Full wwPDB X-ray Structure Validation Report (i)

Jun 18, 2024 – 05:05 PM EDT

PDB ID	:	4LFB
Title	:	Crystal Structure of 30S ribosomal subunit from Thermus thermophilus
Authors	:	Demirci, H.; Belardinelli, R.; Carr, J.; Murphy IV, F.; Jogl, G.; Dahlberg, A.E.; Gregory, S.T.
Deposited on	:	2013-06-26
Resolution	:	3.01 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:

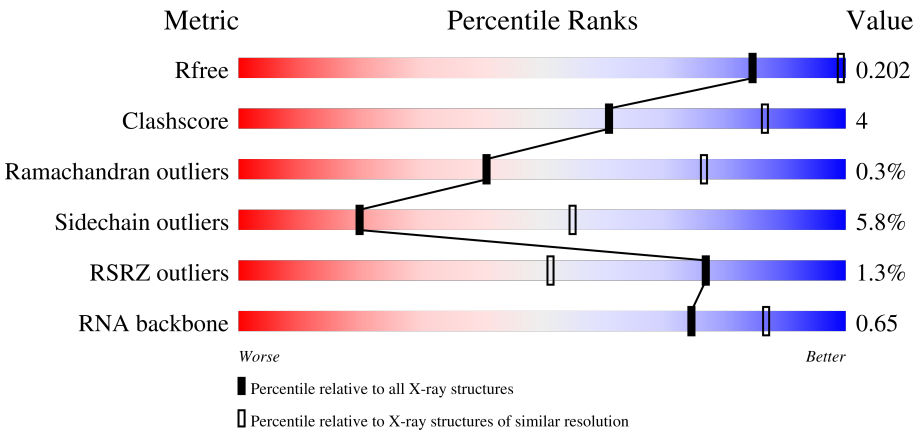
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.01 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	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)
RNA backbone	3102	1173 (3.30-2.70)

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	1522	% 73% 21% 5% •
2	B	256	% 75% 16% • 8%
3	C	239	65% 21% • 13%
4	D	209	76% 22% •

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Mol	Chain	Length	Quality of chain
5	E	162	77% 14% 7%
6	F	101	% 90% 8%
7	G	156	% 82% 15%
8	H	138	80% 19%
9	I	128	% 80% 19%
10	J	105	3% 73% 16% 5% 6%
11	K	129	2% 75% 17% 8%
12	L	135	3% 73% 16% 7%
13	M	126	2% 75% 16% 6%
14	N	61	82% 13%
15	O	89	2% 78% 19%
16	P	88	% 92% 5%
17	Q	105	4% 76% 21%
18	R	88	3% 67% 16% 17%
19	S	93	4% 69% 16% 13%
20	T	106	% 70% 22% 7%
21	U	27	7% 85% 7% 7%

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
22	MG	A	1609	-	-	-	X
22	MG	A	1615	-	-	-	X
22	MG	A	1619	-	-	-	X
22	MG	A	1624	-	-	-	X
22	MG	A	1657	-	-	-	X
22	MG	A	1682	-	-	-	X
22	MG	A	1720	-	-	-	X
22	MG	A	1721	-	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
22	MG	A	1726	-	-	-	X
22	MG	A	1731	-	-	-	X
22	MG	A	1763	-	-	-	X
22	MG	A	1765	-	-	-	X
22	MG	A	1775	-	-	-	X
22	MG	A	1780	-	-	-	X
22	MG	A	1789	-	-	-	X
22	MG	A	1793	-	-	-	X
22	MG	A	1796	-	-	-	X
22	MG	A	1799	-	-	-	X
22	MG	A	1801	-	-	-	X
22	MG	A	1806	-	-	-	X
22	MG	A	1810	-	-	-	X
22	MG	A	1812	-	-	-	X
22	MG	A	1814	-	-	-	X
22	MG	A	1818	-	-	-	X
22	MG	U	101	-	-	-	X
23	K	A	1741	-	-	-	X
23	K	A	1752	-	-	-	X
23	K	A	1755	-	-	-	X

2 Entry composition (i)

There are 26 unique types of molecules in this entry. The entry contains 52046 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 RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	A	1512	32504	14477	6011	10505	1511	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1534	C	A	CONFLICT	GB M26923.1
A	1535	A	C	CONFLICT	GB M26923.1

- Molecule 2 is a protein called ribosomal protein S2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	236	1874	1195	336	338	5	0	0	1

- Molecule 3 is a protein called ribosomal protein S3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	207	1613	1016	315	281	1	0	0	1

- Molecule 4 is a protein called ribosomal protein S4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	208	1703	1066	339	291	7	0	0	0

- Molecule 5 is a protein called ribosomal protein S5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	151	1147	724	218	201	4	0	0	1

- Molecule 6 is a protein called ribosomal protein S6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	101	843	531	155	154	3	0	0	0

- Molecule 7 is a protein called ribosomal protein S7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	G	155	1257	781	252	218	6	0	0	0

- Molecule 8 is a protein called ribosomal protein S8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	138	1116	705	215	193	3	0	0	0

- Molecule 9 is a protein called ribosomal protein S9.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
9	I	127	1010	639	197	174	0	0	0

- Molecule 10 is a protein called ribosomal protein S10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	J	99	793	498	157	137	1	0	0	1

- Molecule 11 is a protein called ribosomal protein S11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	119	885	549	168	165	3	0	0	0

- Molecule 12 is a protein called ribosomal protein S12.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	125	973	612	196	163	2	0	0	1

- Molecule 13 is a protein called ribosomal protein S13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	M	118	937	579	193	163	2	0	0	0

- Molecule 14 is a protein called ribosomal protein S14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	N	60	492	312	104	72	4	0	0	0

- Molecule 15 is a protein called ribosomal protein S15.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	O	88	734	459	147	126	2	0	0	0

- Molecule 16 is a protein called ribosomal protein S16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
16	P	84	701	443	140	117	1	0	0	1

- Molecule 17 is a protein called ribosomal protein S17.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
17	Q	104	857	547	160	148	2	0	0	0

- Molecule 18 is a protein called ribosomal protein S18.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
18	R	73	598	381	118	99	0	0	0

- Molecule 19 is a protein called ribosomal protein S19.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
19	S	81	648	414	120	112	2	0	0	1

- Molecule 20 is a protein called ribosomal protein S20.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
20	T	99	763	470	162	129	2	0	0	0

- Molecule 21 is a protein called ribosomal protein THX.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
21	U	25	209	128	51	30	0	0	1

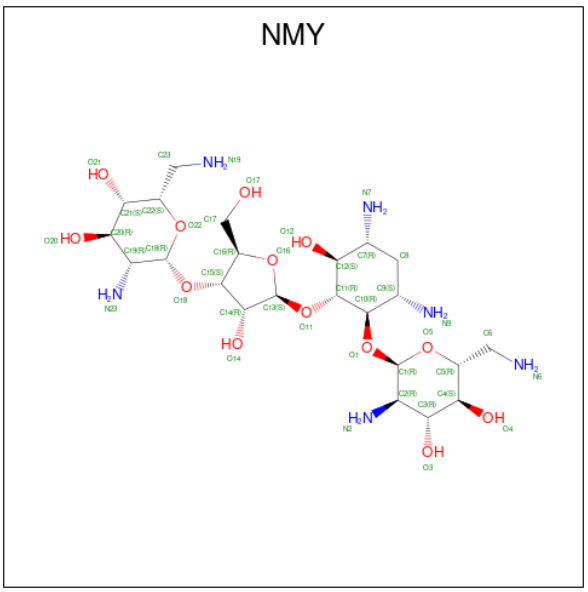
- Molecule 22 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
22	A	197	197	197	0	0
22	D	2	2	2	0	0
22	E	1	1	1	0	0
22	H	2	2	2	0	0
22	K	1	1	1	0	0
22	L	1	1	1	0	0
22	M	1	1	1	0	0
22	N	1	1	1	0	0
22	P	3	3	3	0	0
22	Q	1	1	1	0	0
22	S	2	2	2	0	0
22	U	1	1	1	0	0

- Molecule 23 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	K		
23	A	24	24	24	0	0

- Molecule 24 is NEOMYCIN (three-letter code: NMY) (formula: $C_{23}H_{46}N_6O_{13}$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
24	A	1	Total	C	N	O	0	0
			42	23	6	13		
24	A	1	Total	C	N	O	0	0
			42	23	6	13		
24	A	1	Total	C	N	O	0	0
			42	23	6	13		

- Molecule 25 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
25	D	1	Total	Zn	0	0
			1	1		
25	N	1	Total	Zn	0	0
			1	1		

- Molecule 26 is water.

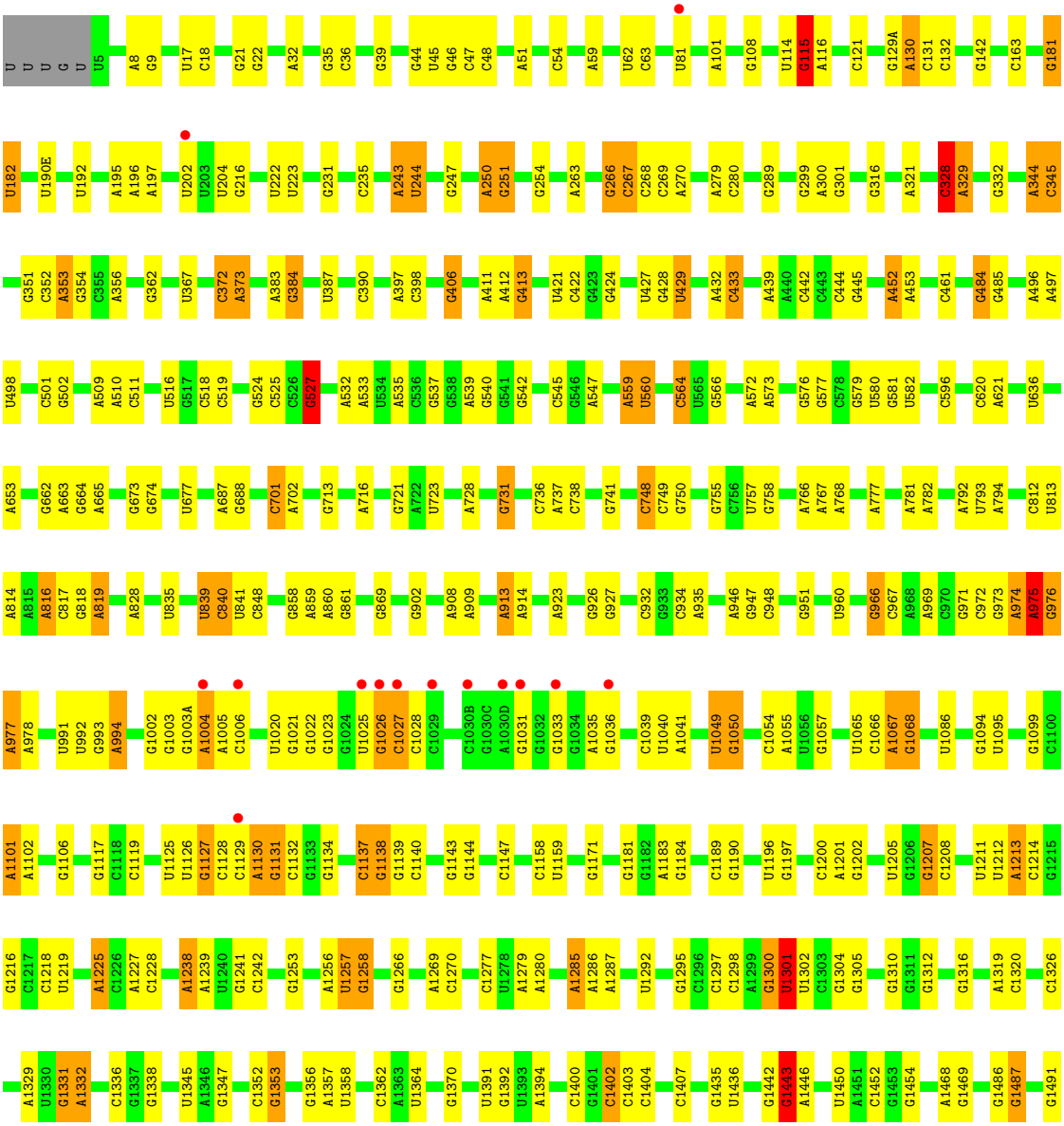
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
26	A	20	Total	O	0	0
			20	20		
26	H	4	Total	O	0	0
			4	4		

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.

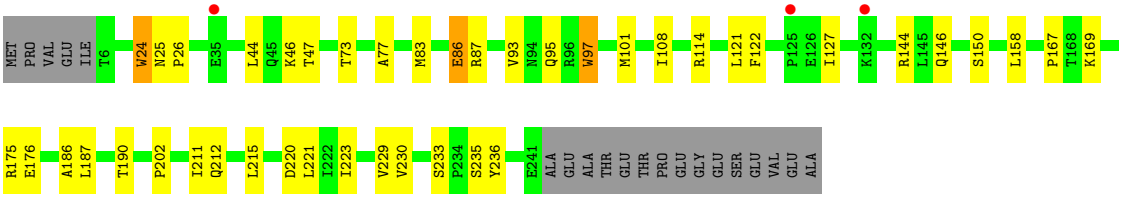
- Molecule 1: 16S rRNA

Chain A:



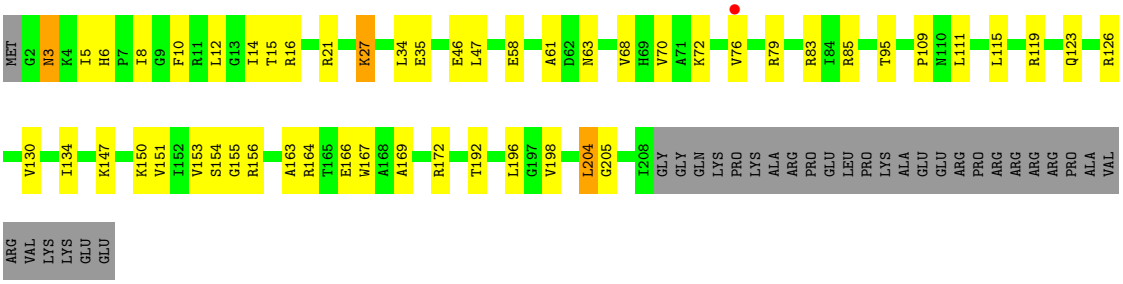
• Molecule 2: ribosomal protein S2

Chain B:



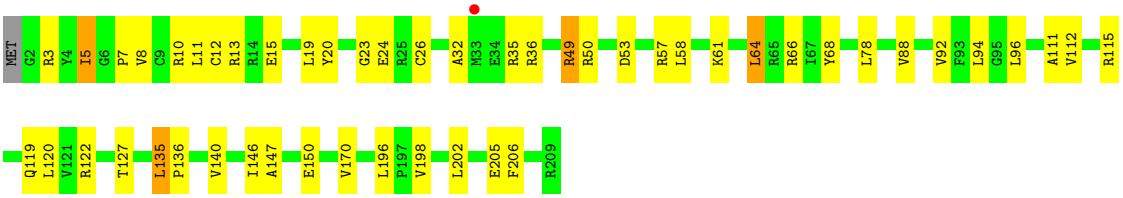
• Molecule 3: ribosomal protein S3

Chain C:



