



# wwPDB X-ray Structure Validation Summary Report ⓘ

May 27, 2024 – 07:21 PM EDT

PDB ID : 6C50  
Title : Cross-alpha Amyloid-like Structure alphaAmS  
Authors : Liu, L.; Zhang, S.Q.  
Deposited on : 2018-01-13  
Resolution : 2.50 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
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

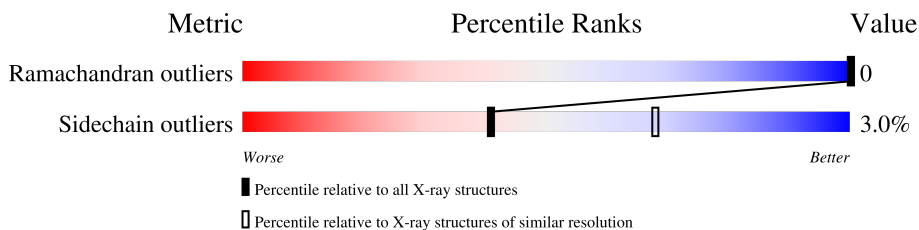
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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))
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 50163 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 Cross-alpha Amyloid-like Structure alphaAmS.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
1	A1	27	209	137	36	36	0	0	1
1	A2	27	209	137	36	36	0	0	1
1	A3	27	209	137	36	36	0	0	1
1	A4	27	209	137	36	36	0	0	1
1	B1	27	209	137	36	36	0	0	1
1	B2	27	209	137	36	36	0	0	1
1	B3	27	209	137	36	36	0	0	1
1	B4	27	209	137	36	36	0	0	1
1	C1	27	209	137	36	36	0	0	1
1	C2	27	209	137	36	36	0	0	1
1	C3	27	209	137	36	36	0	0	1
1	C4	27	209	137	36	36	0	0	1
1	D1	27	209	137	36	36	0	0	1
1	D2	27	209	137	36	36	0	0	1
1	D3	27	209	137	36	36	0	0	1
1	D4	27	209	137	36	36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	E1	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	E2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	E3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	E4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	F1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	F2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	F3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	F4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	G1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	G2	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	G3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	G4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	H1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	H2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	H3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	H4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	I1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	I2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	I3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	I4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	J1	27	Total	C	N	O	0	0	1
			209	137	36	36			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	J2	27	Total 209	C 137	N 36	O 36	0	0	1
1	J3	27	Total 209	C 137	N 36	O 36	0	0	1
1	J4	27	Total 209	C 137	N 36	O 36	0	0	1
1	K1	27	Total 209	C 137	N 36	O 36	0	0	1
1	K2	27	Total 209	C 137	N 36	O 36	0	0	1
1	K3	27	Total 209	C 137	N 36	O 36	0	0	1
1	K4	27	Total 209	C 137	N 36	O 36	0	0	1
1	L1	27	Total 217	C 142	N 39	O 36	0	1	1
1	L2	27	Total 209	C 137	N 36	O 36	0	0	1
1	L3	27	Total 209	C 137	N 36	O 36	0	0	1
1	L4	27	Total 209	C 137	N 36	O 36	0	0	1
1	M1	27	Total 209	C 137	N 36	O 36	0	0	1
