Full wwPDB X-ray Structure Validation Report (i)

Feb 20, 2025 – 10:12 AM JST

PDB ID	:	8GXR
Title	:	crystal structure of UBC domain of UBE2O
Authors	:	Fu, Z.; Zhu, W.; Huang, H.
Deposited on	:	2022-09-21
Resolution	:	1.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

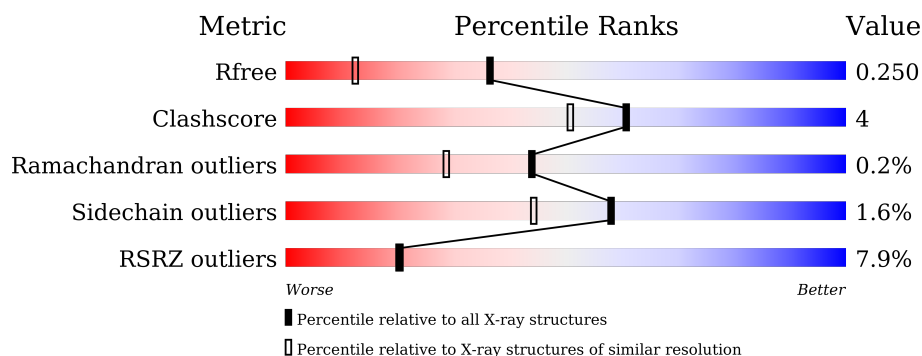|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.2

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 1.70 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		0.250
Clashscore		4
Ramachandran outliers		0.2%
Sidechain outliers		1.6%
RSRZ outliers		7.9%

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	5161 (1.70-1.70)
Clashscore	180529	5671 (1.70-1.70)
Ramachandran outliers	177936	5594 (1.70-1.70)
Sidechain outliers	177891	5594 (1.70-1.70)
RSRZ outliers	164620	5159 (1.70-1.70)

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	281	7% / 88% / 11%
1	B	281	6% / 88% / 10%
1	C	281	9% / 91% / 8%
1	D	281	9% / 87% / 12%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 8972 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 (E3-independent) E2 ubiquitin-conjugating enzyme UBE2O.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	279	Total	C	N	O	S	0	0	0
			2168	1379	375	409	5			
1	B	276	Total	C	N	O	S	0	0	0
			2156	1373	377	402	4			
1	C	281	Total	C	N	O	S	0	0	0
			2174	1385	377	407	5			
1	D	281	Total	C	N	O	S	0	0	0
			2139	1366	371	397	5			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	639	PRO	GLY	conflict	UNP A0A1M2VY70
B	639	PRO	GLY	conflict	UNP A0A1M2VY70
C	639	PRO	GLY	conflict	UNP A0A1M2VY70
D	639	PRO	GLY	conflict	UNP A0A1M2VY70

- Molecule 2 is CITRIC ACID (three-letter code: CIT) (formula: $C_6H_8O_7$) (labeled as "Ligand of Interest" by depositor).

CIT

O5

O

HO

C6

C3

O6

HO

O7

C2

C1

O2

OH

O

O1

C4

C5

O3

O

OH

O4
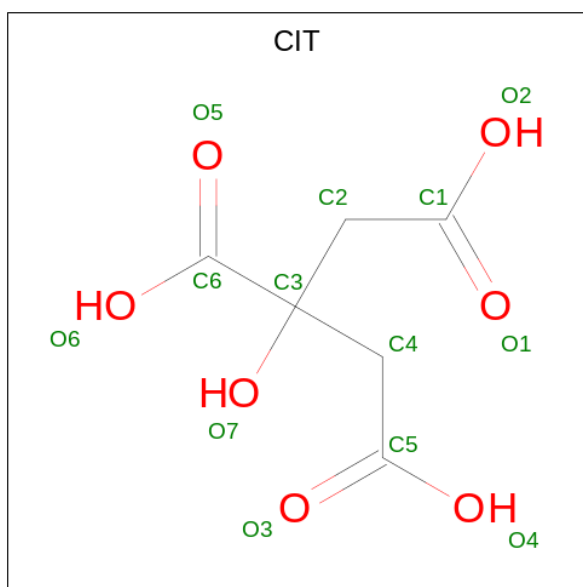
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 13	C 6	O 7	0	0
2	B	1	Total 13	C 6	O 7	0	0
2	C	1	Total 13	C 6	O 7	0	0
2	D	1	Total 13	C 6	O 7	0	0

- Molecule 3 is water.

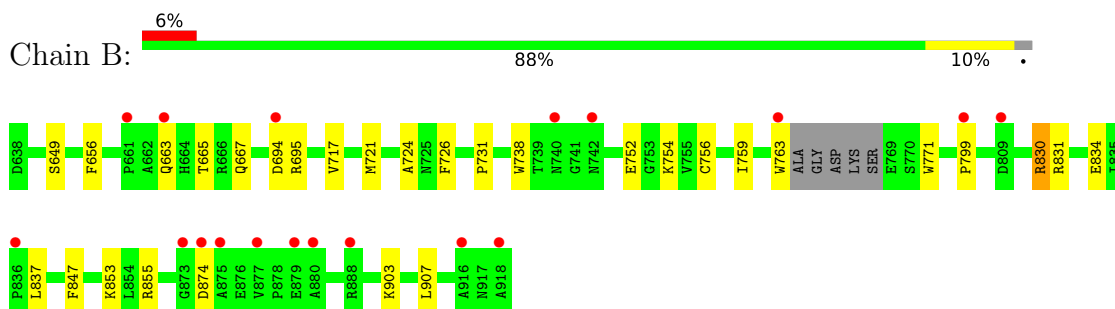| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	75	Total 75	O 75	0	0
3	B	76	Total 76	O 76	0	0
3	C	74	Total 74	O 74	0	0
3	D	58	Total 58	O 58	0	0