• Molecule 4: ribosomal protein S4

Chain D:

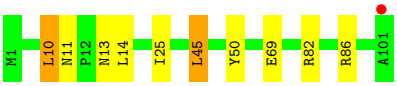


• Molecule 5: ribosomal protein S5

Chain E:

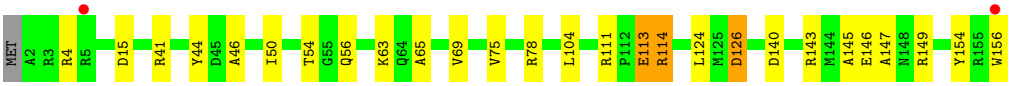
• Molecule 6: ribosomal protein S6

Chain F:



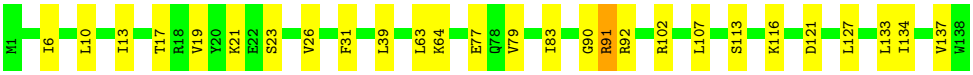
• Molecule 7: ribosomal protein S7

Chain G:



• Molecule 8: ribosomal protein S8

Chain H:

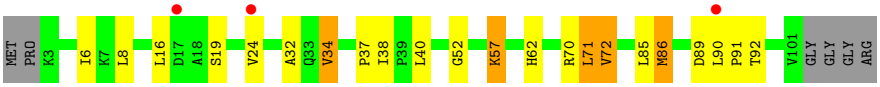


• Molecule 9: ribosomal protein S9

Chain I:

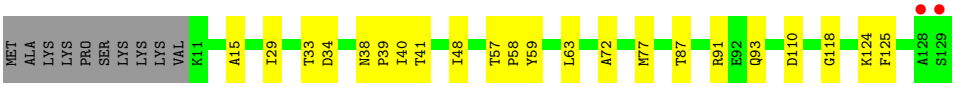
• Molecule 10: ribosomal protein S10

Chain J:



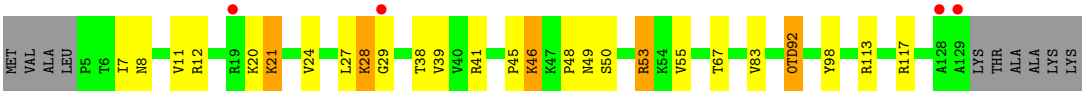
• Molecule 11: ribosomal protein S11

Chain K:



• Molecule 12: ribosomal protein S12

Chain L:



• Molecule 13: ribosomal protein S13

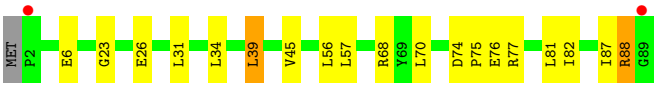
Chain M:

- Molecule 14: ribosomal protein S14

Chain N:

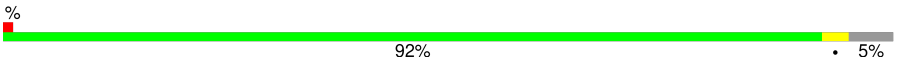
- Molecule 15: ribosomal protein S15

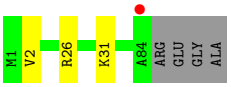
Chain O:



- Molecule 16: ribosomal protein S16

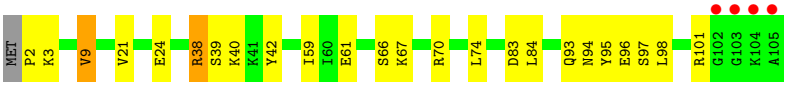
Chain P:





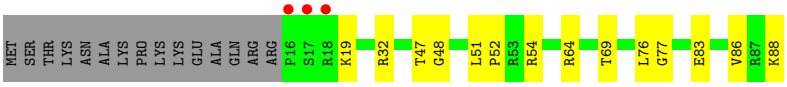
- Molecule 17: ribosomal protein S17

Chain Q:



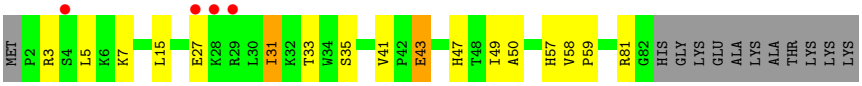
- Molecule 18: ribosomal protein S18

Chain R:



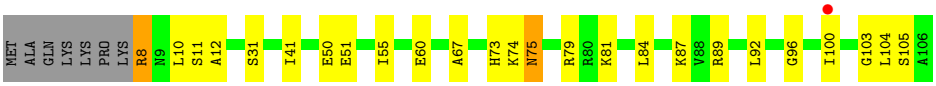
- Molecule 19: ribosomal protein S19

Chain S:



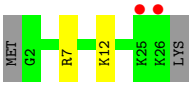
• Molecule 20: ribosomal protein S20

Chain T:



• Molecule 21: ribosomal protein THX

Chain U:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α, β, γ	402.76Å 402.76Å 177.09Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.54 – 3.01 34.54 – 3.01	Depositor EDS
% Data completeness (in resolution range)	96.5 (34.54-3.01) 96.3 (34.54-3.01)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.60 (at 3.00Å)	Xtriage
Refinement program	PHENIX dev_1119	Depositor
R, R_{free}	0.169 , 0.203 0.170 , 0.202	Depositor DCC
R_{free} test set	13979 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å^2)	93.8	Xtriage
Anisotropy	0.233	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 76.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	52046	wwPDB-VP
Average B, all atoms (Å^2)	102.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.32% of the height of the origin peak. No significant pseudotranslation is detected.*

[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 5MC, NMY, K, 0TD, ZN, 7MG, 2MG, M2G, UR3, 4OC, MA6, PSU, MG

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	0.34	0/36037	0.80	19/56239 (0.0%)
2	B	0.26	0/1909	0.44	0/2579
3	C	0.26	0/1637	0.44	0/2207
4	D	0.33	0/1733	0.49	1/2318 (0.0%)
5	E	0.33	0/1163	0.55	0/1566
6	F	0.24	0/856	0.42	0/1154
7	G	0.26	0/1276	0.43	0/1709
8	H	0.31	0/1136	0.51	0/1527
9	I	0.27	0/1029	0.48	0/1379
10	J	0.27	0/806	0.52	0/1084
11	K	0.29	0/900	0.51	0/1213
12	L	0.31	0/978	0.56	0/1308
13	M	0.24	0/947	0.46	0/1270
14	N	0.28	0/501	0.45	0/664
15	O	0.27	0/745	0.45	0/992
16	P	0.29	0/717	0.50	0/965
17	Q	0.30	0/870	0.52	0/1159
18	R	0.26	0/604	0.43	0/801
19	S	0.23	0/662	0.49	0/892
20	T	0.32	0/765	0.51	0/1007
21	U	0.25	0/213	0.44	0/279
All	All	0.32	0/55484	0.71	20/82312 (0.0%)

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
8	H	0	1
12	L	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
All	All	0	2

There are no bond length outliers.

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	328	C	C2-N1-C1'	8.54	128.19	118.80
1	A	328	C	N1-C2-O2	8.36	123.91	118.90
1	A	328	C	N3-C2-O2	-6.68	117.22	121.90
1	A	328	C	C6-N1-C1'	-6.29	113.25	120.80
1	A	1301	U	P-O3'-C3'	5.83	126.70	119.70
1	A	913	A	P-O3'-C3'	5.75	126.61	119.70
1	A	328	C	P-O3'-C3'	5.71	126.55	119.70
1	A	975	A	O4'-C1'-N9	-5.59	103.72	108.20
1	A	1158	C	C2-N1-C1'	5.55	124.91	118.80
1	A	748	C	P-O3'-C3'	5.42	126.21	119.70
1	A	1285	A	P-O3'-C3'	5.35	126.12	119.70
1	A	1158	C	N1-C2-O2	5.30	122.08	118.90
1	A	1498	UR3	P-O3'-C3'	5.27	126.02	119.70
1	A	108	G	C5-N7-C8	-5.23	101.68	104.30
4	D	12	CYS	CA-CB-SG	5.17	123.31	114.00
1	A	1067	A	P-O3'-C3'	5.16	125.90	119.70
1	A	115	G	P-O3'-C3'	5.16	125.89	119.70
1	A	1443	G	P-O3'-C3'	5.09	125.81	119.70
1	A	701	C	P-O3'-C3'	5.07	125.79	119.70
1	A	484	G	P-O3'-C3'	5.05	125.77	119.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
8	H	90	GLY	Peptide
12	L	46	LYS	Peptide