1	M2	27	Total 209	C 137	N 36	O 36	0	0	1
1	M3	27	Total 209	C 137	N 36	O 36	0	0	1
1	M4	27	Total 209	C 137	N 36	O 36	0	0	1
1	N1	27	Total 209	C 137	N 36	O 36	0	0	1
1	N2	27	Total 209	C 137	N 36	O 36	0	0	1
1	N3	27	Total 209	C 137	N 36	O 36	0	0	1
1	N4	27	Total 209	C 137	N 36	O 36	0	0	1
1	O1	27	Total 209	C 137	N 36	O 36	0	0	1
1	O2	27	Total 209	C 137	N 36	O 36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	O3	27	Total 209	C 137	N 36	O 36	0	0	1
1	O4	27	Total 209	C 137	N 36	O 36	0	0	1
1	P1	27	Total 209	C 137	N 36	O 36	0	0	1
1	P2	27	Total 209	C 137	N 36	O 36	0	0	1
1	P3	27	Total 209	C 137	N 36	O 36	0	0	1
1	P4	27	Total 209	C 137	N 36	O 36	0	0	1
1	Q1	27	Total 209	C 137	N 36	O 36	0	0	1
1	Q2	27	Total 209	C 137	N 36	O 36	0	0	1
1	Q3	27	Total 209	C 137	N 36	O 36	0	0	1
1	Q4	27	Total 209	C 137	N 36	O 36	0	0	1
1	R1	27	Total 209	C 137	N 36	O 36	0	0	1
1	R2	27	Total 209	C 137	N 36	O 36	0	0	1
1	R3	27	Total 209	C 137	N 36	O 36	0	0	1
1	R4	27	Total 209	C 137	N 36	O 36	0	0	1
1	S1	27	Total 209	C 137	N 36	O 36	0	0	1
1	S2	27	Total 209	C 137	N 36	O 36	0	0	1
1	S3	27	Total 217	C 142	N 39	O 36	0	1	1
1	S4	27	Total 209	C 137	N 36	O 36	0	0	1
1	T1	27	Total 209	C 137	N 36	O 36	0	0	1
1	T2	27	Total 209	C 137	N 36	O 36	0	0	1
1	T3	27	Total 209	C 137	N 36	O 36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	T4	27	Total 209	C 137	N 36	O 36	0	0	1
1	U1	27	Total 209	C 137	N 36	O 36	0	0	1
1	U2	27	Total 209	C 137	N 36	O 36	0	0	1
1	U3	27	Total 209	C 137	N 36	O 36	0	0	1
1	U4	27	Total 209	C 137	N 36	O 36	0	0	1
1	V1	27	Total 209	C 137	N 36	O 36	0	0	1
1	V2	27	Total 209	C 137	N 36	O 36	0	0	1
1	V3	27	Total 209	C 137	N 36	O 36	0	0	1
1	V4	27	Total 209	C 137	N 36	O 36	0	0	1
1	W1	27	Total 209	C 137	N 36	O 36	0	0	1
1	W2	27	Total 209	C 137	N 36	O 36	0	0	1
1	W3	27	Total 209	C 137	N 36	O 36	0	0	1
1	W4	27	Total 209	C 137	N 36	O 36	0	0	1
1	X1	27	Total 209	C 137	N 36	O 36	0	0	1
1	X2	27	Total 209	C 137	N 36	O 36	0	0	1
1	X3	27	Total 209	C 137	N 36	O 36	0	0	1
1	X4	27	Total 209	C 137	N 36	O 36	0	0	1
1	Y1	27	Total 209	C 137	N 36	O 36	0	0	1
1	Y2	27	Total 209	C 137	N 36	O 36	0	0	1
1	Y3	27	Total 209	C 137	N 36	O 36	0	0	1
1	Y4	27	Total 209	C 137	N 36	O 36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	Z1	27	Total 209	C 137	N 36	O 36	0	0	1
1	Z2	27	Total 209	C 137	N 36	O 36	0	0	1
1	Z3	27	Total 209	C 137	N 36	O 36	0	0	1
1	Z4	27	Total 209	C 137	N 36	O 36	0	0	1
1	11	27	Total 209	C 137	N 36	O 36	0	0	1
1	12	27	Total 209	C 137	N 36	O 36	0	0	1
1	13	27	Total 209	C 137	N 36	O 36	0	0	1
1	14	27	Total 209	C 137	N 36	O 36	0	0	1
1	21	27	Total 209	C 137	N 36	O 36	0	0	1
1	22	27	Total 209	C 137	N 36	O 36	0	0	1
1	23	27	Total 209	C 137	N 36	O 36	0	0	1
1	24	27	Total 209	C 137	N 36	O 36	0	0	1
1	31	27	Total 209	C 137	N 36	O 36	0	0	1
1	32	27	Total 217	C 142	N 39	O 36	0	1	1
1	33	27	Total 209	C 137	N 36	O 36	0	0	1
1	34	27	Total 209	C 137	N 36	O 36	0	0	1
1	41	27	Total 209	C 137	N 36	O 36	0	0	1
1	42	27	Total 209	C 137	N 36	O 36	0	0	1
