



Full wwPDB X-ray Structure Validation Report ⓘ

May 27, 2024 – 06:09 PM EDT

PDB ID : 4UM3
Title : Engineered Ls-AChBP with alpha4-alpha4 binding pocket in complex with NS3920
Authors : Shahsavar, A.; Kastrup, J.S.; Balle, T.; Gajhede, M.
Deposited on : 2014-05-14
Resolution : 2.70 Å (reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ 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 : **FAILED**
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 Å.

There are no overall percentile quality scores available for this entry.

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 64774 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 ACETYLCHOLINE BINDING PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	201	Total 1619	C 1015	N 280	O 320	S 4	0	2	0
1	B	198	Total 1578	C 991	N 269	O 314	S 4	0	0	0
1	C	201	Total 1608	C 1007	N 278	O 319	S 4	0	0	0
1	D	201	Total 1605	C 1005	N 275	O 321	S 4	0	0	0
1	E	195	Total 1560	C 983	N 265	O 308	S 4	0	1	0
1	F	196	Total 1572	C 989	N 270	O 309	S 4	0	1	0
1	G	200	Total 1597	C 1001	N 274	O 318	S 4	0	0	0
1	H	197	Total 1567	C 985	N 265	O 313	S 4	0	0	0
1	I	200	Total 1603	C 1005	N 274	O 320	S 4	0	1	0
1	J	200	Total 1605	C 1006	N 277	O 318	S 4	0	1	0
1	K	197	Total 1575	C 990	N 268	O 313	S 4	0	1	0
1	L	195	Total 1565	C 985	N 268	O 308	S 4	0	1	0
1	M	198	Total 1590	C 998	N 272	O 316	S 4	0	1	0
1	N	196	Total 1564	C 984	N 264	O 312	S 4	0	1	0
1	O	196	Total 1563	C 983	N 264	O 312	S 4	0	0	0
1	Q	196	Total 1574	C 991	N 269	O 310	S 4	0	2	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	R	198	Total	C	N	O	S	0	0	0
			1585	995	272	314	4			
1	T	194	Total	C	N	O	S	0	0	0
			1552	978	265	305	4			
1	U	197	Total	C	N	O	S	0	0	0
			1575	990	271	310	4			
1	V	199	Total	C	N	O	S	0	0	0
			1589	997	273	315	4			
1	W	197	Total	C	N	O	S	0	0	0
			1570	987	268	311	4			
1	X	202	Total	C	N	O	S	0	0	0
			1611	1008	276	323	4			
1	Y	197	Total	C	N	O	S	0	0	0
			1567	985	265	313	4			
1	Z	196	Total	C	N	O	S	0	0	0
			1564	984	267	309	4			
1	a	197	Total	C	N	O	S	0	1	0
			1575	990	268	313	4			
1	b	198	Total	C	N	O	S	0	1	0
			1590	999	274	313	4			
1	c	200	Total	C	N	O	S	0	2	0
			1604	1005	273	322	4			
1	d	198	Total	C	N	O	S	0	0	0
			1578	991	269	314	4			
1	e	198	Total	C	N	O	S	0	0	0
			1583	994	272	313	4			
1	f	195	Total	C	N	O	S	0	0	0
			1560	982	266	308	4			
1	g	198	Total	C	N	O	S	0	0	0
			1585	995	272	314	4			
1	h	199	Total	C	N	O	S	0	1	0
			1596	1001	273	318	4			
1	i	197	Total	C	N	O	S	0	0	0
			1567	985	265	313	4			
1	j	198	Total	C	N	O	S	0	0	0
			1585	995	272	314	4			
1	k	198	Total	C	N	O	S	0	0	0
			1578	991	269	314	4			
1	l	200	Total	C	N	O	S	0	0	0
			1597	1001	274	318	4			
1	m	201	Total	C	N	O	S	0	0	0
			1605	1005	275	321	4			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	n	196	1559	981	264	310	4	0	0	0

