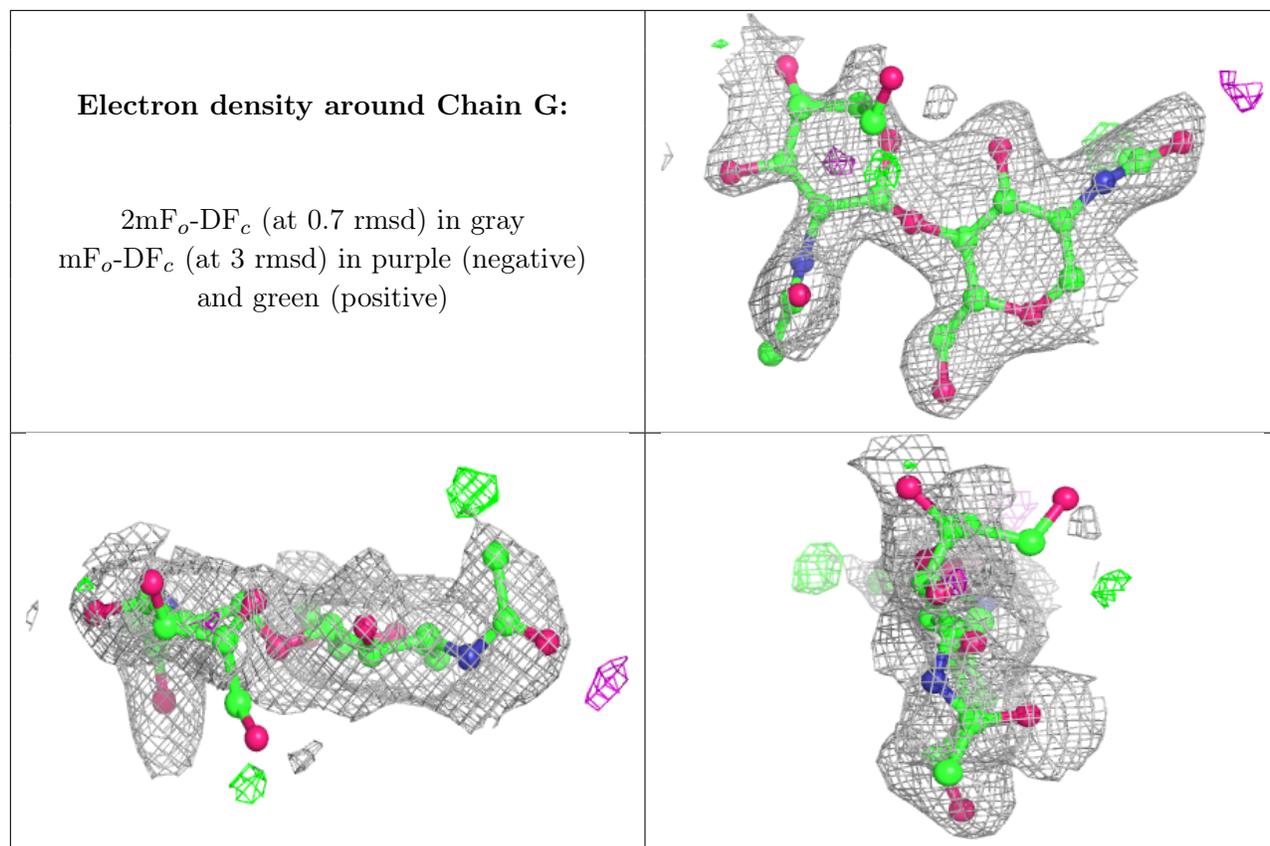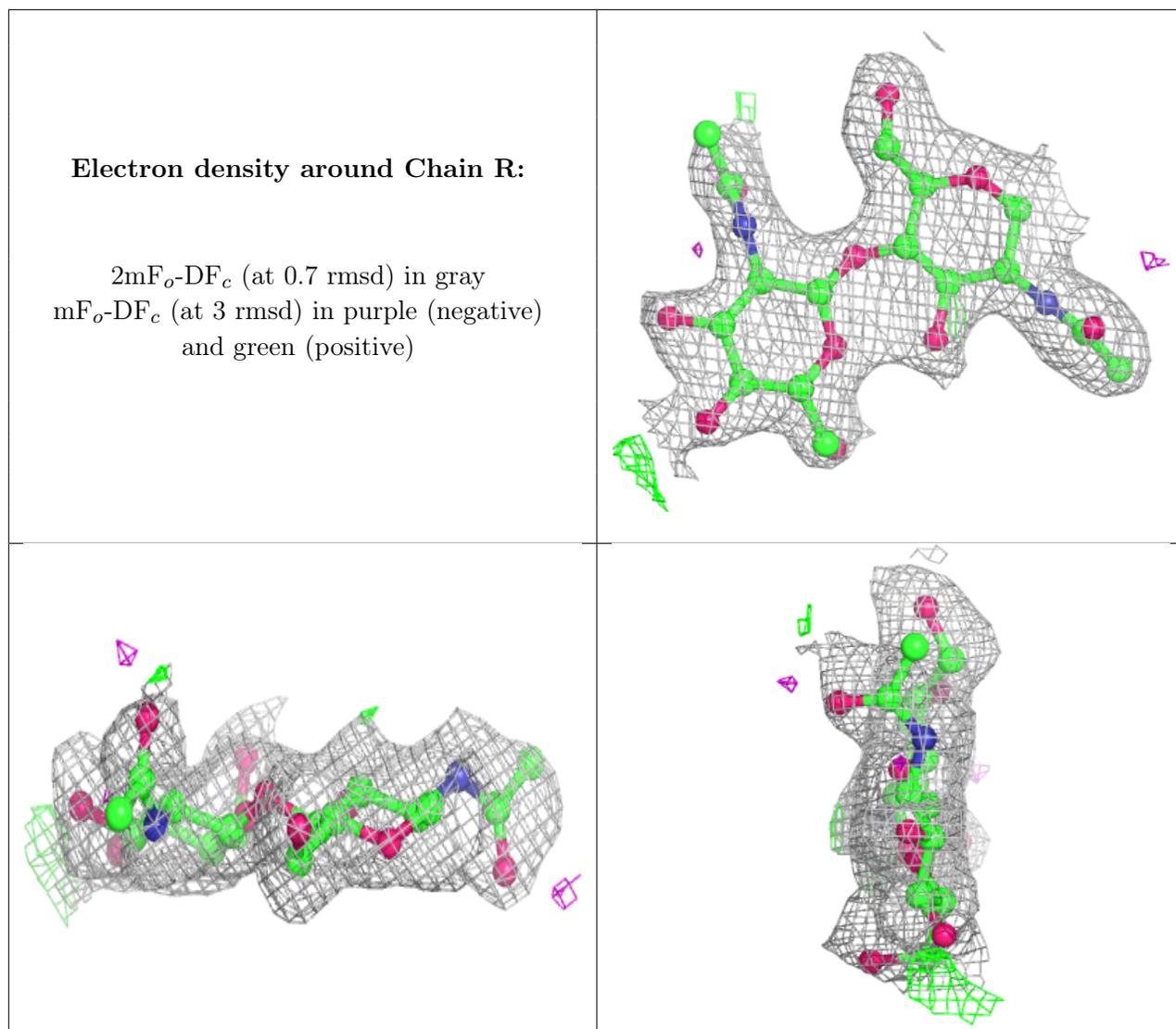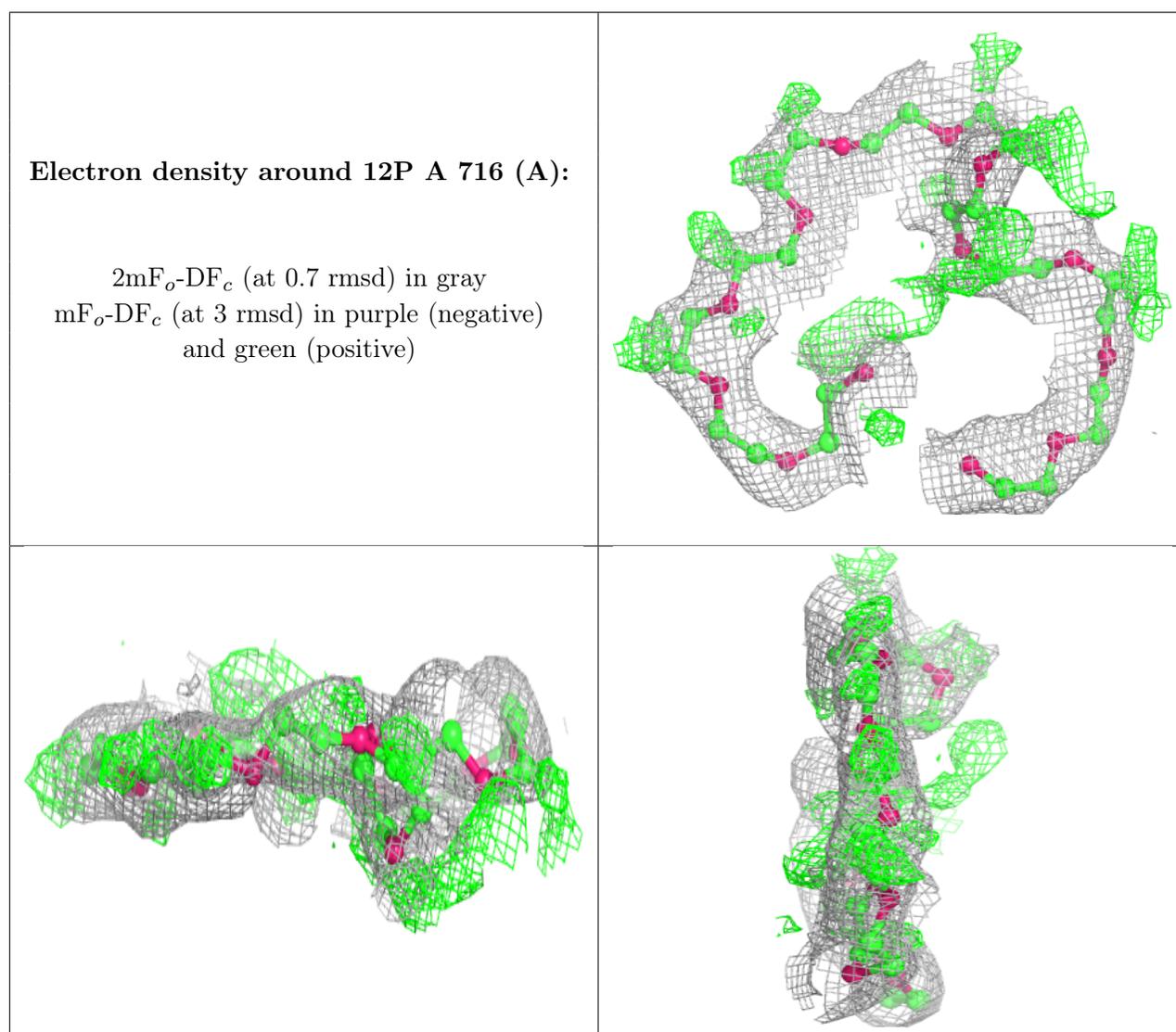**Electron density around Chain E:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
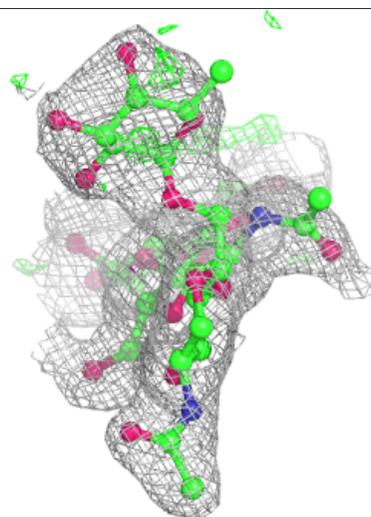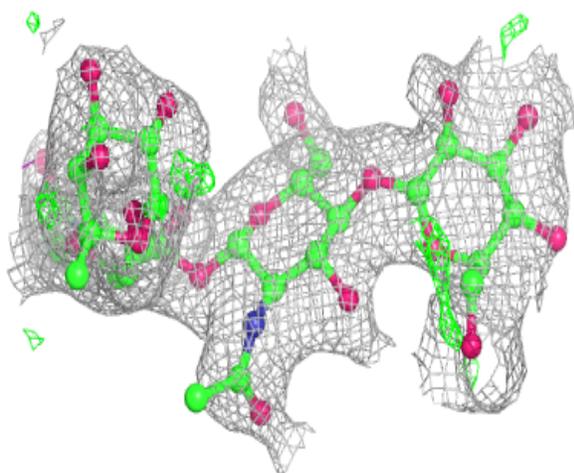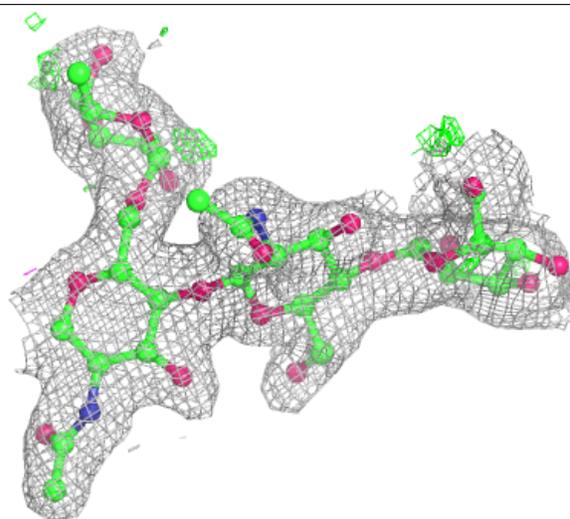
Electron density around Chain K:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
