



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 2, 2024 – 06:14 PM EST

PDB ID : 3W1B
Title : Crystal Structure of Human DNA ligase IV-Artemis Complex (Mercury Derivative)
Authors : Ochi, T.; Blundell, T.L.
Deposited on : 2012-11-14
Resolution : 2.40 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.21
EDS : 3.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.004 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.40

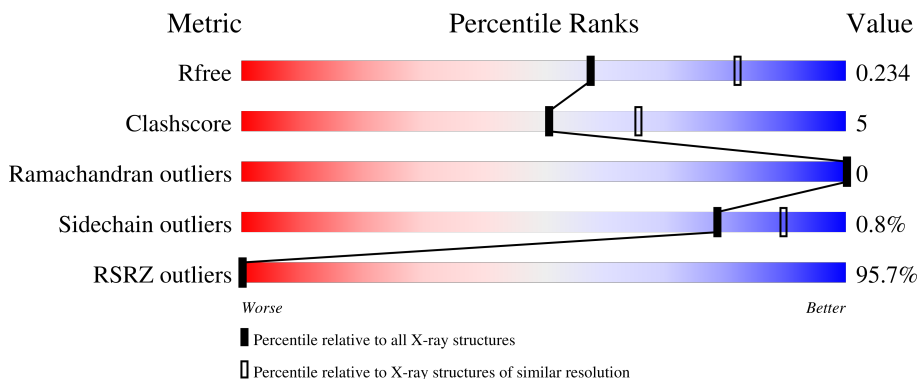
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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}	164625	4642 (2.40-2.40)
Clashscore	180529	5218 (2.40-2.40)
Ramachandran outliers	177936	5158 (2.40-2.40)
Sidechain outliers	177891	5159 (2.40-2.40)
RSRZ outliers	164620	4642 (2.40-2.40)

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

Mol	Chain	Length	Quality of chain
1	A	610	92% (0-3 outliers), 85% (0-2 outliers), 11% (1 outlier), 0% (2 outliers), 0% (3+ outliers), 0% (not modelled)
2	B	11	91% (0-3 outliers), 64% (0-2 outliers), 27% (1 outlier), 9% (2 outliers), 0% (3+ outliers), 9% (not modelled)

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
4	SO4	A	702	-	-	X	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 5003 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 DNA ligase 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	589	4638	2957	792	856	33	0	0	0

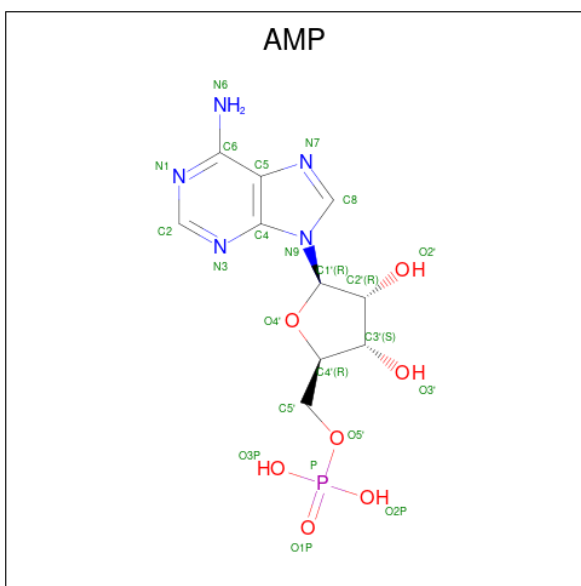
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	THR	-	expression tag	UNP P49917

- Molecule 2 is a protein called Artemis-derived peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	B	10	85	61	13	11	0	0	0

- Molecule 3 is ADENOSINE MONOPHOSPHATE (three-letter code: AMP) (formula: C₁₀H₁₄N₅O₇P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	P	0	0
			4	3	1		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



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

- Molecule 5 is MERCURY (II) ION (three-letter code: HG) (formula: Hg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	9	Total Hg 9 9	0	0