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	32504	0	16434	170	0
2	B	1874	0	1887	20	0
3	C	1613	0	1677	34	0
4	D	1703	0	1763	28	0
5	E	1147	0	1207	15	0
6	F	843	0	857	7	0
7	G	1257	0	1296	15	0
8	H	1116	0	1177	14	0
9	I	1010	0	1037	13	0
10	J	793	0	835	15	0
11	K	885	0	904	14	0
12	L	973	0	1058	16	0
13	M	937	0	995	15	0
14	N	492	0	529	6	0
15	O	734	0	771	7	0
16	P	701	0	720	1	0
17	Q	857	0	928	13	0
18	R	598	0	670	11	0
19	S	648	0	673	9	0
20	T	763	0	861	18	0
21	U	209	0	221	2	0
22	A	197	0	0	0	0
22	D	2	0	0	0	0
22	E	1	0	0	0	0
22	H	2	0	0	0	0
22	K	1	0	0	0	0
22	L	1	0	0	0	0
22	M	1	0	0	0	0
22	N	1	0	0	0	0
22	P	3	0	0	0	0
22	Q	1	0	0	0	0
22	S	2	0	0	0	0
22	U	1	0	0	0	0
23	A	24	0	0	0	0
24	A	126	0	138	4	0
25	D	1	0	0	0	0
25	N	1	0	0	0	0
26	A	20	0	0	0	0
26	H	4	0	0	0	0
All	All	52046	0	36638	386	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 (386) 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:A:975:A:H4'	1:A:976:G:H5"	1.58	0.85
1:A:664:G:H22	1:A:741:G:H1	1.28	0.82
1:A:279:A:OP2	17:Q:95:TYR:OH	1.98	0.81
13:M:10:PRO:HB2	13:M:18:ALA:HB1	1.63	0.80
1:A:1502:A:H2	1:A:1505:G:H1	1.28	0.80
1:A:1086:U:H3	1:A:1099:G:H22	1.28	0.78
1:A:406:G:H21	4:D:119:GLN:HE22	1.32	0.78
1:A:387:U:OP1	24:A:1824:NMY:N9	2.18	0.77
17:Q:66:SER:O	17:Q:70:ARG:NH1	2.17	0.76
13:M:88:ARG:HD3	19:S:3:ARG:HH21	1.50	0.74
10:J:8:LEU:HB2	10:J:70:ARG:HB2	1.69	0.74
11:K:40:ILE:HG22	11:K:41:THR:HG23	1.70	0.73
19:S:33:THR:HG22	19:S:35:SER:H	1.54	0.73
1:A:542:G:OP1	4:D:10:ARG:NH2	2.22	0.72
1:A:235:C:H5'	17:Q:70:ARG:HG2	1.73	0.71
1:A:427:U:OP1	4:D:13:ARG:NH2	2.23	0.71
1:A:951:G:OP2	13:M:102:ARG:NH2	2.24	0.71
1:A:413:G:N2	1:A:429:U:OP2	2.16	0.70
10:J:19:SER:HB3	10:J:91:PRO:HG3	1.74	0.70
20:T:50:GLU:HG3	20:T:100:ILE:HD12	1.73	0.69
11:K:15:ALA:HA	11:K:77:MET:HA	1.74	0.69
12:L:53:ARG:NH1	12:L:92:0TD:OD2	2.25	0.69
12:L:38:THR:HG22	12:L:39:VAL:HG23	1.73	0.69
1:A:1128:C:O2'	1:A:1130:A:N7	2.25	0.69
1:A:560:U:H5'	1:A:566:G:N2	2.07	0.69
7:G:146:GLU:HA	7:G:149:ARG:HG2	1.75	0.68
7:G:111:ARG:NH2	7:G:126:ASP:OD2	2.26	0.67
1:A:1310:G:OP2	13:M:88:ARG:NH2	2.26	0.67
8:H:10:LEU:HD22	8:H:83:ILE:HD11	1.75	0.67
20:T:60:GLU:HG3	20:T:81:LYS:HD2	1.76	0.67
11:K:72:ALA:HB1	11:K:77:MET:HE2	1.77	0.66
16:P:26:ARG:HD2	16:P:31:LYS:O	1.95	0.66
2:B:77:ALA:HB2	2:B:211:ILE:HD13	1.76	0.65
9:I:46:ALA:HB2	9:I:74:ILE:HG23	1.78	0.65
5:E:143:ARG:NH1	8:H:77:GLU:OE2	2.29	0.65
1:A:266:G:H5"	1:A:267:C:H5	1.61	0.65
1:A:501:C:OP1	12:L:117:ARG:NH2	2.29	0.64
3:C:8:ILE:HG23	3:C:16:ARG:HG2	1.78	0.64
1:A:1147:C:O2	9:I:16:ARG:NH1	2.31	0.64
20:T:10:LEU:HG	20:T:12:ALA:H	1.63	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:7:PRO:HG2	4:D:10:ARG:HD2	1.79	0.64
1:A:266:G:H5"	1:A:267:C:C5	2.33	0.64
1:A:537:G:OP1	12:L:113:ARG:NH2	2.28	0.63
1:A:975:A:H5'	1:A:975:A:H8	1.64	0.63
19:S:50:ALA:HB1	19:S:57:HIS:HB3	1.78	0.63
4:D:20:TYR:HD2	4:D:26:CYS:HB3	1.64	0.63
4:D:57:ARG:HB3	4:D:206:PHE:HB2	1.81	0.63
5:E:43:LEU:HD11	5:E:132:ALA:HB1	1.81	0.63
3:C:156:ARG:H	3:C:163:ALA:HA	1.64	0.63
7:G:140:ASP:OD1	7:G:143:ARG:NH2	2.33	0.62
3:C:150:LYS:HG3	3:C:169:ALA:HB2	1.81	0.62
6:F:11:ASN:HD22	6:F:14:LEU:HG	1.66	0.61
19:S:31:ILE:HG22	19:S:49:ILE:HA	1.81	0.61
7:G:78:ARG:NH1	7:G:154:TYR:O	2.33	0.61
1:A:427:U:OP2	4:D:36:ARG:NH2	2.34	0.60
20:T:89:ARG:NH2	20:T:105:SER:O	2.33	0.60
3:C:46:GLU:HG3	3:C:83:ARG:HH21	1.67	0.60
11:K:57:THR:HG22	11:K:59:TYR:H	1.67	0.59
1:A:1392:G:H21	1:A:1502:A:H8	1.50	0.59
5:E:80:ILE:HD12	5:E:91:LEU:HD12	1.83	0.59
1:A:948:C:OP1	13:M:109:THR:HG22	2.03	0.59
7:G:15:ASP:OD2	7:G:44:TYR:OH	2.20	0.58
1:A:266:G:H5'	1:A:268:C:H41	1.67	0.58
1:A:559:A:OP1	5:E:126:ARG:NH2	2.29	0.58
1:A:1266:G:N2	1:A:1269:A:OP2	2.34	0.58
10:J:89:ASP:HB2	10:J:91:PRO:HD2	1.85	0.58
12:L:8:ASN:O	12:L:12:ARG:HG3	2.04	0.58
1:A:362:G:O2'	12:L:28:LYS:NZ	2.37	0.57
3:C:6:HIS:HD2	3:C:8:ILE:H	1.50	0.57
1:A:946:A:H2'	1:A:947:G:C8	2.39	0.57
2:B:223:ILE:HD13	2:B:230:VAL:H	1.69	0.57
12:L:24:VAL:HG13	12:L:98:TYR:HE2	1.69	0.57
12:L:27:LEU:O	12:L:29:GLY:N	2.37	0.57
17:Q:40:LYS:HD3	17:Q:42:TYR:CZ	2.39	0.57
3:C:21:ARG:HG3	3:C:58:GLU:HG2	1.87	0.56
18:R:47:THR:HA	18:R:83:GLU:HB2	1.85	0.56
8:H:113:SER:HB2	8:H:134:ILE:HD11	1.87	0.56
1:A:972:C:H4'	10:J:57:LYS:HG2	1.88	0.56
4:D:49:ARG:H	4:D:49:ARG:HD2	1.69	0.56
1:A:1305:G:N2	1:A:1331:G:H1'	2.21	0.56
20:T:67:ALA:HA	20:T:73:HIS:H	1.69	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:976:G:H5'	1:A:1358:U:O2'	2.06	0.56
18:R:32:ARG:HA	18:R:69:THR:HG21	1.88	0.56
1:A:1295:G:O2'	13:M:14:ARG:NH1	2.39	0.55
12:L:46:LYS:HG3	12:L:92:0TD:H8	1.88	0.55
1:A:1003(A):G:H2'	1:A:1004:A:H4'	1.87	0.55
5:E:152:ARG:NH2	8:H:107:LEU:O	2.39	0.55
1:A:818:G:H3'	1:A:819:A:H5"	1.89	0.55
1:A:1026:G:H3'	1:A:1027:C:H5"	1.88	0.55
1:A:580:U:H2'	1:A:581:G:O4'	2.06	0.55
1:A:1049:U:H4'	1:A:1050:G:O5'	2.07	0.55
1:A:1305:G:H22	1:A:1331:G:H1'	1.71	0.55
1:A:1435:G:H2'	1:A:1436:U:C6	2.42	0.55
4:D:23:GLY:HA3	4:D:112:VAL:HG12	1.89	0.54
1:A:353:A:H5'	1:A:353:A:H8	1.72	0.54
2:B:87:ARG:NH2	2:B:220:ASP:OD1	2.33	0.54
11:K:110:ASP:OD1	18:R:88:LYS:NZ	2.39	0.54
9:I:8:GLY:HA2	9:I:79:LEU:HD13	1.89	0.54
1:A:582:U:OP1	15:O:68:ARG:NH2	2.40	0.54
7:G:111:ARG:NH1	7:G:113:GLU:OE2	2.40	0.54
2:B:24:TRP:HB2	2:B:190:THR:HG22	1.90	0.54
13:M:15:VAL:HG21	13:M:48:LEU:HD21	1.90	0.54
1:A:328:C:H4'	1:A:329:A:H5'	1.89	0.53
13:M:63:THR:HG23	13:M:64:TRP:H	1.72	0.53
1:A:1225:A:H2'	1:A:1225:A:N3	2.24	0.53
1:A:1345:U:OP1	9:I:120:ARG:NH1	2.38	0.53
1:A:1510:U:H2'	1:A:1511:G:C8	2.43	0.53
2:B:212:GLN:HE21	2:B:235:SER:HB2	1.73	0.53
20:T:41:ILE:HD13	20:T:87:LYS:HD2	1.91	0.53
1:A:132:C:O3'	20:T:74:LYS:NZ	2.38	0.53
1:A:1003:G:N2	1:A:1039:C:O2	2.41	0.53
1:A:1319:A:H5'	19:S:5:LEU:HD22	1.91	0.53
13:M:16:ASP:OD1	13:M:16:ASP:N	2.41	0.53
1:A:757:U:H2'	1:A:758:G:O4'	2.09	0.53
17:Q:24:GLU:HG2	17:Q:39:SER:HB3	1.89	0.53
5:E:110:LEU:HD13	5:E:118:ILE:HG21	1.90	0.53
15:O:87:ILE:HG22	15:O:88:ARG:H	1.74	0.52
20:T:75:ASN:OD1	20:T:75:ASN:N	2.42	0.52
1:A:243:A:H4'	1:A:244:U:O5'	2.08	0.52
5:E:98:THR:HB	5:E:117:ASP:HB3	1.91	0.52
1:A:372:C:H4'	1:A:373:A:O5'	2.09	0.52
3:C:153:VAL:HG22	3:C:198:VAL:HG22	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:111:ALA:HB2	4:D:120:LEU:HD12	1.90	0.52
8:H:83:ILE:HG13	8:H:137:VAL:HG22	1.92	0.52
1:A:344:A:H5"	1:A:345:C:H5	1.75	0.52
1:A:250:A:H4'	1:A:251:G:O5'	2.09	0.52
1:A:1502:A:H2	1:A:1505:G:N1	2.01	0.52
1:A:1391:U:H2'	1:A:1392:G:C8	2.44	0.52
1:A:1238:A:H5'	1:A:1336:C:H41	1.74	0.52
1:A:673:G:H2'	1:A:674:G:C8	2.45	0.51
1:A:1127:G:H5'	9:I:66:ARG:HH12	1.74	0.51
1:A:299:G:H2'	1:A:300:A:C8	2.45	0.51
1:A:1392:G:N2	1:A:1502:A:H8	2.07	0.51
13:M:73:GLU:O	13:M:77:ASN:ND2	2.42	0.51
1:A:1218:C:H2'	1:A:1219:U:C6	2.46	0.51
3:C:68:VAL:HG12	3:C:70:VAL:HG23	1.93	0.51
4:D:64:LEU:HG	4:D:198:VAL:HG11	1.93	0.51
9:I:48:GLU:OE1	9:I:51:ARG:NH1	2.44	0.51
10:J:52:GLY:O	14:N:41:ARG:NH2	2.43	0.51
8:H:121:ASP:OD1	8:H:121:ASP:N	2.42	0.50
10:J:24:VAL:HG21	10:J:37:PRO:HD3	1.93	0.50
1:A:579:G:H5'	1:A:728:A:H1'	1.92	0.50
1:A:1292:U:OP1	7:G:41:ARG:NH2	2.44	0.50
18:R:47:THR:HG22	18:R:48:GLY:H	1.76	0.50
1:A:818:G:C3'	1:A:819:A:H5"	2.41	0.50
24:A:1822:NMY:O11	24:A:1822:NMY:H1	2.12	0.50
2:B:122:PHE:HA	2:B:127:ILE:HD13	1.94	0.50
7:G:46:ALA:O	7:G:50:ILE:HG12	2.11	0.50
1:A:35:G:H2'	1:A:36:C:C6	2.47	0.50
1:A:636:U:H5'	17:Q:2:PRO:HG3	1.94	0.49
5:E:12:LEU:HD13	5:E:31:LEU:HB2	1.93	0.49
7:G:54:THR:HG22	7:G:56:GLN:H	1.76	0.49
10:J:90:LEU:N	10:J:91:PRO:HD2	2.27	0.49
1:A:1504:G:OP1	1:A:1507:A:H4'	2.12	0.49
5:E:6:PHE:HB3	5:E:34:VAL:HG22	1.95	0.49
1:A:181:G:H4'	1:A:182:U:H5'	1.93	0.49
8:H:64:LYS:HG2	8:H:79:VAL:HG21	1.93	0.49
9:I:37:PHE:HD2	9:I:40:LEU:HD12	1.77	0.49
9:I:55:ALA:O	9:I:58:HIS:ND1	2.36	0.49
1:A:130:A:OP2	1:A:190(E):U:O2'	2.21	0.49
1:A:1068:G:H8	1:A:1068:G:OP2	1.96	0.49
3:C:47:LEU:HG	3:C:76:VAL:HG12	1.95	0.49
1:A:1189:C:H5"	3:C:5:ILE:HG12	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1228:C:H4'	13:M:116:THR:HA	1.94	0.49
5:E:29:GLY:HA2	5:E:47:LYS:HG3	1.94	0.49
5:E:11:ILE:HB	5:E:31:LEU:HB3	1.95	0.48
3:C:123:GLN:O	3:C:126:ARG:HG2	2.13	0.48
1:A:1331:G:H4'	1:A:1332:A:O5'	2.14	0.48
1:A:1128:C:O2	1:A:1144:G:N2	2.47	0.48
2:B:47:THR:HA	2:B:202:PRO:HG2	1.95	0.48
12:L:24:VAL:HG13	12:L:98:TYR:CE2	2.48	0.48
12:L:45:PRO:HB2	12:L:92:0TD:SB	2.53	0.48
3:C:109:PRO:HB3	3:C:115:LEU:HD23	1.95	0.48
4:D:24:GLU:C	4:D:26:CYS:H	2.17	0.48
13:M:15:VAL:HG23	13:M:43:THR:O	2.14	0.48
1:A:269:C:H2'	1:A:270:A:C8	2.48	0.48
1:A:1035:A:H2'	1:A:1036:G:H8	1.79	0.48
13:M:88:ARG:HG3	13:M:98:VAL:HG13	1.96	0.48
11:K:57:THR:HG22	11:K:59:TYR:N	2.29	0.47
1:A:444:C:H2'	1:A:445:G:H8	1.79	0.47
1:A:59:A:OP1	24:A:1824:NMY:N2	2.47	0.47
1:A:564:C:O2'	8:H:91:ARG:NH2	2.48	0.47
1:A:923:A:OP1	5:E:21:ALA:HB2	2.14	0.47
1:A:527:7MG:O2'	1:A:535:A:N1	2.40	0.47
1:A:1006:C:H42	1:A:1023:G:H1	1.61	0.47
1:A:1468:A:H2'	1:A:1469:G:O4'	2.14	0.47
1:A:263:A:OP2	20:T:79:ARG:NH1	2.48	0.47
1:A:1300:G:O2'	1:A:1301:U:P	2.73	0.47
2:B:44:LEU:HD12	2:B:44:LEU:H	1.80	0.47
11:K:58:PRO:HB3	11:K:93:GLN:HG3	1.96	0.47
1:A:1101:A:H4'	1:A:1102:A:O5'	2.15	0.47
3:C:6:HIS:CD2	3:C:8:ILE:HB	2.49	0.47
8:H:19:VAL:HG23	8:H:21:LYS:HG3	1.96	0.47
20:T:73:HIS:HB3	20:T:74:LYS:H	1.55	0.47
1:A:1498:UR3:O4'	1:A:1519:MA6:H2	2.15	0.47
6:F:11:ASN:OD1	6:F:86:ARG:NH2	2.48	0.47
1:A:1352:C:H2'	1:A:1353:G:C8	2.50	0.46
20:T:92:LEU:O	20:T:96:GLY:N	2.44	0.46
1:A:501:C:H2'	1:A:502:G:C8	2.51	0.46
1:A:860:A:H2'	1:A:861:G:O4'	2.15	0.46
3:C:155:GLY:HA3	3:C:163:ALA:HB1	1.97	0.46
1:A:62:U:H2'	1:A:63:C:C6	2.51	0.46
1:A:750:G:N3	15:O:23:GLY:HA3	2.30	0.46
1:A:1131:G:H2'	1:A:1132:C:C6	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1216:G:H5"	14:N:5:ALA:HB2	1.97	0.46
1:A:192:U:H1'	20:T:103:GLY:HA2	1.98	0.46
1:A:1450:U:H2'	1:A:1452:C:C5	2.50	0.46
3:C:5:ILE:HD13	3:C:10:PHE:HB2	1.97	0.46
6:F:11:ASN:HD21	6:F:13:ASN:HB2	1.79	0.46
19:S:27:GLU:HG3	19:S:47:HIS:CE1	2.51	0.46
6:F:45:LEU:HD23	6:F:45:LEU:H	1.80	0.46
18:R:19:LYS:H	18:R:19:LYS:HD2	1.79	0.46
1:A:858:G:O6	1:A:869:G:H3'	2.16	0.46
1:A:1127:G:H21	1:A:1147:C:N4	2.14	0.46
1:A:1147:C:HO2'	9:I:5:TYR:HH	1.62	0.46
3:C:6:HIS:CD2	3:C:8:ILE:H	2.33	0.46
1:A:1486:G:H2'	1:A:1487:G:O4'	2.15	0.46
1:A:383:A:C5	1:A:384:G:H1'	2.50	0.45
1:A:973:G:H3'	1:A:974:A:H5"	1.98	0.45
2:B:167:PRO:HG3	2:B:186:ALA:HB1	1.99	0.45
1:A:1131:G:H1	1:A:1143:G:H21	1.64	0.45
1:A:1207:2MG:HM23	1:A:1208:C:H1'	1.98	0.45
1:A:1057:G:H5"	3:C:154:SER:HB2	1.98	0.45
1:A:1137:C:H4'	1:A:1138:G:C2	2.51	0.45
3:C:147:LYS:HG3	3:C:205:GLY:H	1.81	0.45
1:A:192:U:C1'	20:T:103:GLY:HA2	2.47	0.45
1:A:432:A:H3'	1:A:433:C:H5"	1.98	0.45
9:I:10:ARG:HG2	9:I:75:ASP:HB2	1.99	0.45
4:D:78:LEU:HA	4:D:78:LEU:HD23	1.76	0.45
4:D:94:LEU:HD23	4:D:94:LEU:HA	1.85	0.45
1:A:114:U:O2'	1:A:115:G:H5'	2.17	0.45
1:A:1040:U:H2'	1:A:1041:A:H8	1.81	0.45
10:J:32:ALA:O	10:J:34:VAL:HG23	2.16	0.45
6:F:25:ILE:HG21	6:F:82:ARG:HD2	1.97	0.45
1:A:1200:C:O2'	1:A:1205:U:O4	2.22	0.45
10:J:16:LEU:HD13	10:J:70:ARG:HG2	1.99	0.45
1:A:1402:4OC:H2'	1:A:1403:C:O4'	2.18	0.44
4:D:53:ASP:O	4:D:57:ARG:HG2	2.17	0.44
11:K:87:THR:HA	11:K:91:ARG:HH21	1.83	0.44
15:O:26:GLU:OE1	15:O:77:ARG:NH1	2.50	0.44
1:A:994:A:OP1	1:A:994:A:C8	2.71	0.44
1:A:545:C:OP1	4:D:61:LYS:NZ	2.50	0.44
1:A:677:U:H3	1:A:713:G:H22	1.66	0.44
1:A:767:A:H2'	1:A:768:A:O4'	2.18	0.44
17:Q:94:ASN:O	17:Q:97:SER:HB3	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:17:U:H2'	1:A:18:C:C6	2.52	0.44
1:A:519:C:OP2	12:L:50:SER:OG	2.34	0.44
4:D:5:ILE:H	4:D:115:ARG:HH22	1.65	0.44
1:A:21:G:H2'	1:A:22:G:C8	2.53	0.44
10:J:40:LEU:HD11	10:J:71:LEU:HD23	1.99	0.44
1:A:1119:C:OP2	9:I:9:ARG:NH2	2.51	0.44
1:A:1241:G:H2'	1:A:1242:C:C6	2.53	0.44
5:E:78:HIS:CD2	8:H:107:LEU:HD12	2.52	0.44
1:A:977:A:H2'	1:A:978:A:H5"	2.00	0.44
10:J:6:ILE:HB	10:J:72:VAL:HB	1.99	0.44
1:A:1002:G:H2'	1:A:1003:G:C8	2.54	0.43
3:C:61:ALA:O	3:C:63:ASN:ND2	2.47	0.43
1:A:908:A:H2'	1:A:909:A:C8	2.53	0.43
2:B:73:THR:HG23	2:B:95:GLN:O	2.17	0.43
3:C:14:ILE:HG22	3:C:15:THR:HG23	2.00	0.43
9:I:39:GLY:O	9:I:40:LEU:HD23	2.18	0.43
11:K:124:LYS:HE3	11:K:125:PHE:CZ	2.53	0.43
1:A:731:G:OP1	1:A:766:A:H1'	2.18	0.43
15:O:39:LEU:HD13	15:O:56:LEU:HB2	2.00	0.43
1:A:1277:C:O2'	1:A:1279:A:H1'	2.18	0.43
1:A:1443:G:H5"	1:A:1443:G:N3	2.34	0.43
10:J:85:LEU:HB3	10:J:86:MET:H	1.68	0.43
20:T:10:LEU:HD12	20:T:11:SER:H	1.83	0.43
8:H:6:ILE:HD11	8:H:31:PHE:HD2	1.83	0.43
1:A:1304:G:C6	1:A:1305:G:N1	2.86	0.43
12:L:21:LYS:HE3	12:L:21:LYS:HB3	1.89	0.43
15:O:74:ASP:HA	15:O:75:PRO:HD2	1.89	0.43
1:A:524:G:H2'	1:A:525:C:C6	2.54	0.43
3:C:134:ILE:HG23	3:C:151:VAL:HB	2.00	0.43
1:A:839:U:H5'	1:A:840:C:H5	1.84	0.43
1:A:1505:G:O2'	1:A:1506:U:OP2	2.32	0.43
20:T:8:ARG:N	20:T:8:ARG:HH11	2.16	0.43
20:T:51:GLU:O	20:T:55:ILE:HG12	2.19	0.43
1:A:45:U:H2'	1:A:46:G:C8	2.54	0.43
1:A:716:A:N3	11:K:118:GLY:HA2	2.34	0.43
1:A:975:A:H5'	1:A:975:A:C8	2.48	0.43
1:A:1316:G:H4'	14:N:18:VAL:HG11	2.00	0.43
3:C:155:GLY:HA2	3:C:164:ARG:H	1.84	0.43
8:H:116:LYS:HD3	8:H:127:LEU:HD13	1.99	0.43
3:C:130:VAL:O	3:C:134:ILE:HG13	2.19	0.43
8:H:17:THR:HG22	8:H:63:LEU:HG	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:N:3:ARG:O	14:N:7:ILE:HG13	2.19	0.43
14:N:26:ARG:NH2	14:N:46:GLU:OE1	2.46	0.43
20:T:74:LYS:HB3	20:T:74:LYS:HE3	1.75	0.43
1:A:1035:A:H2'	1:A:1036:G:C8	2.54	0.42
17:Q:93:GLN:O	17:Q:96:GLU:HG2	2.18	0.42
1:A:8:A:N6	4:D:205:GLU:O	2.52	0.42
6:F:50:TYR:CE1	18:R:77:GLY:HA2	2.54	0.42
1:A:1239:A:C4	1:A:1298:C:N4	2.87	0.42
1:A:1356:G:H2'	1:A:1357:A:C8	2.54	0.42
3:C:70:VAL:HG12	3:C:72:LYS:H	1.84	0.42
1:A:1020:U:H2'	1:A:1021:G:C8	2.55	0.42
1:A:1257:U:O2'	1:A:1258:G:OP2	2.30	0.42
13:M:90:LEU:O	13:M:94:ARG:HG2	2.19	0.42
6:F:10:LEU:HD12	6:F:10:LEU:HA	1.89	0.42
18:R:51:LEU:HA	18:R:52:PRO:HD3	1.94	0.42
1:A:280:C:O2	17:Q:38:ARG:HG3	2.19	0.42
1:A:328:C:H4'	1:A:329:A:C5'	2.49	0.42
1:A:1326:C:OP1	21:U:12:LYS:NZ	2.48	0.42
3:C:6:HIS:HD2	3:C:8:ILE:N	2.16	0.42
3:C:35:GLU:HG3	3:C:95:THR:HG21	2.01	0.42
1:A:932:C:H4'	7:G:4:ARG:HH21	1.84	0.42
1:A:1022:G:H2'	1:A:1023:G:H8	1.85	0.42
1:A:1211:U:H1'	1:A:1213:A:C2	2.54	0.42
1:A:1329:A:H5'	13:M:29:ARG:HD2	2.02	0.42
2:B:87:ARG:NH2	2:B:233:SER:HB2	2.35	0.42
1:A:316:G:OP2	1:A:351:G:O2'	2.36	0.42
1:A:1057:G:H5"	3:C:154:SER:CB	2.50	0.42
1:A:1329:A:N7	21:U:7:ARG:NH2	2.68	0.42
19:S:33:THR:HG22	19:S:35:SER:N	2.29	0.42
1:A:620:C:H2'	1:A:621:A:O4'	2.20	0.42
1:A:222:U:H2'	1:A:223:U:C6	2.55	0.41
1:A:452:A:HO2'	1:A:453:A:H8	1.65	0.41
10:J:89:ASP:OD2	10:J:91:PRO:HG2	2.20	0.41
1:A:835:U:OP1	18:R:64:ARG:NH2	2.45	0.41
1:A:1491:G:N7	24:A:1822:NMY:O17	2.46	0.41
11:K:38:ASN:HA	11:K:39:PRO:HD3	1.88	0.41
1:A:539:A:H2'	1:A:540:G:C8	2.55	0.41
1:A:1040:U:H2'	1:A:1041:A:C8	2.56	0.41
1:A:1106:G:H5"	3:C:172:ARG:HG2	2.03	0.41
8:H:13:ILE:O	8:H:17:THR:HG23	2.21	0.41
1:A:662:G:H2'	1:A:663:A:C8	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:146:GLN:O	2:B:150:SER:HB3	2.20	0.41
4:D:68:TYR:OH	4:D:196:LEU:HD11	2.20	0.41
4:D:127:THR:HG23	4:D:147:ALA:HB3	2.02	0.41
4:D:140:VAL:HG11	4:D:146:ILE:HD11	2.02	0.41
19:S:41:VAL:HG23	19:S:43:GLU:HG2	2.01	0.41
1:A:1297:C:O2'	7:G:114:ARG:NH2	2.54	0.41
3:C:111:LEU:HD22	3:C:204:LEU:HD23	2.01	0.41
17:Q:83:ASP:OD1	17:Q:84:LEU:N	2.50	0.41
18:R:52:PRO:HB2	18:R:54:ARG:HG2	2.02	0.41
1:A:1028:C:H42	1:A:1033:G:H1	1.66	0.41
12:L:7:ILE:O	12:L:11:VAL:HG23	2.20	0.41
18:R:76:LEU:HD23	18:R:76:LEU:HA	1.90	0.41
1:A:269:C:H2'	1:A:270:A:H8	1.84	0.41
2:B:83:MET:HA	2:B:86:GLU:HB2	2.03	0.41
12:L:49:ASN:HB2	12:L:92:0TD:SB	2.61	0.41
17:Q:9:VAL:O	17:Q:21:VAL:HA	2.21	0.41
18:R:47:THR:HG22	18:R:48:GLY:N	2.36	0.41
1:A:737:A:H2'	1:A:738:C:C6	2.56	0.41
1:A:814:A:H2'	1:A:816:A:H5"	2.03	0.41
2:B:97:TRP:HZ3	2:B:176:GLU:OE2	2.04	0.41
2:B:158:LEU:HD23	2:B:158:LEU:HA	1.92	0.41
3:C:58:GLU:HB3	10:J:92:THR:HG21	2.03	0.41
19:S:58:VAL:HA	19:S:59:PRO:HD3	1.70	0.41
20:T:89:ARG:HG3	20:T:104:LEU:HD13	2.03	0.41
1:A:142:G:O2'	1:A:196:A:N1	2.41	0.41
2:B:122:PHE:HA	2:B:127:ILE:HG21	2.02	0.41
4:D:32:ALA:O	4:D:36:ARG:N	2.42	0.41
5:E:92:LYS:HA	5:E:93:PRO:HD3	1.92	0.41
11:K:33:THR:HG22	11:K:39:PRO:HA	2.03	0.41
2:B:25:ASN:HA	2:B:26:PRO:HD2	1.94	0.40
2:B:93:VAL:HG11	2:B:97:TRP:CD1	2.56	0.40
3:C:27:LYS:HD3	3:C:27:LYS:H	1.86	0.40
3:C:70:VAL:HG12	3:C:72:LYS:N	2.37	0.40
9:I:24:GLY:N	9:I:60:ASP:OD1	2.45	0.40
10:J:38:ILE:HB	10:J:71:LEU:HB2	2.02	0.40
12:L:48:PRO:HD2	12:L:92:0TD:H8	2.04	0.40
1:A:254:G:OP1	17:Q:67:LYS:O	2.39	0.40
1:A:1134:G:N2	1:A:1140:C:O2	2.49	0.40
3:C:12:LEU:HA	3:C:12:LEU:HD23	1.88	0.40
7:G:65:ALA:O	7:G:69:VAL:HG23	2.20	0.40
11:K:34:ASP:OD1	11:K:38:ASN:N	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:3:ASN:OD1	3:C:3:ASN:N	2.54	0.40
4:D:11:LEU:HD13	4:D:66:ARG:HD3	2.03	0.40
4:D:57:ARG:HE	4:D:202:LEU:HD22	1.86	0.40
4:D:150:GLU:OE1	4:D:150:GLU:N	2.42	0.40
11:K:63:LEU:HD23	11:K:63:LEU:HA	1.90	0.40
1:A:736:C:H2'	1:A:737:A:C8	2.57	0.40
2:B:101:MET:HA	2:B:108:ILE:HG13	2.02	0.40
2:B:215:LEU:HD23	2:B:215:LEU:HA	1.95	0.40
4:D:32:ALA:HA	4:D:35:ARG:HB2	2.04	0.40
4:D:88:VAL:O	4:D:92:VAL:HG23	2.22	0.40
4:D:135:LEU:HA	4:D:136:PRO:HD3	1.80	0.40
5:E:80:ILE:HD12	5:E:138:ALA:HB1	2.03	0.40
7:G:63:LYS:HE3	7:G:63:LYS:HB2	1.90	0.40
7:G:69:VAL:HG21	7:G:104:LEU:HD21	2.03	0.40
14:N:12:ARG:HD2	14:N:12:ARG:H	1.87	0.40
17:Q:3:LYS:HD3	17:Q:61:GLU:O	2.21	0.40
7:G:145:ALA:C	7:G:147:ALA:H	2.25	0.40
15:O:82:ILE:HD13	15:O:88:ARG:HB2	2.03	0.40

