



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 24, 2023 – 03:51 AM EDT

PDB ID : 5TRL
Title : Crystal structure of human GCN5 histone acetyltransferase domain
Authors : Guo, Y.R.; Tao, Y.J.
Deposited on : 2016-10-26
Resolution : 2.30 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

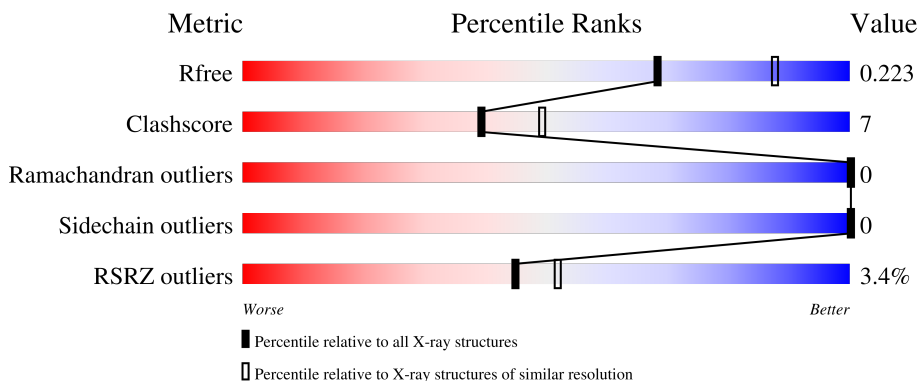
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

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



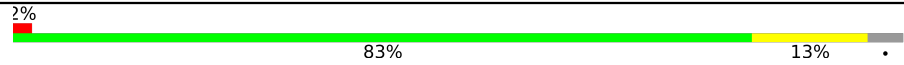


Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	168	 90% 6%
1	B	168	 85% 11% 5%
1	C	168	 87% 9%
1	D	168	 78% 18%
1	E	168	 82% 13% 5%

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Mol	Chain	Length	Quality of chain
1	F	168	
1	G	168	
1	H	168	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11576 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 Histone acetyltransferase KAT2A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	C	161	1323	866	225	225	7	0	0	0
1	D	161	1323	866	225	225	7	0	0	0
1	E	160	1316	862	224	223	7	0	0	0
1	F	161	1323	866	225	225	7	0	0	0
1	B	160	1318	863	224	224	7	0	0	0
1	A	161	1323	866	225	225	7	0	0	0
1	G	156	1285	843	220	215	7	0	0	0
1	H	161	1326	869	225	225	7	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

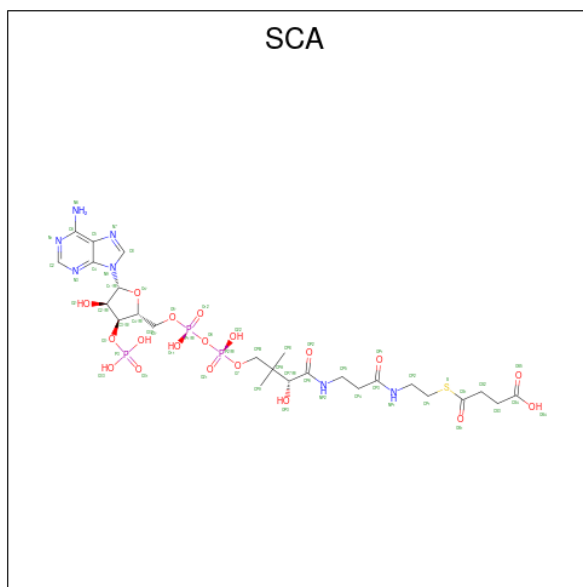
Chain	Residue	Modelled	Actual	Comment	Reference
C	495	GLY	-	expression tag	UNP Q92830
C	496	SER	-	expression tag	UNP Q92830
D	495	GLY	-	expression tag	UNP Q92830
D	496	SER	-	expression tag	UNP Q92830
E	495	GLY	-	expression tag	UNP Q92830
E	496	SER	-	expression tag	UNP Q92830
F	495	GLY	-	expression tag	UNP Q92830
F	496	SER	-	expression tag	UNP Q92830
B	495	GLY	-	expression tag	UNP Q92830
B	496	SER	-	expression tag	UNP Q92830
A	495	GLY	-	expression tag	UNP Q92830
A	496	SER	-	expression tag	UNP Q92830
G	495	GLY	-	expression tag	UNP Q92830

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Chain	Residue	Modelled	Actual	Comment	Reference
G	496	SER	-	expression tag	UNP Q92830
H	495	GLY	-	expression tag	UNP Q92830
H	496	SER	-	expression tag	UNP Q92830

- Molecule 2 is SUCCINYL-COENZYME A (three-letter code: SCA) (formula: C₂₅H₄₀N₇O₁₉P₃S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	N	O	P			S
2	C	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	D	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	E	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	F	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	B	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	A	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	G	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		
2	H	1	Total	C	N	O	P	S	0	0
			55	25	7	19	3	1		

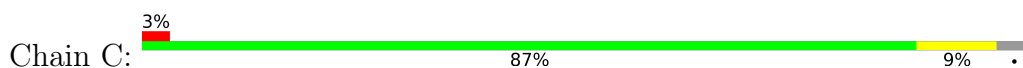
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	69	Total O 69 69	0	0
3	D	112	Total O 112 112	0	0
3	E	67	Total O 67 67	0	0
3	F	77	Total O 77 77	0	0
3	B	81	Total O 81 81	0	0
3	A	83	Total O 83 83	0	0
3	G	38	Total O 38 38	0	0
3	H	72	Total O 72 72	0	0

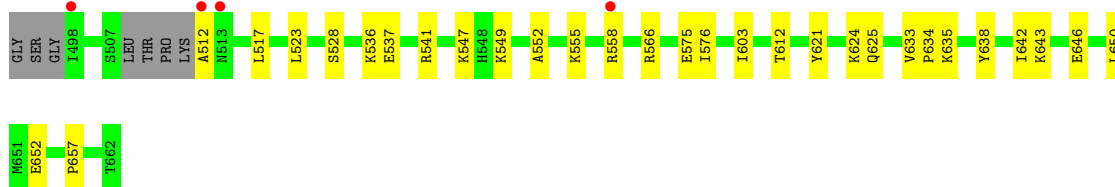
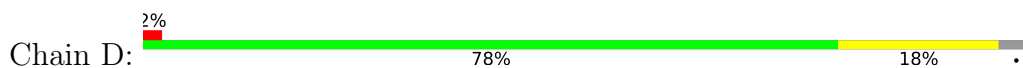
3 Residue-property plots [i](#)

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.

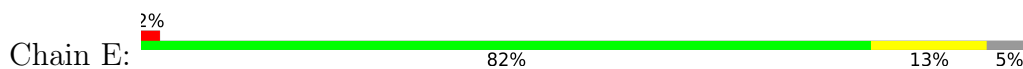
- Molecule 1: Histone acetyltransferase KAT2A



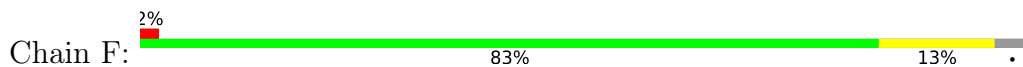
- Molecule 1: Histone acetyltransferase KAT2A



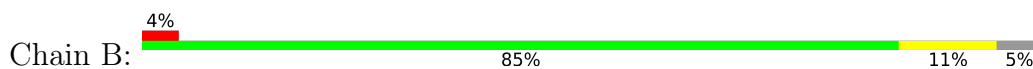
- Molecule 1: Histone acetyltransferase KAT2A



- Molecule 1: Histone acetyltransferase KAT2A

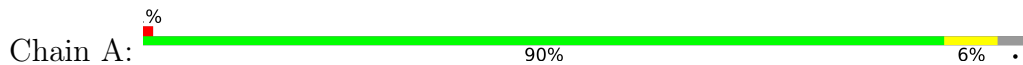


- Molecule 1: Histone acetyltransferase KAT2A

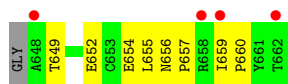
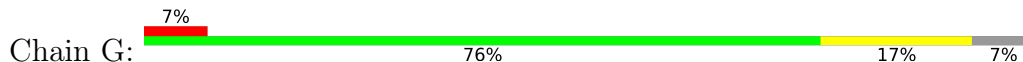




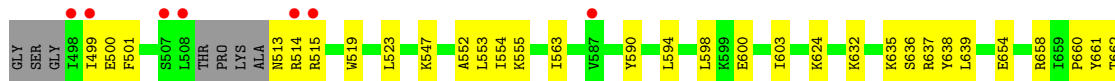
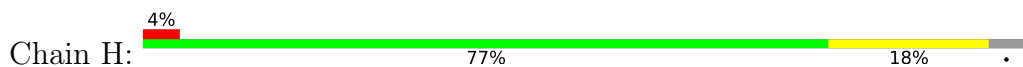
• Molecule 1: Histone acetyltransferase KAT2A



• Molecule 1: Histone acetyltransferase KAT2A



• Molecule 1: Histone acetyltransferase KAT2A



4 Data and refinement statistics i

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, α , β , γ	175.73Å 175.73Å 175.73Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.14 – 2.30 33.82 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.9 (30.14-2.30) 96.4 (33.82-2.30)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.32 (at 2.29Å)	Xtrriage
Refinement program	PHENIX 1.10_2152	Depositor
R, R_{free}	0.197 , 0.223 0.197 , 0.223	Depositor DCC
R_{free} test set	4031 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	30.7	Xtrriage
Anisotropy	0.000	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 52.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.026 for l,-k,h	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	11576	wwPDB-VP
Average B, all atoms (Å ²)	34.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.08% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SCA

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	0.32	0/1358	0.47	0/1831
1	B	0.30	0/1353	0.48	0/1824
1	C	0.30	0/1358	0.49	0/1831
1	D	0.30	0/1358	0.47	0/1831
1	E	0.30	0/1351	0.48	0/1821
1	F	0.30	0/1358	0.44	0/1831
1	G	0.29	0/1318	0.46	0/1775
1	H	0.29	0/1361	0.48	0/1835
All	All	0.30	0/10815	0.47	0/14579