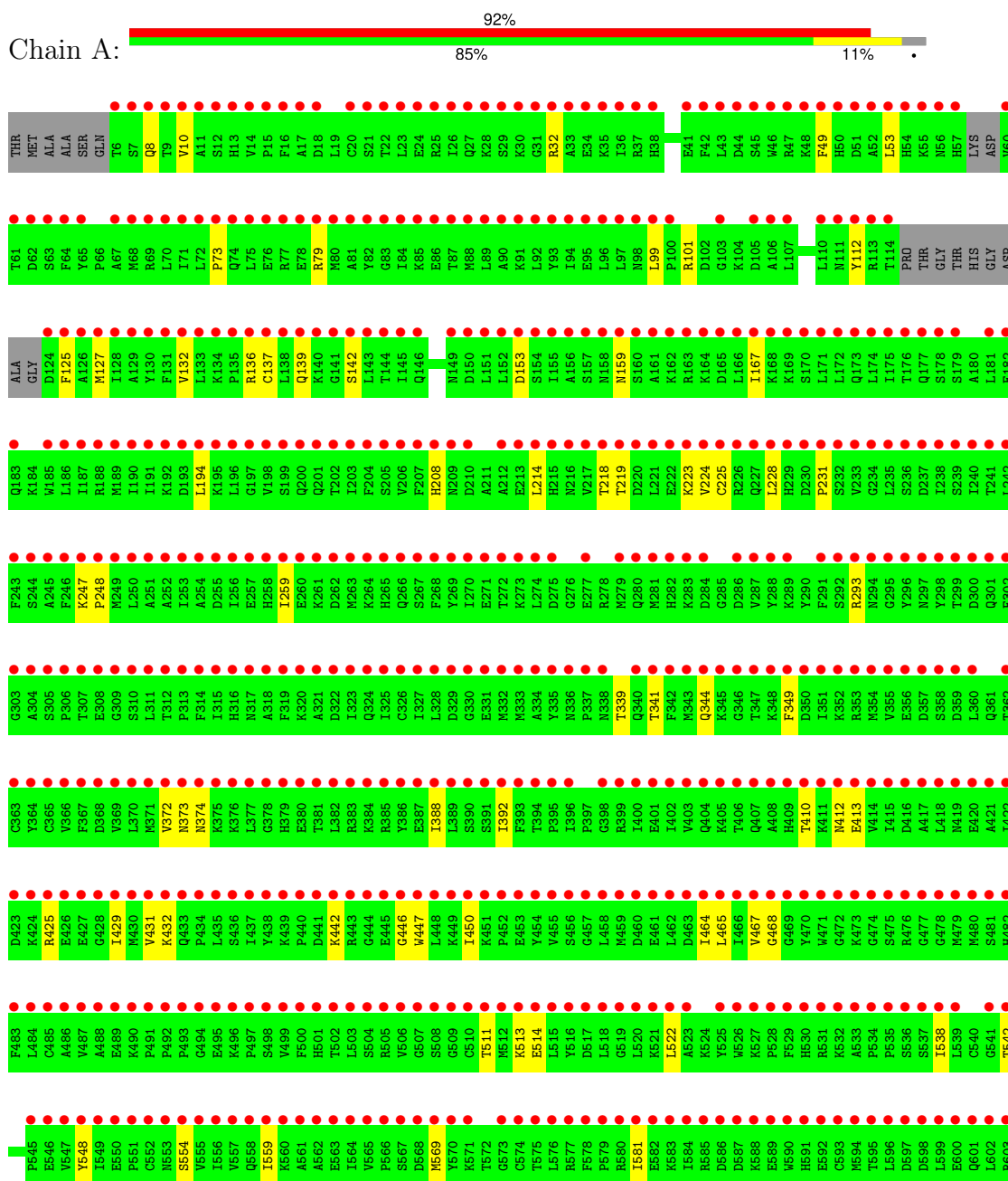
- Molecule 6 is water.

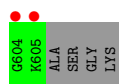
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	216	Total O 216 216	0	0
6	B	1	Total O 1 1	0	0

3 Residue-property plots

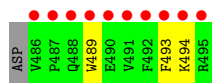
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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: DNA ligase 4





- Molecule 2: Artemis-derived peptide



4 Data and refinement statistics

Property	Value	Source
Space group	P 2 21 21	Depositor
Cell constants a, b, c, α , β , γ	68.63Å 105.21Å 122.04Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	59.82 – 2.40 59.82 – 2.40	Depositor EDS
% Data completeness (in resolution range)	98.9 (59.82-2.40) 98.9 (59.82-2.40)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.12 (at 2.40Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, R_{free}	0.176 , 0.225 0.189 , 0.234	Depositor DCC
R_{free} test set	1991 reflections (5.70%)	wwPDB-VP
Wilson B-factor (Å ²)	38.1	Xtrriage
Anisotropy	0.153	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 52.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.55	EDS
Total number of atoms	5003	wwPDB-VP
Average B, all atoms (Å ²)	43.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.79% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, AMP, HG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.42	0/4735	0.56	0/6396
2	B	0.40	0/89	0.56	0/121
All	All	0.42	0/4824	0.56	0/6517

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	4638	0	4574	45	0
2	B	85	0	77	3	0
3	A	4	0	0	0	0
4	A	50	0	0	3	0
5	A	9	0	0	0	0
6	A	216	0	0	3	0
6	B	1	0	0	0	0
All	All	5003	0	4651	48	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 5.