There are no symmetry-related clashes.

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	
2	B	234/256 (91%)	216 (92%)	17 (7%)	1 (0%)	34	72
3	C	205/239 (86%)	189 (92%)	16 (8%)	0	100	100
4	D	206/209 (99%)	198 (96%)	7 (3%)	1 (0%)	29	68
5	E	149/162 (92%)	145 (97%)	4 (3%)	0	100	100
6	F	99/101 (98%)	99 (100%)	0	0	100	100
7	G	153/156 (98%)	146 (95%)	7 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	H	136/138 (99%)	133 (98%)	3 (2%)	0	100	100
9	I	125/128 (98%)	115 (92%)	10 (8%)	0	100	100
10	J	97/105 (92%)	82 (84%)	13 (13%)	2 (2%)	7	33
11	K	117/129 (91%)	107 (92%)	10 (8%)	0	100	100
12	L	122/135 (90%)	114 (93%)	7 (6%)	1 (1%)	19	57
13	M	116/126 (92%)	113 (97%)	3 (3%)	0	100	100
14	N	58/61 (95%)	55 (95%)	3 (5%)	0	100	100
15	O	86/89 (97%)	83 (96%)	3 (4%)	0	100	100
16	P	82/88 (93%)	80 (98%)	2 (2%)	0	100	100
17	Q	102/105 (97%)	96 (94%)	6 (6%)	0	100	100
18	R	71/88 (81%)	64 (90%)	7 (10%)	0	100	100
19	S	79/93 (85%)	71 (90%)	7 (9%)	1 (1%)	12	45
20	T	97/106 (92%)	90 (93%)	7 (7%)	0	100	100
21	U	23/27 (85%)	22 (96%)	1 (4%)	0	100	100
All	All	2357/2541 (93%)	2218 (94%)	133 (6%)	6 (0%)	41	76

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	L	28	LYS
19	S	31	ILE
10	J	72	VAL
10	J	34	VAL
4	D	5	ILE
2	B	229	VAL

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	
2	B	194/220 (88%)	182 (94%)	12 (6%)	18	52

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	160/188 (85%)	149 (93%)	11 (7%)	15	48
4	D	180/181 (99%)	168 (93%)	12 (7%)	16	49
5	E	115/123 (94%)	108 (94%)	7 (6%)	18	53
6	F	90/90 (100%)	87 (97%)	3 (3%)	38	73
7	G	126/127 (99%)	120 (95%)	6 (5%)	25	62
8	H	119/119 (100%)	112 (94%)	7 (6%)	19	54
9	I	98/99 (99%)	92 (94%)	6 (6%)	18	53
10	J	87/92 (95%)	83 (95%)	4 (5%)	27	64
11	K	90/99 (91%)	88 (98%)	2 (2%)	52	81
12	L	103/110 (94%)	96 (93%)	7 (7%)	16	48
13	M	94/101 (93%)	87 (93%)	7 (7%)	13	44
14	N	49/50 (98%)	45 (92%)	4 (8%)	11	39
15	O	79/80 (99%)	69 (87%)	10 (13%)	4	19
16	P	72/74 (97%)	71 (99%)	1 (1%)	67	88
17	Q	96/97 (99%)	90 (94%)	6 (6%)	18	51
18	R	64/77 (83%)	63 (98%)	1 (2%)	62	86
19	S	71/80 (89%)	67 (94%)	4 (6%)	21	56
20	T	76/82 (93%)	72 (95%)	4 (5%)	22	58
21	U	19/22 (86%)	19 (100%)	0	100	100
All	All	1982/2111 (94%)	1868 (94%)	114 (6%)	20	55

All (114) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	24	TRP
2	B	46	LYS
2	B	86	GLU
2	B	97	TRP
2	B	114	ARG
2	B	121	LEU
2	B	144	ARG
2	B	169	LYS
2	B	175	ARG
2	B	187	LEU
2	B	221	LEU

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Mol	Chain	Res	Type
2	B	236	TYR
3	C	3	ASN
3	C	27	LYS
3	C	34	LEU
3	C	79	ARG
3	C	85	ARG
3	C	119	ARG
3	C	166	GLU
3	C	167	TRP
3	C	192	THR
3	C	196	LEU
3	C	204	LEU
4	D	3	ARG
4	D	8	VAL
4	D	15	GLU
4	D	19	LEU
4	D	49	ARG
4	D	50	ARG
4	D	58	LEU
4	D	64	LEU
4	D	96	LEU
4	D	122	ARG
4	D	135	LEU
4	D	170	VAL
5	E	12	LEU
5	E	31	LEU
5	E	41	VAL
5	E	43	LEU
5	E	64	ARG
5	E	79	GLU
5	E	80	ILE
6	F	10	LEU
6	F	45	LEU
6	F	69	GLU
7	G	75	VAL
7	G	113	GLU
7	G	114	ARG
7	G	124	LEU
7	G	126	ASP
7	G	156	TRP
8	H	23	SER
8	H	26	VAL