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [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	1323	0	1336	6	1
1	B	1318	0	1331	13	2
1	C	1323	0	1336	13	0
1	D	1323	0	1336	26	0
1	E	1316	0	1329	19	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	1323	0	1336	23	0
1	G	1285	0	1308	24	1
1	H	1326	0	1342	33	0
2	A	55	0	35	1	0
2	B	55	0	34	5	0
2	C	55	0	35	2	0
2	D	55	0	35	2	0
2	E	55	0	35	0	0
2	F	55	0	35	10	0
2	G	55	0	35	3	0
2	H	55	0	35	6	0
3	A	83	0	0	2	0
3	B	81	0	0	5	1
3	C	69	0	0	5	1
3	D	112	0	0	8	2
3	E	67	0	0	5	0
3	F	77	0	0	15	0
3	G	38	0	0	5	0
3	H	72	0	0	10	2
All	All	11576	0	10933	162	5

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (162) 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:D:558:ARG:NH2	1:G:660:PRO:HB3	1.33	1.44
1:F:558:ARG:HD3	3:F:801:HOH:O	1.16	1.33
1:H:513:ASN:N	3:H:802:HOH:O	1.81	1.13
1:C:566:ARG:NH2	3:C:801:HOH:O	1.86	1.08
1:C:566:ARG:NH1	3:C:801:HOH:O	1.87	1.07
1:H:658:ARG:NH2	3:H:803:HOH:O	1.88	1.06
1:C:566:ARG:CZ	3:C:801:HOH:O	2.06	1.03
1:G:558:ARG:NE	3:G:801:HOH:O	1.96	0.99
1:E:637:ARG:NH2	3:E:801:HOH:O	1.90	0.98
2:H:701:SCA:OS5	3:H:801:HOH:O	1.81	0.97
1:H:632:LYS:NZ	1:H:654:GLU:OE1	2.00	0.94
1:E:604:LYS:HE2	1:E:660:PRO:HB3	1.48	0.94
1:D:558:ARG:NH2	1:G:660:PRO:CB	2.29	0.94
1:G:632:LYS:NZ	1:G:654:GLU:OE1	2.00	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:701:SCA:N6	3:B:802:HOH:O	2.03	0.91
1:G:536:LYS:NZ	3:G:802:HOH:O	2.00	0.90
1:D:558:ARG:HH22	1:G:660:PRO:CB	1.82	0.89
1:B:615:ASP:N	2:B:701:SCA:OS5	2.04	0.89
1:B:566:ARG:NH1	1:B:567:MET:O	2.06	0.88
1:E:637:ARG:NE	3:E:801:HOH:O	1.95	0.88
1:C:566:ARG:NH1	1:C:567:MET:O	2.07	0.87
1:H:624:LYS:NZ	2:H:701:SCA:O33	2.10	0.84
1:H:547:LYS:NZ	3:H:804:HOH:O	2.10	0.84
1:H:499:ILE:HD13	1:H:555:LYS:HG3	1.61	0.82
1:D:646:GLU:O	3:D:801:HOH:O	1.97	0.82
1:D:558:ARG:HH22	1:G:660:PRO:HB3	1.00	0.82
1:B:541:ARG:HD2	3:B:803:HOH:O	1.82	0.80
1:F:500:GLU:OE1	3:F:804:HOH:O	2.01	0.78
1:B:606:ASN:OD1	3:B:801:HOH:O	2.01	0.77
1:F:617:TYR:O	2:F:701:SCA:N6	2.18	0.77
1:B:606:ASN:ND2	3:B:804:HOH:O	2.17	0.76
2:F:701:SCA:S	3:F:841:HOH:O	2.44	0.76
2:F:701:SCA:OS5	3:F:805:HOH:O	2.04	0.75
1:H:600:GLU:OE2	1:H:661:TYR:N	2.16	0.74
1:H:501:PHE:CE1	1:H:553:LEU:HD13	2.23	0.74
1:D:558:ARG:CZ	1:G:660:PRO:HB3	2.17	0.73
2:B:701:SCA:C6	3:B:802:HOH:O	2.34	0.73
1:D:650:LEU:O	3:D:802:HOH:O	2.05	0.72
2:F:701:SCA:HS32	3:F:805:HOH:O	1.90	0.72
2:G:701:SCA:O22	3:G:803:HOH:O	2.08	0.71
2:F:701:SCA:H8	3:F:809:HOH:O	1.90	0.71
1:E:558:ARG:HD3	1:E:559:VAL:N	2.06	0.70
1:E:637:ARG:CZ	3:E:801:HOH:O	2.20	0.70
2:F:701:SCA:CS3	3:F:805:HOH:O	2.40	0.69
1:G:656:ASN:HD22	1:G:659:ILE:HG13	1.58	0.69
1:G:558:ARG:CD	3:G:801:HOH:O	2.35	0.68
1:F:558:ARG:NH2	3:F:802:HOH:O	1.90	0.67
2:H:701:SCA:H3'	3:H:807:HOH:O	1.94	0.66
1:H:636:SER:OG	3:H:805:HOH:O	2.13	0.66
2:H:701:SCA:CS4	3:H:801:HOH:O	2.37	0.66
1:F:548:HIS:NE2	3:F:808:HOH:O	2.30	0.64
1:A:617:TYR:O	2:A:701:SCA:N6	2.31	0.63
1:H:500:GLU:HB2	1:H:554:ILE:HB	1.80	0.63
1:D:624:LYS:NZ	2:D:701:SCA:H8	2.15	0.60
2:H:701:SCA:H2	2:H:701:SCA:HPB2	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:500:GLU:OE1	1:C:502:HIS:NE2	2.33	0.59
1:F:637:ARG:NH1	1:H:639:LEU:O	2.35	0.59
1:A:633:VAL:HG23	1:A:652:GLU:OE2	2.02	0.59
1:B:624:LYS:HD2	2:B:701:SCA:H1'	1.85	0.58
1:E:642:ILE:O	3:E:802:HOH:O	2.16	0.58
1:C:632:LYS:NZ	3:C:803:HOH:O	2.27	0.58
1:G:624:LYS:HD2	2:G:701:SCA:H1'	1.85	0.57
1:G:633:VAL:HG23	1:G:652:GLU:OE2	2.05	0.56
1:H:553:LEU:HB2	1:H:594:LEU:HD21	1.85	0.56
1:G:558:ARG:HD2	3:G:801:HOH:O	1.99	0.56
1:F:566:ARG:HD3	1:F:568:PHE:CZ	2.40	0.56
1:E:660:PRO:HG2	1:F:538:TYR:CD1	2.42	0.55
1:E:558:ARG:HD3	1:E:559:VAL:H	1.72	0.55
1:A:538:TYR:OH	3:A:801:HOH:O	2.16	0.54
1:C:616:GLU:H	1:C:616:GLU:CD	2.10	0.54
1:F:547:LYS:HE3	1:F:566:ARG:HH21	1.72	0.54
1:F:558:ARG:NH1	3:F:802:HOH:O	2.41	0.53
1:H:603:ILE:HD11	1:H:661:TYR:CE2	2.44	0.52
1:F:571:GLN:O	1:F:637:ARG:HD3	2.09	0.52
1:F:637:ARG:NH2	1:H:636:SER:O	2.40	0.52
1:B:600:GLU:HG2	1:B:661:TYR:HB2	1.92	0.52
2:F:701:SCA:CS4	3:F:805:HOH:O	2.54	0.52
2:H:701:SCA:C3'	3:H:807:HOH:O	2.53	0.52
1:C:636:SER:HA	1:D:634:PRO:HG2	1.91	0.52
1:C:553:LEU:HB2	1:C:594:LEU:HD21	1.92	0.51
1:D:537:GLU:OE1	3:D:804:HOH:O	2.18	0.51
1:D:624:LYS:HZ2	2:D:701:SCA:H8	1.74	0.51
1:E:500:GLU:HB2	1:E:554:ILE:HB	1.92	0.51
1:E:538:TYR:CE1	1:G:657:PRO:HB2	2.46	0.51
1:H:514:ARG:HH11	1:H:514:ARG:HA	1.75	0.50
1:F:566:ARG:NH1	1:F:567:MET:O	2.45	0.50
1:C:575:GLU:HB2	1:C:642:ILE:HG22	1.94	0.50
1:H:600:GLU:HG2	1:H:661:TYR:HB2	1.93	0.50
1:E:572:GLY:HA3	1:F:639:LEU:HD23	1.93	0.50
1:E:553:LEU:HB2	1:E:594:LEU:HD21	1.94	0.50
1:E:661:TYR:OH	1:F:541:ARG:NH2	2.44	0.50
1:D:528:SER:OG	1:D:536:LYS:HG2	2.11	0.49
1:G:500:GLU:HG3	1:G:554:ILE:HB	1.94	0.49
1:F:558:ARG:NH1	3:F:801:HOH:O	1.88	0.49
2:B:701:SCA:H2	2:B:701:SCA:HPB2	1.94	0.48
1:H:600:GLU:OE2	1:H:660:PRO:HA	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:553:LEU:HD22	1:H:594:LEU:CD1	2.44	0.48
1:G:515:ARG:HD3	1:G:519:TRP:CH2	2.48	0.48
1:H:553:LEU:HD21	1:H:590:TYR:HB3	1.95	0.48
1:G:553:LEU:HB2	1:G:594:LEU:HD21	1.96	0.47
1:F:528:SER:OG	1:F:536:LYS:HG2	2.14	0.47
1:H:547:LYS:HA	1:H:547:LYS:HD2	1.57	0.47
1:H:624:LYS:HE2	1:H:624:LYS:HB3	1.72	0.47
2:F:701:SCA:OS4	3:F:806:HOH:O	2.20	0.47
1:E:528:SER:OG	1:E:536:LYS:HG2	2.15	0.47
2:F:701:SCA:O22	3:F:807:HOH:O	2.20	0.47
1:B:523:LEU:HD13	1:B:550:THR:HG21	1.97	0.47
1:G:629:LYS:NZ	1:G:649:THR:HG21	2.30	0.47
1:E:621:TYR:O	1:E:625:GLN:HG2	2.15	0.47
1:A:603:ILE:HD11	1:A:655:LEU:HB3	1.96	0.47
1:H:603:ILE:HD11	1:H:661:TYR:HE2	1.79	0.47
1:D:517:LEU:HD11	1:E:517:LEU:HD11	1.97	0.46
1:G:619:ILE:HD12	1:G:623:LYS:HD2	1.97	0.46
1:F:558:ARG:NH1	3:F:803:HOH:O	1.93	0.46
1:D:575:GLU:HB2	1:D:642:ILE:HG22	1.96	0.46
1:B:659:ILE:HD11	1:B:661:TYR:CZ	2.51	0.46
1:H:563:ILE:HG21	1:H:598:LEU:HD22	1.98	0.46
1:H:515:ARG:HD3	1:H:519:TRP:CH2	2.51	0.45
1:D:547:LYS:HD3	1:D:566:ARG:NH2	2.32	0.45
1:E:633:VAL:HG23	1:E:652:GLU:OE2	2.15	0.45
1:F:531:LEU:HD21	2:F:701:SCA:H12	1.97	0.45
1:F:603:ILE:HD11	1:F:661:TYR:HE2	1.81	0.45
1:F:635:LYS:HA	1:F:638:TYR:CE2	2.52	0.45
1:B:547:LYS:O	1:B:566:ARG:CD	2.64	0.45
1:H:600:GLU:HG3	1:H:662:THR:OG1	2.17	0.45
2:C:701:SCA:C4'	3:C:804:HOH:O	2.65	0.45
1:D:633:VAL:HG23	1:D:652:GLU:OE2	2.17	0.45
1:F:603:ILE:HD13	1:F:657:PRO:HA	1.99	0.45
1:A:523:LEU:HD13	1:A:550:THR:HG21	1.99	0.45
1:H:637:ARG:HG2	3:H:805:HOH:O	2.16	0.44
1:G:603:ILE:HD12	1:G:657:PRO:HA	2.00	0.44
1:H:553:LEU:HD22	1:H:594:LEU:HG	1.98	0.44
1:C:571:GLN:O	1:C:637:ARG:HD2	2.18	0.44
1:H:635:LYS:HA	1:H:638:TYR:CE2	2.52	0.44
1:D:512:ALA:N	3:D:815:HOH:O	2.51	0.43
1:E:563:ILE:HG21	1:E:598:LEU:HD22	2.00	0.43
1:B:547:LYS:O	1:B:566:ARG:HD2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:576:ILE:HB	1:D:612:THR:HB	1.99	0.43
1:E:558:ARG:NH2	3:E:809:HOH:O	2.50	0.43
2:G:701:SCA:HPB2	2:G:701:SCA:H2	2.01	0.43
1:D:603:ILE:HD12	1:D:657:PRO:HA	1.99	0.43
1:H:501:PHE:CZ	1:H:553:LEU:HD13	2.53	0.43
1:A:558:ARG:NH1	3:A:802:HOH:O	2.22	0.43
1:D:643:LYS:HB3	3:D:833:HOH:O	2.19	0.43
1:D:541:ARG:NH1	3:D:816:HOH:O	2.51	0.43
1:B:528:SER:OG	1:B:536:LYS:HG2	2.19	0.43
1:G:586:GLN:O	1:G:588:LYS:HG3	2.19	0.42
1:D:621:TYR:O	1:D:625:GLN:HG2	2.19	0.42
1:G:615:ASP:O	1:G:619:ILE:HG23	2.19	0.42
1:D:549:LYS:NZ	3:D:810:HOH:O	2.43	0.42
1:G:603:ILE:HD11	1:G:655:LEU:HB3	2.01	0.42
1:C:624:LYS:HD2	2:C:701:SCA:H1'	2.02	0.42
1:H:499:ILE:CD1	1:H:555:LYS:HG3	2.40	0.41
1:B:635:LYS:HA	1:B:638:TYR:CE2	2.56	0.41
1:G:599:LYS:O	1:G:603:ILE:HG12	2.21	0.41
1:H:523:LEU:HD11	1:H:552:ALA:HB2	2.02	0.41
1:C:517:LEU:HD12	1:C:517:LEU:HA	1.93	0.40
1:F:634:PRO:HG2	1:H:636:SER:HA	2.02	0.40
1:H:555:LYS:NZ	3:H:816:HOH:O	2.54	0.40
1:D:523:LEU:HD11	1:D:552:ALA:HB2	2.03	0.40
1:D:635:LYS:HA	1:D:638:TYR:CE2	2.57	0.40
1:D:555:LYS:NZ	3:D:803:HOH:O	2.10	0.40