1	43	27	Total 209	C 137	N 36	O 36	0	0	1
1	44	27	Total 209	C 137	N 36	O 36	0	0	1
1	51	27	Total 209	C 137	N 36	O 36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	52	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	53	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	54	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	61	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	62	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	63	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	64	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	71	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	72	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	73	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	74	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	81	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	82	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	83	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	84	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	91	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	92	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	93	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	94	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	a1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	a2	27	Total	C	N	O	0	0	1
			209	137	36	36			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	a3	27	Total 209	C 137	N 36	O 36	0	0	1
1	a4	27	Total 209	C 137	N 36	O 36	0	0	1
1	b1	27	Total 209	C 137	N 36	O 36	0	0	1
1	b2	27	Total 209	C 137	N 36	O 36	0	0	1
1	b3	27	Total 209	C 137	N 36	O 36	0	0	1
1	b4	27	Total 209	C 137	N 36	O 36	0	0	1
1	c1	27	Total 209	C 137	N 36	O 36	0	0	1
1	c2	27	Total 209	C 137	N 36	O 36	0	0	1
1	c3	27	Total 209	C 137	N 36	O 36	0	0	1
1	c4	27	Total 209	C 137	N 36	O 36	0	0	1
1	d1	27	Total 209	C 137	N 36	O 36	0	0	1
1	d2	27	Total 209	C 137	N 36	O 36	0	0	1
1	d3	27	Total 209	C 137	N 36	O 36	0	0	1
1	d4	27	Total 209	C 137	N 36	O 36	0	0	1
1	e1	27	Total 209	C 137	N 36	O 36	0	0	1
1	e2	27	Total 209	C 137	N 36	O 36	0	0	1
1	e3	27	Total 209	C 137	N 36	O 36	0	0	1
1	e4	27	Total 209	C 137	N 36	O 36	0	0	1
1	f1	27	Total 209	C 137	N 36	O 36	0	0	1
1	f2	27	Total 209	C 137	N 36	O 36	0	0	1
1	f3	27	Total 209	C 137	N 36	O 36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	f4	27	Total 209	C 137	N 36	O 36	0	0	1
1	g1	27	Total 209	C 137	N 36	O 36	0	0	1
1	g2	27	Total 209	C 137	N 36	O 36	0	0	1
1	g3	27	Total 209	C 137	N 36	O 36	0	0	1
1	g4	27	Total 209	C 137	N 36	O 36	0	0	1
1	h1	27	Total 209	C 137	N 36	O 36	0	0	1
1	h2	27	Total 209	C 137	N 36	O 36	0	0	1
1	h3	27	Total 209	C 137	N 36	O 36	0	0	1
1	h4	27	Total 209	C 137	N 36	O 36	0	0	1
1	i1	27	Total 209	C 137	N 36	O 36	0	0	1
1	i2	27	Total 209	C 137	N 36	O 36	0	0	1
1	i3	27	Total 209	C 137	N 36	O 36	0	0	1
1	i4	27	Total 209	C 137	N 36	O 36	0	0	1
1	j1	27	Total 209	C 137	N 36	O 36	0	0	1
1	j2	27	Total 209	C 137	N 36	O 36	0	0	1
1	j3	27	Total 209	C 137	N 36	O 36	0	0	1