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Mol	Chain	Res	Type
8	H	39	LEU
8	H	91	ARG
8	H	92	ARG
8	H	102	ARG
8	H	133	LEU
9	I	25	LYS
9	I	79	LEU
9	I	112	LYS
9	I	118	LYS
9	I	121	ARG
9	I	128	ARG
10	J	57	LYS
10	J	62	HIS
10	J	71	LEU
10	J	86	MET
11	K	29	ILE
11	K	48	ILE
12	L	20	LYS
12	L	21	LYS
12	L	41	ARG
12	L	53	ARG
12	L	55	VAL
12	L	67	THR
12	L	83	VAL
13	M	56	LEU
13	M	64	TRP
13	M	70	LEU
13	M	88	ARG
13	M	109	THR
13	M	110	ARG
13	M	115	LYS
14	N	8	GLU
14	N	9	LYS
14	N	12	ARG
14	N	41	ARG
15	O	6	GLU
15	O	31	LEU
15	O	34	LEU
15	O	39	LEU
15	O	45	VAL
15	O	57	LEU
15	O	70	LEU

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Mol	Chain	Res	Type
15	O	76	GLU
15	O	81	LEU
15	O	88	ARG
16	P	2	VAL
17	Q	9	VAL
17	Q	38	ARG
17	Q	59	ILE
17	Q	74	LEU
17	Q	98	LEU
17	Q	101	ARG
18	R	86	VAL
19	S	7	LYS
19	S	15	LEU
19	S	43	GLU
19	S	81	ARG
20	T	8	ARG
20	T	31	SER
20	T	75	ASN
20	T	84	LEU

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

Mol	Chain	Res	Type
2	B	212	GLN
3	C	6	HIS
4	D	119	GLN
13	M	106	ASN
15	O	46	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1507/1522 (99%)	199 (13%)	31 (2%)

All (199) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	9	G
1	A	32	A
1	A	39	G

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Mol	Chain	Res	Type
1	A	44	G
1	A	47	C
1	A	48	C
1	A	51	A
1	A	54	C
1	A	81	U
1	A	101	A
1	A	116	A
1	A	121	C
1	A	129(A)	G
1	A	130	A
1	A	131	C
1	A	163	C
1	A	182	U
1	A	195	A
1	A	197	A
1	A	202	U
1	A	204	U
1	A	216	G
1	A	231	G
1	A	244	U
1	A	247	G
1	A	251	G
1	A	266	G
1	A	267	C
1	A	289	G
1	A	301	G
1	A	321	A
1	A	328	C
1	A	329	A
1	A	332	G
1	A	344	A
1	A	345	C
1	A	352	C
1	A	353	A
1	A	354	G
1	A	356	A
1	A	367	U
1	A	373	A
1	A	384	G
1	A	390	C
1	A	397	A

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Mol	Chain	Res	Type
1	A	398	C
1	A	406	G
1	A	411	A
1	A	412	A
1	A	413	G
1	A	421	U
1	A	422	C
1	A	424	G
1	A	429	U
1	A	433	C
1	A	439	A
1	A	442	C
1	A	452	A
1	A	461	C
1	A	485	G
1	A	497	A
1	A	498	U
1	A	509	A
1	A	510	A
1	A	511	C
1	A	518	C
1	A	527	7MG
1	A	532	A
1	A	533	A
1	A	547	A
1	A	559	A
1	A	560	U
1	A	564	C
1	A	572	A
1	A	573	A
1	A	576	G
1	A	577	G
1	A	596	C
1	A	653	A
1	A	665	A
1	A	687	A
1	A	688	G
1	A	702	A
1	A	721	G
1	A	723	U
1	A	731	G
1	A	749	C

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Mol	Chain	Res	Type
1	A	755	G
1	A	777	A
1	A	781	A
1	A	782	A
1	A	792	A
1	A	793	U
1	A	794	A
1	A	813	U
1	A	816	A
1	A	817	C
1	A	819	A
1	A	828	A
1	A	839	U
1	A	840	C
1	A	841	U
1	A	848	C
1	A	859	A
1	A	902	G
1	A	914	A
1	A	926	G
1	A	927	G
1	A	934	C
1	A	935	A
1	A	960	U
1	A	966	M2G
1	A	969	A
1	A	971	G
1	A	974	A
1	A	975	A
1	A	976	G
1	A	977	A
1	A	991	U
1	A	992	U
1	A	993	G
1	A	994	A
1	A	1004	A
1	A	1005	A
1	A	1025	U
1	A	1026	G
1	A	1027	C
1	A	1031	G
1	A	1050	G

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Mol	Chain	Res	Type
1	A	1054	C
1	A	1055	A
1	A	1065	U
1	A	1066	C
1	A	1068	G
1	A	1094	G
1	A	1095	U
1	A	1101	A
1	A	1117	G
1	A	1125	U
1	A	1126	U
1	A	1127	G
1	A	1129	C
1	A	1130	A
1	A	1131	G
1	A	1137	C
1	A	1138	G
1	A	1139	G
1	A	1159	U
1	A	1171	G
1	A	1181	G
1	A	1183	A
1	A	1184	G
1	A	1190	G
1	A	1196	U
1	A	1197	G
1	A	1201	A
1	A	1202	G
1	A	1212	U
1	A	1213	A
1	A	1214	C
1	A	1225	A
1	A	1227	A
1	A	1238	A
1	A	1253	G
1	A	1256	A
1	A	1257	U
1	A	1258	G
1	A	1270	C
1	A	1280	A
1	A	1286	A
1	A	1287	A

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Mol	Chain	Res	Type
1	A	1300	G
1	A	1301	U
1	A	1302	U
1	A	1312	G
1	A	1320	C
1	A	1332	A
1	A	1338	G
1	A	1347	G
1	A	1353	G
1	A	1362	C
1	A	1364	U
1	A	1370	G
1	A	1394	A
1	A	1442	G
1	A	1443	G
1	A	1446	A
1	A	1454	G
1	A	1487	G
1	A	1492	A
1	A	1497	G
1	A	1499	A
1	A	1504	G
1	A	1505	G
1	A	1506	U
1	A	1517	G
1	A	1520	G
1	A	1529	G
1	A	1530	G

All (31) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	115	G
1	A	129(A)	G
1	A	181	G
1	A	204	U
1	A	243	A
1	A	250	A
1	A	266	G
1	A	328	C
1	A	372	C
1	A	428	G

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Mol	Chain	Res	Type
1	A	484	G
1	A	496	A
1	A	509	A
1	A	559	A
1	A	687	A
1	A	701	C
1	A	748	C
1	A	812	C
1	A	913	A
1	A	1049	U
1	A	1065	U
1	A	1067	A
1	A	1129	C
1	A	1201	A
1	A	1257	U
1	A	1285	A
1	A	1300	G
1	A	1301	U
1	A	1331	G
1	A	1443	G
1	A	1505	G

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

15 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
1	UR3	A	1498	1	19,22,23	0.73	1 (5%)	26,32,35	1.05	1 (3%)
12	0TD	L	92	12	8,9,10	1.39	1 (12%)	6,11,13	1.86	2 (33%)
1	5MC	A	1400	1	19,22,23	1.11	3 (15%)	26,32,35	0.95	1 (3%)
1	PSU	A	1541	1,22	18,21,22	1.08	1 (5%)	21,30,33	1.88	6 (28%)
1	M2G	A	966	1	20,27,28	1.45	4 (20%)	19,40,43	1.16	2 (10%)
1	MA6	A	1518	1	19,26,27	1.19	1 (5%)	18,38,41	0.67	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	2MG	A	1207	1	18,26,27	1.38	3 (16%)	16,38,41	1.56	2 (12%)
1	5MC	A	967	1	19,22,23	1.09	2 (10%)	26,32,35	0.94	2 (7%)
1	4OC	A	1402	1	20,23,24	0.99	2 (10%)	25,32,35	0.76	0
1	MA6	A	1519	1	19,26,27	1.15	2 (10%)	18,38,41	0.73	0
1	7MG	A	527	1	23,26,27	3.93	4 (17%)	27,39,42	2.30	9 (33%)
1	PSU	A	1540	1	18,21,22	1.12	1 (5%)	21,30,33	1.75	4 (19%)
1	PSU	A	516	1,22	18,21,22	1.13	1 (5%)	21,30,33	1.86	5 (23%)
1	5MC	A	1404	1	19,22,23	0.99	2 (10%)	26,32,35	1.01	2 (7%)
1	5MC	A	1407	1	19,22,23	1.01	2 (10%)	26,32,35	0.94	1 (3%)

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
1	UR3	A	1498	1	-	0/7/25/26	0/2/2/2
12	0TD	L	92	12	-	2/7/12/14	-
1	5MC	A	1400	1	-	0/7/25/26	0/2/2/2
1	PSU	A	1541	1,22	-	0/7/25/26	0/2/2/2
1	M2G	A	966	1	-	0/7/29/30	0/3/3/3
1	MA6	A	1518	1	-	2/7/29/30	0/3/3/3
1	2MG	A	1207	1	-	0/5/27/28	0/3/3/3
1	5MC	A	967	1	-	0/7/25/26	0/2/2/2
1	4OC	A	1402	1	-	2/9/29/30	0/2/2/2
1	MA6	A	1519	1	-	3/7/29/30	0/3/3/3
1	7MG	A	527	1	-	2/7/37/38	0/3/3/3
1	PSU	A	1540	1	-	0/7/25/26	0/2/2/2
1	PSU	A	516	1,22	-	0/7/25/26	0/2/2/2
1	5MC	A	1404	1	-	0/7/25/26	0/2/2/2
1	5MC	A	1407	1	-	0/7/25/26	0/2/2/2

All (30) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	527	7MG	C8-N9	-17.54	1.34	1.45
1	A	527	7MG	C2-N2	4.16	1.43	1.34
1	A	1518	MA6	C6-N1	3.97	1.38	1.32
1	A	516	PSU	C6-C5	3.82	1.39	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1540	PSU	C6-C5	3.80	1.39	1.35
1	A	527	7MG	C5-N7	3.75	1.40	1.35
1	A	1541	PSU	C6-C5	3.46	1.39	1.35
1	A	527	7MG	C4-N3	3.26	1.41	1.34
1	A	1207	2MG	C2-N2	3.25	1.40	1.33
1	A	966	M2G	C2-N2	3.12	1.40	1.35
1	A	1519	MA6	C6-N1	3.08	1.36	1.32
1	A	966	M2G	C2-N3	3.08	1.35	1.30
1	A	1207	2MG	C6-N1	3.01	1.42	1.37
12	L	92	0TD	CB-CA	-2.93	1.53	1.54
1	A	966	M2G	C6-N1	2.79	1.42	1.37
1	A	1407	5MC	C2-N1	2.74	1.45	1.40
1	A	1207	2MG	C2-N1	2.66	1.40	1.36
1	A	1400	5MC	C2-N1	2.65	1.45	1.40
1	A	966	M2G	C5-C6	-2.64	1.42	1.47
1	A	967	5MC	C2-N3	2.56	1.41	1.36
1	A	1519	MA6	C2-N1	2.53	1.38	1.33
1	A	967	5MC	C2-N1	2.50	1.45	1.40
1	A	1404	5MC	C2-N1	2.34	1.45	1.40
1	A	1400	5MC	C2-N3	2.34	1.41	1.36
1	A	1402	4OC	C2-N3	2.25	1.40	1.36
1	A	1404	5MC	C2-N3	2.20	1.40	1.36
1	A	1407	5MC	C2-N3	2.16	1.40	1.36
1	A	1498	UR3	C2-N1	2.09	1.41	1.38
1	A	1402	4OC	O2-C2	-2.06	1.19	1.23
1	A	1400	5MC	C6-C5	2.03	1.37	1.34

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	527	7MG	C2-N3-C4	4.97	120.85	112.30
1	A	527	7MG	C5-C6-N1	4.95	119.65	110.94
1	A	1541	PSU	C4-N3-C2	-4.77	119.80	126.37
1	A	527	7MG	N9-C4-N3	4.60	132.20	125.46
1	A	1207	2MG	O6-C6-N1	-4.58	115.18	120.62
1	A	1540	PSU	C4-N3-C2	-4.57	120.07	126.37
1	A	516	PSU	N1-C2-N3	4.55	119.97	115.17
1	A	1541	PSU	N1-C2-N3	4.55	119.96	115.17
1	A	516	PSU	C4-N3-C2	-4.52	120.15	126.37
1	A	1540	PSU	N1-C2-N3	4.34	119.75	115.17
1	A	527	7MG	C5-C4-N3	-4.24	120.18	128.13
1	A	527	7MG	N9-C8-N7	3.73	108.66	103.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1207	2MG	O6-C6-C5	3.58	131.43	124.32
1	A	966	M2G	O6-C6-N1	-3.27	116.74	120.62
1	A	966	M2G	O6-C6-C5	3.19	130.65	124.32
1	A	516	PSU	O2-C2-N1	-3.13	119.56	122.79
1	A	1541	PSU	O2-C2-N1	-2.87	119.83	122.79
1	A	527	7MG	O6-C6-C5	-2.83	120.68	127.62
1	A	527	7MG	C6-C5-C4	-2.77	117.54	122.40
1	A	527	7MG	C2-N1-C6	-2.75	120.12	125.11
1	A	1498	UR3	C6-N1-C2	-2.69	119.60	121.80
12	L	92	0TD	CSB-SB-CB	-2.56	97.76	102.36
1	A	516	PSU	C6-N1-C2	-2.54	120.33	122.69
1	A	527	7MG	C6-C5-N7	2.52	135.84	131.93
1	A	1404	5MC	C5-C4-N3	2.52	124.34	121.75
12	L	92	0TD	OD1-CG-CB	-2.41	117.40	122.44
1	A	1404	5MC	N4-C4-N3	-2.40	114.16	118.51
1	A	1400	5MC	N4-C4-N3	-2.35	114.25	118.51
1	A	1540	PSU	O2-C2-N1	-2.23	120.49	122.79
1	A	967	5MC	C5-C4-N3	2.22	124.03	121.75
1	A	516	PSU	O4'-C1'-C2'	2.20	108.19	105.15
1	A	1540	PSU	C6-N1-C2	-2.14	120.70	122.69
1	A	1541	PSU	O4'-C1'-C2'	2.12	108.09	105.15
1	A	1407	5MC	N4-C4-N3	-2.12	114.67	118.51
1	A	1541	PSU	C6-N1-C2	-2.07	120.77	122.69
1	A	967	5MC	N4-C4-N3	-2.07	114.77	118.51
1	A	1541	PSU	C6-C5-C4	2.04	119.55	118.17

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	527	7MG	O4'-C4'-C5'-O5'
1	A	527	7MG	C3'-C4'-C5'-O5'
1	A	1402	4OC	O4'-C4'-C5'-O5'
1	A	1519	MA6	O4'-C4'-C5'-O5'
1	A	1519	MA6	C3'-C4'-C5'-O5'
1	A	1402	4OC	C3'-C4'-C5'-O5'
12	L	92	0TD	CG-CB-SB-CSB
1	A	1518	MA6	C3'-C4'-C5'-O5'
1	A	1519	MA6	C5-C6-N6-C10
12	L	92	0TD	SB-CB-CG-OD1
1	A	1518	MA6	O4'-C4'-C5'-O5'

There are no ring outliers.