All (5) 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)
3:C:864:HOH:O	3:B:826:HOH:O[8_454]	1.81	0.39
1:B:646:GLU:OE2	1:A:629:LYS:NZ[11_444]	1.92	0.28
3:D:808:HOH:O	3:H:868:HOH:O[4_444]	1.94	0.26
3:D:880:HOH:O	3:H:860:HOH:O[4_444]	2.02	0.18
1:B:514:ARG:NH1	1:G:544:PHE:O[7_454]	2.15	0.05

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	157/168 (94%)	154 (98%)	3 (2%)	0	100	100
1	B	156/168 (93%)	154 (99%)	2 (1%)	0	100	100
1	C	157/168 (94%)	156 (99%)	1 (1%)	0	100	100
1	D	157/168 (94%)	154 (98%)	3 (2%)	0	100	100
1	E	156/168 (93%)	154 (99%)	2 (1%)	0	100	100
1	F	157/168 (94%)	156 (99%)	1 (1%)	0	100	100
1	G	150/168 (89%)	148 (99%)	2 (1%)	0	100	100
1	H	157/168 (94%)	154 (98%)	3 (2%)	0	100	100
All	All	1247/1344 (93%)	1230 (99%)	17 (1%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	142/147 (97%)	142 (100%)	0	100	100
1	B	142/147 (97%)	142 (100%)	0	100	100
1	C	142/147 (97%)	142 (100%)	0	100	100
1	D	142/147 (97%)	142 (100%)	0	100	100
1	E	141/147 (96%)	141 (100%)	0	100	100
1	F	142/147 (97%)	142 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	139/147 (95%)	139 (100%)	0	100	100
1	H	143/147 (97%)	143 (100%)	0	100	100
All	All	1133/1176 (96%)	1133 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

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

Mol	Chain	Res	Type
1	C	530	GLN
1	E	530	GLN
1	G	530	GLN
1	G	656	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

8 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	SCA	F	701	-	49,57,57	2.48	10 (20%)	61,84,84	2.72	9 (14%)
2	SCA	E	701	-	49,57,57	2.50	10 (20%)	61,84,84	2.72	9 (14%)
2	SCA	H	701	-	49,57,57	2.53	13 (26%)	61,84,84	3.00	12 (19%)
2	SCA	C	701	-	49,57,57	2.48	10 (20%)	61,84,84	2.96	10 (16%)
2	SCA	D	701	-	49,57,57	2.51	12 (24%)	61,84,84	2.83	14 (22%)
2	SCA	A	701	-	49,57,57	2.48	10 (20%)	61,84,84	2.91	13 (21%)
2	SCA	B	701	-	49,57,57	2.42	9 (18%)	61,84,84	3.00	13 (21%)
2	SCA	G	701	-	49,57,57	2.48	12 (24%)	61,84,84	2.81	11 (18%)

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	SCA	F	701	-	-	8/52/72/72	0/3/3/3
2	SCA	E	701	-	-	11/52/72/72	0/3/3/3
2	SCA	H	701	-	-	17/52/72/72	0/3/3/3
2	SCA	C	701	-	-	15/52/72/72	0/3/3/3
2	SCA	D	701	-	-	19/52/72/72	0/3/3/3
2	SCA	A	701	-	-	15/52/72/72	0/3/3/3
2	SCA	B	701	-	-	14/52/72/72	0/3/3/3
2	SCA	G	701	-	-	16/52/72/72	0/3/3/3