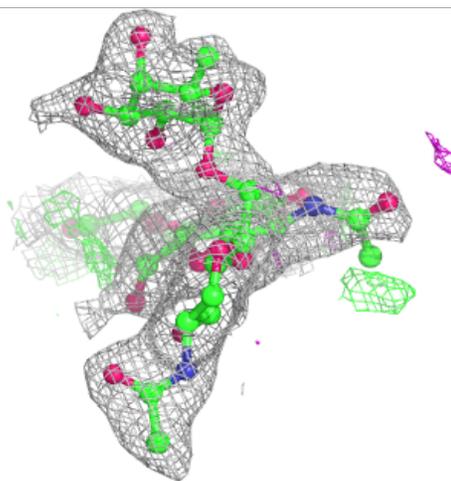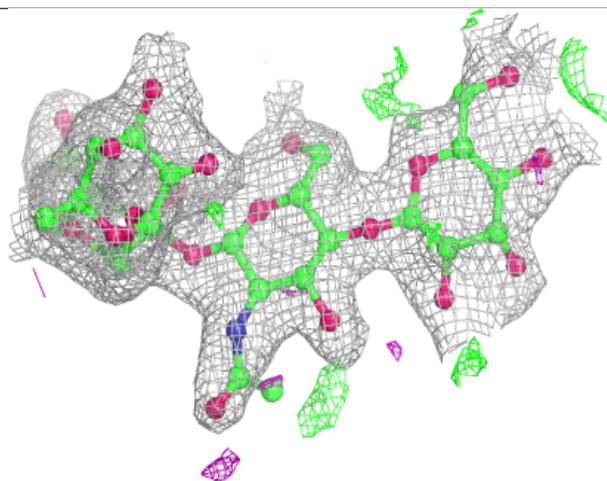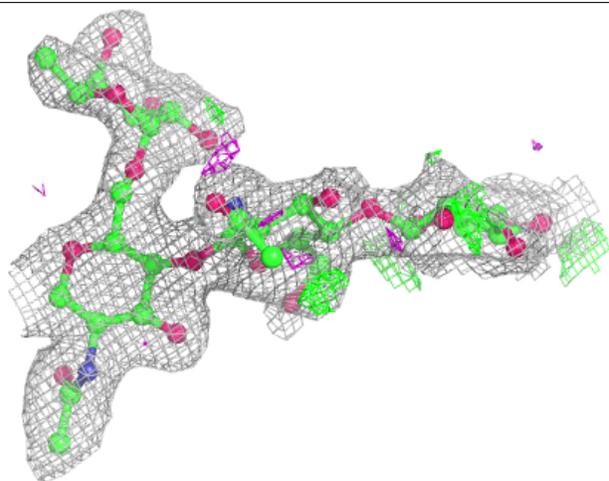
Electron density around Chain M:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
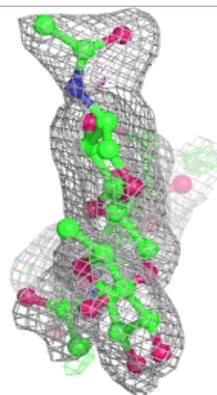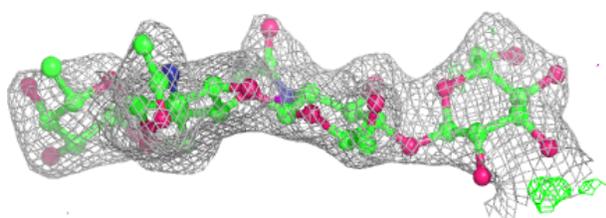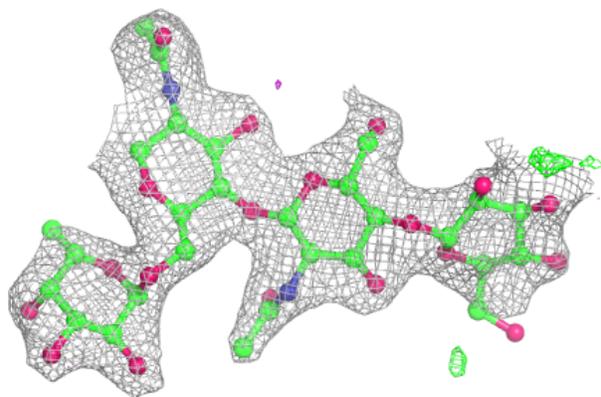
Electron density around Chain N:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
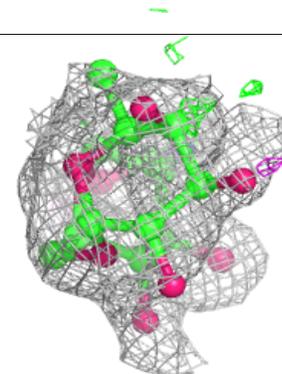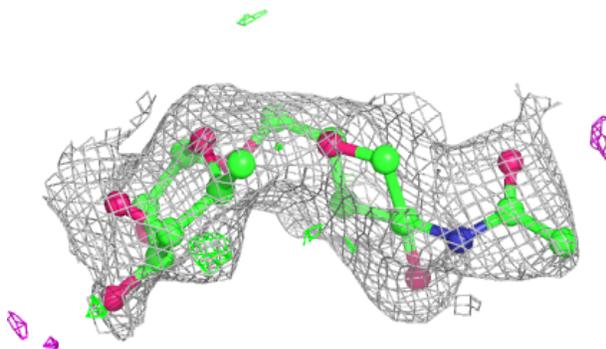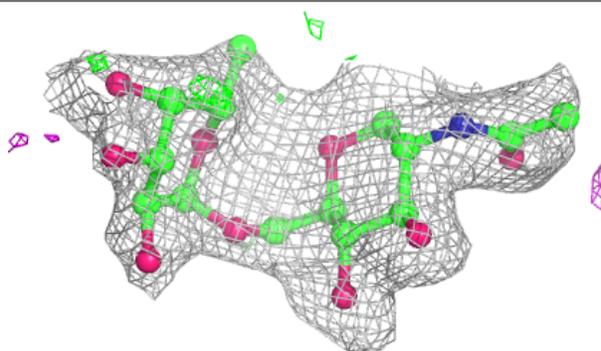