6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	1498	UR3	1	0
12	L	92	0TD	5	0
1	A	1207	2MG	1	0
1	A	1402	4OC	1	0
1	A	1519	MA6	1	0
1	A	527	7MG	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 242 ligands modelled in this entry, 239 are monoatomic - leaving 3 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	$\#\|Z\| > 2$
24	NMY	A	1823	22	43,45,45	1.37	7 (16%)	62,67,67	1.74	11 (17%)
24	NMY	A	1822	-	43,45,45	1.30	4 (9%)	62,67,67	1.49	12 (19%)
24	NMY	A	1824	-	43,45,45	1.53	7 (16%)	62,67,67	1.71	13 (20%)

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
24	NMY	A	1823	22	-	9/18/94/94	0/4/4/4
24	NMY	A	1822	-	-	6/18/94/94	0/4/4/4
24	NMY	A	1824	-	-	8/18/94/94	0/4/4/4

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
24	A	1824	NMY	C1-C2	4.29	1.60	1.52
24	A	1824	NMY	C3-C2	3.91	1.58	1.53
24	A	1823	NMY	C1-C2	3.29	1.58	1.52
24	A	1823	NMY	C3-C2	3.19	1.57	1.53
24	A	1824	NMY	C13-C14	3.19	1.57	1.52
24	A	1822	NMY	C3-C2	3.12	1.57	1.53
24	A	1823	NMY	C18-C19	2.89	1.58	1.52
24	A	1824	NMY	C18-C19	2.81	1.57	1.52
24	A	1822	NMY	C1-C2	2.67	1.57	1.52
24	A	1823	NMY	C13-C14	2.52	1.56	1.52
24	A	1822	NMY	C10-C11	2.42	1.57	1.52
24	A	1822	NMY	C13-C14	2.40	1.56	1.52
24	A	1824	NMY	C10-C11	2.29	1.57	1.52
24	A	1824	NMY	C10-C9	2.23	1.57	1.53
24	A	1823	NMY	C10-C11	2.17	1.56	1.52
24	A	1823	NMY	C10-C9	2.15	1.57	1.53
24	A	1823	NMY	C20-C19	2.11	1.56	1.53
24	A	1824	NMY	C20-C19	2.11	1.56	1.53

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
24	A	1823	NMY	C13-C14-C15	-7.19	93.45	102.10
24	A	1824	NMY	C11-C10-C9	-5.04	101.97	111.31
24	A	1824	NMY	O1-C10-C11	4.65	119.23	107.42
24	A	1824	NMY	O1-C1-C2	4.25	115.03	108.08
24	A	1822	NMY	O20-C20-C19	-4.20	102.67	110.22
24	A	1822	NMY	O1-C10-C11	4.19	118.07	107.42
24	A	1823	NMY	C14-C15-C16	-3.65	96.84	103.24
24	A	1823	NMY	O1-C1-C2	3.56	113.91	108.08
24	A	1823	NMY	O16-C13-C14	-3.55	100.47	104.98
24	A	1823	NMY	O18-C18-C19	3.44	113.70	108.08
24	A	1824	NMY	O11-C13-O16	-3.43	107.86	111.37
24	A	1822	NMY	O11-C13-O16	-3.36	107.94	111.37
24	A	1823	NMY	O1-C10-C11	3.16	115.43	107.42
24	A	1824	NMY	O16-C13-C14	-3.06	101.08	104.98
24	A	1823	NMY	O20-C20-C19	-3.01	104.81	110.22
24	A	1824	NMY	O11-C11-C12	2.93	114.67	107.23
24	A	1822	NMY	O21-C21-C20	-2.85	103.65	110.38
24	A	1823	NMY	O18-C18-O22	-2.77	103.42	110.69
24	A	1824	NMY	O20-C20-C19	-2.69	105.39	110.22
24	A	1822	NMY	C13-C14-C15	-2.62	98.95	102.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
24	A	1823	NMY	O21-C21-C20	-2.56	104.35	110.38
24	A	1824	NMY	O18-C18-C19	2.51	112.19	108.08
24	A	1824	NMY	O21-C21-C20	-2.48	104.53	110.38
24	A	1822	NMY	O16-C13-C14	-2.42	101.90	104.98
24	A	1822	NMY	C11-C10-C9	-2.41	106.85	111.31
24	A	1822	NMY	C8-C7-C12	-2.40	106.48	110.08
24	A	1822	NMY	C9-C8-C7	-2.31	107.06	111.02
24	A	1823	NMY	C11-C10-C9	-2.17	107.28	111.31
24	A	1822	NMY	O18-C18-C19	2.17	111.62	108.08
24	A	1824	NMY	O12-C12-C7	-2.13	105.91	109.90
24	A	1824	NMY	C13-C14-C15	-2.11	99.57	102.10
24	A	1824	NMY	O5-C5-C6	2.09	110.08	106.07
24	A	1822	NMY	O12-C12-C7	-2.07	106.02	109.90
24	A	1824	NMY	O11-C11-C10	2.07	112.68	107.42
24	A	1822	NMY	C18-O18-C15	-2.04	113.14	117.98
24	A	1823	NMY	C1-C2-N2	2.01	113.82	110.20

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
24	A	1822	NMY	C21-C22-C23-N19
24	A	1822	NMY	O22-C22-C23-N19
24	A	1823	NMY	C4-C5-C6-N6
24	A	1823	NMY	O5-C5-C6-N6
24	A	1823	NMY	C14-C13-O11-C11
24	A	1823	NMY	O16-C13-O11-C11
24	A	1823	NMY	C19-C18-O18-C15
24	A	1823	NMY	O22-C22-C23-N19
24	A	1824	NMY	C9-C10-O1-C1
24	A	1824	NMY	C4-C5-C6-N6
24	A	1824	NMY	O5-C5-C6-N6
24	A	1824	NMY	O22-C22-C23-N19
24	A	1824	NMY	C12-C11-O11-C13
24	A	1823	NMY	O22-C18-O18-C15
24	A	1822	NMY	C11-C10-O1-C1
24	A	1824	NMY	C11-C10-O1-C1
24	A	1822	NMY	O16-C16-C17-O17
24	A	1822	NMY	O16-C13-O11-C11
24	A	1822	NMY	C9-C10-O1-C1
24	A	1824	NMY	O16-C13-O11-C11
24	A	1823	NMY	C16-C15-O18-C18

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Mol	Chain	Res	Type	Atoms
24	A	1824	NMY	C21-C22-C23-N19
24	A	1823	NMY	C14-C15-O18-C18

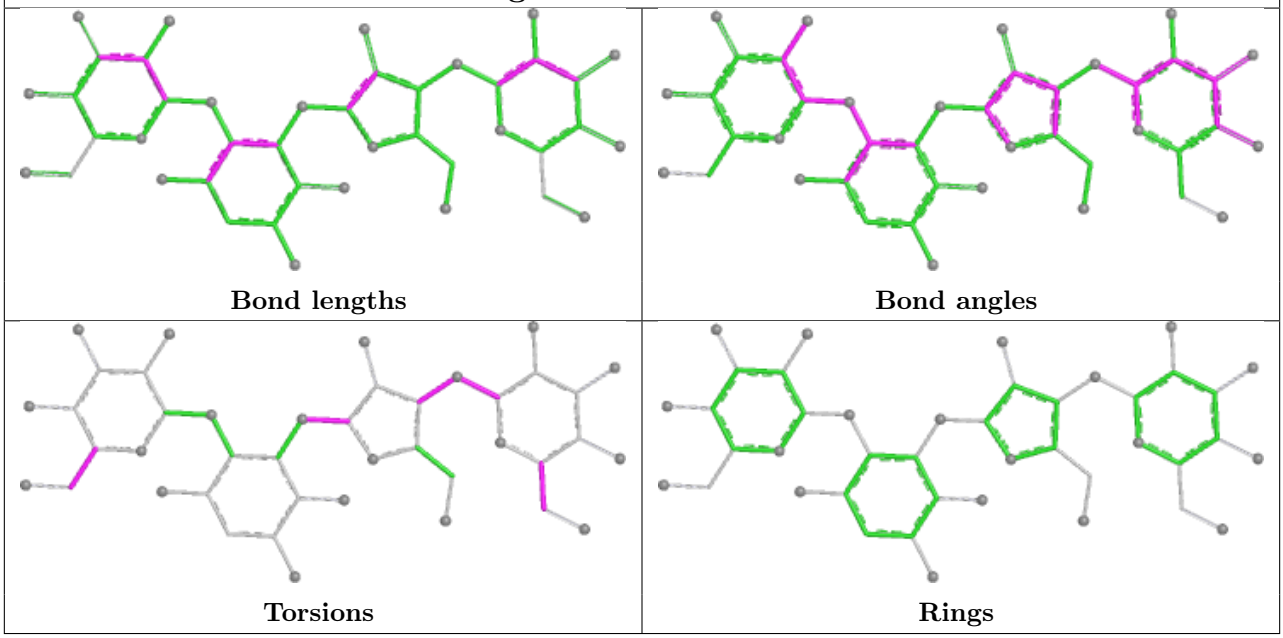
There are no ring outliers.

2 monomers are involved in 4 short contacts:

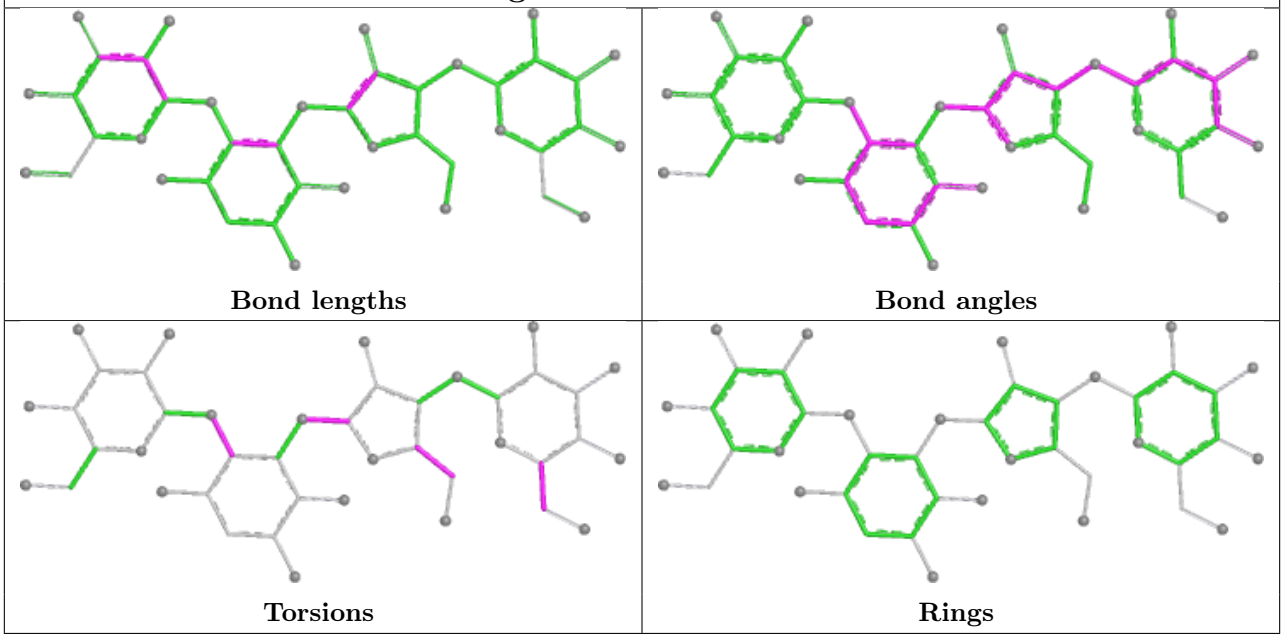
Mol	Chain	Res	Type	Clashes	Symm-Clashes
24	A	1822	NMY	2	0
24	A	1824	NMY	2	0

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.

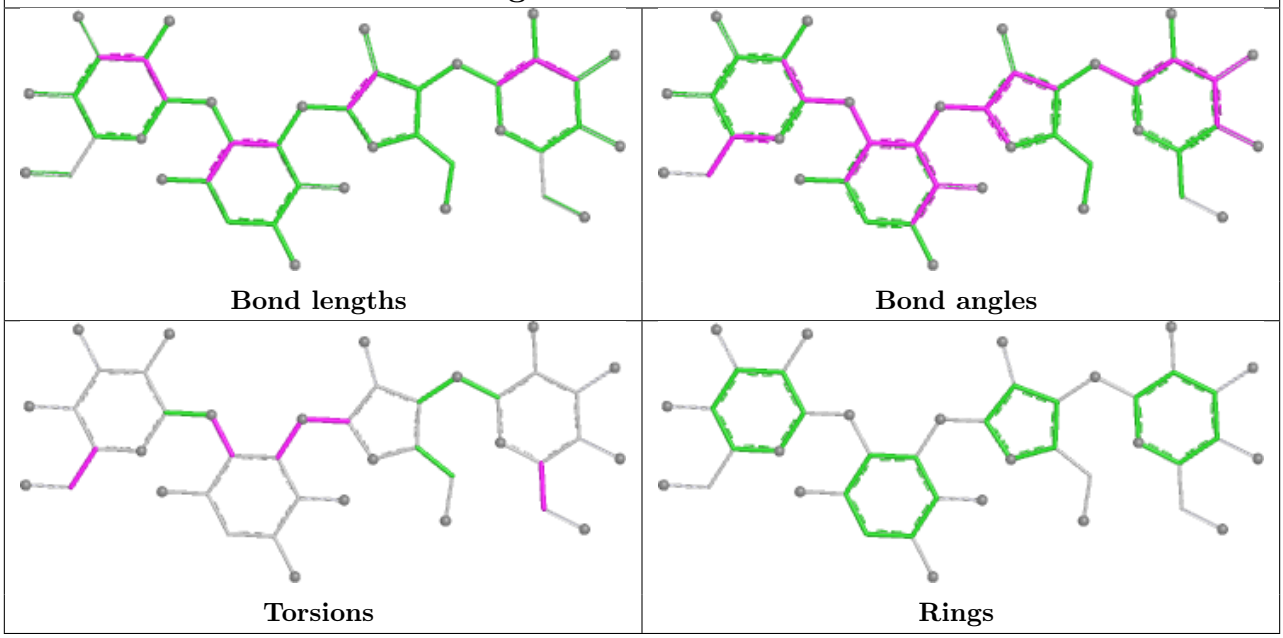
Ligand NMY A 1823



Ligand NMY A 1822



Ligand NMY A 1824



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 (i)