All (86) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	701	SCA	O4'-C1'	-8.68	1.29	1.41
2	A	701	SCA	O4'-C1'	-8.45	1.29	1.41
2	F	701	SCA	O4'-C1'	-8.42	1.29	1.41
2	G	701	SCA	O4'-C1'	-8.40	1.29	1.41
2	E	701	SCA	O4'-C1'	-8.39	1.29	1.41
2	H	701	SCA	O4'-C1'	-8.36	1.29	1.41
2	B	701	SCA	O4'-C1'	-8.22	1.29	1.41
2	C	701	SCA	O4'-C1'	-8.03	1.29	1.41
2	C	701	SCA	O4'-C4'	7.53	1.61	1.45
2	H	701	SCA	O4'-C4'	7.50	1.61	1.45
2	F	701	SCA	O4'-C4'	7.33	1.61	1.45
2	E	701	SCA	O4'-C4'	7.30	1.61	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	701	SCA	O4'-C4'	7.29	1.61	1.45
2	C	701	SCA	C3'-C4'	-7.27	1.33	1.52
2	A	701	SCA	O4'-C4'	7.11	1.60	1.45
2	B	701	SCA	C3'-C4'	-7.10	1.33	1.52
2	H	701	SCA	C3'-C4'	-7.03	1.34	1.52
2	G	701	SCA	C3'-C4'	-7.02	1.34	1.52
2	G	701	SCA	O4'-C4'	6.98	1.60	1.45
2	D	701	SCA	C3'-C4'	-6.98	1.34	1.52
2	E	701	SCA	C3'-C4'	-6.96	1.34	1.52
2	A	701	SCA	C3'-C4'	-6.80	1.34	1.52
2	F	701	SCA	C3'-C4'	-6.75	1.34	1.52
2	H	701	SCA	CP6-NP2	6.69	1.48	1.33
2	D	701	SCA	O4'-C4'	6.53	1.59	1.45
2	G	701	SCA	CP6-NP2	6.41	1.47	1.33
2	F	701	SCA	CP6-NP2	6.31	1.47	1.33
2	E	701	SCA	CP6-NP2	6.31	1.47	1.33
2	B	701	SCA	CP6-NP2	6.28	1.47	1.33
2	D	701	SCA	CP6-NP2	6.26	1.47	1.33
2	C	701	SCA	CP6-NP2	6.26	1.47	1.33
2	A	701	SCA	CP6-NP2	6.24	1.47	1.33
2	D	701	SCA	CS2-CS1	4.74	1.55	1.50
2	A	701	SCA	CS2-CS1	4.50	1.55	1.50
2	F	701	SCA	CS2-CS1	4.43	1.55	1.50
2	H	701	SCA	CS2-CS1	4.41	1.55	1.50
2	E	701	SCA	CS2-CS1	4.32	1.55	1.50
2	C	701	SCA	CS2-CS1	4.23	1.55	1.50
2	G	701	SCA	CS2-CS1	4.08	1.55	1.50
2	G	701	SCA	CP3-NP1	3.85	1.42	1.33
2	A	701	SCA	CP3-NP1	3.83	1.42	1.33
2	C	701	SCA	CP3-NP1	3.74	1.41	1.33
2	H	701	SCA	CP3-NP1	3.69	1.41	1.33
2	D	701	SCA	CP3-NP1	3.67	1.41	1.33
2	F	701	SCA	CP3-NP1	3.59	1.41	1.33
2	E	701	SCA	CP3-NP1	3.58	1.41	1.33
2	B	701	SCA	CP3-NP1	3.49	1.41	1.33
2	B	701	SCA	CS2-CS1	3.35	1.54	1.50
2	D	701	SCA	C2-N3	3.22	1.37	1.32
2	A	701	SCA	C2-N3	2.96	1.36	1.32
2	F	701	SCA	C2-N3	2.89	1.36	1.32
2	E	701	SCA	C2-N3	2.84	1.36	1.32
2	H	701	SCA	C2-N3	2.79	1.36	1.32
2	G	701	SCA	C2-N3	2.71	1.36	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	701	SCA	O2'-C2'	-2.65	1.36	1.43
2	C	701	SCA	CS1-S	2.63	1.82	1.76
2	C	701	SCA	C2-N3	2.56	1.36	1.32
2	F	701	SCA	O2'-C2'	-2.55	1.37	1.43
2	E	701	SCA	O2'-C2'	-2.53	1.37	1.43
2	D	701	SCA	O2'-C2'	-2.52	1.37	1.43
2	D	701	SCA	CS1-S	2.50	1.82	1.76
2	H	701	SCA	CS1-S	2.48	1.82	1.76
2	G	701	SCA	O2'-C2'	-2.47	1.37	1.43
2	A	701	SCA	OP3-CP7	-2.43	1.37	1.42
2	E	701	SCA	OP3-CP7	-2.39	1.37	1.42
2	A	701	SCA	O2'-C2'	-2.39	1.37	1.43
2	C	701	SCA	O2'-C2'	-2.37	1.37	1.43
2	G	701	SCA	CS1-S	2.35	1.81	1.76
2	E	701	SCA	CS1-S	2.31	1.81	1.76
2	B	701	SCA	CS1-S	2.30	1.81	1.76
2	H	701	SCA	O2'-C2'	-2.30	1.37	1.43
2	G	701	SCA	C2'-C1'	2.30	1.57	1.53
2	A	701	SCA	CS1-S	2.29	1.81	1.76
2	C	701	SCA	OP3-CP7	-2.29	1.38	1.42
2	H	701	SCA	OP3-CP7	-2.25	1.38	1.42
2	G	701	SCA	O3'-C3'	2.20	1.52	1.44
2	G	701	SCA	OP3-CP7	-2.20	1.38	1.42
2	D	701	SCA	OP3-CP7	-2.16	1.38	1.42
2	F	701	SCA	OP3-CP7	-2.16	1.38	1.42
2	F	701	SCA	CS1-S	2.16	1.81	1.76
2	B	701	SCA	OP3-CP7	-2.12	1.38	1.42
2	H	701	SCA	C2'-C1'	2.10	1.57	1.53
2	H	701	SCA	O3'-C3'	2.09	1.51	1.44
2	D	701	SCA	C5-C4	-2.06	1.35	1.40
2	D	701	SCA	C4-N3	2.04	1.38	1.35
2	H	701	SCA	C5-C4	-2.03	1.35	1.40

All (91) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	701	SCA	C5-C6-N6	13.09	140.24	120.35
2	C	701	SCA	C5-C6-N6	12.81	139.82	120.35
2	G	701	SCA	C5-C6-N6	12.49	139.33	120.35
2	E	701	SCA	C5-C6-N6	12.39	139.17	120.35
2	A	701	SCA	C5-C6-N6	12.38	139.16	120.35
2	F	701	SCA	C5-C6-N6	12.19	138.88	120.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	701	SCA	C5-C6-N6	12.16	138.83	120.35
2	D	701	SCA	C5-C6-N6	11.78	138.26	120.35
2	B	701	SCA	C1'-N9-C4	-11.27	106.84	126.64
2	H	701	SCA	C1'-N9-C4	-11.21	106.95	126.64
2	G	701	SCA	C1'-N9-C4	-10.69	107.86	126.64
2	C	701	SCA	C1'-N9-C4	-10.55	108.10	126.64
2	A	701	SCA	C1'-N9-C4	-10.42	108.33	126.64
2	F	701	SCA	C1'-N9-C4	-9.96	109.15	126.64
2	E	701	SCA	C1'-N9-C4	-9.81	109.41	126.64
2	C	701	SCA	N6-C6-N1	-8.89	100.13	118.57
2	B	701	SCA	N6-C6-N1	-8.85	100.21	118.57
2	A	701	SCA	N6-C6-N1	-8.77	100.38	118.57
2	G	701	SCA	N6-C6-N1	-8.65	100.61	118.57
2	H	701	SCA	N6-C6-N1	-8.59	100.73	118.57
2	E	701	SCA	N6-C6-N1	-8.58	100.77	118.57
2	D	701	SCA	C1'-N9-C4	-8.51	111.69	126.64
2	F	701	SCA	N6-C6-N1	-8.41	101.11	118.57
2	D	701	SCA	CS2-CS1-S	8.39	123.23	113.46
2	D	701	SCA	N6-C6-N1	-8.37	101.20	118.57
2	H	701	SCA	CS2-CS1-S	8.28	123.09	113.46
2	C	701	SCA	CS2-CS1-S	7.69	122.41	113.46
2	A	701	SCA	CS2-CS1-S	7.55	122.25	113.46
2	B	701	SCA	N3-C2-N1	-6.18	119.02	128.68
2	F	701	SCA	CS2-CS1-S	6.00	120.44	113.46
2	G	701	SCA	CS2-CS1-S	5.78	120.18	113.46
2	H	701	SCA	N3-C2-N1	-5.75	119.69	128.68
2	D	701	SCA	N3-C2-N1	-5.59	119.94	128.68
2	G	701	SCA	N3-C2-N1	-5.45	120.16	128.68
2	C	701	SCA	N3-C2-N1	-5.36	120.31	128.68
2	E	701	SCA	N3-C2-N1	-5.35	120.31	128.68
2	A	701	SCA	N3-C2-N1	-5.25	120.47	128.68
2	F	701	SCA	N3-C2-N1	-5.13	120.67	128.68
2	E	701	SCA	CS2-CS1-S	5.02	119.30	113.46
2	B	701	SCA	CS2-CS1-S	4.77	119.01	113.46
2	C	701	SCA	OS1-CS1-CS2	-4.74	118.39	123.99
2	B	701	SCA	CS3-CS2-CS1	-4.65	105.41	112.41
2	H	701	SCA	OS1-CS1-CS2	-4.42	118.77	123.99
2	B	701	SCA	OS1-CS1-CS2	-4.10	119.14	123.99
2	D	701	SCA	OS1-CS1-CS2	-3.99	119.27	123.99
2	D	701	SCA	OS1-CS1-S	-3.94	117.50	122.61
2	A	701	SCA	OS1-CS1-CS2	-3.68	119.64	123.99
2	A	701	SCA	OS1-CS1-S	-3.46	118.11	122.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	701	SCA	OS1-CS1-S	-3.45	118.13	122.61
2	F	701	SCA	O4'-C1'-C2'	-3.41	101.94	106.93
2	G	701	SCA	OS1-CS1-CS2	-3.35	120.03	123.99
2	F	701	SCA	OS1-CS1-S	-3.35	118.27	122.61
2	E	701	SCA	O4'-C1'-C2'	-3.29	102.11	106.93
2	C	701	SCA	CP1-S-CS1	3.25	111.99	101.87
2	B	701	SCA	OS4-CS4-CS3	3.21	124.36	114.03
2	E	701	SCA	OS1-CS1-CS2	-2.98	120.47	123.99
2	D	701	SCA	C2'-C3'-C4'	2.86	108.30	103.22
2	G	701	SCA	CP1-S-CS1	2.77	110.49	101.87
2	E	701	SCA	CP1-S-CS1	2.70	110.27	101.87
2	E	701	SCA	CS3-CS2-CS1	-2.67	108.40	112.41
2	C	701	SCA	OS1-CS1-S	-2.63	119.19	122.61
2	A	701	SCA	CP1-S-CS1	2.57	109.89	101.87
2	H	701	SCA	C3'-C2'-C1'	2.54	105.51	99.89
2	D	701	SCA	P2-O6-P1	-2.44	124.45	132.83
2	B	701	SCA	P2-O6-P1	-2.41	124.57	132.83
2	F	701	SCA	P2-O6-P1	-2.37	124.69	132.83
2	H	701	SCA	O7-CPB-CPA	-2.36	106.75	110.55
2	H	701	SCA	CP4-CP3-NP1	2.32	120.32	116.42
2	A	701	SCA	OS4-CS4-CS3	2.31	121.46	114.03
2	A	701	SCA	O7-CPB-CPA	-2.31	106.84	110.55
2	B	701	SCA	O7-CPB-CPA	-2.30	106.85	110.55
2	F	701	SCA	OS1-CS1-CS2	-2.29	121.28	123.99
2	B	701	SCA	CP1-CP2-NP1	-2.25	107.70	112.42
2	D	701	SCA	CP4-CP3-NP1	2.23	120.17	116.42
2	G	701	SCA	OS1-CS1-S	-2.18	119.78	122.61
2	G	701	SCA	CS3-CS2-CS1	-2.18	109.13	112.41
2	D	701	SCA	CP1-S-CS1	2.16	108.59	101.87
2	G	701	SCA	CP7-CP6-NP2	2.14	120.84	116.58
2	A	701	SCA	CP7-CP6-NP2	2.13	120.82	116.58
2	D	701	SCA	O7-CPB-CPA	-2.13	107.12	110.55
2	D	701	SCA	OS4-CS4-OS5	-2.13	117.99	123.30
2	D	701	SCA	OS4-CS4-CS3	2.09	120.75	114.03
2	C	701	SCA	P2-O6-P1	-2.08	125.69	132.83
2	A	701	SCA	P2-O6-P1	-2.06	125.76	132.83
2	A	701	SCA	CP4-CP3-NP1	2.03	119.84	116.42
2	H	701	SCA	CP1-S-CS1	2.03	108.20	101.87
2	G	701	SCA	P2-O6-P1	-2.03	125.87	132.83
2	B	701	SCA	O3'-C3'-C2'	-2.02	104.35	111.68
2	B	701	SCA	OS5-CS4-CS3	-2.02	116.59	123.08
2	H	701	SCA	CS2-CS3-CS4	-2.01	109.28	113.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	701	SCA	O4'-C1'-C2'	-2.01	103.99	106.93

There are no chirality outliers.