1	j4	27	Total 209	C 137	N 36	O 36	0	0	1
1	k1	27	Total 209	C 137	N 36	O 36	0	0	1
1	k2	27	Total 209	C 137	N 36	O 36	0	0	1
1	k3	27	Total 217	C 142	N 39	O 36	0	1	1
1	k4	27	Total 209	C 137	N 36	O 36	0	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	l1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	l2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	l3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	l4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	m1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	m2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	m3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	m4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	n1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	n2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	n3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	n4	27	Total	C	N	O	0	0	1
			205	134	35	36			
1	o1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	o2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	o3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	o4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	p1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	p2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	p3	27	Total	C	N	O	0	0	1
			205	134	35	36			
1	p4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	q1	27	Total	C	N	O	0	0	1
			209	137	36	36			

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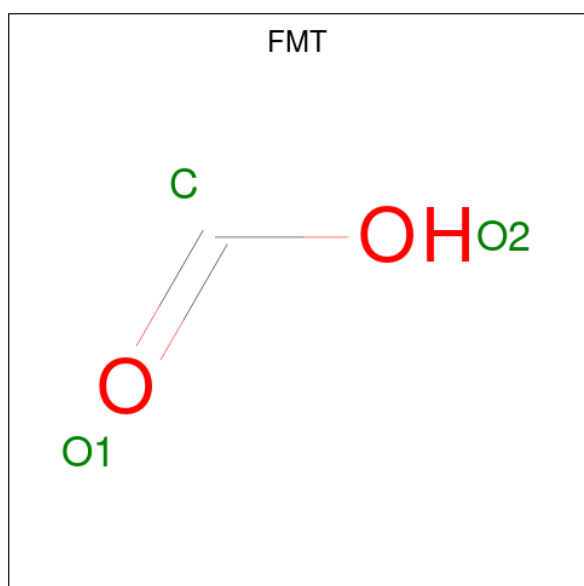
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	q2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	q3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	q4	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	r1	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	r2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	r3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	r4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	s1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	s2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	s3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	s4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	t1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	t2	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	t3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	t4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	u1	27	Total	C	N	O	0	1	1
			217	142	39	36			
1	u2	27	Total	C	N	O	0	1	1
			220	143	40	37			
1	u3	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	u4	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	v1	27	Total	C	N	O	0	0	1
			209	137	36	36			
1	v2	27	Total	C	N	O	0	0	1
			209	137	36	36			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
1	v3	27	Total 209	C 137	N 36	O 36	0	0	1
1	v4	27	Total 209	C 137	N 36	O 36	0	0	1
1	w1	27	Total 209	C 137	N 36	O 36	0	0	1
1	w2	27	Total 209	C 137	N 36	O 36	0	0	1