W O R L D W I D E

PDB

PROTEIN DATA BANK

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.
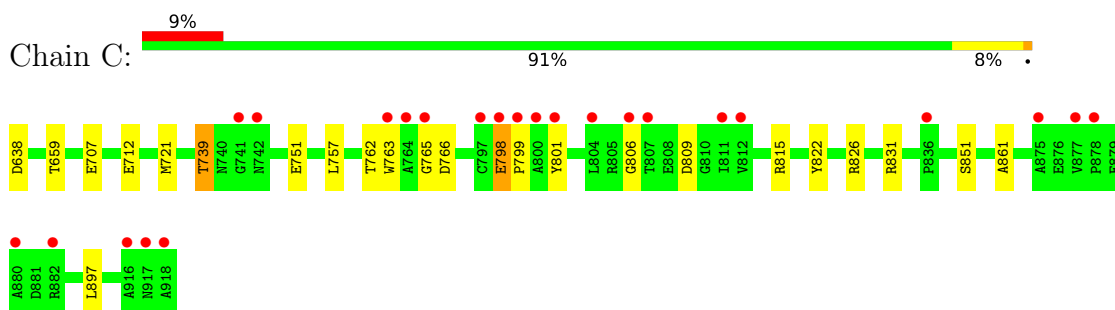
• Molecule 1: (E3-independent) E2 ubiquitin-conjugating enzyme UBE2O
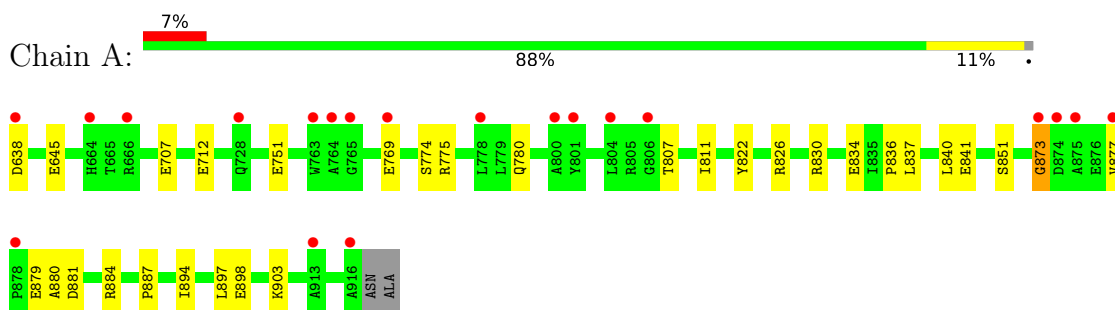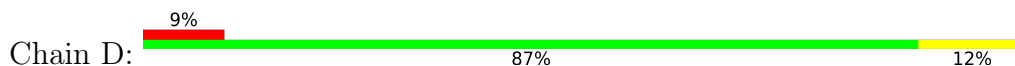

• Molecule 1: (E3-independent) E2 ubiquitin-conjugating enzyme UBE2O

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D638 R643 L647 P648 P651 V652 D653 H654 A655 F656 T659 P660 P661 A662 Q663 H664 F668 S673 K674 K677 Y692 E693 D694 R695 L698 Y711 F716 D719 W720 A724 A733 V755 C756 L757 T762 W763 A764 G765 D766 K767 P794 N818

E819 I835 P836 L837 F847 K853 T871 Q872 G873 D874 A875 E876 V877 R884 L889 Q905 Q908 A913 A916 N917 A918
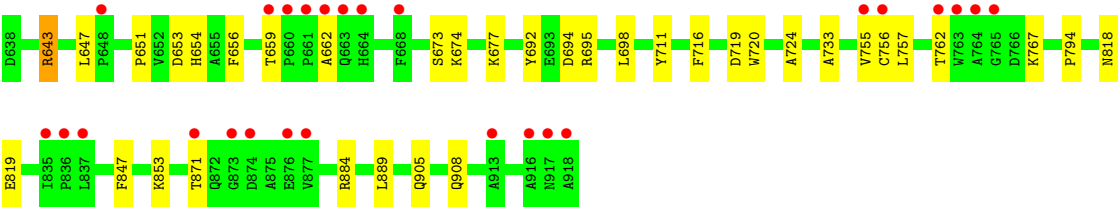
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	64.39Å 96.96Å 207.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.09 – 1.70 38.09 – 1.70	Depositor EDS
% Data completeness (in resolution range)	99.8 (38.09-1.70) 99.9 (38.09-1.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.35 (at 1.70Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.225 , 0.250 0.225 , 0.250	Depositor DCC
R_{free} test set	7169 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	30.1	Xtriage
Anisotropy	0.687	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 36.3	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	8972	wwPDB-VP
Average B, all atoms (Å^2)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.40% 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: CIT

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	0.42	0/2222	0.64	0/3030
1	B	0.41	0/2209	0.63	0/3010
1	C	0.38	0/2228	0.64	0/3036
1	D	0.37	0/2191	0.61	0/2988
All	All	0.39	0/8850	0.63	0/12064

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	2
1	B	0	1
1	D	0	1
All	All	0	4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	775	ARG	Sidechain
1	A	873	GLY	Peptide
1	B	830	ARG	Sidechain
1	D	643	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	2168	0	2113	18	0
1	B	2156	0	2115	17	0
1	C	2174	0	2127	14	0
1	D	2139	0	2091	22	0
2	A	13	0	5	0	0
2	B	13	0	5	0	0
2	C	13	0	5	0	0
2	D	13	0	5	2	0
3	A	75	0	0	1	0
3	B	76	0	0	0	0
3	C	74	0	0	0	0
3	D	58	0	0	0	0
All	All	8972	0	8466	70	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 4.