There are 114 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	104	HIS	ARG	engineered mutation	UNP P58154
A	112	GLN	LEU	engineered mutation	UNP P58154
A	114	THR	MET	engineered mutation	UNP P58154
B	104	HIS	ARG	engineered mutation	UNP P58154
B	112	GLN	LEU	engineered mutation	UNP P58154
B	114	THR	MET	engineered mutation	UNP P58154
C	104	HIS	ARG	engineered mutation	UNP P58154
C	112	GLN	LEU	engineered mutation	UNP P58154
C	114	THR	MET	engineered mutation	UNP P58154
D	104	HIS	ARG	engineered mutation	UNP P58154
D	112	GLN	LEU	engineered mutation	UNP P58154
D	114	THR	MET	engineered mutation	UNP P58154
E	104	HIS	ARG	engineered mutation	UNP P58154
E	112	GLN	LEU	engineered mutation	UNP P58154
E	114	THR	MET	engineered mutation	UNP P58154
F	104	HIS	ARG	engineered mutation	UNP P58154
F	112	GLN	LEU	engineered mutation	UNP P58154
F	114	THR	MET	engineered mutation	UNP P58154
G	104	HIS	ARG	engineered mutation	UNP P58154
G	112	GLN	LEU	engineered mutation	UNP P58154
G	114	THR	MET	engineered mutation	UNP P58154
H	104	HIS	ARG	engineered mutation	UNP P58154
H	112	GLN	LEU	engineered mutation	UNP P58154
H	114	THR	MET	engineered mutation	UNP P58154
I	104	HIS	ARG	engineered mutation	UNP P58154
I	112	GLN	LEU	engineered mutation	UNP P58154
I	114	THR	MET	engineered mutation	UNP P58154
J	104	HIS	ARG	engineered mutation	UNP P58154
J	112	GLN	LEU	engineered mutation	UNP P58154
J	114	THR	MET	engineered mutation	UNP P58154
K	104	HIS	ARG	engineered mutation	UNP P58154
K	112	GLN	LEU	engineered mutation	UNP P58154
K	114	THR	MET	engineered mutation	UNP P58154
L	104	HIS	ARG	engineered mutation	UNP P58154
L	112	GLN	LEU	engineered mutation	UNP P58154
L	114	THR	MET	engineered mutation	UNP P58154

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Chain	Residue	Modelled	Actual	Comment	Reference
M	104	HIS	ARG	engineered mutation	UNP P58154
M	112	GLN	LEU	engineered mutation	UNP P58154
M	114	THR	MET	engineered mutation	UNP P58154
N	104	HIS	ARG	engineered mutation	UNP P58154
N	112	GLN	LEU	engineered mutation	UNP P58154
N	114	THR	MET	engineered mutation	UNP P58154
O	104	HIS	ARG	engineered mutation	UNP P58154
O	112	GLN	LEU	engineered mutation	UNP P58154
O	114	THR	MET	engineered mutation	UNP P58154
Q	104	HIS	ARG	engineered mutation	UNP P58154
Q	112	GLN	LEU	engineered mutation	UNP P58154
Q	114	THR	MET	engineered mutation	UNP P58154
R	104	HIS	ARG	engineered mutation	UNP P58154
R	112	GLN	LEU	engineered mutation	UNP P58154
R	114	THR	MET	engineered mutation	UNP P58154
T	104	HIS	ARG	engineered mutation	UNP P58154
T	112	GLN	LEU	engineered mutation	UNP P58154
T	114	THR	MET	engineered mutation	UNP P58154
U	104	HIS	ARG	engineered mutation	UNP P58154
U	112	GLN	LEU	engineered mutation	UNP P58154
U	114	THR	MET	engineered mutation	UNP P58154
V	104	HIS	ARG	engineered mutation	UNP P58154
V	112	GLN	LEU	engineered mutation	UNP P58154
V	114	THR	MET	engineered mutation	UNP P58154
W	104	HIS	ARG	engineered mutation	UNP P58154
W	112	GLN	LEU	engineered mutation	UNP P58154
W	114	THR	MET	engineered mutation	UNP P58154
X	104	HIS	ARG	engineered mutation	UNP P58154
X	112	GLN	LEU	engineered mutation	UNP P58154
X	114	THR	MET	engineered mutation	UNP P58154
Y	104	HIS	ARG	engineered mutation	UNP P58154
Y	112	GLN	LEU	engineered mutation	UNP P58154
Y	114	THR	MET	engineered mutation	UNP P58154
Z	104	HIS	ARG	engineered mutation	UNP P58154
Z	112	GLN	LEU	engineered mutation	UNP P58154
Z	114	THR	MET	engineered mutation	UNP P58154
a	104	HIS	ARG	engineered mutation	UNP P58154
a	112	GLN	LEU	engineered mutation	UNP P58154
a	114	THR	MET	engineered mutation	UNP P58154
b	104	HIS	ARG	engineered mutation	UNP P58154
b	112	GLN	LEU	engineered mutation	UNP P58154
b	114	THR	MET	engineered mutation	UNP P58154