All (115) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	701	SCA	C3'-O3'-P3-O31
2	C	701	SCA	CPB-O7-P2-O21
2	C	701	SCA	OS1-CS1-S-CP1
2	C	701	SCA	CS2-CS1-S-CP1
2	C	701	SCA	CS1-CS2-CS3-CS4
2	D	701	SCA	C3'-O3'-P3-O31
2	D	701	SCA	CPB-O7-P2-O21
2	D	701	SCA	OS1-CS1-S-CP1
2	D	701	SCA	CS2-CS1-S-CP1
2	E	701	SCA	C3'-O3'-P3-O31
2	E	701	SCA	CP2-CP1-S-CS1
2	E	701	SCA	OS1-CS1-S-CP1
2	E	701	SCA	CS2-CS1-S-CP1
2	F	701	SCA	CPB-O7-P2-O21
2	F	701	SCA	S-CP1-CP2-NP1
2	F	701	SCA	OS1-CS1-S-CP1
2	F	701	SCA	CS2-CS1-S-CP1
2	B	701	SCA	C4'-C3'-O3'-P3
2	B	701	SCA	C3'-O3'-P3-O31
2	B	701	SCA	C3'-C4'-C5'-O5'
2	B	701	SCA	O4'-C4'-C5'-O5'
2	B	701	SCA	C5'-O5'-P1-O12
2	B	701	SCA	C5'-O5'-P1-O6
2	B	701	SCA	CPB-O7-P2-O21
2	B	701	SCA	OS1-CS1-S-CP1
2	B	701	SCA	CS2-CS1-S-CP1
2	A	701	SCA	C4'-C3'-O3'-P3
2	A	701	SCA	C3'-O3'-P3-O31
2	A	701	SCA	CPB-O7-P2-O21
2	A	701	SCA	CP2-CP1-S-CS1
2	A	701	SCA	OS1-CS1-S-CP1
2	A	701	SCA	CS2-CS1-S-CP1
2	G	701	SCA	CP2-CP1-S-CS1
2	G	701	SCA	OS1-CS1-S-CP1
2	G	701	SCA	CS2-CS1-S-CP1
2	G	701	SCA	S-CS1-CS2-CS3

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Mol	Chain	Res	Type	Atoms
2	G	701	SCA	OS1-CS1-CS2-CS3
2	H	701	SCA	C3'-O3'-P3-O33
2	H	701	SCA	O4'-C4'-C5'-O5'
2	H	701	SCA	CPB-O7-P2-O6
2	H	701	SCA	OS1-CS1-S-CP1
2	H	701	SCA	CS2-CS1-S-CP1
2	H	701	SCA	CS1-CS2-CS3-CS4
2	A	701	SCA	C3'-C4'-C5'-O5'
2	H	701	SCA	C3'-C4'-C5'-O5'
2	C	701	SCA	C4'-C3'-O3'-P3
2	D	701	SCA	C4'-C3'-O3'-P3
2	G	701	SCA	C4'-C3'-O3'-P3
2	H	701	SCA	C4'-C3'-O3'-P3
2	C	701	SCA	C3'-C4'-C5'-O5'
2	D	701	SCA	C3'-C4'-C5'-O5'
2	D	701	SCA	O4'-C4'-C5'-O5'
2	A	701	SCA	O4'-C4'-C5'-O5'
2	G	701	SCA	C3'-C4'-C5'-O5'
2	G	701	SCA	O4'-C4'-C5'-O5'
2	D	701	SCA	CS1-CS2-CS3-CS4
2	E	701	SCA	CS1-CS2-CS3-CS4
2	F	701	SCA	CS1-CS2-CS3-CS4
2	G	701	SCA	CS1-CS2-CS3-CS4
2	H	701	SCA	C2'-C3'-O3'-P3
2	B	701	SCA	C2'-C3'-O3'-P3
2	C	701	SCA	S-CS1-CS2-CS3
2	D	701	SCA	S-CS1-CS2-CS3
2	D	701	SCA	OS1-CS1-CS2-CS3
2	E	701	SCA	S-CS1-CS2-CS3
2	E	701	SCA	OS1-CS1-CS2-CS3
2	A	701	SCA	S-CS1-CS2-CS3
2	A	701	SCA	OS1-CS1-CS2-CS3
2	H	701	SCA	OS1-CS1-CS2-CS3
2	G	701	SCA	NP2-CP6-CP7-OP3
2	D	701	SCA	C5'-O5'-P1-O6
2	D	701	SCA	CPB-O7-P2-O6
2	E	701	SCA	C5'-O5'-P1-O6
2	F	701	SCA	C5'-O5'-P1-O6
2	F	701	SCA	CPB-O7-P2-O6
2	B	701	SCA	CPB-O7-P2-O6
2	D	701	SCA	P2-O6-P1-O12
2	A	701	SCA	P2-O6-P1-O12

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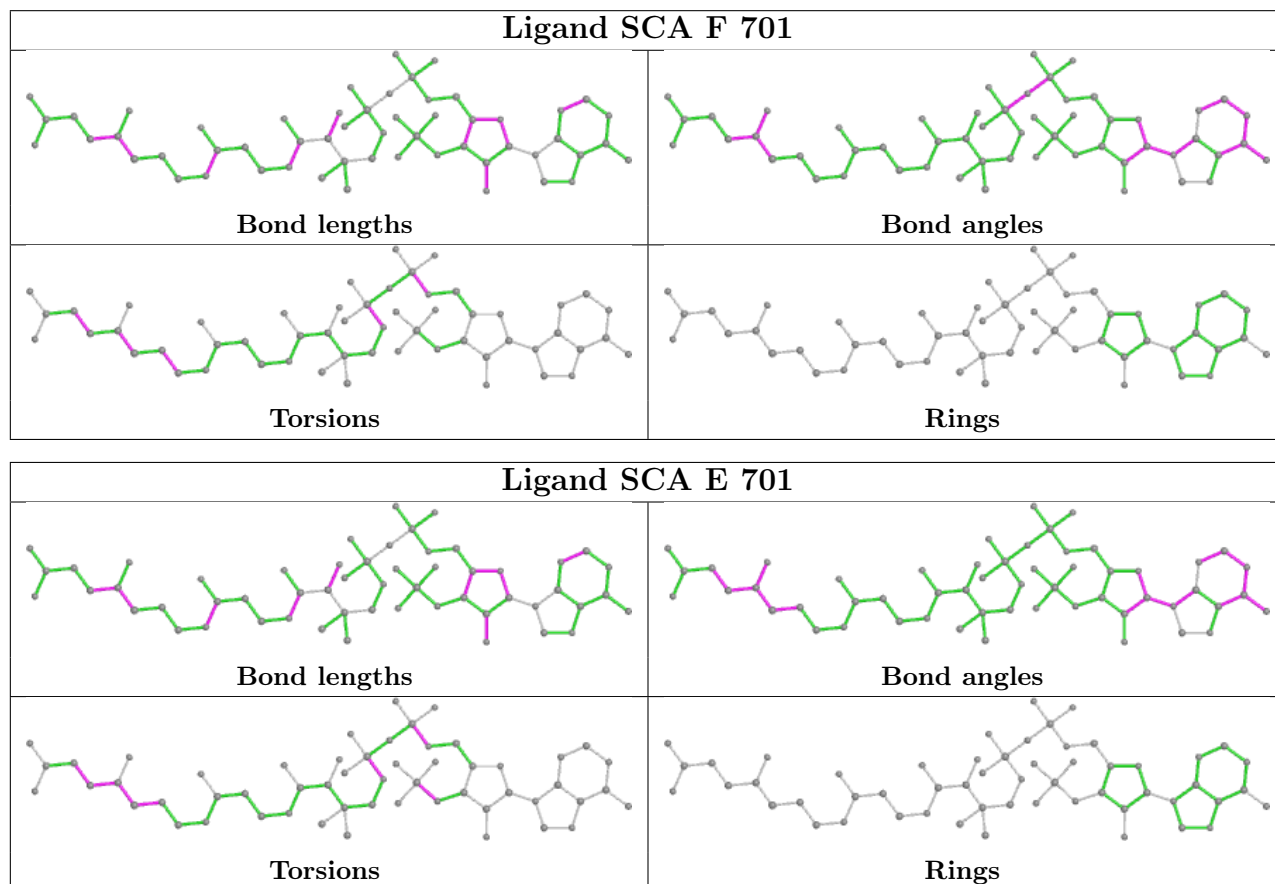
Mol	Chain	Res	Type	Atoms
2	H	701	SCA	P2-O6-P1-O12
2	D	701	SCA	C5'-O5'-P1-O12
2	E	701	SCA	C5'-O5'-P1-O12
2	F	701	SCA	C5'-O5'-P1-O12
2	H	701	SCA	CPB-O7-P2-O21
2	H	701	SCA	CPB-O7-P2-O22
2	C	701	SCA	O4'-C4'-C5'-O5'
2	C	701	SCA	CS2-CS3-CS4-OS4
2	A	701	SCA	CS2-CS3-CS4-OS5
2	D	701	SCA	CS2-CS3-CS4-OS5
2	G	701	SCA	CS2-CS3-CS4-OS5
2	H	701	SCA	CS2-CS3-CS4-OS5
2	G	701	SCA	C2'-C3'-O3'-P3
2	C	701	SCA	CS2-CS3-CS4-OS5
2	H	701	SCA	CP9-CPA-CPB-O7
2	D	701	SCA	CS2-CS3-CS4-OS4
2	G	701	SCA	CS2-CS3-CS4-OS4
2	H	701	SCA	CS2-CS3-CS4-OS4
2	D	701	SCA	CP2-CP1-S-CS1
2	B	701	SCA	CP2-CP1-S-CS1
2	C	701	SCA	OS1-CS1-CS2-CS3
2	H	701	SCA	S-CS1-CS2-CS3
2	G	701	SCA	OP2-CP6-CP7-OP3
2	A	701	SCA	CS2-CS3-CS4-OS4
2	B	701	SCA	CS2-CS3-CS4-OS5
2	C	701	SCA	C3'-O3'-P3-O32
2	C	701	SCA	CPB-O7-P2-O6
2	D	701	SCA	C3'-O3'-P3-O32
2	E	701	SCA	C3'-O3'-P3-O33
2	A	701	SCA	CPB-O7-P2-O6
2	B	701	SCA	CS2-CS3-CS4-OS4
2	G	701	SCA	P1-O6-P2-O21
2	G	701	SCA	P1-O6-P2-O22
2	E	701	SCA	CPB-O7-P2-O21
2	A	701	SCA	C5'-O5'-P1-O12
2	C	701	SCA	C2'-C3'-O3'-P3
2	D	701	SCA	C2'-C3'-O3'-P3