6.1 Protein, DNA and RNA chains (i)

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	1498/1522 (98%)	-0.26	14 (0%)	84	63	55, 85, 178, 278	0
2	B	236/256 (92%)	-0.31	3 (1%)	77	51	75, 124, 211, 250	0
3	C	207/239 (86%)	-0.24	1 (0%)	91	75	79, 122, 163, 202	0
4	D	208/209 (99%)	-0.32	1 (0%)	91	75	67, 97, 138, 164	0
5	E	151/162 (93%)	-0.40	0	100	100	61, 84, 129, 175	0
6	F	101/101 (100%)	-0.44	1 (0%)	82	59	82, 126, 158, 192	0
7	G	155/156 (99%)	-0.32	2 (1%)	77	51	79, 106, 175, 211	0
8	H	138/138 (100%)	-0.51	0	100	100	55, 81, 111, 147	0
9	I	127/128 (99%)	-0.18	1 (0%)	86	65	83, 125, 165, 203	0
10	J	99/105 (94%)	0.10	3 (3%)	50	22	77, 144, 225, 241	0
11	K	119/129 (92%)	-0.19	2 (1%)	70	41	65, 95, 145, 203	0
12	L	124/135 (91%)	-0.23	4 (3%)	47	20	58, 91, 139, 235	0
13	M	118/126 (93%)	-0.19	3 (2%)	57	29	79, 115, 155, 187	0
14	N	60/61 (98%)	-0.10	0	100	100	85, 107, 143, 191	0
15	O	88/89 (98%)	-0.26	2 (2%)	60	31	68, 98, 147, 190	0
16	P	84/88 (95%)	-0.37	1 (1%)	79	54	63, 84, 118, 197	0
17	Q	104/105 (99%)	0.26	4 (3%)	40	16	60, 87, 143, 228	0
18	R	73/88 (82%)	-0.14	3 (4%)	37	14	73, 105, 183, 211	0
19	S	81/93 (87%)	-0.14	4 (4%)	29	11	70, 134, 199, 236	0
20	T	99/106 (93%)	-0.27	1 (1%)	82	59	62, 92, 150, 207	0
21	U	25/27 (92%)	0.45	2 (8%)	12	4	81, 112, 129, 192	0
All	All	3895/4063 (95%)	-0.25	52 (1%)	77	51	55, 98, 173, 278	0

All (52) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
17	Q	103	GLY	23.9
17	Q	104	LYS	16.3
17	Q	105	ALA	13.7
17	Q	102	GLY	9.5
11	K	129	SER	8.9
11	K	128	ALA	8.2
21	U	26	LYS	7.1
1	A	1129	C	6.9
18	R	17	SER	4.5
1	A	1025	U	4.3
12	L	129	ALA	4.2
15	O	89	GLY	3.8
21	U	25	LYS	3.7
13	M	7	VAL	3.6
7	G	5	ARG	3.5
3	C	76	VAL	3.4
15	O	2	PRO	3.2
10	J	17	ASP	3.2
9	I	128	ARG	3.0
20	T	100	ILE	3.0
7	G	156	TRP	2.9
1	A	202	U	2.9
1	A	1027	C	2.9
10	J	90	LEU	2.9
1	A	1026	G	2.9
12	L	128	ALA	2.7
19	S	27	GLU	2.7
1	A	81	U	2.6
1	A	1031	G	2.6
19	S	4	SER	2.6
16	P	84	ALA	2.6
1	A	1004	A	2.6
6	F	101	ALA	2.6
1	A	1029	C	2.5
1	A	1033	G	2.5
13	M	117	VAL	2.5
10	J	24	VAL	2.5
18	R	18	ARG	2.5
2	B	132	LYS	2.4
13	M	119	GLY	2.4
1	A	1006	C	2.4
19	S	28	LYS	2.4
2	B	35	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
12	L	29	GLY	2.3
19	S	29	ARG	2.3
1	A	1030(B)	C	2.2
18	R	16	PRO	2.2
1	A	1030(D)	A	2.2
12	L	19	ARG	2.2
4	D	33	MET	2.2
1	A	1036	G	2.2
2	B	125	PRO	2.1

6.2 Non-standard residues in protein, DNA, RNA chains (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
1	PSU	A	1540	20/21	0.81	0.39	176,191,205,208	0
1	PSU	A	1541	20/21	0.88	0.25	178,188,205,218	0
1	PSU	A	516	20/21	0.95	0.12	83,98,104,105	0
1	5MC	A	1400	21/22	0.96	0.15	57,76,100,104	0
12	0TD	L	92	10/11	0.96	0.26	81,88,186,306	0
1	7MG	A	527	24/25	0.97	0.17	66,74,91,95	0
1	2MG	A	1207	24/25	0.97	0.12	97,104,109,114	0
1	5MC	A	1404	21/22	0.98	0.17	55,62,71,76	0
1	5MC	A	1407	21/22	0.98	0.17	64,74,83,90	0
1	UR3	A	1498	21/22	0.98	0.19	52,64,74,99	0
1	MA6	A	1518	24/25	0.98	0.18	57,65,79,84	0
1	MA6	A	1519	24/25	0.98	0.19	54,71,82,89	0
1	M2G	A	966	25/26	0.98	0.13	74,84,102,116	0
1	5MC	A	967	21/22	0.98	0.12	73,80,89,93	0
1	4OC	A	1402	22/23	0.98	0.17	59,69,78,79	0

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
22	MG	A	1799	1/1	-0.23	0.45	118,118,118,118	0
22	MG	A	1682	1/1	0.00	0.71	108,108,108,108	0
22	MG	A	1769	1/1	0.38	0.38	79,79,79,79	0
22	MG	A	1639	1/1	0.48	0.34	105,105,105,105	0
22	MG	A	1814	1/1	0.49	0.66	109,109,109,109	0
22	MG	A	1780	1/1	0.50	0.43	95,95,95,95	0
22	MG	A	1818	1/1	0.54	0.50	113,113,113,113	0
22	MG	A	1810	1/1	0.55	1.14	98,98,98,98	0
22	MG	A	1812	1/1	0.55	0.94	102,102,102,102	0
22	MG	A	1789	1/1	0.56	0.61	119,119,119,119	0
22	MG	A	1775	1/1	0.57	1.18	97,97,97,97	0
22	MG	A	1763	1/1	0.57	1.43	95,95,95,95	0
22	MG	A	1607	1/1	0.60	0.32	98,98,98,98	0
22	MG	A	1776	1/1	0.62	0.40	87,87,87,87	0
22	MG	A	1806	1/1	0.64	1.08	104,104,104,104	0
22	MG	A	1656	1/1	0.66	0.31	113,113,113,113	0
22	MG	U	101	1/1	0.66	0.43	121,121,121,121	0
22	MG	A	1726	1/1	0.68	0.55	118,118,118,118	0
22	MG	A	1793	1/1	0.68	0.81	108,108,108,108	0
22	MG	A	1612	1/1	0.68	0.38	83,83,83,83	0
22	MG	A	1722	1/1	0.69	0.25	83,83,83,83	0
22	MG	A	1619	1/1	0.69	0.73	99,99,99,99	0
22	MG	A	1805	1/1	0.70	0.17	104,104,104,104	0
22	MG	A	1796	1/1	0.71	0.62	100,100,100,100	0
22	MG	A	1720	1/1	0.71	0.99	103,103,103,103	0
22	MG	A	1657	1/1	0.71	0.54	127,127,127,127	0
22	MG	A	1807	1/1	0.73	0.34	85,85,85,85	0
23	K	A	1741	1/1	0.74	0.50	150,150,150,150	0
22	MG	A	1765	1/1	0.75	1.19	94,94,94,94	0
22	MG	A	1721	1/1	0.75	0.41	94,94,94,94	0
22	MG	A	1640	1/1	0.75	0.30	62,62,62,62	0
23	K	A	1755	1/1	0.75	1.42	165,165,165,165	0
22	MG	Q	201	1/1	0.76	0.12	101,101,101,101	0
22	MG	A	1731	1/1	0.76	0.72	95,95,95,95	0
22	MG	A	1724	1/1	0.76	0.24	74,74,74,74	0
22	MG	A	1683	1/1	0.76	0.24	100,100,100,100	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
22	MG	A	1609	1/1	0.77	0.64	83,83,83,83	0
22	MG	A	1615	1/1	0.77	0.70	107,107,107,107	0
22	MG	D	302	1/1	0.77	0.11	73,73,73,73	0
23	K	A	1744	1/1	0.77	0.27	195,195,195,195	0
23	K	A	1752	1/1	0.77	0.77	138,138,138,138	0
22	MG	N	102	1/1	0.77	0.34	71,71,71,71	0
23	K	A	1740	1/1	0.78	0.39	122,122,122,122	0
22	MG	A	1681	1/1	0.79	0.25	89,89,89,89	0
22	MG	A	1815	1/1	0.79	0.21	79,79,79,79	0
22	MG	A	1801	1/1	0.80	0.44	89,89,89,89	0
22	MG	A	1774	1/1	0.80	0.28	76,76,76,76	0
22	MG	A	1624	1/1	0.80	0.72	113,113,113,113	0
22	MG	A	1817	1/1	0.80	0.36	101,101,101,101	0
22	MG	A	1695	1/1	0.80	0.73	98,98,98,98	0
23	K	A	1745	1/1	0.80	0.56	147,147,147,147	0
23	K	A	1747	1/1	0.80	0.29	147,147,147,147	0
22	MG	A	1808	1/1	0.80	0.54	91,91,91,91	0
22	MG	A	1760	1/1	0.80	0.38	73,73,73,73	0
23	K	A	1759	1/1	0.80	1.08	167,167,167,167	0
24	NMY	A	1824	42/42	0.80	0.39	76,172,227,228	0
22	MG	A	1677	1/1	0.81	0.92	88,88,88,88	0
22	MG	D	303	1/1	0.81	0.69	93,93,93,93	0
22	MG	A	1625	1/1	0.82	0.23	97,97,97,97	0
22	MG	A	1816	1/1	0.82	0.63	92,92,92,92	0
22	MG	A	1613	1/1	0.82	0.90	87,87,87,87	0
23	K	A	1754	1/1	0.82	0.22	170,170,170,170	0
22	MG	A	1610	1/1	0.82	0.21	58,58,58,58	0
22	MG	A	1697	1/1	0.82	0.48	102,102,102,102	0
22	MG	A	1646	1/1	0.82	0.54	97,97,97,97	0
22	MG	A	1777	1/1	0.83	0.49	104,104,104,104	0
22	MG	A	1797	1/1	0.83	0.20	89,89,89,89	0
22	MG	H	201	1/1	0.83	0.18	90,90,90,90	0
24	NMY	A	1823	42/42	0.83	0.32	104,173,194,228	0
22	MG	A	1764	1/1	0.83	0.98	81,81,81,81	0
23	K	A	1746	1/1	0.84	0.47	186,186,186,186	0
22	MG	P	103	1/1	0.84	0.39	95,95,95,95	0
22	MG	A	1661	1/1	0.84	0.40	81,81,81,81	0
22	MG	A	1668	1/1	0.84	0.78	97,97,97,97	0
22	MG	A	1714	1/1	0.84	0.29	92,92,92,92	0
22	MG	L	201	1/1	0.84	0.56	109,109,109,109	0
22	MG	A	1641	1/1	0.84	0.82	87,87,87,87	0
22	MG	P	102	1/1	0.84	0.12	88,88,88,88	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
22	MG	A	1662	1/1	0.85	0.30	83,83,83,83	0
23	K	A	1749	1/1	0.85	0.92	146,146,146,146	0
23	K	A	1736	1/1	0.85	0.14	125,125,125,125	0
22	MG	A	1665	1/1	0.85	0.45	103,103,103,103	0
22	MG	A	1784	1/1	0.85	0.38	94,94,94,94	0
23	K	A	1758	1/1	0.85	0.26	168,168,168,168	0
22	MG	A	1786	1/1	0.85	0.46	87,87,87,87	0
22	MG	A	1655	1/1	0.85	0.81	84,84,84,84	0
22	MG	A	1792	1/1	0.85	0.16	82,82,82,82	0
22	MG	A	1651	1/1	0.86	0.79	73,73,73,73	0
22	MG	A	1617	1/1	0.86	0.35	81,81,81,81	0
22	MG	A	1712	1/1	0.86	0.23	78,78,78,78	0
22	MG	A	1638	1/1	0.86	0.44	80,80,80,80	0
22	MG	A	1782	1/1	0.86	0.55	82,82,82,82	0
22	MG	A	1821	1/1	0.86	0.25	227,227,227,227	0
22	MG	A	1620	1/1	0.87	0.23	75,75,75,75	0
23	K	A	1751	1/1	0.87	0.12	153,153,153,153	0
22	MG	A	1611	1/1	0.87	1.06	89,89,89,89	0
22	MG	A	1685	1/1	0.88	0.55	72,72,72,72	0
22	MG	A	1800	1/1	0.88	0.35	82,82,82,82	0
22	MG	A	1689	1/1	0.88	0.25	77,77,77,77	0
22	MG	A	1691	1/1	0.88	0.64	94,94,94,94	0
22	MG	A	1761	1/1	0.88	0.43	79,79,79,79	0
22	MG	A	1692	1/1	0.88	0.68	81,81,81,81	0
22	MG	A	1680	1/1	0.88	0.84	70,70,70,70	0
22	MG	A	1653	1/1	0.88	0.17	86,86,86,86	0
22	MG	A	1779	1/1	0.89	0.44	88,88,88,88	0
22	MG	H	202	1/1	0.89	0.04	204,204,204,204	0
22	MG	A	1693	1/1	0.89	0.63	104,104,104,104	0
22	MG	A	1701	1/1	0.89	0.08	76,76,76,76	0
22	MG	P	101	1/1	0.89	0.60	89,89,89,89	0
22	MG	A	1650	1/1	0.90	0.69	88,88,88,88	0
23	K	A	1748	1/1	0.90	0.38	119,119,119,119	0
22	MG	A	1723	1/1	0.90	1.16	77,77,77,77	0
23	K	A	1750	1/1	0.90	0.96	137,137,137,137	0
22	MG	A	1790	1/1	0.90	0.85	69,69,69,69	0
22	MG	A	1762	1/1	0.90	0.41	76,76,76,76	0
22	MG	A	1718	1/1	0.90	0.12	66,66,66,66	0
22	MG	A	1626	1/1	0.90	0.93	75,75,75,75	0
22	MG	A	1601	1/1	0.90	0.88	92,92,92,92	0
22	MG	A	1798	1/1	0.90	0.13	81,81,81,81	0
22	MG	A	1732	1/1	0.90	0.25	61,61,61,61	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
22	MG	A	1773	1/1	0.90	1.06	89,89,89,89	0
22	MG	A	1629	1/1	0.91	0.37	70,70,70,70	0
22	MG	A	1783	1/1	0.91	1.04	105,105,105,105	0
22	MG	A	1803	1/1	0.91	0.52	78,78,78,78	0
22	MG	A	1767	1/1	0.91	0.20	116,116,116,116	0
22	MG	A	1631	1/1	0.91	0.50	110,110,110,110	0
22	MG	A	1603	1/1	0.91	0.09	90,90,90,90	0
22	MG	K	201	1/1	0.91	0.15	75,75,75,75	0
22	MG	A	1735	1/1	0.91	1.49	86,86,86,86	0
22	MG	A	1643	1/1	0.91	0.50	69,69,69,69	0
22	MG	A	1811	1/1	0.91	0.19	82,82,82,82	0
23	K	A	1753	1/1	0.91	0.20	162,162,162,162	0
22	MG	A	1644	1/1	0.91	0.83	80,80,80,80	0
22	MG	A	1813	1/1	0.91	0.88	99,99,99,99	0
23	K	A	1757	1/1	0.91	0.16	145,145,145,145	0
22	MG	A	1686	1/1	0.91	0.15	73,73,73,73	0
22	MG	A	1778	1/1	0.91	0.58	91,91,91,91	0
22	MG	A	1645	1/1	0.91	0.59	69,69,69,69	0
22	MG	A	1725	1/1	0.91	0.23	57,57,57,57	0
22	MG	A	1654	1/1	0.92	0.59	89,89,89,89	0
22	MG	A	1734	1/1	0.92	0.12	70,70,70,70	0
22	MG	A	1602	1/1	0.92	0.68	84,84,84,84	0
22	MG	A	1802	1/1	0.92	0.09	79,79,79,79	0
23	K	A	1739	1/1	0.92	0.19	137,137,137,137	0
22	MG	A	1690	1/1	0.92	2.54	81,81,81,81	0
22	MG	A	1728	1/1	0.92	0.07	36,36,36,36	0
22	MG	A	1671	1/1	0.92	0.43	63,63,63,63	0
22	MG	A	1788	1/1	0.93	0.90	78,78,78,78	0
22	MG	A	1621	1/1	0.93	1.04	87,87,87,87	0
22	MG	A	1688	1/1	0.93	0.71	63,63,63,63	0
22	MG	A	1768	1/1	0.93	0.09	113,113,113,113	0
22	MG	E	201	1/1	0.93	0.29	79,79,79,79	0
22	MG	A	1636	1/1	0.93	0.35	21,21,21,21	0
22	MG	A	1630	1/1	0.94	0.59	77,77,77,77	0
22	MG	A	1664	1/1	0.94	0.29	81,81,81,81	0
22	MG	A	1627	1/1	0.94	0.50	50,50,50,50	0
22	MG	A	1667	1/1	0.94	0.44	69,69,69,69	0
22	MG	A	1635	1/1	0.94	0.09	81,81,81,81	0
22	MG	A	1766	1/1	0.94	0.66	81,81,81,81	0
22	MG	A	1670	1/1	0.94	0.26	92,92,92,92	0
22	MG	A	1704	1/1	0.94	0.50	58,58,58,58	0
22	MG	A	1727	1/1	0.94	0.17	92,92,92,92	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
22	MG	A	1791	1/1	0.94	0.69	102,102,102,102	0
22	MG	A	1772	1/1	0.94	0.56	87,87,87,87	0
22	MG	A	1708	1/1	0.94	0.64	69,69,69,69	0
22	MG	A	1710	1/1	0.94	0.42	86,86,86,86	0
22	MG	A	1659	1/1	0.94	0.50	61,61,61,61	0
22	MG	A	1713	1/1	0.94	0.18	91,91,91,91	0
22	MG	A	1674	1/1	0.94	1.33	91,91,91,91	0
22	MG	A	1614	1/1	0.94	1.05	103,103,103,103	0
22	MG	A	1628	1/1	0.95	0.48	64,64,64,64	0
22	MG	A	1684	1/1	0.95	0.51	79,79,79,79	0
22	MG	A	1770	1/1	0.95	0.58	86,86,86,86	0
22	MG	A	1785	1/1	0.95	0.19	95,95,95,95	0
22	MG	A	1673	1/1	0.95	0.35	53,53,53,53	0
22	MG	A	1608	1/1	0.95	1.00	107,107,107,107	0
22	MG	A	1676	1/1	0.95	0.52	80,80,80,80	0
22	MG	A	1658	1/1	0.95	0.35	75,75,75,75	0
23	K	A	1737	1/1	0.95	0.18	135,135,135,135	0
22	MG	A	1679	1/1	0.95	0.73	79,79,79,79	0
22	MG	A	1647	1/1	0.95	0.86	78,78,78,78	0
22	MG	A	1660	1/1	0.95	0.34	69,69,69,69	0
23	K	A	1743	1/1	0.95	0.22	136,136,136,136	0
22	MG	A	1729	1/1	0.95	0.37	70,70,70,70	0
22	MG	A	1616	1/1	0.95	0.97	92,92,92,92	0
22	MG	S	101	1/1	0.96	0.12	92,92,92,92	0
22	MG	A	1719	1/1	0.96	0.39	60,60,60,60	0
22	MG	A	1705	1/1	0.96	0.27	68,68,68,68	0
22	MG	A	1694	1/1	0.96	0.39	52,52,52,52	0
23	K	A	1738	1/1	0.96	0.38	140,140,140,140	0
22	MG	A	1648	1/1	0.96	0.44	58,58,58,58	0
22	MG	A	1663	1/1	0.96	0.58	82,82,82,82	0
22	MG	A	1698	1/1	0.96	0.65	69,69,69,69	0
23	K	A	1756	1/1	0.96	0.43	150,150,150,150	0
22	MG	A	1795	1/1	0.96	0.67	71,71,71,71	0
22	MG	A	1642	1/1	0.96	0.38	62,62,62,62	0
22	MG	A	1819	1/1	0.96	0.07	257,257,257,257	0
24	NMY	A	1822	42/42	0.96	0.19	42,78,109,159	0
22	MG	A	1669	1/1	0.96	0.31	71,71,71,71	0
22	MG	A	1787	1/1	0.96	0.14	73,73,73,73	0
22	MG	A	1678	1/1	0.97	0.33	46,46,46,46	0
22	MG	A	1696	1/1	0.97	0.17	70,70,70,70	0
22	MG	A	1717	1/1	0.97	0.58	108,108,108,108	0
22	MG	A	1687	1/1	0.97	1.69	69,69,69,69	0