Electron density around Chain H:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
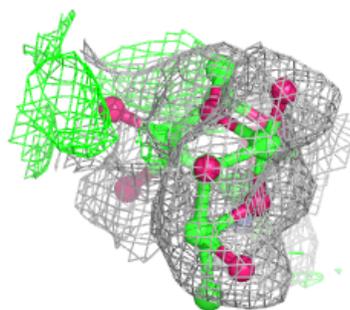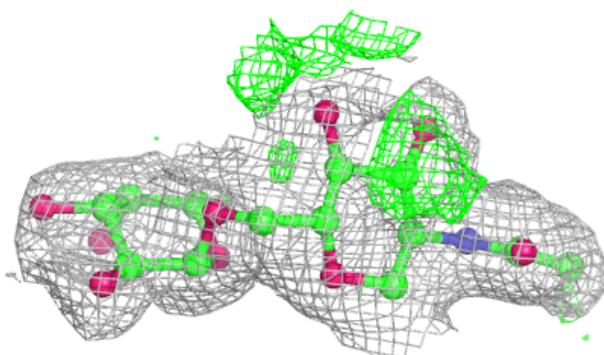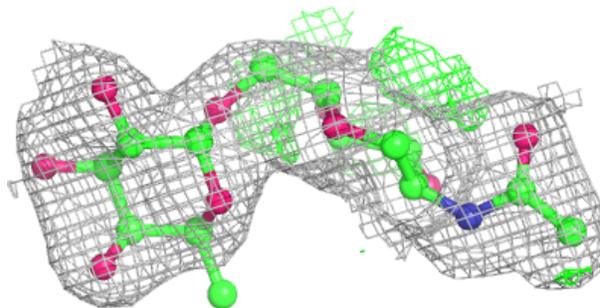
Electron density around Chain Q:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
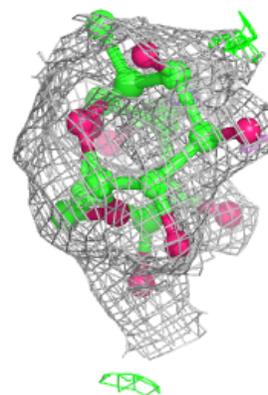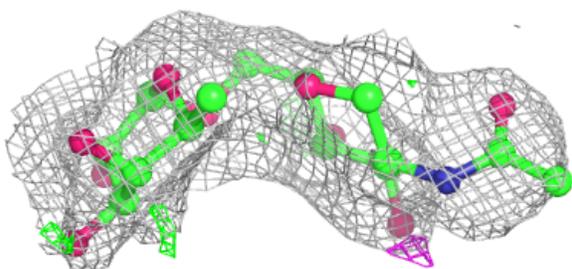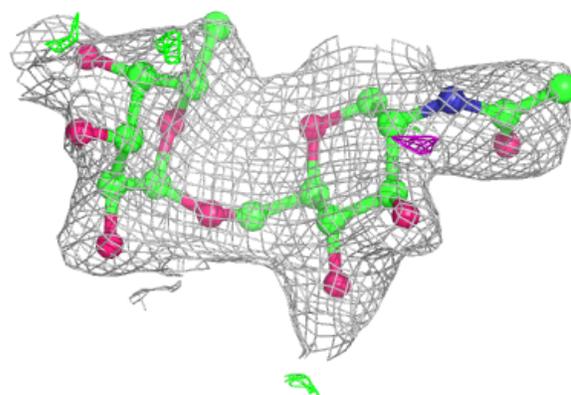
Electron density around Chain O:

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

Electron density around Chain P:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
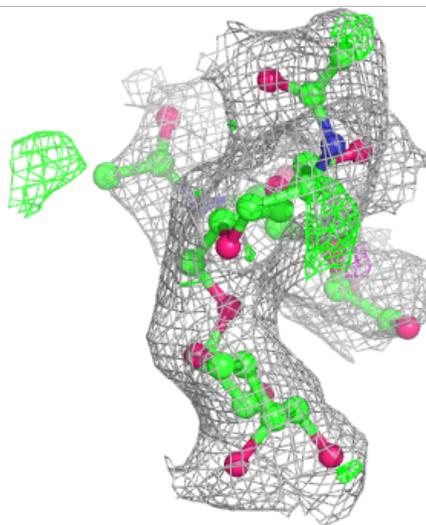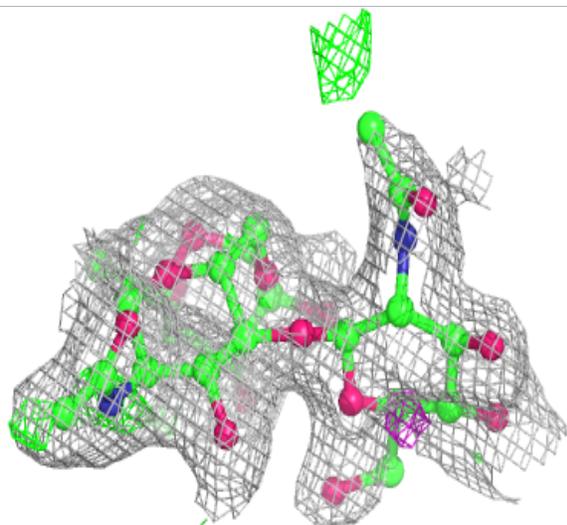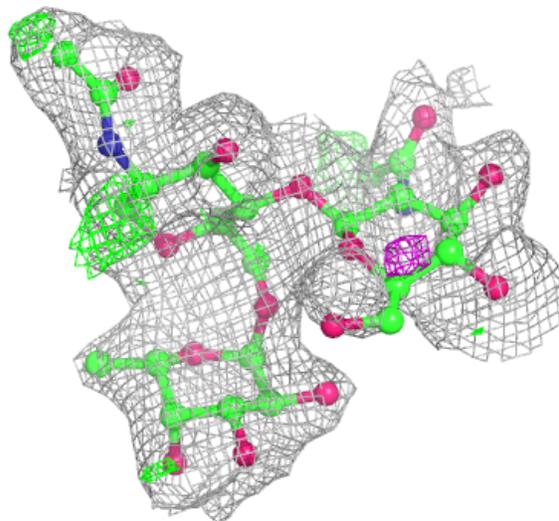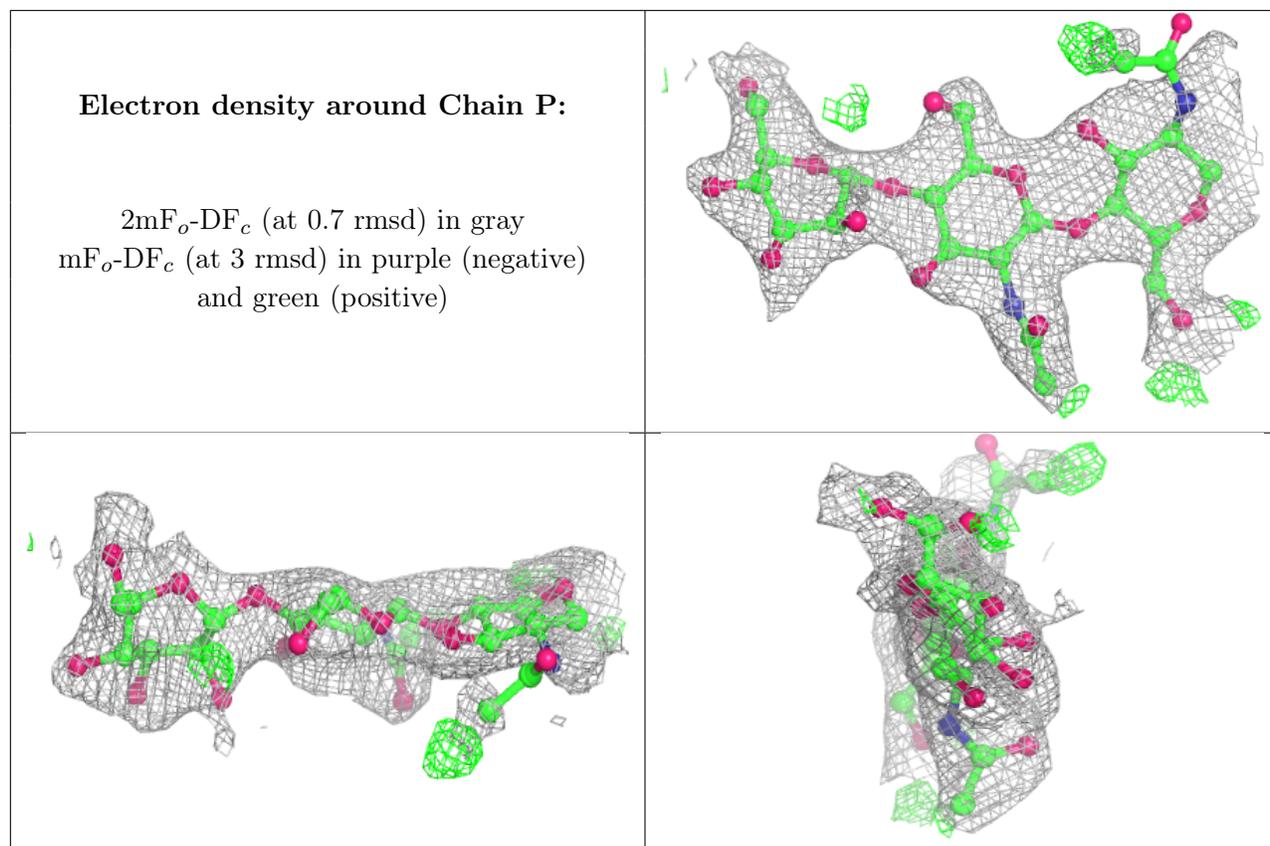
Electron density around Chain F:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
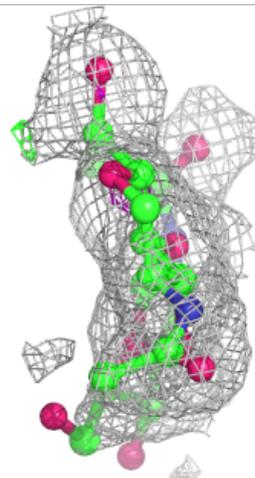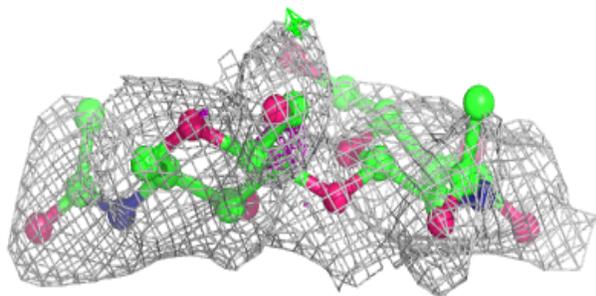
Electron density around Chain G:

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

Electron density around Chain R:

$2mF_o\text{-}DF_c$ (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
9	PEG	C	708	7/7	0.66	0.23	59,69,77,78	0
11	ACT	A	706	4/4	0.69	0.25	65,71,74,77	0
14	NAG	A	714	14/15	0.69	0.17	49,57,65,68	0
10	EDO	A	707	4/4	0.74	0.19	55,55,58,59	0
10	EDO	A	708	4/4	0.74	0.21	58,59,63,65	0
18	TRS	C	705	8/8	0.75	0.20	61,64,68,70	0
9	PEG	B	704	7/7	0.76	0.22	47,58,73,73	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
10	EDO	B	707	4/4	0.77	0.18	68,70,73,74	0
9	PEG	A	705	7/7	0.77	0.26	69,71,76,78	0
10	EDO	C	712	4/4	0.78	0.22	60,60,63,65	0
10	EDO	A	704	4/4	0.79	0.19	48,50,53,53	0
12	PGE	A	712	10/10	0.79	0.23	59,66,78,83	0
10	EDO	C	713	4/4	0.80	0.18	43,51,52,52	0
10	EDO	D	703	4/4	0.80	0.17	46,53,54,56	0
9	PEG	C	707	7/7	0.80	0.19	52,54,55,57	0
9	PEG	C	706	7/7	0.81	0.19	58,60,63,67	0
10	EDO	C	711	4/4	0.81	0.23	52,54,54,58	0
16	12P	A	716[A]	37/37	0.81	0.18	23,31,46,49	37
16	12P	A	716[B]	37/37	0.81	0.18	24,32,50,51	37
9	PEG	A	703	7/7	0.81	0.21	48,55,61,61	0
9	PEG	B	706	7/7	0.83	0.17	62,65,70,72	0