1	w3	27	Total 209	C 137	N 36	O 36	0	0	1
1	w4	27	Total 209	C 137	N 36	O 36	0	0	1
1	x1	27	Total 209	C 137	N 36	O 36	0	0	1
1	x2	27	Total 209	C 137	N 36	O 36	0	0	1
1	x3	27	Total 209	C 137	N 36	O 36	0	0	1
1	x4	27	Total 209	C 137	N 36	O 36	0	0	1

- Molecule 2 is FORMIC ACID (three-letter code: FMT) (formula: CH<sub>2</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A1	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A1	1	Total 3	C 1	O 2	0	0
2	A3	1	Total 3	C 1	O 2	0	0
2	A4	1	Total 3	C 1	O 2	0	0
2	B3	1	Total 3	C 1	O 2	0	0
2	B4	1	Total 3	C 1	O 2	0	0
2	C2	1	Total 3	C 1	O 2	0	0
2	D1	1	Total 3	C 1	O 2	0	0
2	D2	1	Total 3	C 1	O 2	0	0
2	E1	1	Total 3	C 1	O 2	0	0
2	E3	1	Total 3	C 1	O 2	0	0
2	E4	1	Total 3	C 1	O 2	0	0
2	F3	1	Total 3	C 1	O 2	0	0
2	F4	1	Total 3	C 1	O 2	0	0
2	G2	1	Total 3	C 1	O 2	0	0
2	G3	1	Total 3	C 1	O 2	0	0
2	H1	1	Total 3	C 1	O 2	0	0
2	H2	1	Total 3	C 1	O 2	0	0
2	H3	1	Total 3	C 1	O 2	0	0
2	I3	1	Total 3	C 1	O 2	0	0
2	I4	1	Total 3	C 1	O 2	0	0
2	J2	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	K2	1	Total 3	C 1	O 2	0	0
2	L2	1	Total 3	C 1	O 2	0	0
2	L3	1	Total 3	C 1	O 2	0	0
2	L4	1	Total 3	C 1	O 2	0	0
2	M2	1	Total 3	C 1	O 2	0	0
2	N1	1	Total 3	C 1	O 2	0	0
2	O1	1	Total 3	C 1	O 2	0	0
2	O2	1	Total 3	C 1	O 2	0	0
2	O3	1	Total 3	C 1	O 2	0	0
2	P2	1	Total 3	C 1	O 2	0	0
2	P3	1	Total 3	C 1	O 2	0	0
2	Q2	1	Total 3	C 1	O 2	0	0
2	Q3	1	Total 3	C 1	O 2	0	0
2	R4	1	Total 3	C 1	O 2	0	0
2	S1	1	Total 3	C 1	O 2	0	0
2	S2	1	Total 3	C 1	O 2	0	0
2	T2	1	Total 3	C 1	O 2	0	0
2	T3	1	Total 3	C 1	O 2	0	0
2	U1	1	Total 3	C 1	O 2	0	0
2	U2	1	Total 3	C 1	O 2	0	0
2	W4	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	X4	1	Total 3	C 1	O 2	0	0
2	Y4	1	Total 3	C 1	O 2	0	0
2	Z1	1	Total 3	C 1	O 2	0	0
2	Z3	1	Total 3	C 1	O 2	0	0
2	Z4	1	Total 3	C 1	O 2	0	0
2	13	1	Total 3	C 1	O 2	0	0
2	14	1	Total 3	C 1	O 2	0	0
2	24	1	Total 3	C 1	O 2	0	0
2	32	1	Total 3	C 1	O 2	0	0
2	42	1	Total 3	C 1	O 2	0	0
2	43	1	Total 3	C 1	O 2	0	0
2	44	1	Total 3	C 1	O 2	0	0
2	62	1	Total 3	C 1	O 2	0	0
2	72	1	Total 3	C 1	O 2	0	0
2	81	1	Total 3	C 1	O 2	0	0
2	82	1	Total 3	C 1	O 2	0	0
2	83	1	Total 3	C 1	O 2	0	0
2	92	1	Total 3	C 1	O 2	0	0
2	93	1	Total 3	C 1	O 2	0	0
2	a4	1	Total 3	C 1	O 2	0	0
2	b1	1	Total 3	C 1	O 2	0	0

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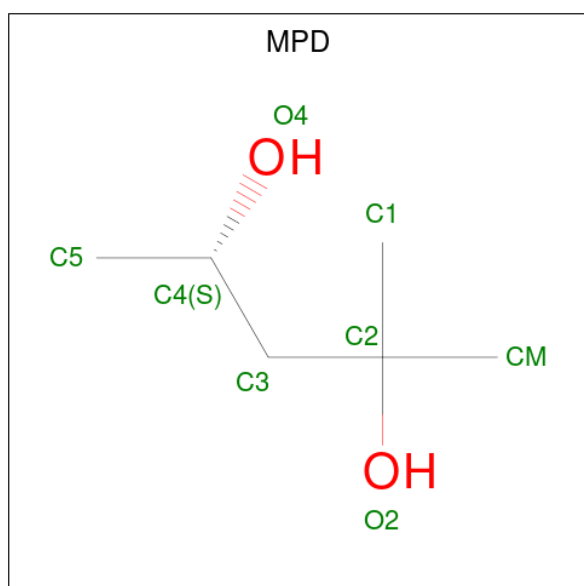
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	b4	1	Total 3	C 1	O 2	0	0
2	c4	1	Total 3	C 1	O 2	0	0
2	d1	1	Total 3	C 1	O 2	0	0
2	d2	1	Total 3	C 1	O 2	0	0
2	e1	1	Total 3	C 1	O 2	0	0
2	e4	1	Total 3	C 1	O 2	0	0
2	e4	1	Total 3	C 1	O 2	0	0
2	f4	1	Total 3	C 1	O 2	0	0
2	g1	1	Total 3	C 1	O 2	0	0
2	g4	1	Total 3	C 1	O 2	0	0
2	h2	1	Total 3	C 1	O 2	0	0
2	i1	1	Total 3	C 1	O 2	0	0
2	i2	1	Total 3	C 1	O 2	0	0
2	j1	1	Total 3	C 1	O 2	0	0
2	j3	1	Total 3	C 1	O 2	0	0
2	k4	1	Total 3	C 1	O 2	0	0
2	m2	1	Total 3	C 1	O 2	0	0
2	m3	1	Total 3	C 1	O 2	0	0
2	m4	1	Total 3	C 1	O 2	0	0
2	n2	1	Total 3	C 1	O 2	0	0