All (70) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:830:ARG:NH1	1:B:834:GLU:OE1	2.02	0.92
1:B:830:ARG:HE	1:B:903:LYS:HD3	1.37	0.90
1:C:707:GLU:HA	1:C:712:GLU:HG3	1.65	0.77
1:A:830:ARG:CZ	1:A:903:LYS:HD3	2.21	0.70
1:D:659:THR:O	1:D:695:ARG:NH2	2.24	0.70
1:A:707:GLU:HA	1:A:712:GLU:HG3	1.75	0.69
1:D:755:VAL:O	1:D:762:THR:HG21	1.94	0.67
1:A:894:ILE:O	1:A:898:GLU:HG3	1.94	0.66
1:B:763:TRP:CZ2	1:B:799:PRO:HG2	2.32	0.64
1:C:763:TRP:HD1	1:C:766:ASP:H	1.45	0.63
1:C:757:LEU:H	1:C:762:THR:HG23	1.65	0.61
1:B:717:VAL:HG21	1:B:837:LEU:HD21	1.83	0.60
1:B:830:ARG:NE	1:B:903:LYS:HD3	2.14	0.59
1:A:830:ARG:O	1:A:834:GLU:HG3	2.04	0.58
1:D:905:GLN:HE22	1:D:908:GLN:NE2	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:751:GLU:OE2	3:A:1101:HOH:O	2.18	0.57
1:B:665:THR:HG22	1:B:667:GLN:H	1.70	0.57
1:B:754:LYS:HE3	1:B:756:CYS:SG	2.46	0.56
1:D:662:ALA:HB3	1:D:724:ALA:HB2	1.88	0.55
1:D:756:CYS:HA	1:D:762:THR:HG23	1.89	0.55
1:A:837:LEU:HD23	1:A:840:LEU:HD12	1.88	0.54
1:D:819:GLU:HG3	1:D:889:LEU:HD22	1.89	0.54
1:D:673:SER:O	1:D:677:LYS:HG3	2.08	0.53
1:C:765:GLY:HA3	1:C:799:PRO:HG3	1.91	0.53
1:A:769:GLU:OE2	1:A:780:GLN:NE2	2.41	0.53
1:A:877:VAL:HG21	1:A:887:PRO:HB2	1.91	0.52
1:B:834:GLU:HG2	1:B:907:LEU:HD21	1.91	0.52
1:B:738:TRP:HB3	1:B:831:ARG:HG3	1.93	0.51
1:A:807:THR:O	1:A:811:ILE:HG13	2.11	0.51
1:C:815:ARG:HH11	1:C:815:ARG:HG3	1.77	0.50
1:A:836:PRO:HB3	1:A:841:GLU:OE2	2.13	0.49
1:A:826:ARG:HG3	1:A:897:LEU:CD1	2.43	0.48
1:A:881:ASP:O	1:A:884:ARG:HB2	2.13	0.48
1:B:847:PHE:CZ	1:B:853:LYS:HG3	2.49	0.48
1:B:752:GLU:OE1	1:B:752:GLU:N	2.40	0.48
1:D:651:PRO:HB2	1:D:653:ASP:OD1	2.14	0.48
1:D:794:PRO:HD2	1:D:818:ASN:OD1	2.14	0.48
1:D:654:HIS:CE1	1:D:719:ASP:HB3	2.49	0.48
1:B:694:ASP:OD2	1:B:695:ARG:N	2.47	0.47
1:C:763:TRP:HD1	1:C:765:GLY:H	1.58	0.47
1:C:659:THR:HG21	1:C:721:MET:SD	2.55	0.47
1:D:757:LEU:HD12	1:D:757:LEU:HA	1.74	0.47
1:C:739:THR:HG21	1:C:751:GLU:HG2	1.97	0.47
1:A:873:GLY:H	1:D:767:LYS:HE2	1.80	0.47
1:A:822:TYR:O	1:A:826:ARG:HG2	2.15	0.47
1:B:663:GLN:O	1:B:724:ALA:HA	2.15	0.46
1:B:759:ILE:O	1:B:771:TRP:HB2	2.16	0.45
1:A:830:ARG:NE	1:A:903:LYS:HD3	2.31	0.45
1:D:694:ASP:OD1	1:D:695:ARG:N	2.50	0.44
1:C:762:THR:O	1:C:763:TRP:HB2	2.17	0.44
1:D:819:GLU:HG3	1:D:889:LEU:CD2	2.47	0.44
1:D:647:LEU:O	1:D:692:TYR:HA	2.17	0.44
1:B:656:PHE:HB3	1:B:721:MET:HE3	2.00	0.43
1:C:707:GLU:HA	1:C:712:GLU:CG	2.42	0.43
1:A:884:ARG:HD2	1:A:884:ARG:HA	1.79	0.43
1:D:711:TYR:HB3	1:D:716:PHE:CE2	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:879:GLU:HG3	1:A:880:ALA:N	2.34	0.43
1:A:769:GLU:H	1:A:769:GLU:HG2	1.65	0.42
1:D:720:TRP:CZ3	1:D:733:ALA:HB2	2.54	0.42
1:C:798:GLU:HG3	1:C:801:TYR:CD1	2.54	0.42
1:C:815:ARG:HG3	1:C:815:ARG:NH1	2.34	0.42
1:B:752:GLU:H	1:B:752:GLU:CD	2.23	0.42
1:D:643:ARG:HD3	2:D:1001:CIT:O5	2.20	0.41
1:D:847:PHE:CZ	1:D:853:LYS:HG3	2.54	0.41
1:D:674:LYS:HA	1:D:674:LYS:HD3	1.66	0.41
1:D:643:ARG:HD2	2:D:1001:CIT:O1	2.21	0.41
1:B:726:PHE:HE1	1:B:731:PRO:HD3	1.86	0.40
1:C:861:ALA:HB1	1:C:897:LEU:HD21	2.03	0.40
1:C:822:TYR:O	1:C:826:ARG:HG2	2.21	0.40
1:D:656:PHE:HB2	1:D:698:LEU:HD22	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	277/281 (99%)	269 (97%)	8 (3%)	0	100	100
1	B	272/281 (97%)	264 (97%)	7 (3%)	1 (0%)	30	17
1	C	279/281 (99%)	263 (94%)	15 (5%)	1 (0%)	30	17
1	D	279/281 (99%)	268 (96%)	11 (4%)	0	100	100
All	All	1107/1124 (98%)	1064 (96%)	41 (4%)	2 (0%)	44	29

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	874	ASP

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Mol	Chain	Res	Type
1	C	806	GLY

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	227/236 (96%)	223 (98%)	4 (2%)	54	39
1	B	226/236 (96%)	224 (99%)	2 (1%)	75	67
1	C	226/236 (96%)	220 (97%)	6 (3%)	40	23
1	D	219/236 (93%)	217 (99%)	2 (1%)	75	67
All	All	898/944 (95%)	884 (98%)	14 (2%)	58	44

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	638	ASP
1	A	645	GLU
1	A	774	SER
1	A	851	SER
1	B	649	SER
1	B	855	ARG
1	C	638	ASP
1	C	739	THR
1	C	798	GLU
1	C	809	ASP
1	C	831	ARG
1	C	851	SER
1	D	871	THR
1	D	884	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	813	ASN

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Mol	Chain	Res	Type
1	D	734	HIS
1	D	740	ASN
1	D	908	GLN
1	D	911	GLN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5   Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

4 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	$\#|Z| > 2$
2	CIT	D	1001	-	12,12,12	1.04	0	17,17,17	1.60	4 (23%)
2	CIT	A	1001	-	12,12,12	1.10	0	17,17,17	1.80	3 (17%)
2	CIT	C	1001	-	12,12,12	1.16	0	17,17,17	1.67	3 (17%)
2	CIT	B	1001	-	12,12,12	1.03	0	17,17,17	1.51	3 (17%)

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	CIT	D	1001	-	-	3/16/16/16	-
2	CIT	A	1001	-	-	5/16/16/16	-
2	CIT	C	1001	-	-	0/16/16/16	-
2	CIT	B	1001	-	-	2/16/16/16	-