All (48) 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:373:ASN:O	1:A:374:ASN:HB2	1.68	0.90
1:A:99:LEU:O	1:A:101:ARG:NH1	2.20	0.73
1:A:425:ARG:NH2	1:A:581:ILE:O	2.21	0.73
1:A:32:ARG:NH1	4:A:702:SO4:O4	2.24	0.67
1:A:542:THR:HB	1:A:569:MET:HA	1.77	0.67
1:A:218:THR:O	1:A:218:THR:OG1	2.14	0.65
1:A:410:THR:HG22	1:A:412:ASN:H	1.63	0.64
1:A:410:THR:HB	1:A:413:GLU:HG3	1.86	0.57
1:A:464:ILE:HD11	1:A:559:ILE:HD12	1.86	0.57
1:A:373:ASN:O	1:A:374:ASN:CB	2.40	0.55
1:A:79:ARG:HD3	1:A:153:ASP:OD1	2.09	0.53
1:A:223:LYS:NZ	6:A:1011:HOH:O	2.40	0.53
1:A:410:THR:HG22	1:A:412:ASN:N	2.27	0.50
1:A:293:ARG:HD2	4:A:703:SO4:O4	2.12	0.50
1:A:429:ILE:HG22	1:A:450:ILE:HB	1.94	0.49
1:A:132:VAL:O	1:A:136:ARG:NH1	2.45	0.49
1:A:127:MET:HE1	6:A:986:HOH:O	2.14	0.48
1:A:349:PHE:CE2	1:A:513:LYS:HB3	2.49	0.47
2:B:489:TRP:CE2	2:B:493:PHE:HB2	2.49	0.47
1:A:208:HIS:CD2	1:A:231:PRO:HA	2.50	0.46
1:A:8:GLN:HG3	1:A:53:LEU:HD21	1.98	0.46
1:A:349:PHE:CD2	1:A:513:LYS:HB3	2.51	0.46
1:A:465:LEU:HD11	1:A:554:SER:HB3	1.98	0.45
1:A:73:PRO:HG3	1:A:194:LEU:HD13	1.98	0.45
1:A:219:THR:N	6:A:901:HOH:O	2.50	0.45
1:A:388:ILE:O	1:A:392:ILE:HD12	2.17	0.45
1:A:214:LEU:HD23	1:A:224:VAL:HA	1.99	0.44
1:A:372:VAL:HG13	1:A:372:VAL:O	2.17	0.44
1:A:467:VAL:HB	1:A:538:ILE:HD13	1.99	0.44
1:A:159:ASN:HA	1:A:167:ILE:HD11	2.00	0.44
1:A:132:VAL:HG13	1:A:136:ARG:NH1	2.32	0.44
1:A:248:PRO:HG2	1:A:293:ARG:HB2	2.00	0.43
1:A:137:CYS:SG	1:A:139:GLN:HG2	2.59	0.43
1:A:339:THR:O	1:A:341:THR:HG23	2.18	0.43
1:A:112:TYR:CE2	1:A:125:PHE:HB2	2.53	0.43
1:A:432:LYS:HA	1:A:446:GLY:O	2.19	0.43
1:A:344:GLN:OE1	1:A:425:ARG:NH1	2.51	0.43
1:A:425:ARG:HD3	1:A:511:THR:OG1	2.19	0.43
1:A:10:VAL:HG13	1:A:49:PHE:HD2	1.85	0.42
1:A:259:ILE:HD11	1:A:431:VAL:HG11	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:32:ARG:HD2	4:A:702:SO4:O4	2.19	0.42
1:A:442:LYS:HD3	1:A:442:LYS:HA	1.81	0.42
2:B:489:TRP:CZ2	2:B:493:PHE:HB2	2.55	0.42
2:B:494:LYS:HD3	2:B:494:LYS:HA	1.77	0.41
1:A:247:LYS:HA	1:A:248:PRO:HD3	1.95	0.41
1:A:208:HIS:CD2	1:A:228:LEU:HB3	2.56	0.41
1:A:432:LYS:HE2	1:A:447:TRP:CD2	2.55	0.41
1:A:468:GLY:HA2	1:A:548:TYR:HA	2.03	0.41

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	
1	A	583/610 (96%)	564 (97%)	19 (3%)	0	100	100
2	B	8/11 (73%)	7 (88%)	1 (12%)	0	100	100
All	All	591/621 (95%)	571 (97%)	20 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	499/538 (93%)	495 (99%)	4 (1%)	79	90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	8/11 (73%)	8 (100%)	0	100	100
All	All	507/549 (92%)	503 (99%)	4 (1%)	79	90