2	o4	1	Total 3	C 1	O 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	q1	1	Total	C	O	0	0
			3	1	2		
2	r2	1	Total	C	O	0	0
			3	1	2		
2	r3	1	Total	C	O	0	0
			3	1	2		
2	s2	1	Total	C	O	0	0
			3	1	2		
2	t1	1	Total	C	O	0	0
			3	1	2		
2	t3	1	Total	C	O	0	0
			3	1	2		
2	u2	1	Total	C	O	0	0
			3	1	2		
2	u3	1	Total	C	O	0	0
			3	1	2		
2	v3	1	Total	C	O	0	0
			3	1	2		
2	w4	1	Total	C	O	0	0
			3	1	2		
2	x1	1	Total	C	O	0	0
			3	1	2		
2	x4	1	Total	C	O	0	0
			3	1	2		

- Molecule 3 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula: C<sub>6</sub>H<sub>14</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	G2	1	Total C O 8 6 2	0	0
3	R3	1	Total C O 8 6 2	0	0
3	W2	1	Total C O 8 6 2	0	0
3	X3	1	Total C O 8 6 2	0	0
3	74	1	Total C O 8 6 2	0	0
3	q3	1	Total C O 8 6 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A1	4	Total O 4 4	0	0
4	A2	6	Total O 6 6	0	0
4	A3	2	Total O 2 2	0	0
4	A4	3	Total O 3 3	0	0
4	B1	1	Total O 1 1	0	0
4	B2	1	Total O 1 1	0	0
4	B3	3	Total O 3 3	0	0
4	B4	2	Total O 2 2	0	0
4	C2	1	Total O 1 1	0	0
4	C4	2	Total O 2 2	0	0
4	D1	1	Total O 1 1	0	0
4	D2	1	Total O 1 1	0	0
4	D3	3	Total O 3 3	0	0
4	D4	1	Total O 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	E1	3	Total O 3 3	0	0
4	E2	1	Total O 1 1	0	0
4	E3	3	Total O 3 3	0	0
4	E4	3	Total O 3 3	0	0
4	F1	2	Total O 2 2	0	0
4	F2	5	Total O 5 5	0	0
4	F3	2	Total O 2 2	0	0
4	F4	2	Total O 2 2	0	0
4	G1	1	Total O 1 1	0	0
4	G2	3	Total O 3 3	0	0
4	G3	2	Total O 2 2	0	0
4	G4	2	Total O 2 2	0	0
4	H2	4	Total O 4 4	0	0
4	H3	4	Total O 4 4	0	0
4	H4	2	Total O 2 2	0	0
4	I1	1	Total O 1 1	0	0
4	I2	2	Total O 2 2	0	0
4	I3	4	Total O 4 4	0	0
4	I4	3	Total O 3 3	0	0
4	J1	6	Total O 6 6	0	0
4	J2	7	Total O 7 7	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	J3	3	Total O 3 3	0	0
4	K1	2	Total O 2 2	0	0
4	K2	3	Total O 3 3	0	0
4	K3	2	Total O 2 2	0	0
4	K4	4	Total O 4 4	0	0
4	L1	2	Total O 2 2	0	0
4	L2	1	Total O 1 1	0	0
4	L3	3	Total O 3 3	0	0
4	M2	1	Total O 1 1	0	0
4	M3	2	Total O 2 2	0	0
4	M4	3	Total O 3 3	0	0
4	N1	1	Total O 1 1	0	0
4	N2	2	Total O 2 2	0	0
4	N3	3	Total O 3 3	0	0
4	N4	2	Total O 2 2	0	0
4	O1	1	Total O 1 1	0	0
4	O2	1	Total O 1 1	0	0
4	O3	2	Total O 2 2	0	0
4	O4	2	Total O 2 2	0	0
4	P1	1	Total O 1 1	0	0
4	P2	1	Total O 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	P3	2	Total O 2 2	0	0
4	P4	3	Total O 3 3	0	0
4	Q1	4	Total O 4 4	0	0
4	Q2	1	Total O 1 1	0	0
4	Q3	1	Total O 1 1	0	0
4	Q4	1	Total O 1 1	0	0
4	R1	1	Total O 1 1	0	0
4	R2	4	Total O 4 4	0	0
4	R3	3	Total O 3 3	0	0
4	S1	2	Total O 2 2	0	0
4	S2	2	Total O 2 2	0	0
4	S3	2	Total O 2 2	0	0
4	S4	3	Total O 3 3	0	0
4	T2	1	Total O 1 1	0	0
4	T4	1	Total O 1 1	0	0
4	U1	2	Total O 2 2	0	0
4	U2	1	Total O 1 1	0	0
4	U4	1	Total O 1 1	0	0
4	V1	1	Total O 1 1	0	0
4	V2	3	Total O 3 3	0	0
4	V3	2	Total O 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	V4	1	Total O 1 1	0	0
4	W1	2	Total O 2 2	0	0
4	W3	1	Total O 1 1	0	0
4	X1	1	Total O 1 1	0	0
4	X2	4	Total O 4 4	0	0
4	X3	3	Total O 3 3	0	0
4	Y1	2	Total O 2 2	0	0
4	Y2	4	Total O 4 4	0	0