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1001	CIT	O6-C6-C3	5.01	121.75	113.05
2	C	1001	CIT	O6-C6-C3	4.35	120.61	113.05
2	D	1001	CIT	O6-C6-C3	3.90	119.83	113.05
2	B	1001	CIT	O6-C6-C3	3.23	118.67	113.05
2	C	1001	CIT	O5-C6-C3	-2.54	118.66	122.25
2	B	1001	CIT	O2-C1-C2	2.43	122.15	114.35
2	A	1001	CIT	O2-C1-C2	2.34	121.85	114.35
2	D	1001	CIT	O2-C1-O1	-2.31	117.55	123.30
2	B	1001	CIT	O2-C1-O1	-2.22	117.77	123.30
2	C	1001	CIT	O4-C5-C4	2.18	121.35	114.35
2	A	1001	CIT	O2-C1-O1	-2.08	118.12	123.30
2	D	1001	CIT	O2-C1-C2	2.01	120.82	114.35
2	D	1001	CIT	O4-C5-C4	2.01	120.79	114.35

There are no chirality outliers.
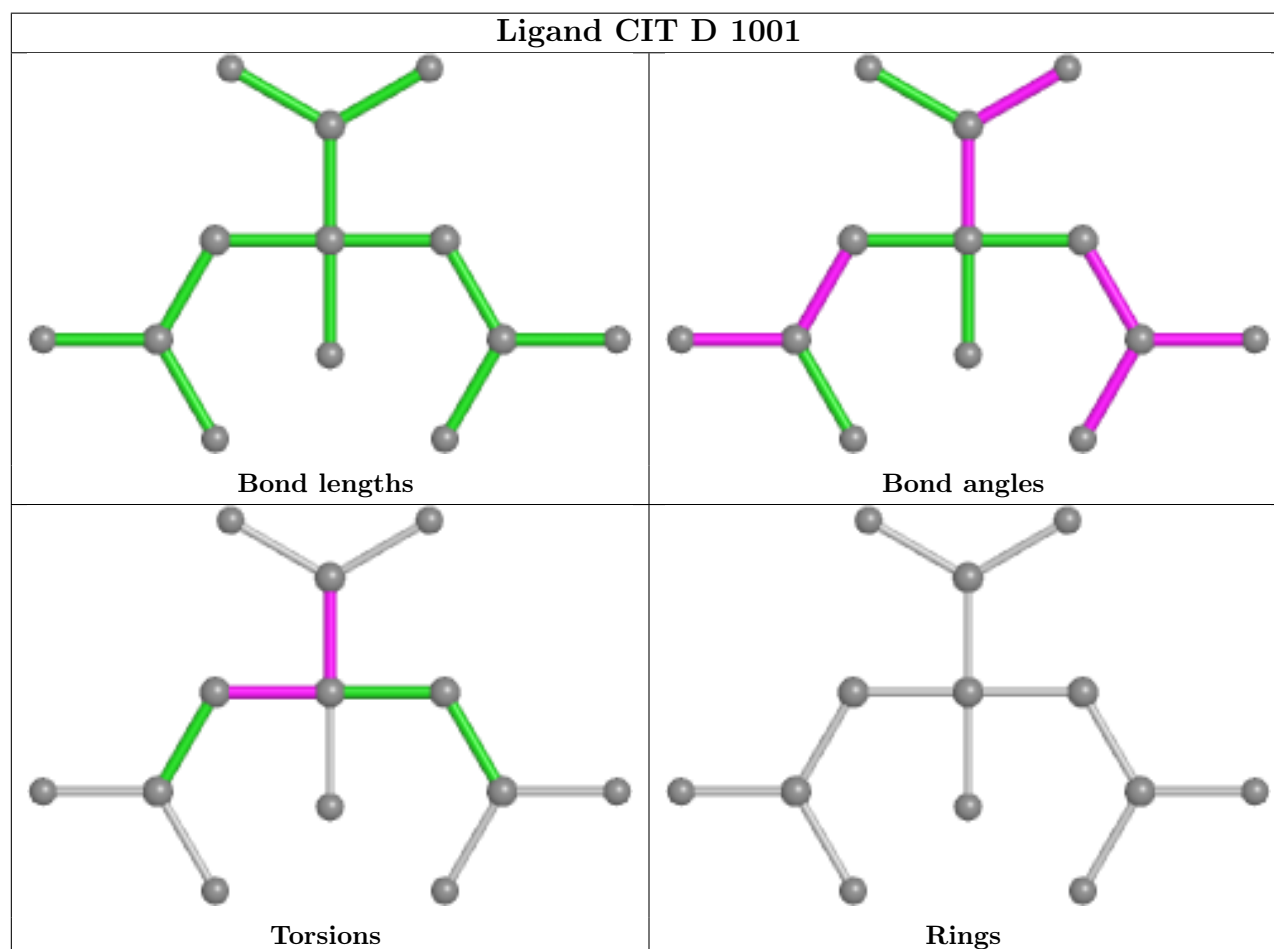
All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1001	CIT	C4-C3-C6-O5
2	A	1001	CIT	C4-C3-C6-O6
2	D	1001	CIT	C4-C3-C6-O5
2	A	1001	CIT	O2-C1-C2-C3
2	A	1001	CIT	O1-C1-C2-C3
2	B	1001	CIT	O2-C1-C2-C3
2	B	1001	CIT	O1-C1-C2-C3
2	A	1001	CIT	C2-C3-C6-O5
2	D	1001	CIT	C4-C3-C6-O6
2	D	1001	CIT	C6-C3-C4-C5