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	142	SER
1	A	225	CYS
1	A	514	GLU
1	A	522	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 9 are monoatomic - leaving 11 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
4	SO4	A	711	-	4,4,4	0.21	0	6,6,6	0.20	0
4	SO4	A	708	-	4,4,4	0.20	0	6,6,6	0.22	0
4	SO4	A	704	-	4,4,4	0.28	0	6,6,6	0.26	0
4	SO4	A	705	-	4,4,4	0.25	0	6,6,6	0.17	0
4	SO4	A	707	-	4,4,4	0.28	0	6,6,6	0.09	0
4	SO4	A	710	-	4,4,4	0.22	0	6,6,6	0.18	0
3	AMP	A	701	1	0,3,25	-	-	0,3,38	-	-
4	SO4	A	703	-	4,4,4	0.25	0	6,6,6	0.24	0
4	SO4	A	706	-	4,4,4	0.26	0	6,6,6	0.10	0
4	SO4	A	702	-	4,4,4	0.30	0	6,6,6	0.07	0
4	SO4	A	709	-	4,4,4	0.24	0	6,6,6	0.14	0

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.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	703	SO4	1	0
4	A	702	SO4	2	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

Warning: The R factor obtained from EDS is 0.4747, which does not match the depositor's R factor of 0.1763. Please interpret the results in this section carefully.

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	589/610 (96%)	4.40	563 (95%) 0 0	20, 39, 76, 100	0
2	B	10/11 (90%)	6.02	10 (100%) 0 0	44, 62, 83, 88	0
All	All	599/621 (96%)	4.42	573 (95%) 0 0	20, 39, 77, 100	0

All (573) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	605	LYS	13.9
1	A	114	THR	13.8
1	A	232	SER	11.6
1	A	458	LEU	11.3
1	A	358	SER	11.0
1	A	604	GLY	11.0
1	A	384	LYS	10.9
1	A	494	GLY	10.8
1	A	455	VAL	10.7
1	A	349	PHE	10.0
1	A	92	LEU	9.7
1	A	479	MET	9.1
2	B	486	VAL	9.0
1	A	357	ASP	8.9
2	B	495	ARG	8.9
1	A	456	SER	8.9
1	A	460	ASP	8.8
1	A	25	ARG	8.8
1	A	377	LEU	8.7
1	A	457	GLY	8.7
1	A	57	HIS	8.5
1	A	603	ARG	8.5

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Mol	Chain	Res	Type	RSRZ
1	A	56	ASN	8.4
1	A	477	GLY	8.4
1	A	563	GLU	8.3
1	A	388	ILE	8.2
2	B	489	TRP	8.2
1	A	28	LYS	8.1
1	A	562	ALA	8.1
1	A	7	SER	7.9
1	A	583	LYS	7.9
1	A	454	TYR	7.8
1	A	415	ILE	7.5
1	A	131	PHE	7.5
1	A	319	PHE	7.5
1	A	113	ARG	7.3
1	A	256	ILE	7.2
1	A	112	TYR	7.2
1	A	237	ASP	7.2
1	A	474	GLY	7.2
1	A	492	PRO	7.1
1	A	433	GLN	7.1
1	A	427	GLU	7.0
1	A	259	ILE	7.0
1	A	376	LYS	7.0
1	A	374	ASN	7.0
1	A	602	LEU	7.0
1	A	266	GLN	7.0
1	A	236	SER	7.0
1	A	491	PRO	6.9
1	A	6	THR	6.9
1	A	461	GLU	6.9
1	A	459	MET	6.9
1	A	257	GLU	6.8
1	A	446	GLY	6.8
1	A	306	PRO	6.7
1	A	496	LYS	6.7
1	A	373	ASN	6.7
1	A	453	GLU	6.7
1	A	354	MET	6.7
2	B	494	LYS	6.6
1	A	265	HIS	6.6
1	A	350	ASP	6.6
1	A	478	GLY	6.6

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Mol	Chain	Res	Type	RSRZ
1	A	419	ASN	6.6
1	A	411	LYS	6.6
1	A	437	ILE	6.6
1	A	550	GLU	6.5
1	A	321	ALA	6.4
1	A	269	TYR	6.4
1	A	561	ALA	6.3
1	A	381	THR	6.3
1	A	383	ARG	6.3
1	A	566	PRO	6.3
1	A	372	VAL	6.3
1	A	408	ALA	6.2
1	A	420	GLU	6.2
1	A	431	VAL	6.2
1	A	60	VAL	6.1
1	A	287	VAL	6.1
1	A	375	LYS	6.1
1	A	472	GLY	6.1
1	A	347	THR	6.1
1	A	450	ILE	6.1
1	A	414	VAL	6.1
1	A	545	PRO	6.0
1	A	462	LEU	6.0
1	A	353	ARG	6.0
1	A	571	LYS	6.0
1	A	251	ALA	6.0
1	A	599	LEU	6.0
1	A	162	LYS	6.0
1	A	406	THR	6.0
1	A	475	SER	6.0
1	A	509	GLY	6.0
1	A	100	PRO	5.9
1	A	584	ILE	5.9
1	A	97	LEU	5.9
1	A	515	LEU	5.9
1	A	16	PHE	5.9
1	A	87	THR	5.9
1	A	253	ILE	5.9
1	A	476	ARG	5.8
1	A	577	ARG	5.8
1	A	379	HIS	5.8
1	A	404	GLN	5.8