4	Y3	2	Total O 2 2	0	0
4	Y4	2	Total O 2 2	0	0
4	Z1	1	Total O 1 1	0	0
4	Z2	1	Total O 1 1	0	0
4	Z3	4	Total O 4 4	0	0
4	Z4	3	Total O 3 3	0	0
4	11	1	Total O 1 1	0	0
4	13	3	Total O 3 3	0	0
4	14	1	Total O 1 1	0	0
4	21	2	Total O 2 2	0	0
4	22	2	Total O 2 2	0	0
4	23	3	Total O 3 3	0	0
4	31	1	Total O 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	32	4	Total O 4 4	0	0
4	33	1	Total O 1 1	0	0
4	34	1	Total O 1 1	0	0
4	41	5	Total O 5 5	0	0
4	42	3	Total O 3 3	0	0
4	43	3	Total O 3 3	0	0
4	44	2	Total O 2 2	0	0
4	51	1	Total O 1 1	0	0
4	52	1	Total O 1 1	0	0
4	53	2	Total O 2 2	0	0
4	54	2	Total O 2 2	0	0
4	61	1	Total O 1 1	0	0
4	62	2	Total O 2 2	0	0
4	63	5	Total O 5 5	0	0
4	64	1	Total O 1 1	0	0
4	71	2	Total O 2 2	0	0
4	72	2	Total O 2 2	0	0
4	73	2	Total O 2 2	0	0
4	74	1	Total O 1 1	0	0
4	81	2	Total O 2 2	0	0
4	82	3	Total O 3 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	83	1	Total O 1 1	0	0
4	84	1	Total O 1 1	0	0
4	92	3	Total O 3 3	0	0
4	93	3	Total O 3 3	0	0
4	94	3	Total O 3 3	0	0
4	a1	3	Total O 3 3	0	0
4	a2	5	Total O 5 5	0	0
4	a3	3	Total O 3 3	0	0
4	a4	1	Total O 1 1	0	0
4	b1	1	Total O 1 1	0	0
4	b2	1	Total O 1 1	0	0
4	b3	1	Total O 1 1	0	0
4	c2	1	Total O 1 1	0	0
4	c3	2	Total O 2 2	0	0
4	c4	1	Total O 1 1	0	0
4	d1	2	Total O 2 2	0	0
4	d3	2	Total O 2 2	0	0
4	d4	2	Total O 2 2	0	0
4	e1	1	Total O 1 1	0	0
4	e2	2	Total O 2 2	0	0
4	e3	1	Total O 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	e4	3	Total O 3 3	0	0
4	f1	1	Total O 1 1	0	0
4	f2	3	Total O 3 3	0	0
4	f3	2	Total O 2 2	0	0
4	f4	2	Total O 2 2	0	0
4	g1	3	Total O 3 3	0	0
4	g2	1	Total O 1 1	0	0
4	g3	1	Total O 1 1	0	0
4	g4	1	Total O 1 1	0	0
4	h1	2	Total O 2 2	0	0
4	h2	1	Total O 1 1	0	0
4	h3	4	Total O 4 4	0	0
4	h4	1	Total O 1 1	0	0
4	i1	2	Total O 2 2	0	0
4	i2	1	Total O 1 1	0	0
4	i4	2	Total O 2 2	0	0
4	j3	2	Total O 2 2	0	0
4	j4	1	Total O 1 1	0	0
4	k3	1	Total O 1 1	0	0
4	l2	1	Total O 1 1	0	0
4	l3	1	Total O 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	l4	1	Total O 1 1	0	0
4	m1	1	Total O 1 1	0	0
4	m3	1	Total O 1 1	0	0
4	m4	1	Total O 1 1	0	0
4	n2	1	Total O 1 1	0	0
4	n3	1	Total O 1 1	0	0
4	n4	2	Total O 2 2	0	0
4	o1	1	Total O 1 1	0	0
4	o2	1	Total O 1 1	0	0
4	o3	2	Total O 2 2	0	0
4	o4	2	Total O 2 2	0	0
4	p1	1	Total O 1 1	0	0
4	p2	1	Total O 1 1	0	0
4	p4	1	Total O 1 1	0	0
4	q1	2	Total O 2 2	0	0
4	q2	1	Total O 1 1	0	0
4	q3	1	Total O 1 1	0	0
4	q4	2	Total O 2 2	0	0
4	r1	1	Total O 1 1	0	0
4	r2	1	Total O 1 1	0	0
4	r3	1	Total O 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	s1	2	Total O 2 2	0	0
4	s2	2	Total O 2 2	0	0
4	s3	3	Total O 3 3	0	0
4	s4	6	Total O 6 6	0	0
4	t1	2	Total O 2 2	0	0
4	t2	1	Total O 1 1	0	0
4	t3	1	Total O 1 1	0	0
4	t4	1	Total O 1 1	0	0
4	u1	4	Total O 4 4	0	0
4	u3	1	Total O 1 1	0	0
4	u4	1	Total O 1 1	0	0
4	v1	3	Total O 3 3	0	0
4	v2	2	Total O 2 2	0	0
4	v3	1	Total O 1 1	0	0
4	w3	3	Total O 3 3	0	0
4	w4	1	Total O 1 1	0	0
4	x1	3	Total O 3 3	0	0
4	x2	1	Total O 1 1	0	0
4	x3	2	Total O 2 2	0	0