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Chain	Residue	Modelled	Actual	Comment	Reference
c	104	HIS	ARG	engineered mutation	UNP P58154
c	112	GLN	LEU	engineered mutation	UNP P58154
c	114	THR	MET	engineered mutation	UNP P58154
d	104	HIS	ARG	engineered mutation	UNP P58154
d	112	GLN	LEU	engineered mutation	UNP P58154
d	114	THR	MET	engineered mutation	UNP P58154
e	104	HIS	ARG	engineered mutation	UNP P58154
e	112	GLN	LEU	engineered mutation	UNP P58154
e	114	THR	MET	engineered mutation	UNP P58154
f	104	HIS	ARG	engineered mutation	UNP P58154
f	112	GLN	LEU	engineered mutation	UNP P58154
f	114	THR	MET	engineered mutation	UNP P58154
g	104	HIS	ARG	engineered mutation	UNP P58154
g	112	GLN	LEU	engineered mutation	UNP P58154
g	114	THR	MET	engineered mutation	UNP P58154
h	104	HIS	ARG	engineered mutation	UNP P58154
h	112	GLN	LEU	engineered mutation	UNP P58154
h	114	THR	MET	engineered mutation	UNP P58154
i	104	HIS	ARG	engineered mutation	UNP P58154
i	112	GLN	LEU	engineered mutation	UNP P58154
i	114	THR	MET	engineered mutation	UNP P58154
j	104	HIS	ARG	engineered mutation	UNP P58154
j	112	GLN	LEU	engineered mutation	UNP P58154
j	114	THR	MET	engineered mutation	UNP P58154
k	104	HIS	ARG	engineered mutation	UNP P58154
k	112	GLN	LEU	engineered mutation	UNP P58154
k	114	THR	MET	engineered mutation	UNP P58154
l	104	HIS	ARG	engineered mutation	UNP P58154
l	112	GLN	LEU	engineered mutation	UNP P58154
l	114	THR	MET	engineered mutation	UNP P58154
m	104	HIS	ARG	engineered mutation	UNP P58154
m	112	GLN	LEU	engineered mutation	UNP P58154
m	114	THR	MET	engineered mutation	UNP P58154
n	104	HIS	ARG	engineered mutation	UNP P58154
n	112	GLN	LEU	engineered mutation	UNP P58154
n	114	THR	MET	engineered mutation	UNP P58154

- Molecule 2 is a protein called ACETYLCHOLINE BINDING PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	P	201	1608	1007	278	319	4	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
P	104	HIS	ARG	engineered mutation	UNP P58154
P	112	GLN	LEU	engineered mutation	UNP P58154
P	114	THR	MET	engineered mutation	UNP P58154
P	?	-	ASP	deletion	UNP P58154