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	1001	CIT	2	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 CIT D 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand CIT A 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand CIT C 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand CIT B 1001
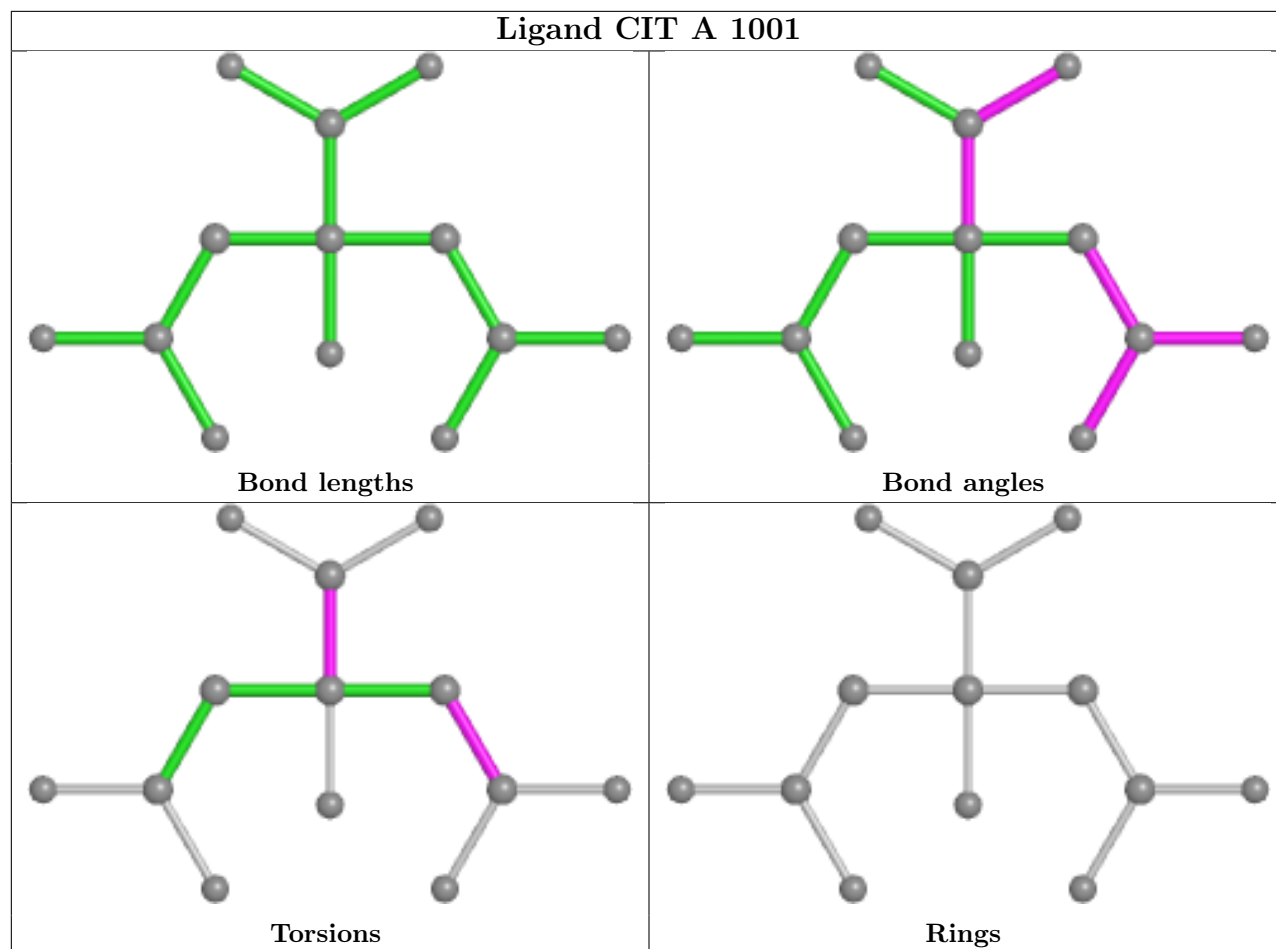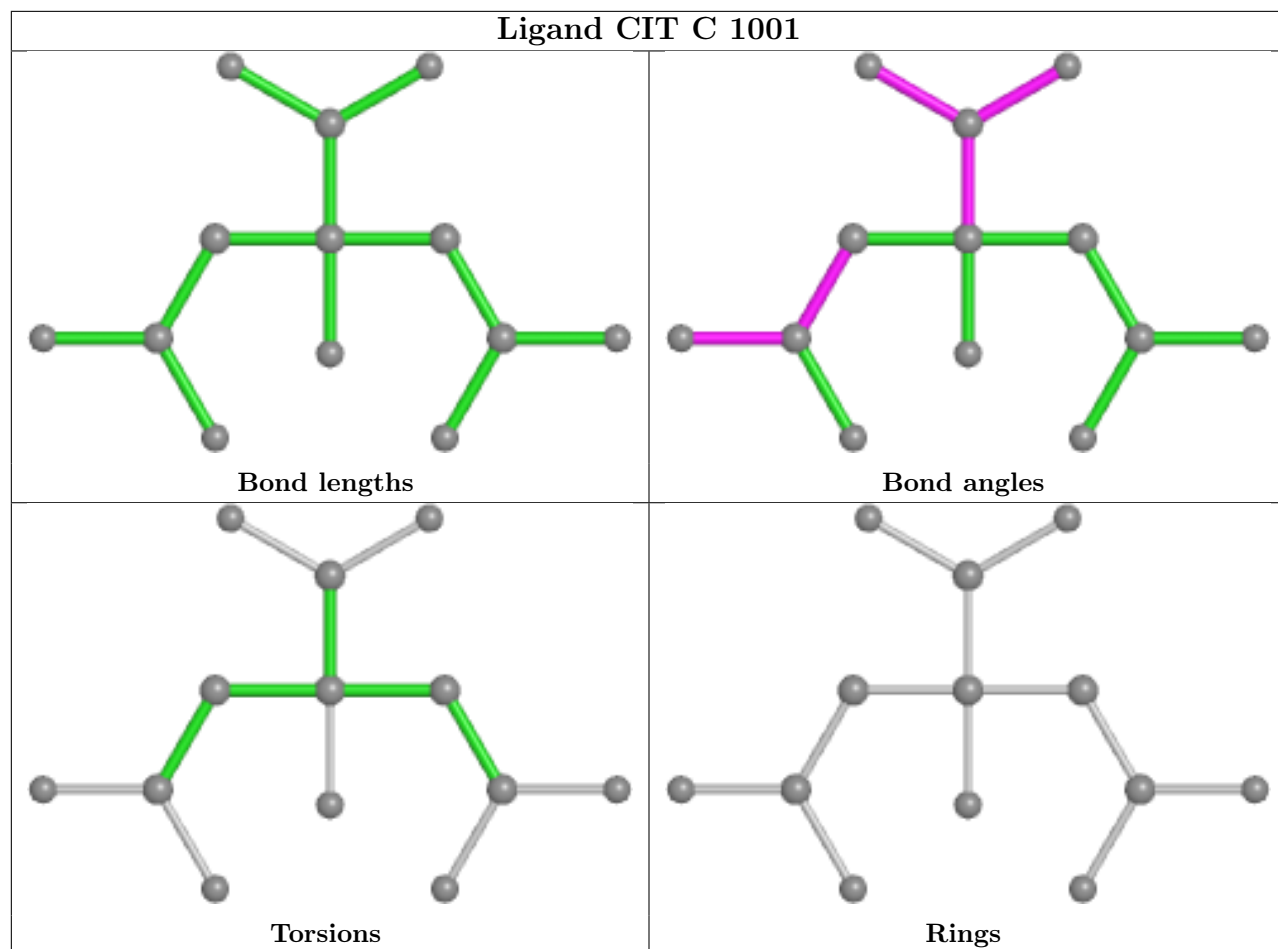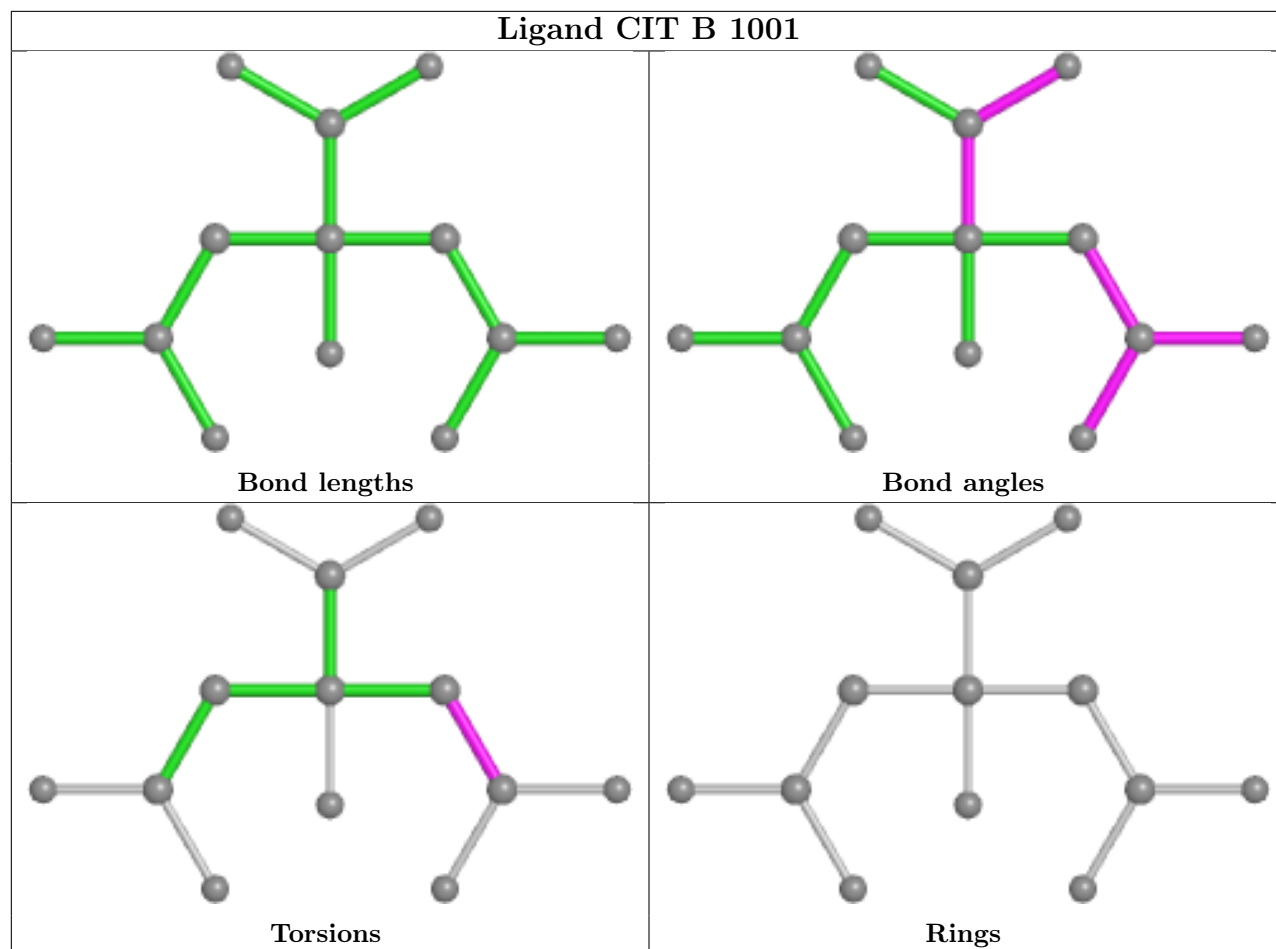
5.7 Other polymers ⓘ