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Mol	Chain	Res	Type	RSRZ
1	A	49	PHE	5.8
1	A	560	LYS	5.8
1	A	254	ALA	5.8
1	A	262	ASP	5.8
1	A	255	ASP	5.8
1	A	99	LEU	5.8
1	A	137	CYS	5.7
1	A	53	LEU	5.7
1	A	500	PHE	5.7
1	A	303	GLY	5.7
1	A	143	LEU	5.7
1	A	258	HIS	5.7
1	A	186	LEU	5.7
1	A	471	TRP	5.6
1	A	487	VAL	5.6
1	A	503	LEU	5.6
1	A	510	CYS	5.6
1	A	207	PHE	5.6
1	A	508	SER	5.6
1	A	202	THR	5.6
1	A	574	CYS	5.6
1	A	352	LYS	5.6
1	A	405	LYS	5.6
1	A	196	LEU	5.6
1	A	417	ALA	5.6
1	A	8	GLN	5.6
1	A	451	LYS	5.6
1	A	21	SER	5.6
1	A	320	LYS	5.5
1	A	387	GLU	5.5
1	A	323	ILE	5.5
1	A	565	VAL	5.5
1	A	22	THR	5.5
2	B	493	PHE	5.5
1	A	220	ASP	5.5
1	A	348	LYS	5.5
1	A	194	LEU	5.5
1	A	591	HIS	5.5
1	A	416	ASP	5.4
1	A	41	GLU	5.4
1	A	580	ARG	5.4
1	A	168	LYS	5.4

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Mol	Chain	Res	Type	RSRZ
1	A	527	LYS	5.4
1	A	600	GLU	5.4
1	A	418	LEU	5.4
1	A	351	ILE	5.4
1	A	231	PRO	5.4
1	A	511	THR	5.4
1	A	499	VAL	5.4
2	B	491	VAL	5.4
1	A	523	ALA	5.4
1	A	586	ASP	5.4
1	A	88	MET	5.4
1	A	206	VAL	5.4
1	A	595	THR	5.3
1	A	72	LEU	5.3
1	A	165	ASP	5.3
1	A	569	MET	5.3
1	A	533	ALA	5.3
1	A	138	LEU	5.3
1	A	559	ILE	5.3
1	A	537	SER	5.3
1	A	585	ARG	5.2
2	B	488	GLN	5.2
1	A	195	LYS	5.2
1	A	239	SER	5.2
1	A	140	LYS	5.2
1	A	169	LYS	5.2
1	A	601	GLN	5.2
1	A	136	ARG	5.1
1	A	594	MET	5.1
1	A	356	GLU	5.1
1	A	465	LEU	5.1
1	A	216	ASN	5.1
1	A	322	ASP	5.1
1	A	160	SER	5.1
1	A	501	HIS	5.1
1	A	105	ASP	5.1
1	A	473	LYS	5.1
1	A	9	THR	5.1
1	A	128	ILE	5.1
1	A	564	ILE	5.1
1	A	177	GLN	5.1
1	A	536	SER	5.0

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Mol	Chain	Res	Type	RSRZ
1	A	130	TYR	5.0
1	A	234	GLY	5.0
1	A	517	ASP	5.0
1	A	576	LEU	5.0
1	A	526	TRP	5.0
1	A	144	THR	5.0
1	A	250	LEU	5.0
1	A	488	ALA	5.0
1	A	385	ARG	5.0
1	A	422	ILE	5.0
1	A	463	ASP	5.0
1	A	340	GLN	5.0
1	A	444	GLY	4.9
1	A	173	GLN	4.9
1	A	398	GLY	4.9
1	A	590	TRP	4.9
1	A	445	GLU	4.9
1	A	29	SER	4.9
1	A	26	ILE	4.9
1	A	247	LYS	4.9
1	A	597	ASP	4.9
1	A	392	ILE	4.9
1	A	432	LYS	4.9
1	A	154	SER	4.9
1	A	190	ILE	4.9
1	A	442	LYS	4.9
1	A	260	GLU	4.8
1	A	199	SER	4.8
1	A	596	LEU	4.8
1	A	37	ARG	4.8
1	A	252	ALA	4.8
1	A	359	ASP	4.8
1	A	98	ASN	4.8
1	A	141	GLY	4.8
1	A	293	ARG	4.8
1	A	167	ILE	4.8
1	A	91	LYS	4.7
1	A	532	LYS	4.7
1	A	241	THR	4.7
1	A	438	TYR	4.7
1	A	490	LYS	4.7
1	A	593	CYS	4.7