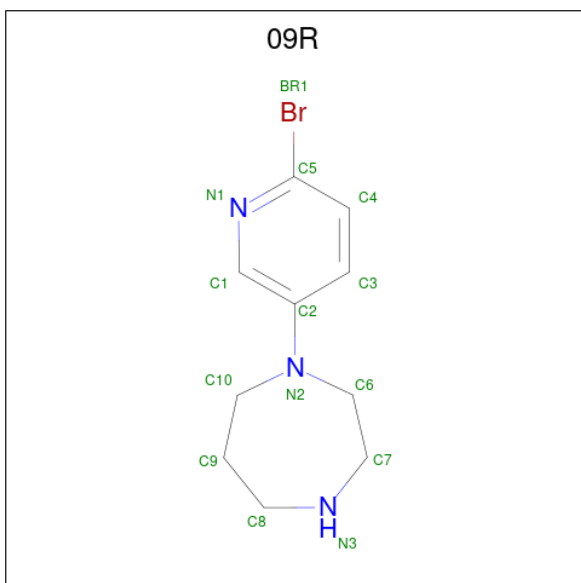
- Molecule 3 is a protein called ACETYLCHOLINE BINDING PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	S	201	1603	1004	276	319	4	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S	104	HIS	ARG	engineered mutation	UNP P58154
S	112	GLN	LEU	engineered mutation	UNP P58154
S	114	THR	MET	engineered mutation	UNP P58154
S	131	GLN	GLU	conflict	UNP P58154

- Molecule 4 is 1-(6-bromopyridin-3-yl)-1,4-diazepane (three-letter code: 09R) (formula: C₁₀H₁₄BrN₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	Br	C	N		
4	A	1	14	1	10	3	0	0

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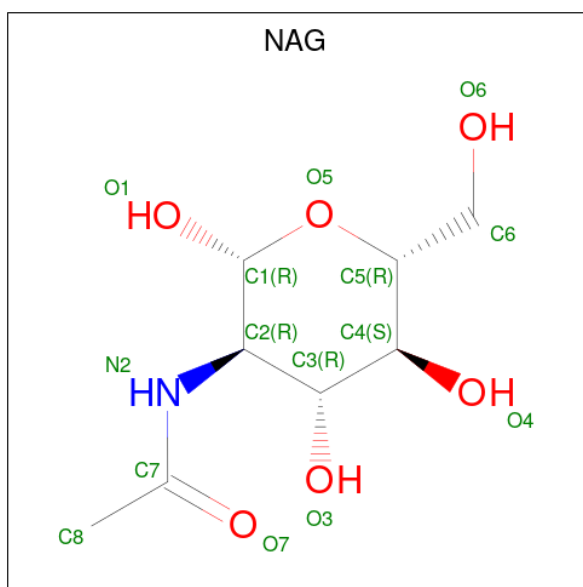
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	Br	C	N		
4	B	1	14	1	10	3	0	0
4	C	1	14	1	10	3	0	0
4	D	1	14	1	10	3	0	0
4	E	1	14	1	10	3	0	0
4	F	1	14	1	10	3	0	0
4	G	1	14	1	10	3	0	0
4	H	1	14	1	10	3	0	0
4	I	1	14	1	10	3	0	0
4	J	1	14	1	10	3	0	0
4	K	1	14	1	10	3	0	0
4	L	1	14	1	10	3	0	0
4	M	1	14	1	10	3	0	0
4	N	1	14	1	10	3	0	0
4	O	1	14	1	10	3	0	0
4	P	1	14	1	10	3	0	0
4	Q	1	14	1	10	3	0	0
4	R	1	14	1	10	3	0	0
4	S	1	14	1	10	3	0	0
4	T	1	14	1	10	3	0	0
4	U	1	14	1	10	3	0	0
4	V	1	14	1	10	3	0	0