9	PEG	A	709	7/7	0.83	0.17	51,55,60,66	0
10	EDO	B	709	4/4	0.84	0.16	53,55,55,59	0
12	PGE	D	709	10/10	0.84	0.15	51,59,69,72	0
10	EDO	A	710	4/4	0.85	0.15	50,55,56,58	0
10	EDO	A	711	4/4	0.85	0.14	43,45,45,45	0
9	PEG	D	706	7/7	0.85	0.22	46,58,67,68	0
18	TRS	B	710	8/8	0.86	0.15	54,59,68,77	0
20	PG4	D	704	13/13	0.86	0.17	46,58,66,69	0
19	XPE	C	703	31/31	0.87	0.15	45,51,55,56	0
10	EDO	B	705	4/4	0.87	0.18	49,51,51,56	0
10	EDO	C	709	4/4	0.88	0.14	43,44,45,45	0
12	PGE	C	714	10/10	0.89	0.14	48,50,54,56	0
10	EDO	C	710	4/4	0.89	0.13	47,50,52,55	0
10	EDO	D	705	4/4	0.89	0.15	42,44,45,48	0
10	EDO	B	708	4/4	0.90	0.20	50,50,51,55	0
17	PE8	B	703	25/25	0.91	0.12	29,39,49,49	0
10	EDO	C	704	4/4	0.92	0.10	42,43,43,45	0
8	ZED	B	702	21/21	0.93	0.12	23,29,67,68	0
8	ZED	C	702	21/21	0.93	0.10	22,30,44,46	0
8	ZED	A	702	21/21	0.94	0.12	25,28,51,59	0
8	ZED	D	702	21/21	0.95	0.10	21,27,59,64	0
13	CA	B	711	1/1	0.99	0.07	38,38,38,38	0
13	CA	C	715	1/1	0.99	0.06	33,33,33,33	0
13	CA	D	707	1/1	0.99	0.04	28,28,28,28	0
13	CA	A	713	1/1	0.99	0.07	31,31,31,31	0
15	CL	A	715	1/1	0.99	0.05	22,22,22,22	0
15	CL	B	712	1/1	0.99	0.05	20,20,20,20	0
15	CL	D	708	1/1	0.99	0.03	19,19,19,19	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
7	ZN	A	701	1/1	1.00	0.01	19,19,19,19	0
15	CL	C	716	1/1	1.00	0.05	23,23,23,23	0
7	ZN	B	701	1/1	1.00	0.01	19,19,19,19	0
7	ZN	C	701	1/1	1.00	0.02	21,21,21,21	0
7	ZN	D	701	1/1	1.00	0.01	18,18,18,18	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.
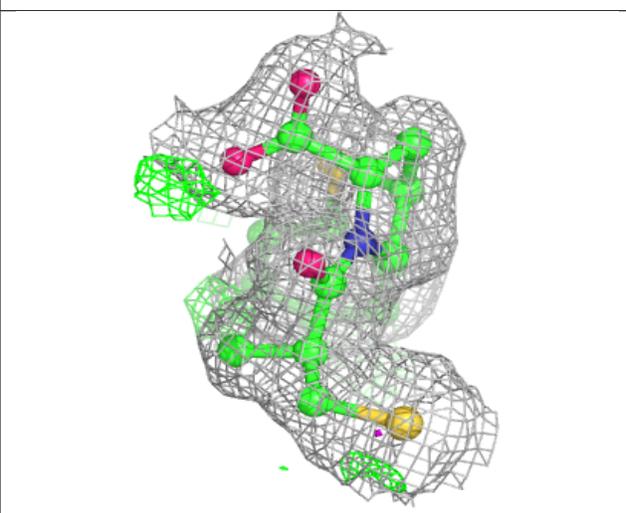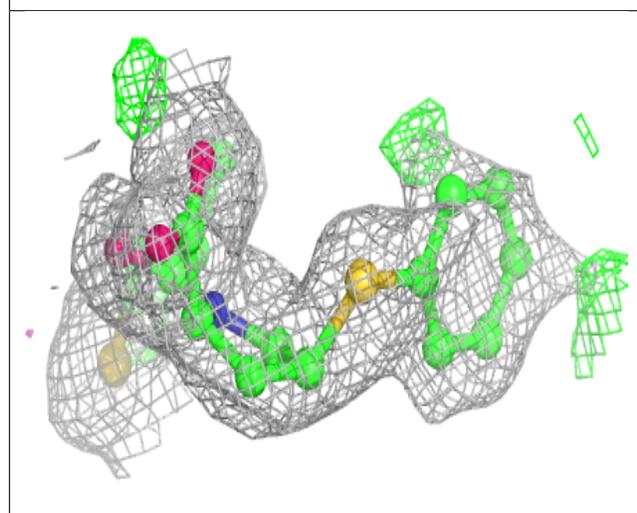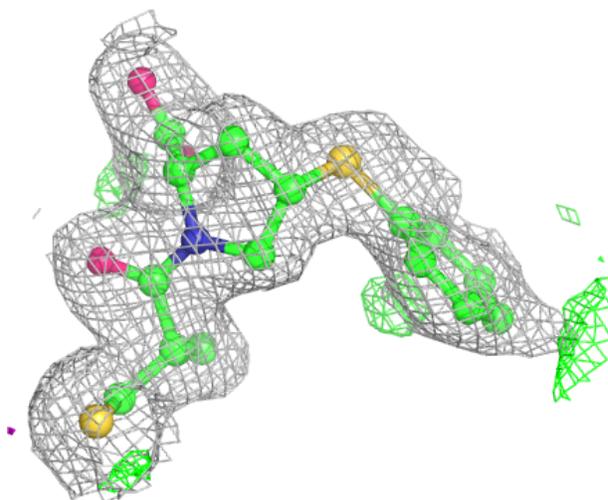
Electron density around 12P A 716 (A):