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Mol	Chain	Res	Type	RSRZ
1	A	407	GLN	4.7
1	A	270	ILE	4.7
1	A	423	ASP	4.7
1	A	274	LEU	4.7
2	B	487	PRO	4.7
1	A	428	GLY	4.7
1	A	466	ILE	4.6
1	A	264	LYS	4.6
1	A	469	GLY	4.6
1	A	96	LEU	4.6
1	A	267	SER	4.6
1	A	394	THR	4.6
1	A	111	ASN	4.6
1	A	429	ILE	4.5
1	A	581	ILE	4.5
1	A	579	PRO	4.5
1	A	592	GLU	4.5
1	A	44	ASP	4.5
2	B	492	PHE	4.5
1	A	52	ALA	4.5
1	A	70	LEU	4.5
1	A	298	TYR	4.5
1	A	201	GLN	4.5
1	A	263	MET	4.4
1	A	409	HIS	4.4
1	A	191	ILE	4.4
1	A	484	LEU	4.4
1	A	485	CYS	4.4
1	A	198	VAL	4.4
1	A	268	PHE	4.4
1	A	34	GLU	4.4
1	A	589	GLU	4.4
1	A	145	ILE	4.4
1	A	212	ALA	4.4
1	A	480	MET	4.4
1	A	542	THR	4.3
1	A	481	SER	4.3
1	A	557	VAL	4.3
1	A	570	TYR	4.3
1	A	233	VAL	4.3
1	A	495	GLU	4.3
1	A	531	ARG	4.3

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Mol	Chain	Res	Type	RSRZ
1	A	370	LEU	4.3
1	A	223	LYS	4.3
1	A	380	GLU	4.3
1	A	505	ARG	4.3
1	A	200	GLN	4.3
1	A	519	GLY	4.3
1	A	328	LEU	4.3
1	A	389	LEU	4.3
1	A	325	ILE	4.3
1	A	424	LYS	4.2
1	A	588	LYS	4.2
1	A	79	ARG	4.2
1	A	498	SER	4.2
1	A	346	GLY	4.2
1	A	261	LYS	4.2
1	A	448	LEU	4.2
1	A	204	PHE	4.2
1	A	175	ILE	4.2
1	A	182	GLU	4.2
1	A	38	HIS	4.2
1	A	215	HIS	4.2
1	A	314	PHE	4.2
1	A	295	GLY	4.2
1	A	538	ILE	4.1
1	A	50	HIS	4.1
1	A	273	LYS	4.1
1	A	192	LYS	4.1
1	A	127	MET	4.1
1	A	578	PHE	4.1
1	A	170	SER	4.1
1	A	23	LEU	4.1
1	A	77	ARG	4.1
1	A	271	GLU	4.1
1	A	279	MET	4.1
1	A	288	TYR	4.0
1	A	142	SER	4.0
1	A	364	TYR	4.0
1	A	391	SER	4.0
1	A	452	PRO	4.0
1	A	520	LEU	4.0
1	A	582	GLU	4.0
1	A	163	ARG	4.0

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Mol	Chain	Res	Type	RSRZ
1	A	110	LEU	4.0
1	A	430	MET	4.0
1	A	224	VAL	4.0
1	A	80	MET	3.9
1	A	395	PRO	3.9
1	A	396	ILE	3.9
1	A	464	ILE	3.9
1	A	443	ARG	3.9
1	A	489	GLU	3.9
1	A	294	ASN	3.9
1	A	205	SER	3.9
1	A	567	SER	3.9
1	A	516	TYR	3.9
1	A	218	THR	3.9
1	A	10	VAL	3.9
1	A	193	ASP	3.9
1	A	210	ASP	3.9
1	A	166	LEU	3.9
1	A	249	MET	3.9
1	A	84	ILE	3.9
1	A	506	VAL	3.8
1	A	93	TYR	3.8
1	A	399	ARG	3.8
1	A	435	LEU	3.8
1	A	126	ALA	3.8
1	A	238	ILE	3.8
1	A	317	ASN	3.8
1	A	549	ILE	3.8
1	A	425	ARG	3.8
1	A	42	PHE	3.8
1	A	302	PHE	3.8
1	A	43	LEU	3.8
1	A	330	GLY	3.8
1	A	337	PRO	3.8
1	A	315	ILE	3.8
1	A	32	ARG	3.8
1	A	214	LEU	3.8
1	A	355	VAL	3.8
1	A	368	ASP	3.8
1	A	208	HIS	3.7
1	A	410	THR	3.7
1	A	95	GLU	3.7