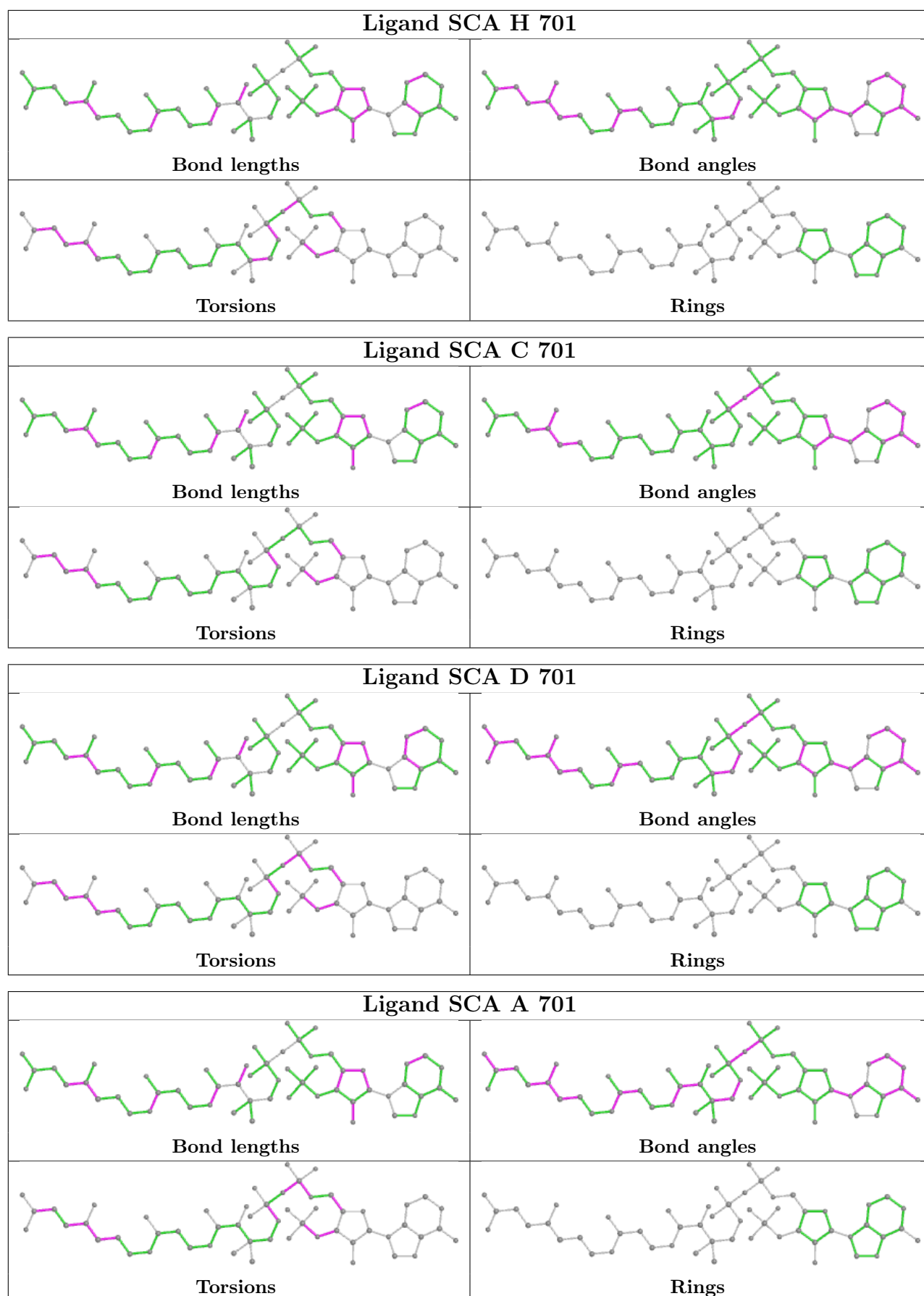
There are no ring outliers.

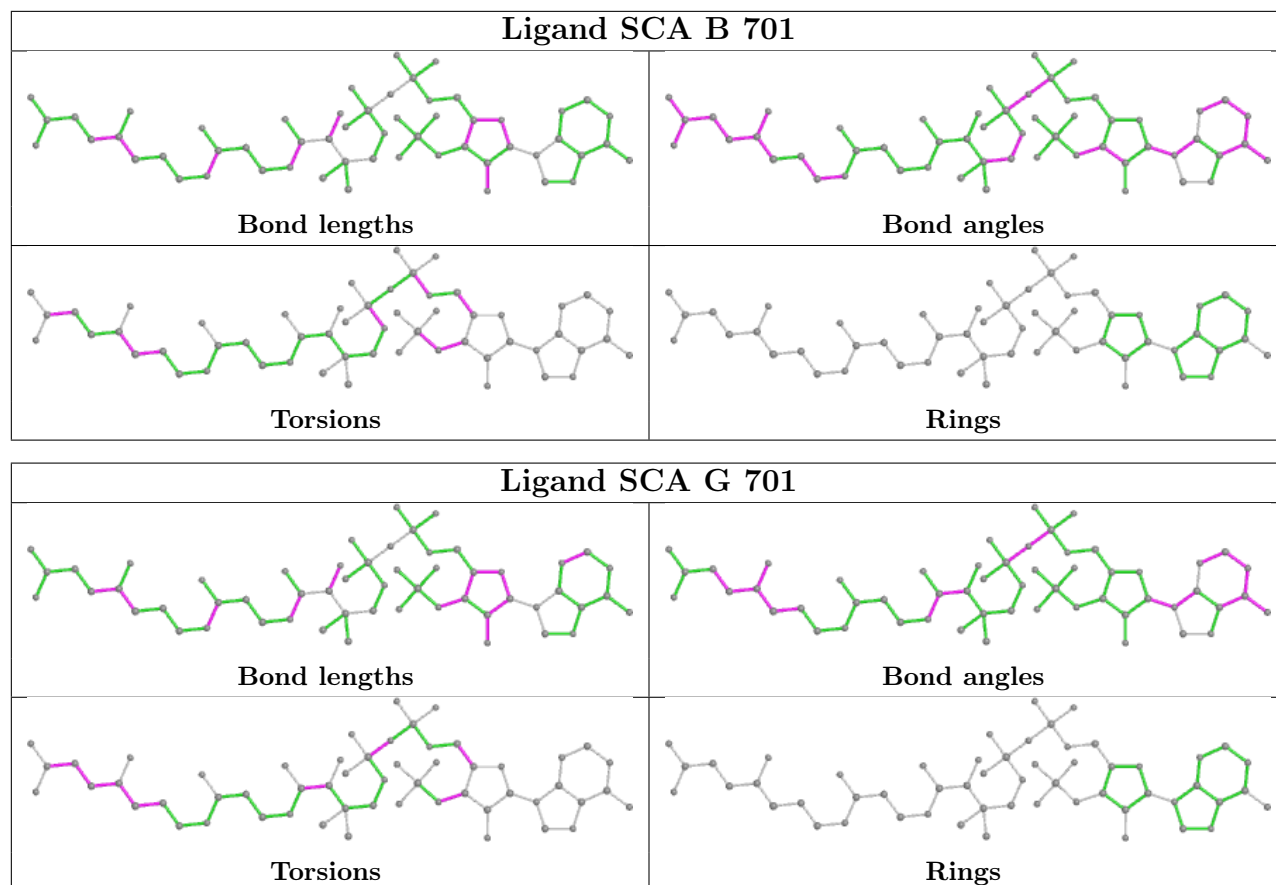
7 monomers are involved in 29 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	701	SCA	10	0
2	H	701	SCA	6	0
2	C	701	SCA	2	0
2	D	701	SCA	2	0
2	A	701	SCA	1	0
2	B	701	SCA	5	0
2	G	701	SCA	3	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 than 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.