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

Electron density around 12P A 716 (B):

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
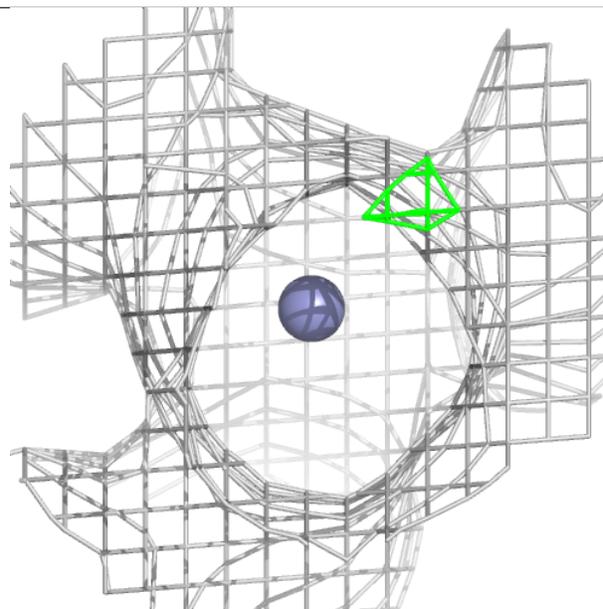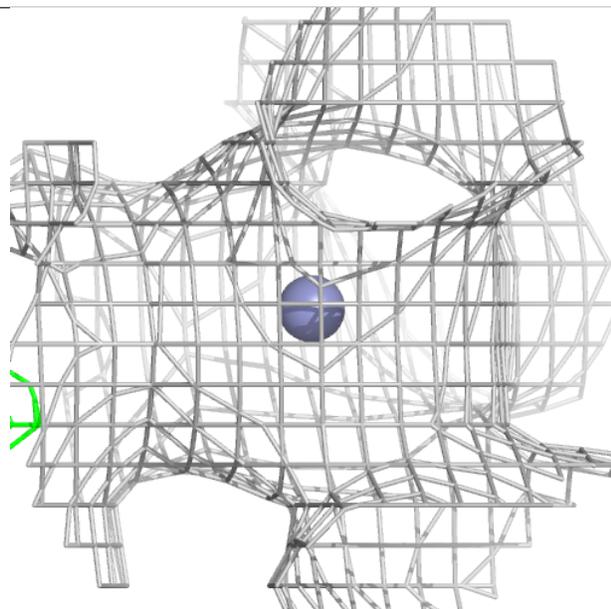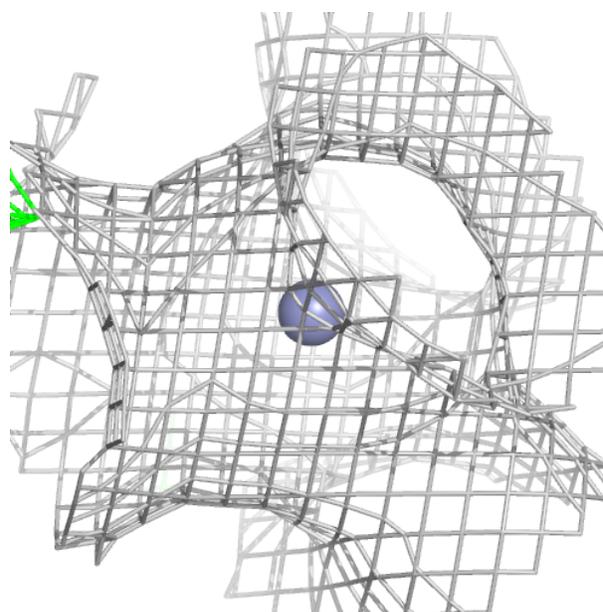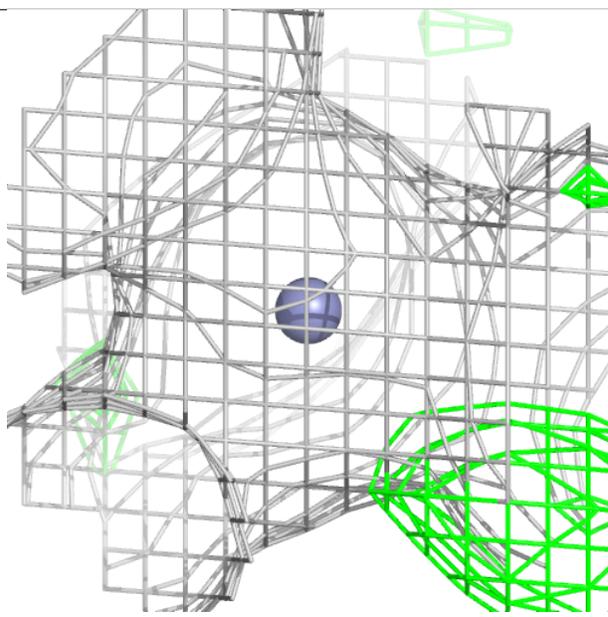and green (positive)
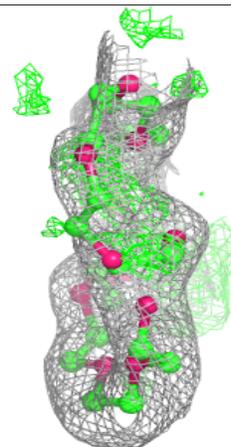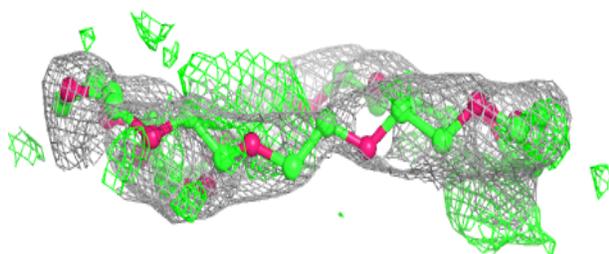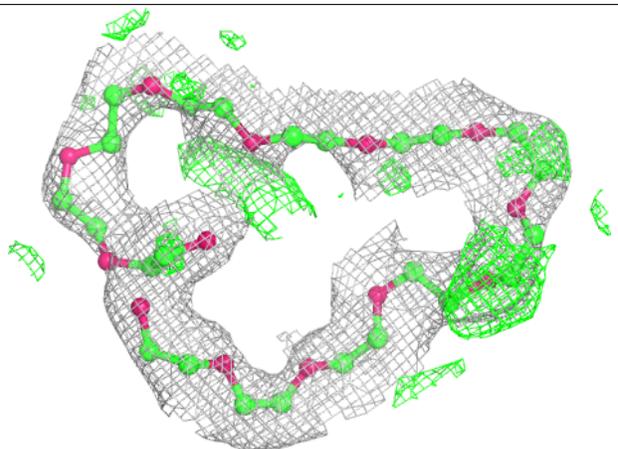
Electron density around XPE C 703:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
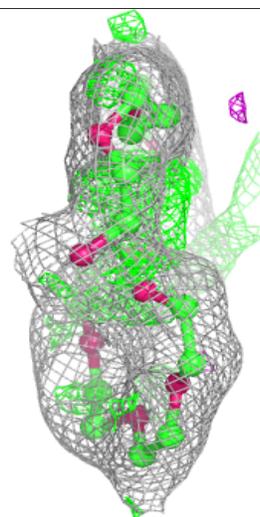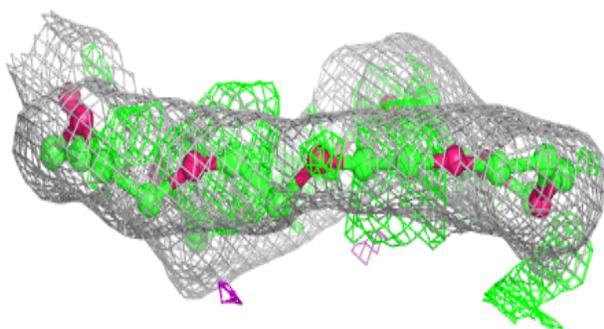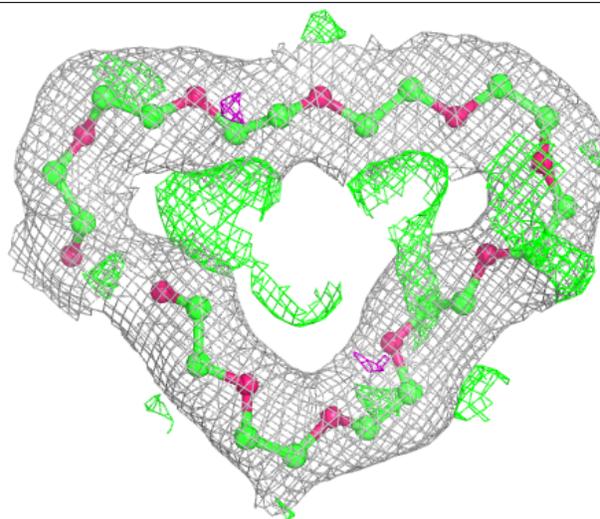
Electron density around PE8 B 703:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
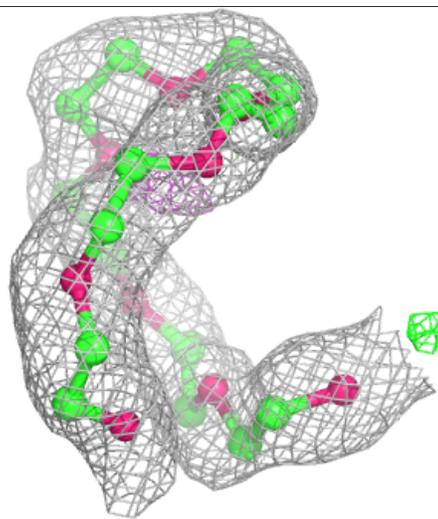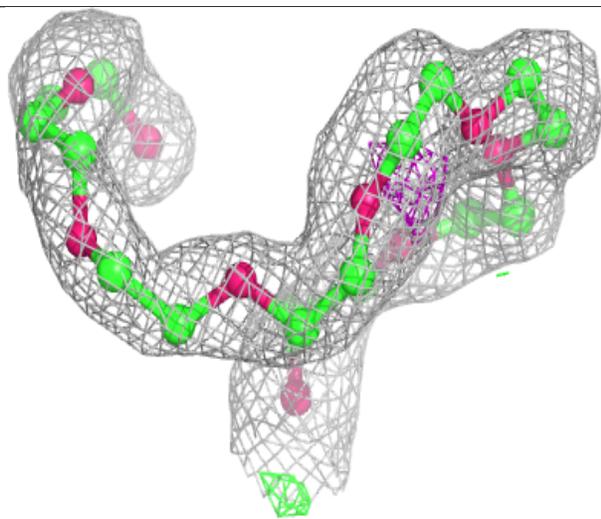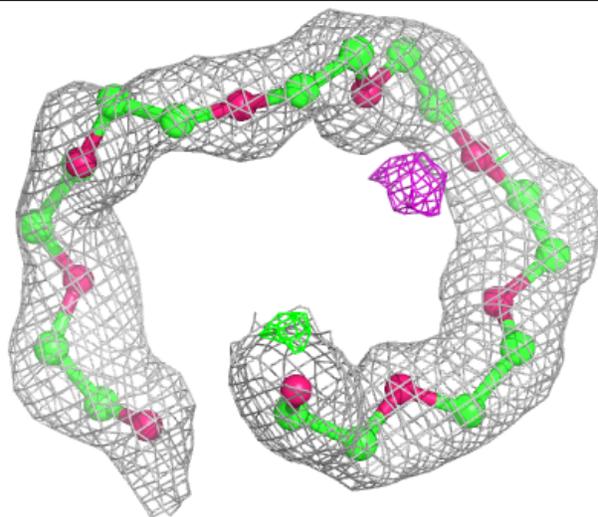