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Mol	Chain	Res	Type	RSRZ
1	A	558	GLN	3.7
1	A	61	THR	3.7
1	A	217	VAL	3.7
1	A	440	PRO	3.7
1	A	568	ASP	3.7
1	A	209	ASN	3.7
1	A	534	PRO	3.7
1	A	535	PRO	3.7
1	A	575	THR	3.7
1	A	134	LYS	3.7
1	A	308	GLU	3.7
1	A	507	GLY	3.7
1	A	48	LYS	3.7
1	A	78	GLU	3.7
1	A	401	GLU	3.7
1	A	441	ASP	3.7
1	A	152	LEU	3.6
1	A	172	LEU	3.6
1	A	382	LEU	3.6
1	A	132	VAL	3.6
1	A	386	TYR	3.6
1	A	135	PRO	3.6
1	A	219	THR	3.6
1	A	403	VAL	3.6
1	A	556	ILE	3.6
1	A	51	ASP	3.6
1	A	225	CYS	3.6
1	A	413	GLU	3.6
1	A	230	ASP	3.6
1	A	449	LYS	3.6
1	A	521	LYS	3.6
1	A	367	PHE	3.6
1	A	341	THR	3.6
1	A	421	ALA	3.6
1	A	89	LEU	3.5
1	A	518	LEU	3.5
1	A	439	LYS	3.5
1	A	284	ASP	3.5
1	A	213	GLU	3.5
1	A	197	GLY	3.5
1	A	139	GLN	3.5
1	A	18	ASP	3.5