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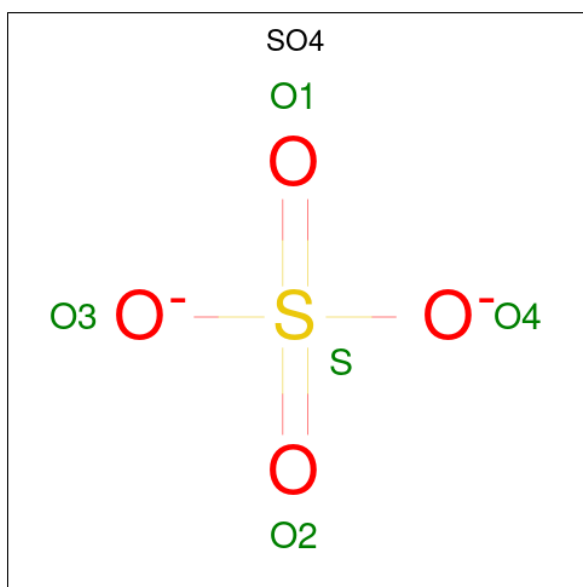
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	Br	C	N		
4	W	1	14	1	10	3	0	0
4	X	1	14	1	10	3	0	0
4	Y	1	14	1	10	3	0	0
4	Z	1	14	1	10	3	0	0
4	a	1	14	1	10	3	0	0
4	b	1	14	1	10	3	0	0
4	c	1	14	1	10	3	0	0
4	d	1	14	1	10	3	0	0
4	f	1	14	1	10	3	0	0
4	f	1	14	1	10	3	0	0
4	g	1	14	1	10	3	0	0
4	h	1	14	1	10	3	0	0
4	i	1	14	1	10	3	0	0
4	j	1	14	1	10	3	0	0
4	k	1	14	1	10	3	0	0
4	l	1	14	1	10	3	0	0
4	m	1	14	1	10	3	0	0
4	n	1	14	1	10	3	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



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

- Molecule 6 is SULFATE ION (three-letter code: SO₄) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
6	V	1	5	4	1	0	0

- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	41	Total O 41 41	0	0
7	B	31	Total O 31 31	0	0
7	C	25	Total O 25 25	0	0
7	D	26	Total O 26 26	0	0
7	E	25	Total O 25 25	0	0
7	F	29	Total O 29 29	0	0
7	G	29	Total O 29 29	0	0
7	H	22	Total O 22 22	0	0
7	I	28	Total O 28 28	0	0
7	J	37	Total O 37 37	0	0
7	K	29	Total O 29 29	0	0
7	L	23	Total O 23 23	0	0
7	M	19	Total O 19 19	0	0
7	N	21	Total O 21 21	0	0
7	O	30	Total O 30 30	0	0
7	P	40	Total O 40 40	0	0
7	Q	37	Total O 37 37	0	0
7	R	27	Total O 27 27	0	0
7	S	28	Total O 28 28	0	0
7	T	31	Total O 31 31	0	0
7	U	30	Total O 30 30	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	V	44	Total O 44 44	0	0
7	W	28	Total O 28 28	0	0
7	X	28	Total O 28 28	0	0
7	Y	16	Total O 16 16	0	0
7	Z	23	Total O 23 23	0	0
7	a	16	Total O 16 16	0	0
7	b	9	Total O 9 9	0	0
7	c	3	Total O 3 3	0	0
7	d	19	Total O 19 19	0	0
7	e	3	Total O 3 3	0	0
7	f	2	Total O 2 2	0	0
7	g	1	Total O 1 1	0	0
7	h	7	Total O 7 7	0	0
7	i	5	Total O 5 5	0	0
7	j	2	Total O 2 2	0	0
7	k	7	Total O 7 7	0	0
7	l	6	Total O 6 6	0	0
7	m	2	Total O 2 2	0	0
7	n	7	Total O 7 7	0	0

SEQUENCE-PLOTS INFOmissingINFO

3 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	135.49Å 145.42Å 234.91Å 90.00° 101.29° 90.00°	Depositor
Resolution (Å)	30.07 – 2.70	Depositor
% Data completeness (in resolution range)	99.5 (30.07-2.70)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.70 (at 2.72Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.198 , 0.244	Depositor
Wilson B-factor (Å ²)	44.8	Xtriage
Anisotropy	0.622	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.40$, $\langle L^2 \rangle = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	64774	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.90% 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.

4 Model quality [i](#)

4.1 Standard geometry [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

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

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

4.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

4.6 Ligand geometry [i](#)

44 ligands are modelled in this entry.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

4.7 Other polymers

There are no such residues in this entry.

4.8 Polymer linkage issues

There are no chain breaks in this entry.

5 Fit of model and data

5.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

5.2 Non-standard residues in protein, DNA, RNA chains

EDS failed to run properly - this section is therefore empty.

5.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

5.4 Ligands

EDS failed to run properly - this section is therefore empty.

5.5 Other polymers

EDS failed to run properly - this section is therefore empty.