5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [\(i\)](#)

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	161/168 (95%)	-0.24	2 (1%) 79 83	16, 25, 39, 75	0
1	B	160/168 (95%)	-0.09	7 (4%) 34 41	17, 27, 54, 66	0
1	C	161/168 (95%)	-0.03	5 (3%) 49 56	20, 31, 50, 70	0
1	D	161/168 (95%)	-0.11	4 (2%) 57 64	18, 27, 42, 72	0
1	E	160/168 (95%)	-0.07	4 (2%) 57 64	22, 32, 53, 71	0
1	F	161/168 (95%)	-0.12	4 (2%) 57 64	23, 33, 48, 74	0
1	G	156/168 (92%)	0.24	11 (7%) 16 21	24, 41, 57, 74	0
1	H	161/168 (95%)	0.27	7 (4%) 35 42	25, 38, 62, 82	0
All	All	1281/1344 (95%)	-0.02	44 (3%) 45 52	16, 32, 54, 82	0

All (44) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	512	ALA	6.3
1	G	659	ILE	4.8
1	H	508	LEU	4.8
1	A	512	ALA	4.8
1	F	512	ALA	4.5
1	G	617	TYR	4.4
1	G	648	ALA	4.0
1	H	498	ILE	3.7
1	B	514	ARG	3.6
1	C	507	SER	3.6
1	G	507	SER	3.6
1	F	507	SER	3.5
1	H	507	SER	3.5
1	F	498	ILE	3.3
1	G	498	ILE	3.3
1	H	587	VAL	3.2

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Mol	Chain	Res	Type	RSRZ
1	H	514	ARG	3.2
1	C	587	VAL	3.0
1	G	658	ARG	2.9
1	G	587	VAL	2.8
1	A	513	ASN	2.8
1	G	538	TYR	2.8
1	F	513	ASN	2.8
1	G	662	THR	2.6
1	E	645	TYR	2.6
1	B	498	ILE	2.5
1	E	507	SER	2.5
1	B	507	SER	2.5
1	B	499	ILE	2.5
1	G	643	LYS	2.5
1	C	499	ILE	2.5
1	C	647	GLY	2.5
1	D	513	ASN	2.4
1	E	661	TYR	2.4
1	D	498	ILE	2.3
1	E	512	ALA	2.3
1	C	512	ALA	2.2
1	H	499	ILE	2.2
1	H	515	ARG	2.2
1	G	533	ARG	2.1
1	B	558	ARG	2.1
1	B	584	ASN	2.1
1	D	558	ARG	2.0
1	B	513	ASN	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

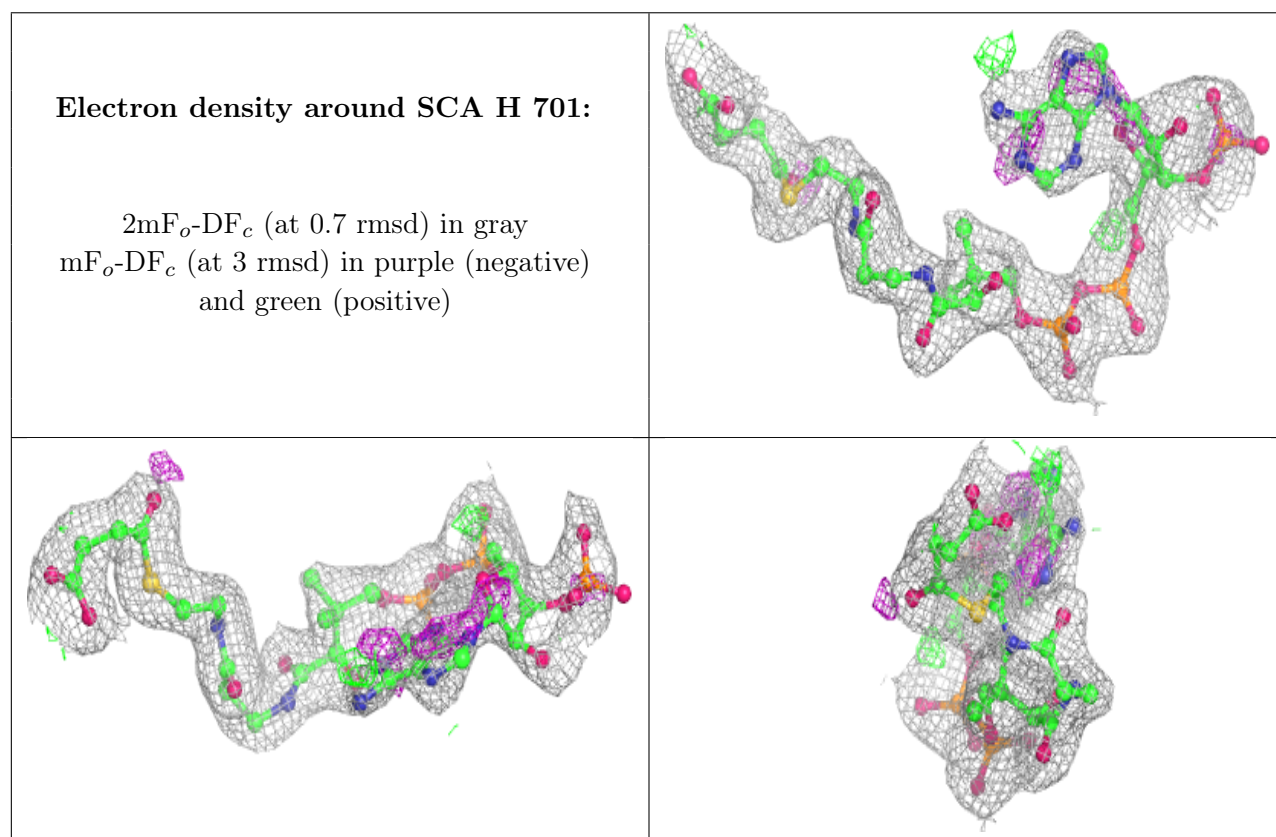
6.4 Ligands [i](#)

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.

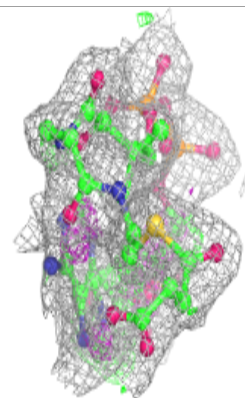
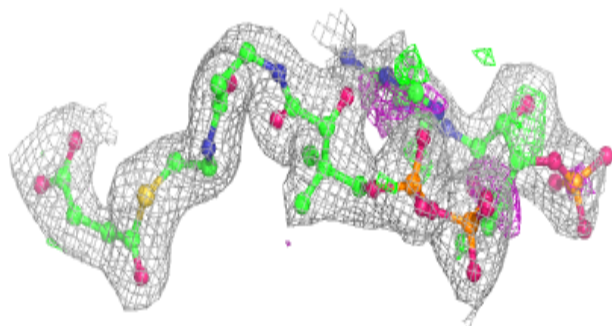
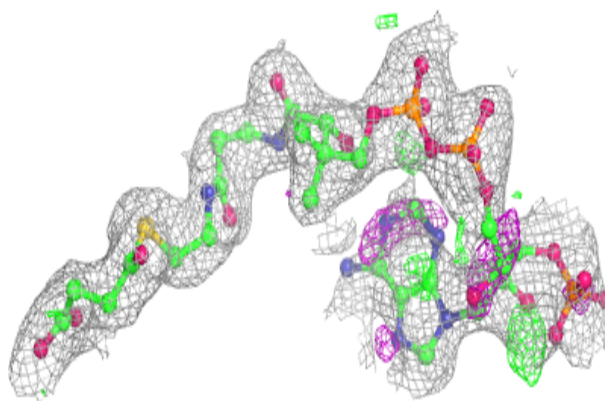
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	SCA	H	701	55/55	0.85	0.20	24,39,72,89	0
2	SCA	D	701	55/55	0.88	0.19	20,29,75,90	0
2	SCA	C	701	55/55	0.88	0.17	21,37,69,78	0
2	SCA	B	701	55/55	0.89	0.21	24,40,70,85	0
2	SCA	A	701	55/55	0.89	0.19	22,37,72,107	0
2	SCA	E	701	55/55	0.89	0.19	26,39,61,66	0
2	SCA	F	701	55/55	0.90	0.16	26,40,58,70	0
2	SCA	G	701	55/55	0.91	0.20	33,50,69,73	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.

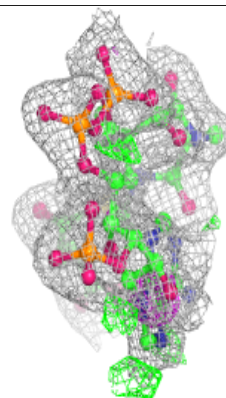
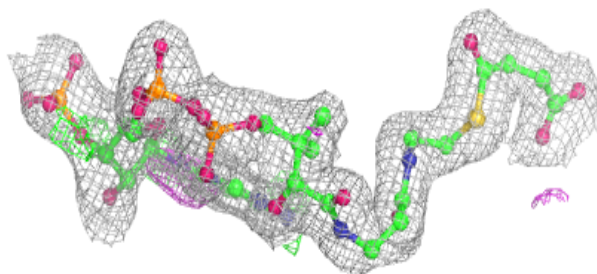
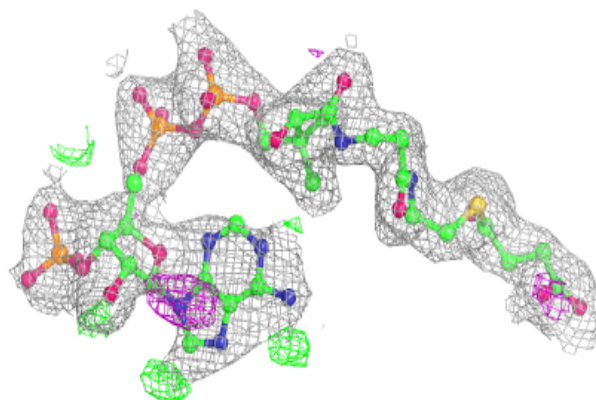


Electron density around SCA D 701:

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

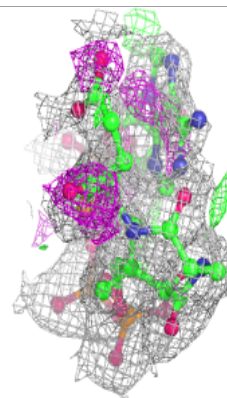
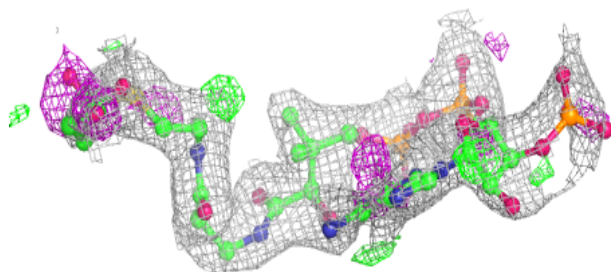
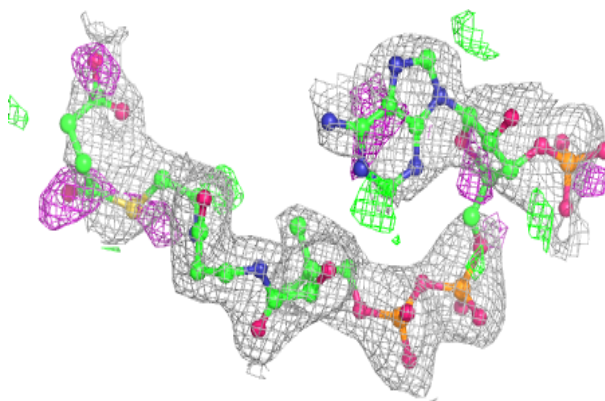
**Electron density around SCA C 701:**

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

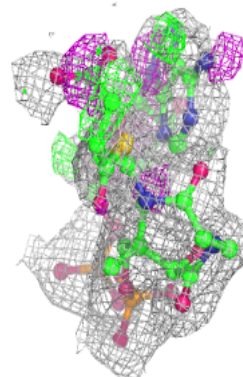
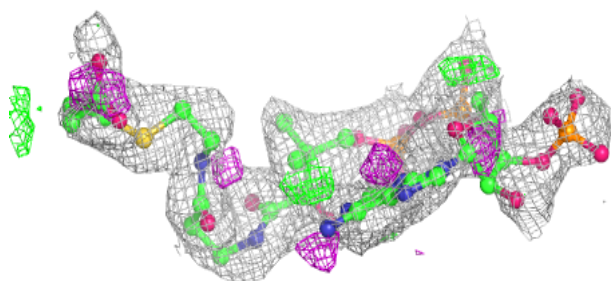
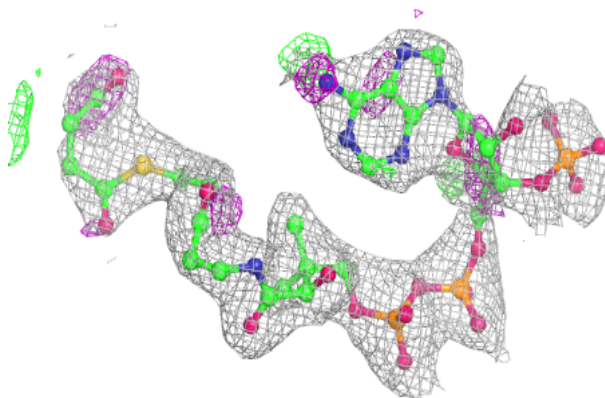


Electron density around SCA B 701:

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

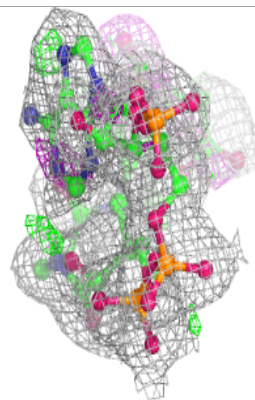
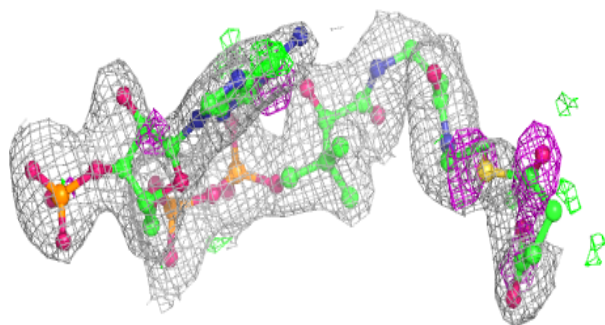
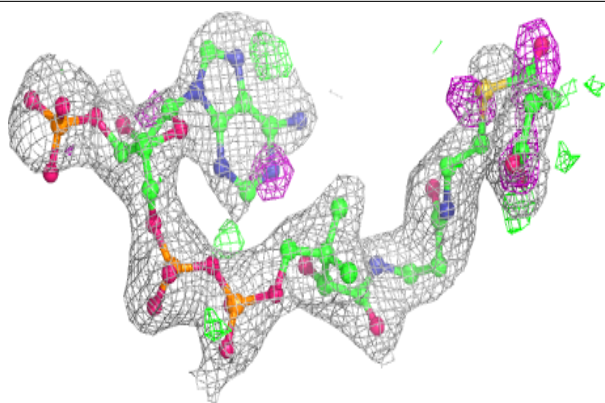
**Electron density around SCA A 701:**

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

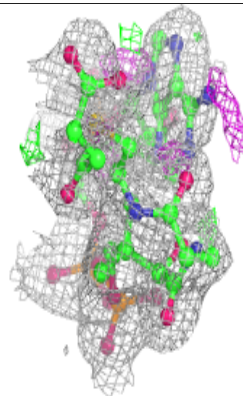
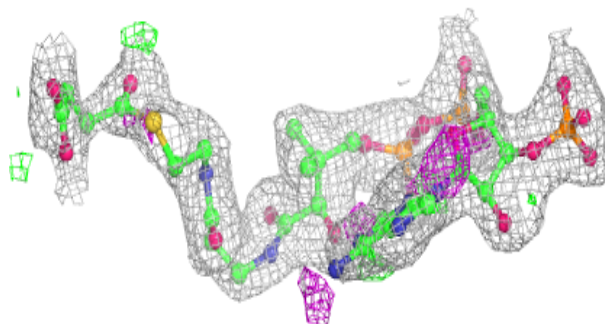
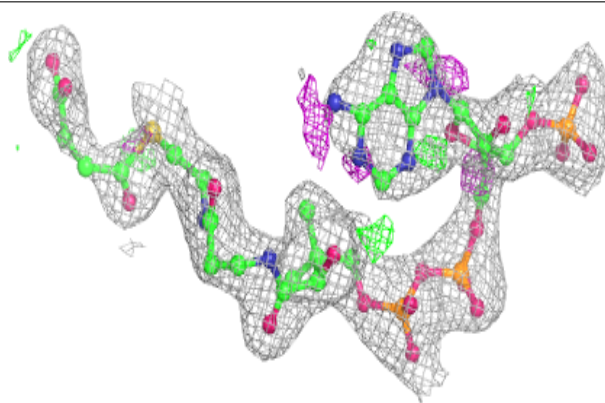


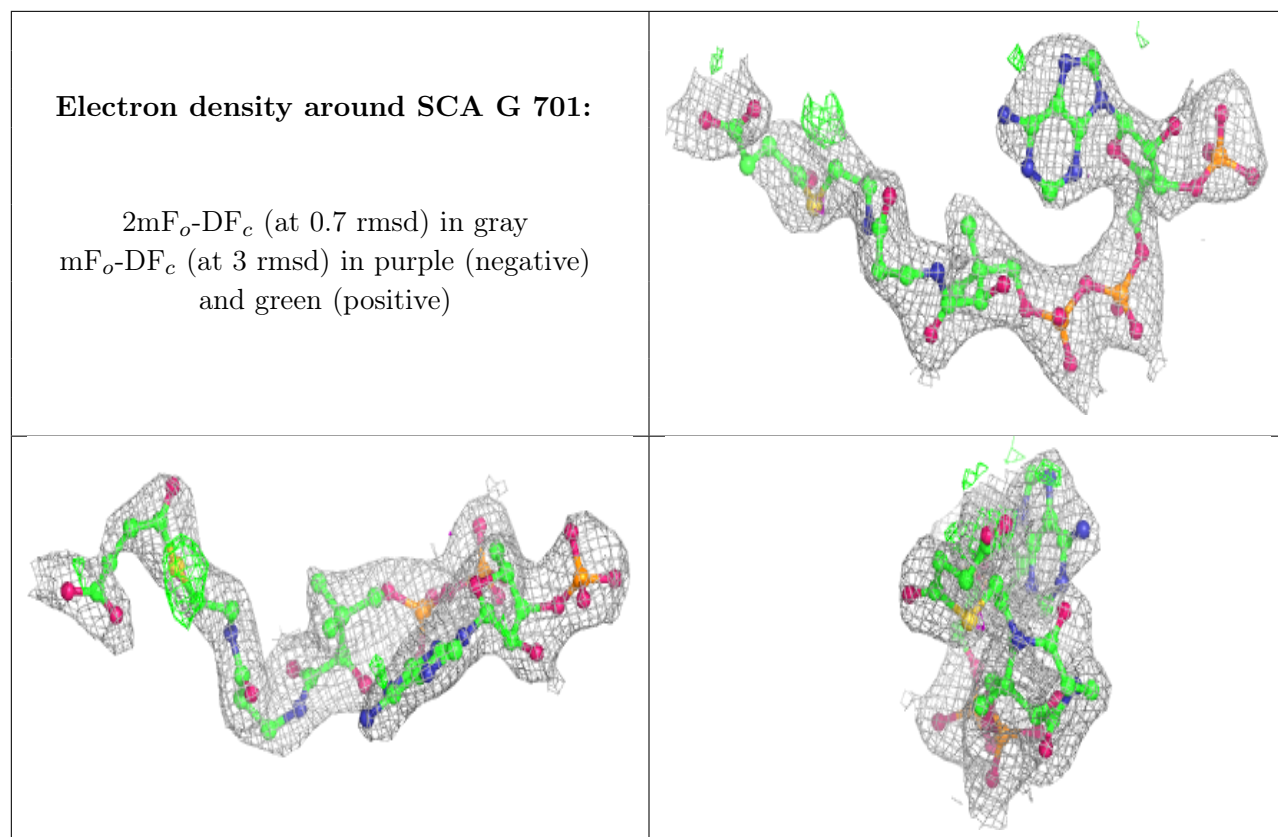
Electron density around SCA E 701:

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

**Electron density around SCA F 701:**

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





6.5 Other polymers [i](#)

There are no such residues in this entry.