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Mol	Chain	Res	Type	RSRZ
1	A	157	SER	3.5
1	A	54	HIS	3.5
1	A	248	PRO	3.5
1	A	326	CYS	3.5
1	A	86	GLU	3.4
1	A	297	ASN	3.4
1	A	55	LYS	3.4
1	A	11	ALA	3.4
1	A	362	THR	3.4
1	A	124	ASP	3.4
1	A	342	PHE	3.4
1	A	467	VAL	3.4
1	A	181	LEU	3.4
1	A	360	LEU	3.4
1	A	539	LEU	3.4
1	A	83	GLY	3.4
1	A	555	VAL	3.4
1	A	63	SER	3.4
1	A	311	LEU	3.4
1	A	296	TYR	3.4
1	A	366	VAL	3.4
1	A	434	PRO	3.3
1	A	13	HIS	3.3
1	A	90	ALA	3.3
1	A	483	PHE	3.3
1	A	45	SER	3.3
1	A	222	GLU	3.3
1	A	246	PHE	3.3
1	A	336	ASN	3.3
1	A	327	ILE	3.3
1	A	46	TRP	3.3
1	A	151	LEU	3.3
1	A	300	ASP	3.3
1	A	174	LEU	3.2
1	A	318	ALA	3.2
1	A	331	GLU	3.2
1	A	75	LEU	3.2
1	A	133	LEU	3.2
1	A	67	ALA	3.2
1	A	179	SER	3.2
1	A	240	ILE	3.2
1	A	400	ILE	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	107	LEU	3.1
1	A	335	TYR	3.1
1	A	343	MET	3.1
1	A	15	PRO	3.1
1	A	334	ALA	3.1
1	A	176	THR	3.1
1	A	12	SER	3.1
1	A	493	PRO	3.1
1	A	304	ALA	3.1
1	A	525	TYR	3.1
1	A	447	TRP	3.1
1	A	275	ASP	3.1
1	A	286	ASP	3.1
1	A	369	VAL	3.1
1	A	548	TYR	3.1
1	A	541	GLY	3.0
1	A	289	LYS	3.0
1	A	282	HIS	3.0
1	A	227	GLN	3.0
1	A	291	PHE	3.0
1	A	153	ASP	3.0
1	A	35	LYS	3.0
1	A	106	ALA	3.0
1	A	307	THR	3.0
1	A	363	CYS	3.0
1	A	305	SER	3.0
1	A	281	MET	3.0
1	A	299	THR	3.0
1	A	324	GLN	3.0
1	A	522	LEU	3.0
1	A	243	PHE	3.0
1	A	393	PHE	3.0
1	A	587	ASP	3.0
1	A	529	PHE	2.9
1	A	229	HIS	2.9
1	A	345	LYS	2.9
1	A	36	ILE	2.9
1	A	598	ASP	2.9
1	A	33	ALA	2.9
1	A	31	GLY	2.9
1	A	468	GLY	2.9
1	A	497	PRO	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	280	GLN	2.9
1	A	71	ILE	2.9
1	A	203	ILE	2.9
1	A	244	SER	2.9
1	A	470	TYR	2.9
1	A	528	PRO	2.9
1	A	74	GLN	2.9
1	A	272	THR	2.9
1	A	412	ASN	2.9
1	A	235	LEU	2.8
1	A	378	GLY	2.8
1	A	178	SER	2.8
1	A	573	GLY	2.8
1	A	552	CYS	2.8
1	A	301	GLN	2.8
1	A	277	GLU	2.8
1	A	504	SER	2.8
1	A	486	ALA	2.8
1	A	226	ARG	2.8
1	A	402	ILE	2.8
1	A	17	ALA	2.8
1	A	24	GLU	2.7
1	A	482	HIS	2.7
1	A	436	SER	2.7
1	A	188	ARG	2.7
1	A	158	ASN	2.7
1	A	125	PHE	2.7
1	A	309	GLY	2.7
1	A	64	PHE	2.7
1	A	85	LYS	2.6
1	A	338	ASN	2.6
1	A	27	GLN	2.6
1	A	65	TYR	2.6
1	A	146	GLN	2.6
1	A	371	MET	2.6
1	A	310	SER	2.6
1	A	551	PRO	2.6
1	A	94	ILE	2.6
1	A	513	LYS	2.6
1	A	161	ALA	2.6
1	A	313	PRO	2.6
1	A	242	LEU	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	283	LYS	2.5
1	A	14	VAL	2.5
1	A	187	ILE	2.5
1	A	47	ARG	2.5
1	A	81	ALA	2.5
1	A	514	GLU	2.5
1	A	68	MET	2.5
1	A	73	PRO	2.5
1	A	76	GLU	2.5
1	A	332	MET	2.5
1	A	333	MET	2.5
1	A	530	HIS	2.5
1	A	155	ILE	2.5
1	A	30	LYS	2.4
1	A	156	ALA	2.4
1	A	189	MET	2.4
1	A	20	CYS	2.4
1	A	547	VAL	2.4
1	A	344	GLN	2.4
1	A	62	ASP	2.4
1	A	150	ASP	2.4
1	A	316	HIS	2.4
1	A	546	GLU	2.4
1	A	502	THR	2.3
1	A	553	ASN	2.3
1	A	82	TYR	2.3
1	A	164	LYS	2.3
1	A	159	ASN	2.3
1	A	171	LEU	2.2
1	A	390	SER	2.2
1	A	554	SER	2.2
1	A	69	ARG	2.2
2	B	490	GLU	2.2
1	A	129	ALA	2.2
1	A	312	THR	2.2
1	A	329	ASP	2.2
1	A	426	GLU	2.2
1	A	245	ALA	2.2
1	A	228	LEU	2.2
1	A	365	CYS	2.2
1	A	221	LEU	2.1
1	A	103	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	149	ASN	2.1
1	A	185	TRP	2.1
1	A	512	MET	2.1
1	A	183	GLN	2.1
1	A	292	SER	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	SO4	A	707	5/5	0.22	0.36	111,112,114,117	0
3	AMP	A	701	4/23	0.26	0.35	85,91,125,126	0
4	SO4	A	709	5/5	0.30	0.37	110,111,113,114	0
4	SO4	A	710	5/5	0.41	0.29	117,117,123,124	0
4	SO4	A	706	5/5	0.42	0.41	110,111,116,121	0
4	SO4	A	711	5/5	0.45	0.43	62,65,66,73	0
4	SO4	A	704	5/5	0.48	0.34	62,70,73,78	0
5	HG	A	720	1/1	0.56	0.37	109,109,109,109	1
4	SO4	A	705	5/5	0.58	0.32	64,66,68,69	0
5	HG	A	718	1/1	0.65	0.38	174,174,174,174	1
4	SO4	A	702	5/5	0.66	0.25	79,79,81,82	0
4	SO4	A	708	5/5	0.68	0.32	61,69,72,75	0
4	SO4	A	703	5/5	0.70	0.27	73,73,77,77	0
5	HG	A	715	1/1	0.73	0.22	70,70,70,70	1
5	HG	A	712	1/1	0.82	0.14	69,69,69,69	1
5	HG	A	719	1/1	0.89	0.09	75,75,75,75	1
5	HG	A	717	1/1	0.91	0.19	79,79,79,79	1
5	HG	A	713	1/1	0.94	0.18	69,69,69,69	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
5	HG	A	716	1/1	0.94	0.11	65,65,65,65	1
5	HG	A	714	1/1	0.98	0.04	58,58,58,58	1

6.5 Other polymers [i](#)

There are no such residues in this entry.