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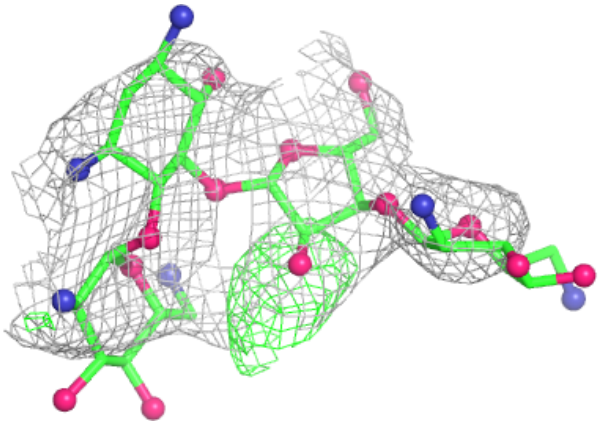
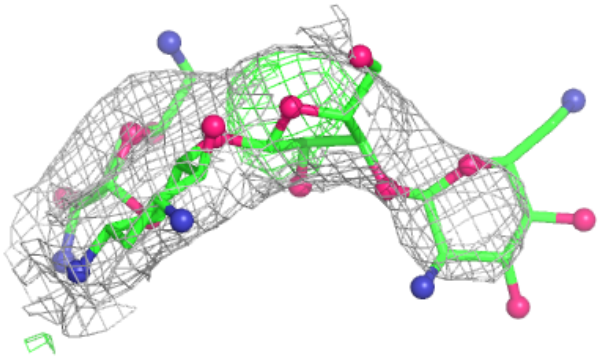
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
22	MG	A	1733	1/1	0.97	0.34	89,89,89,89	0
22	MG	A	1637	1/1	0.97	0.31	57,57,57,57	0
22	MG	A	1604	1/1	0.97	0.66	57,57,57,57	0
22	MG	A	1703	1/1	0.97	0.46	64,64,64,64	0
22	MG	A	1666	1/1	0.97	0.11	63,63,63,63	0
22	MG	A	1633	1/1	0.97	0.49	55,55,55,55	0
22	MG	A	1706	1/1	0.97	0.43	71,71,71,71	0
23	K	A	1742	1/1	0.97	0.87	143,143,143,143	0
22	MG	A	1794	1/1	0.97	0.10	97,97,97,97	0
22	MG	A	1675	1/1	0.97	0.24	59,59,59,59	0
22	MG	A	1622	1/1	0.97	0.74	56,56,56,56	0
22	MG	A	1618	1/1	0.97	1.25	74,74,74,74	0
25	ZN	D	301	1/1	0.97	0.38	95,95,95,95	0
22	MG	A	1606	1/1	0.98	0.63	33,33,33,33	0
22	MG	A	1716	1/1	0.98	0.48	61,61,61,61	0
22	MG	A	1702	1/1	0.98	0.20	64,64,64,64	0
22	MG	S	102	1/1	0.98	0.16	71,71,71,71	0
22	MG	A	1730	1/1	0.98	0.55	83,83,83,83	0
22	MG	A	1623	1/1	0.98	0.73	62,62,62,62	0
22	MG	A	1634	1/1	0.98	0.66	79,79,79,79	0
22	MG	A	1771	1/1	0.98	1.19	71,71,71,71	0
22	MG	A	1605	1/1	0.98	1.17	72,72,72,72	0
22	MG	A	1809	1/1	0.98	0.18	72,72,72,72	0
22	MG	A	1781	1/1	0.98	0.70	85,85,85,85	0
22	MG	A	1804	1/1	0.99	0.23	98,98,98,98	0
22	MG	A	1672	1/1	0.99	0.40	82,82,82,82	0
22	MG	M	201	1/1	0.99	0.47	75,75,75,75	0
22	MG	A	1711	1/1	0.99	0.43	79,79,79,79	0
22	MG	A	1649	1/1	0.99	0.22	52,52,52,52	0
22	MG	A	1652	1/1	0.99	0.22	78,78,78,78	0
22	MG	A	1820	1/1	0.99	0.05	107,107,107,107	0
22	MG	A	1699	1/1	0.99	0.22	51,51,51,51	0
22	MG	A	1715	1/1	0.99	0.37	102,102,102,102	0
22	MG	A	1700	1/1	0.99	0.79	55,55,55,55	0
22	MG	A	1707	1/1	0.99	0.94	63,63,63,63	0
22	MG	A	1632	1/1	0.99	0.37	56,56,56,56	0
22	MG	A	1709	1/1	0.99	0.23	77,77,77,77	0
25	ZN	N	101	1/1	0.99	0.19	108,108,108,108	0

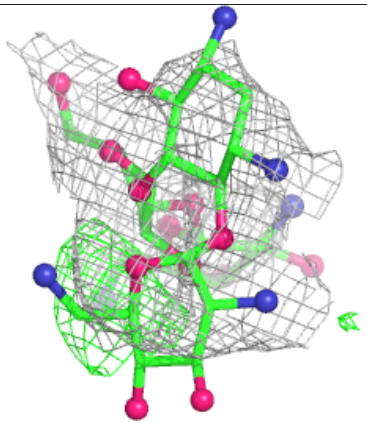
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around NMY A 1824:

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

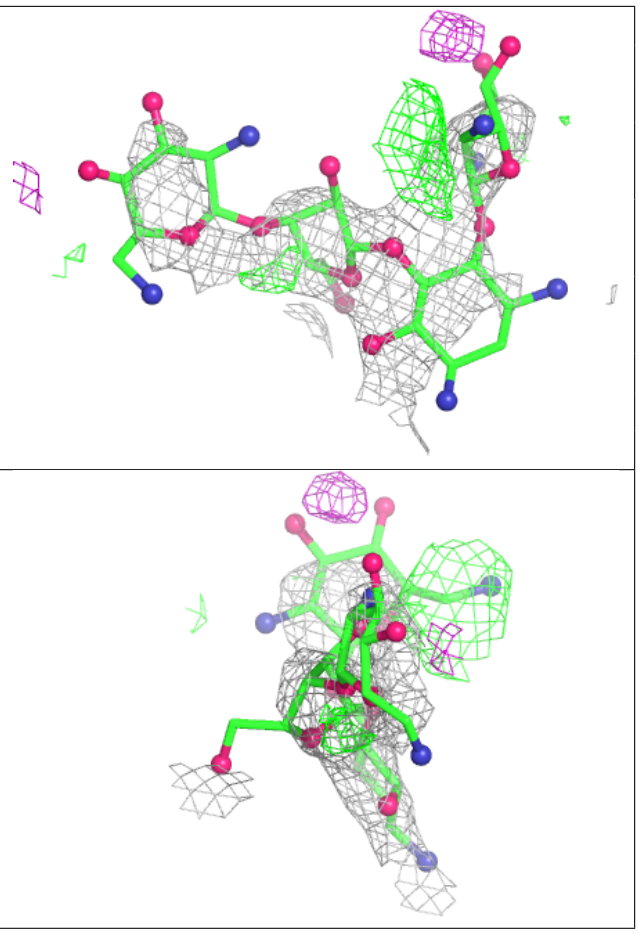


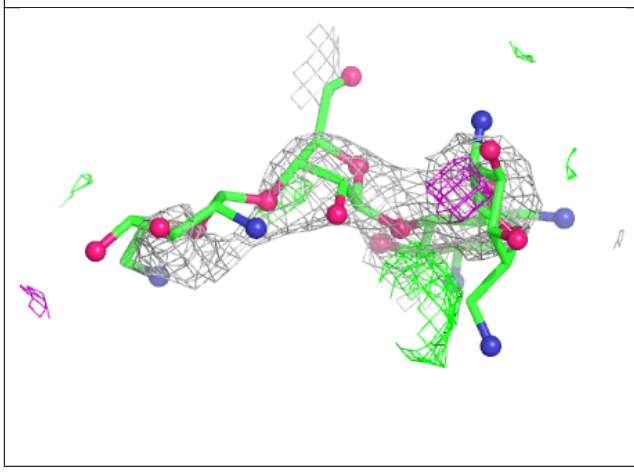




Electron density around NMY A 1823:

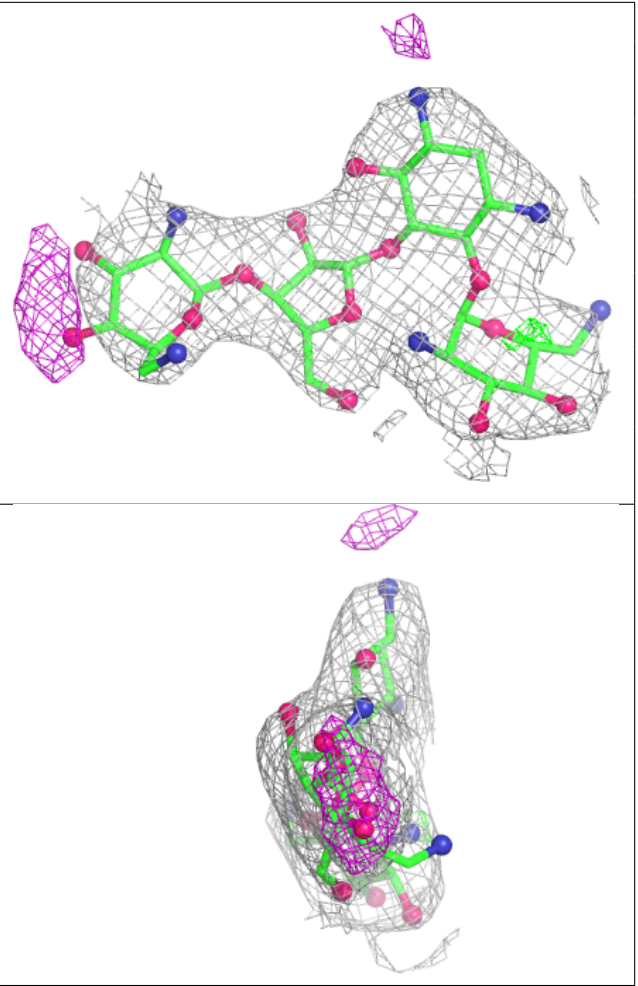
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





Electron density around NMY A 1822:

$2mF_o$-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.