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	279/281 (99%)	0.57	20 (7%)	23	23	29, 38, 67, 81	0
1	B	276/281 (98%)	0.69	18 (6%)	26	27	29, 40, 68, 90	0
1	C	281/281 (100%)	0.75	24 (8%)	18	18	31, 41, 79, 89	0
1	D	281/281 (100%)	0.74	26 (9%)	16	15	33, 44, 65, 89	0
All	All	1117/1124 (99%)	0.68	88 (7%)	20	20	29, 41, 69, 90	0

All (88) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	918	ALA	5.6
1	C	799	PRO	5.3
1	C	918	ALA	4.7
1	B	875	ALA	4.5
1	C	764	ALA	4.3
1	C	765	GLY	4.2
1	C	800	ALA	3.8
1	C	877	VAL	3.5
1	C	763	TRP	3.5
1	D	763	TRP	3.5
1	D	918	ALA	3.4
1	D	876	GLU	3.4
1	B	874	ASP	3.4
1	A	769	GLU	3.3
1	D	916	ALA	3.3
1	D	836	PRO	3.2
1	B	836	PRO	3.0
1	A	801	TYR	3.0
1	D	917	ASN	2.9
1	B	663	GLN	2.9
1	D	913	ALA	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	804	LEU	2.8
1	C	804	LEU	2.8
1	B	742	ASN	2.8
1	B	916	ALA	2.8
1	C	916	ALA	2.8
1	C	917	ASN	2.7
1	B	763	TRP	2.7
1	C	882	ARG	2.7
1	D	837	LEU	2.7
1	A	916	ALA	2.7
1	D	662	ALA	2.7
1	B	877	VAL	2.7
1	D	664	HIS	2.7
1	B	799	PRO	2.6
1	C	741	GLY	2.6
1	C	806	GLY	2.6
1	A	877	VAL	2.6
1	D	661	PRO	2.6
1	B	694	ASP	2.6
1	A	913	ALA	2.5
1	A	728	GLN	2.5
1	D	764	ALA	2.5
1	D	663	GLN	2.5
1	D	668	PHE	2.4
1	C	798	GLU	2.4
1	A	806	GLY	2.4
1	D	874	ASP	2.4
1	A	800	ALA	2.4
1	A	666	ARG	2.4
1	A	763	TRP	2.4
1	B	879	GLU	2.4
1	A	874	ASP	2.4
1	D	765	GLY	2.4
1	C	807	THR	2.3
1	B	661	PRO	2.3
1	A	765	GLY	2.3
1	D	871	THR	2.3
1	A	664	HIS	2.3
1	A	875	ALA	2.3
1	D	873	GLY	2.3
1	B	880	ALA	2.3
1	C	880	ALA	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	873	GLY	2.3
1	B	888	ARG	2.3
1	C	812	VAL	2.3
1	C	797	CYS	2.2
1	C	875	ALA	2.2
1	D	659	THR	2.2
1	A	878	PRO	2.2
1	C	878	PRO	2.2
1	B	809	ASP	2.2
1	C	801	TYR	2.2
1	C	836	PRO	2.2
1	D	762	THR	2.2
1	D	660	PRO	2.2
1	B	740	ASN	2.1
1	D	648	PRO	2.1
1	A	873	GLY	2.1
1	A	638	ASP	2.1
1	C	811	ILE	2.1
1	D	835	ILE	2.1
1	C	742	ASN	2.0
1	A	778	LEU	2.0
1	D	756	CYS	2.0
1	D	755	VAL	2.0
1	D	877	VAL	2.0
1	A	764	ALA	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 ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	CIT	C	1001	13/13	0.88	0.08	39,46,53,54	0
2	CIT	B	1001	13/13	0.89	0.09	41,44,51,51	0
2	CIT	A	1001	13/13	0.90	0.09	35,39,50,54	0
2	CIT	D	1001	13/13	0.91	0.08	41,45,52,52	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.
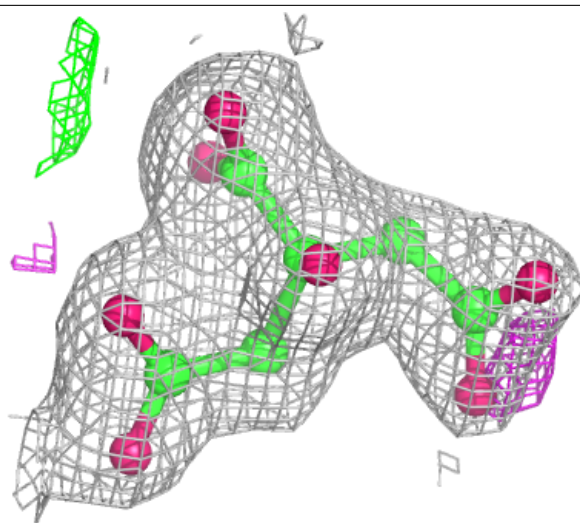

Electron density around CIT C 1001:

$2\text{mF}_o\text{-DF}_c$ (at 0.7 rmsd) in gray
$\text{mF}_o\text{-DF}_c$ (at 3 rmsd) in purple (negative) and green (positive)
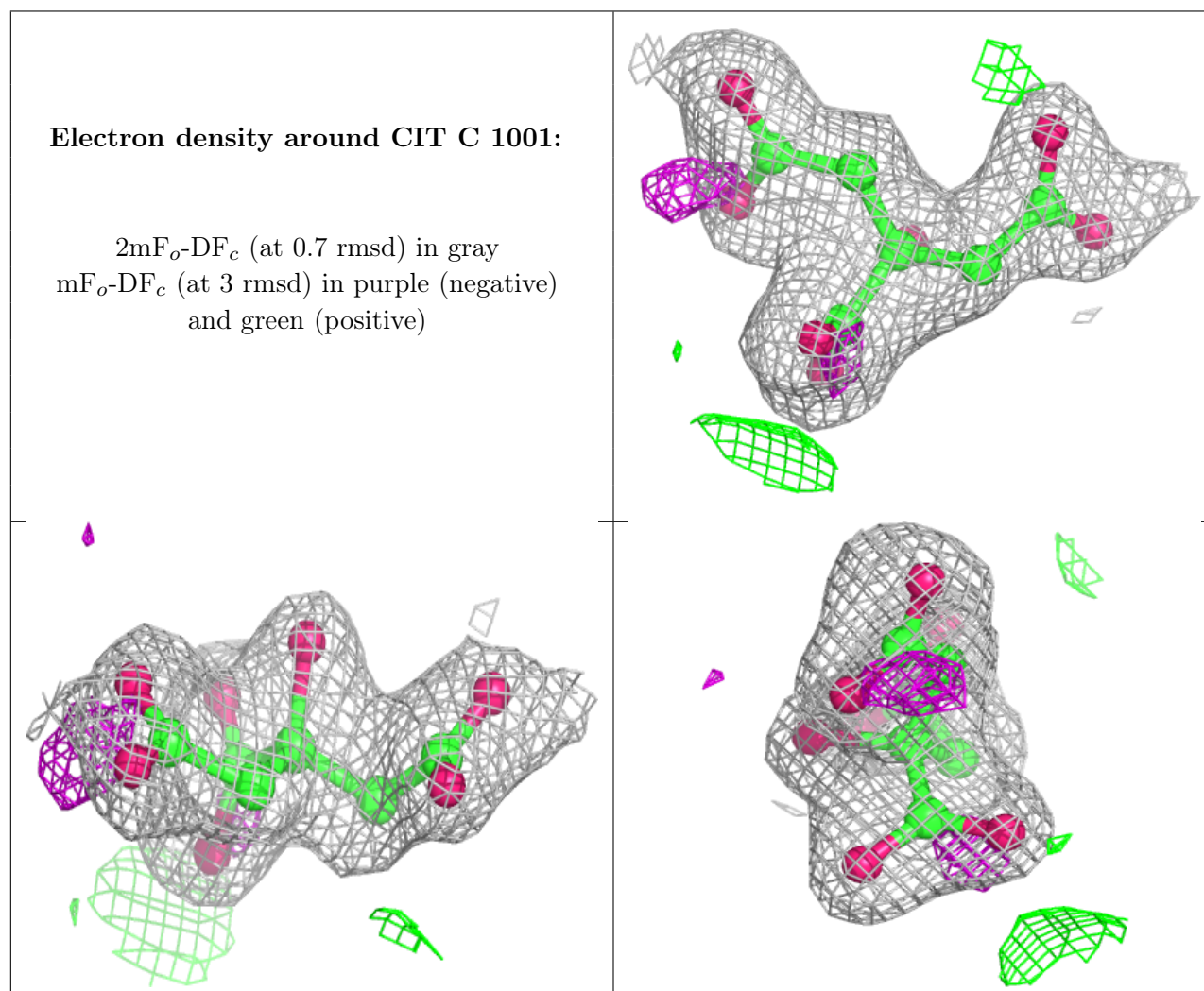
Electron density around CIT B 1001:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
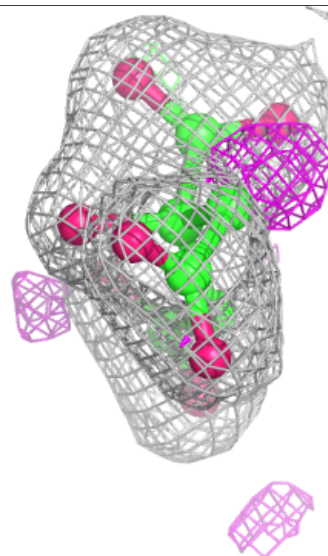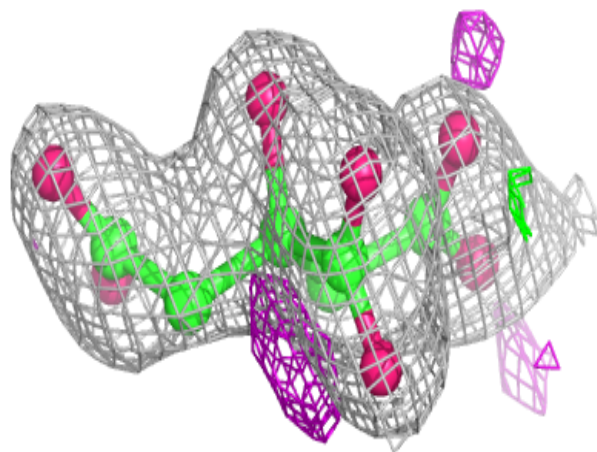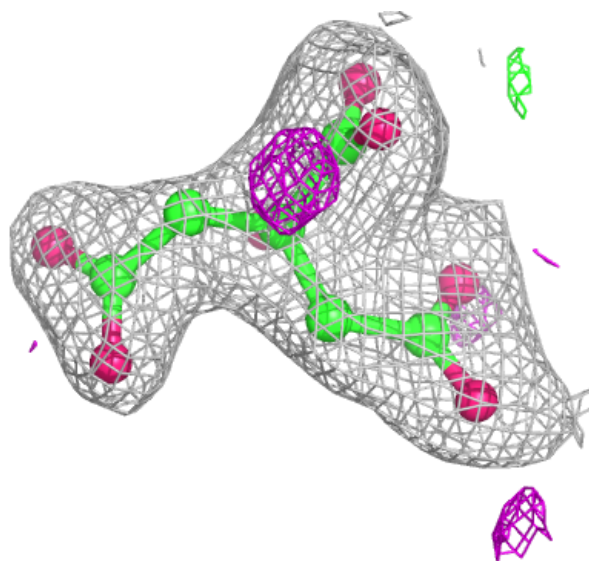$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
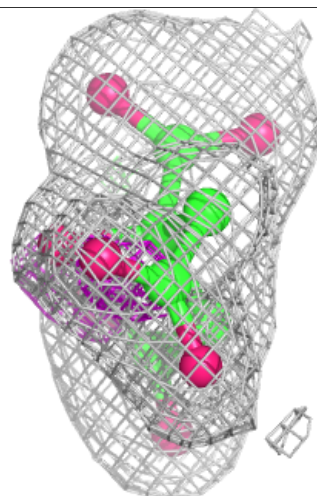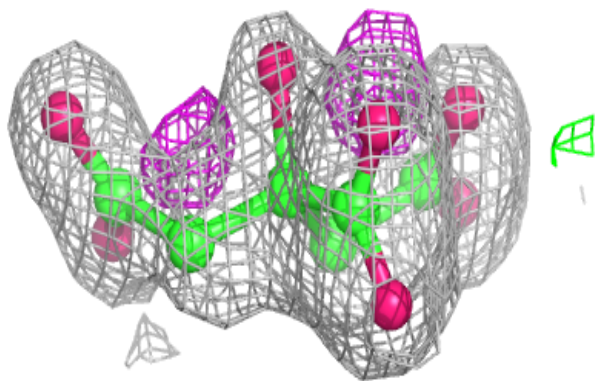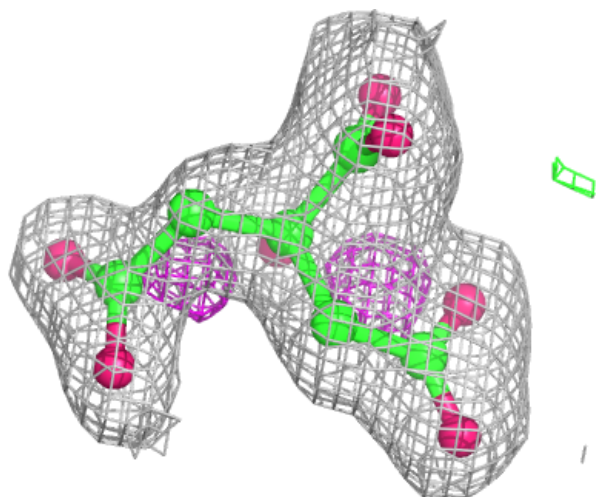
Electron density around CIT A 1001:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
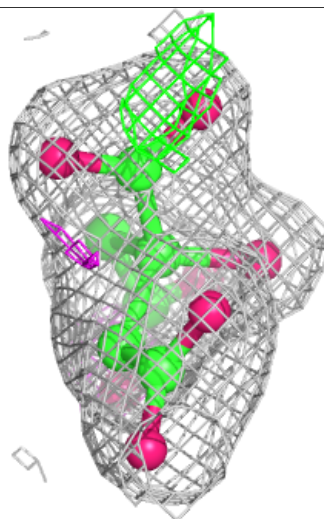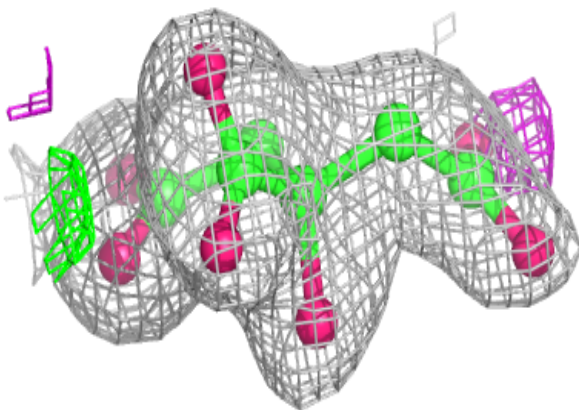
Electron density around CIT D 1001:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.