Electron density around ZED B 702:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
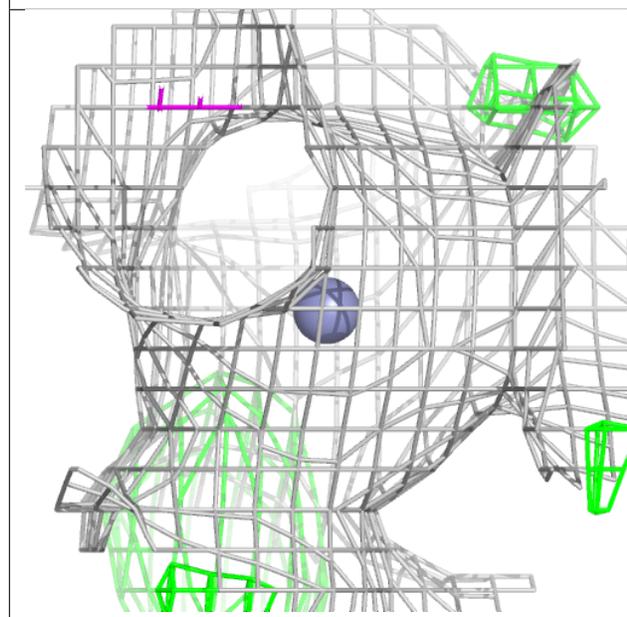$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
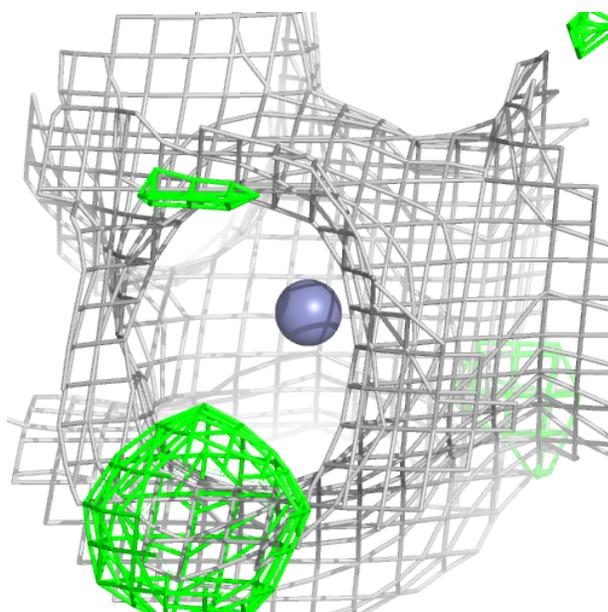and green (positive)
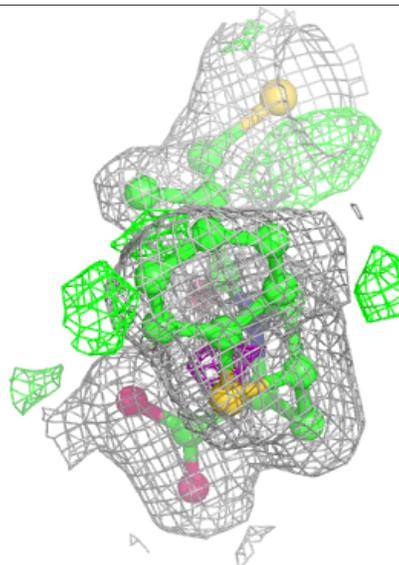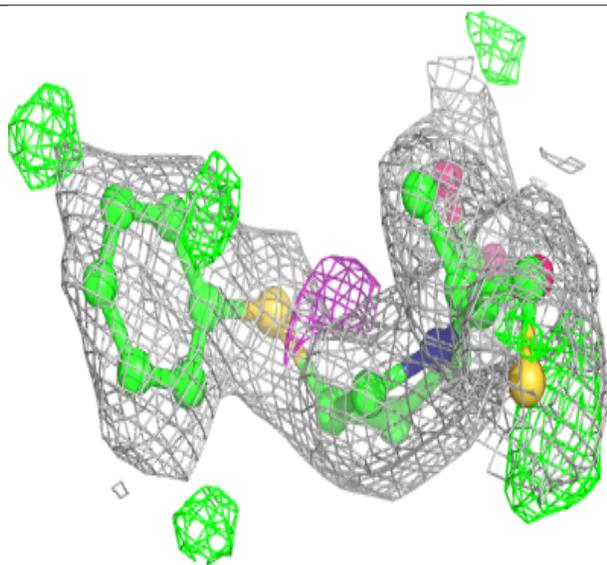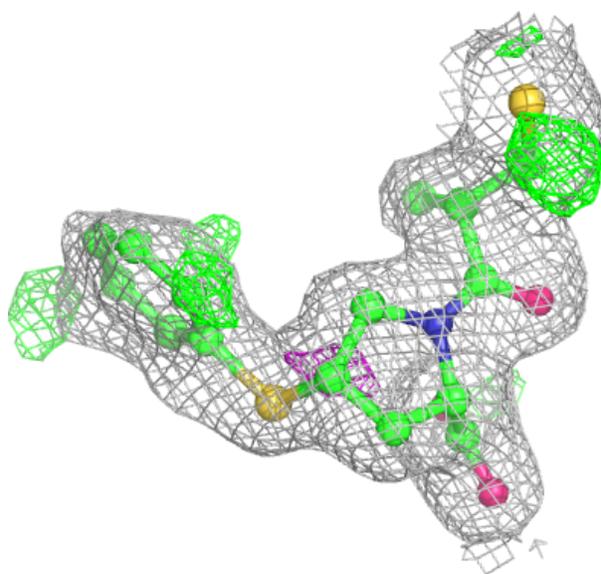
Electron density around ZED C 702:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
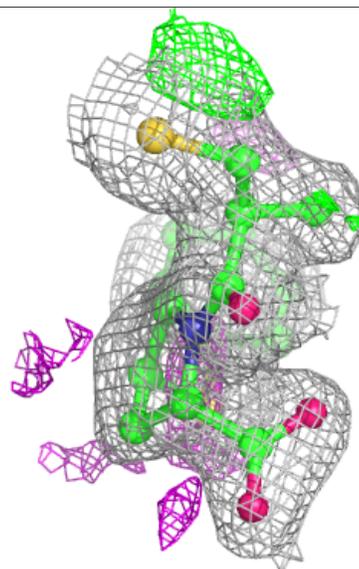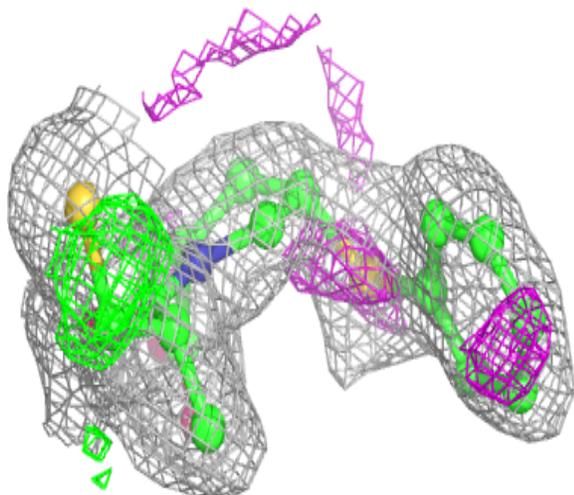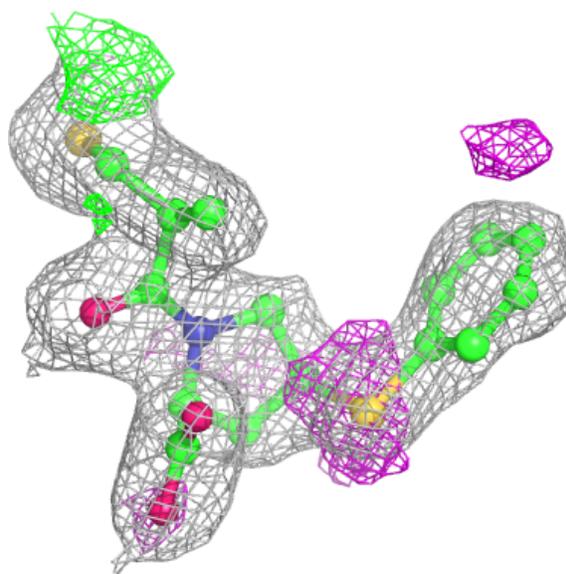
Electron density around ZED A 702:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
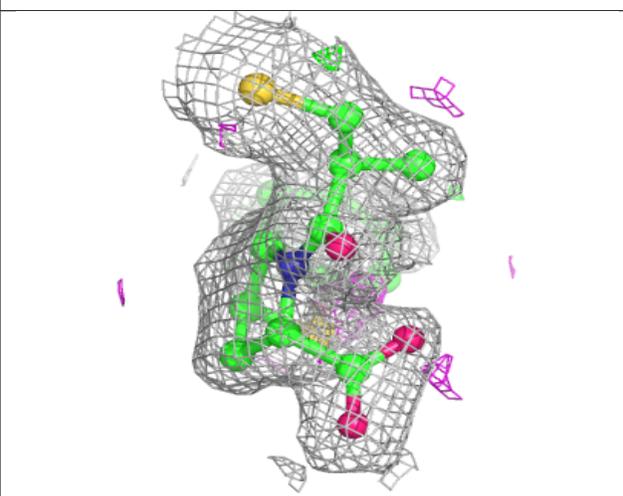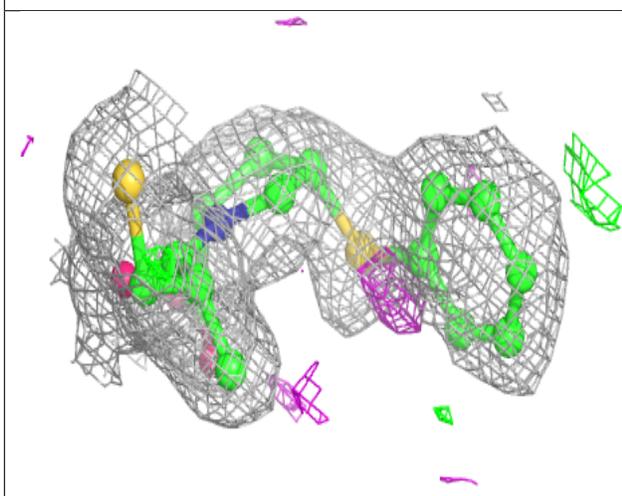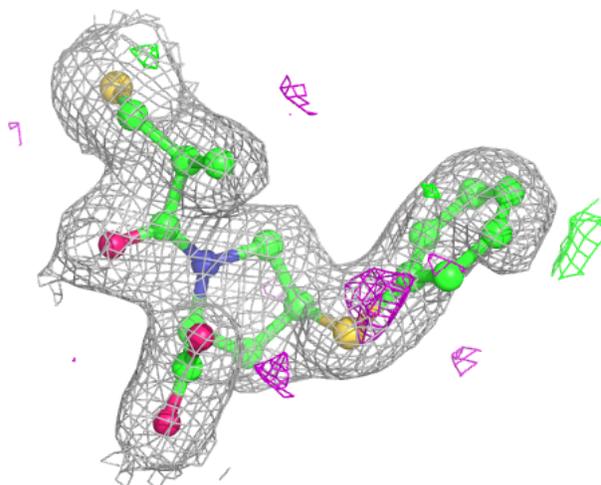
Electron density around ZED D 702:

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

Electron density around ZN A 701:

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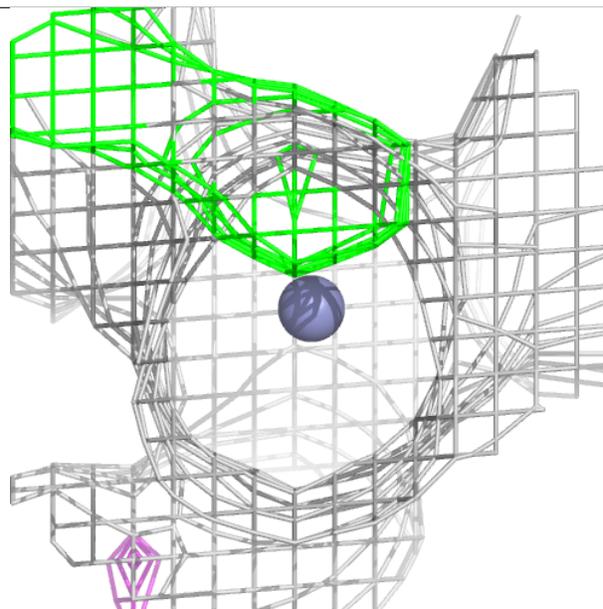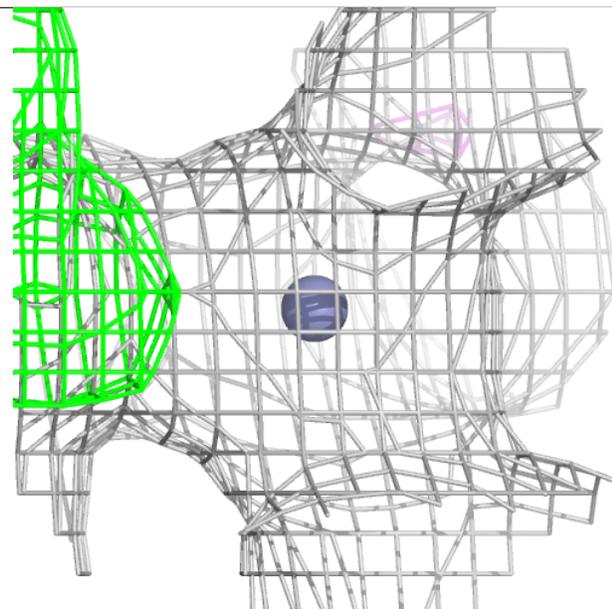and green (positive)

Electron density around ZN B 701:

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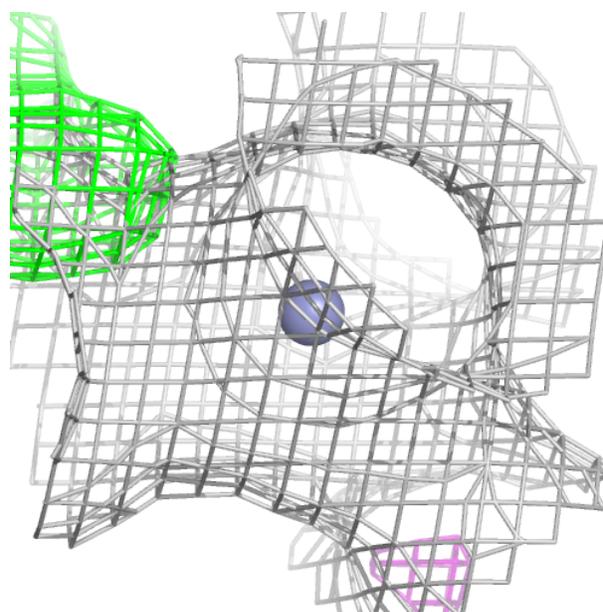$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
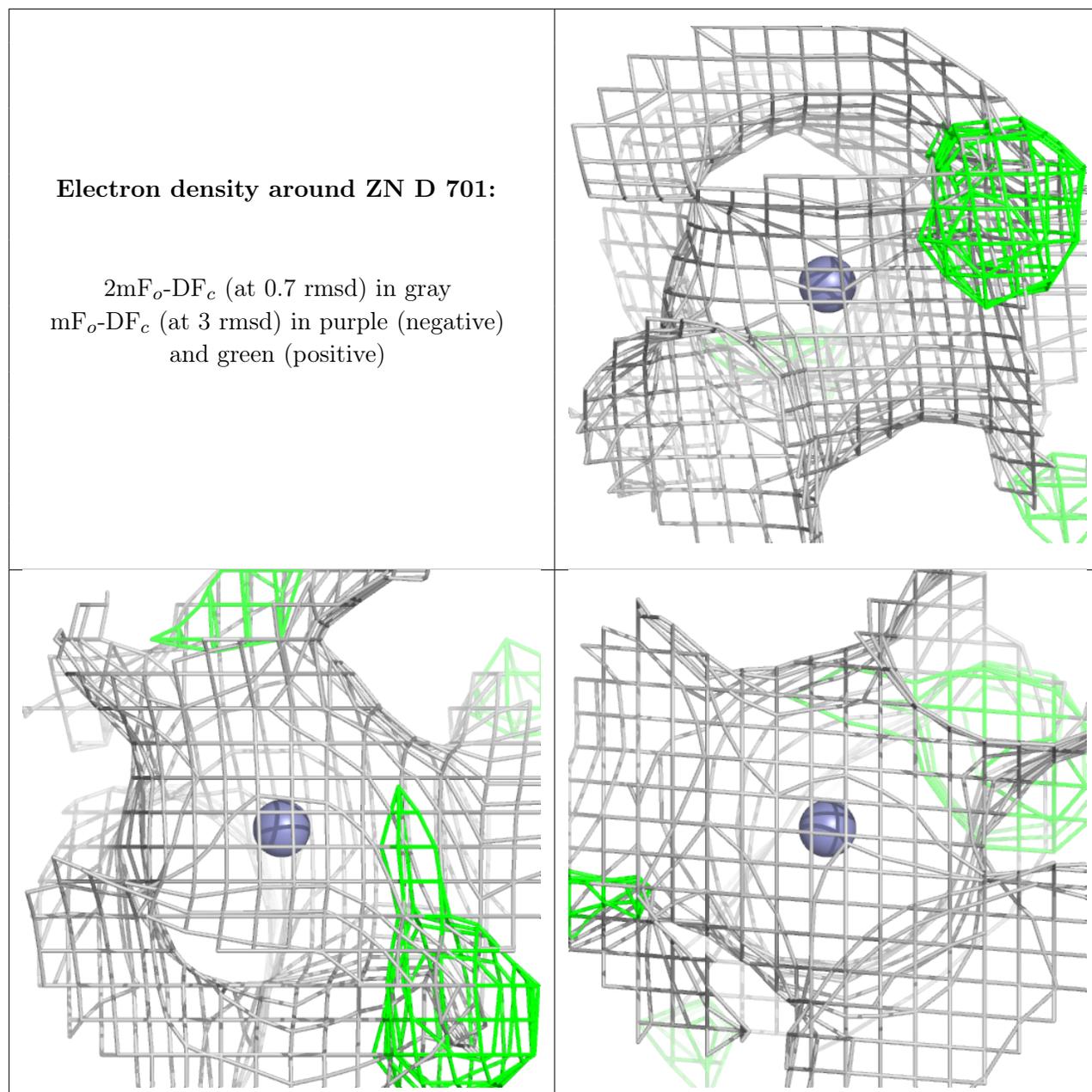and green (positive)

Electron density around ZN C 701:

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

Electron density around ZN D 701:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.