4	x4	1	Total O 1 1	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, $\alpha$ , $\beta$ , $\gamma$	161.17Å 160.16Å 198.50Å 90.00° 109.97° 90.00°	Depositor
Resolution (Å)	151.47 – 2.50	Depositor
% Data completeness (in resolution range)	98.5 (151.47-2.50)	Depositor
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.53 (at 2.52Å)	Xtrriage
Refinement program	PHENIX (1.12_2829: ???)	Depositor
R, $R_{free}$	0.198 , 0.246	Depositor
Wilson B-factor (Å <sup>2</sup> )	68.9	Xtrriage
Anisotropy	0.015	Xtrriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	50163	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	87.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 54.52 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.6107e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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

### 4.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: FMT, ACE, NH2, MPD

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	11	0.43	0/208	0.52	0/277
1	12	0.34	0/208	0.48	0/277
1	13	0.31	0/208	0.45	0/277
1	14	0.30	0/208	0.55	0/277
1	21	0.30	0/208	0.45	0/277
1	22	0.31	0/208	0.53	0/277
1	23	0.29	0/208	0.49	0/277
1	24	0.32	0/208	0.48	0/277
1	31	0.29	0/208	0.52	0/277
1	32	0.32	0/219	0.50	0/291
1	33	0.36	0/208	0.60	0/277
1	34	0.29	0/208	0.45	0/277
1	41	0.32	0/208	0.49	0/277
1	42	0.37	0/208	0.48	0/277
1	43	0.30	0/208	0.51	0/277
1	44	0.39	0/208	0.59	0/277
1	51	0.31	0/208	0.57	0/277
1	52	0.46	0/219	0.61	0/291
1	53	0.33	0/208	0.53	0/277
1	54	0.29	0/208	0.47	0/277
1	61	0.31	0/208	0.52	0/277
1	62	0.28	0/208	0.54	0/277
1	63	0.38	0/208	0.49	0/277
1	64	0.30	0/208	0.43	0/277
1	71	0.32	0/208	0.51	0/277
1	72	0.32	0/208	0.56	0/277
1	73	0.65	0/219	0.77	0/291
1	74	0.30	0/208	0.58	0/277
1	81	0.30	0/208	0.52	0/277
1	82	0.34	0/208	0.44	0/277
1	83	0.31	0/208	0.48	0/277
1	84	0.30	0/208	0.54	0/277

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	91	0.34	0/208	0.50	0/277
1	92	0.32	0/208	0.45	0/277
1	93	0.33	0/208	0.50	0/277
1	94	0.31	0/208	0.50	0/277
1	A1	0.59	0/208	0.46	0/277
1	A2	0.37	0/208	0.60	0/277
1	A3	0.34	0/208	0.50	0/277
1	A4	0.35	0/208	0.54	0/277
1	B1	0.36	0/208	0.54	0/277
1	B2	0.45	0/208	0.56	0/277
1	B3	0.30	0/208	0.52	0/277
1	B4	0.44	0/208	0.49	0/277
1	C1	0.30	0/208	0.57	0/277
1	C2	0.31	0/208	0.49	0/277
1	C3	0.27	0/208	0.43	0/277
1	C4	0.29	0/208	0.50	0/277
1	D1	0.30	0/208	0.53	0/277
1	D2	0.30	0/208	0.46	0/277
1	D3	0.41	0/208	0.52	0/277
1	D4	0.32	0/208	0.53	0/277
1	E1	0.41	0/219	0.61	0/291
1	E2	0.31	0/208	0.48	0/277
1	E3	0.41	0/208	0.43	0/277
1	E4	0.30	0/208	0.40	0/277
1	F1	0.35	0/208	0.45	0/277
1	F2	0.34	0/208	0.49	0/277
1	F3	0.37	0/208	0.50	0/277
1	F4	0.34	0/208	0.46	0/277
1	G1	0.31	0/208	0.55	0/277
1	G2	0.35	0/219	0.53	0/291
1	G3	0.32	0/208	0.47	0/277
1	G4	0.32	0/208	0.51	0/277
1	H1	0.27	0/208	0.43	0/277
1	H2	0.48	0/208	0.53	0/277
1	H3	0.39	0/208	0.42	0/277
1	H4	0.36	0/208	0.54	0/277
1	I1	0.40	0/208	0.55	0/277
1	I2	0.50	0/208	0.49	0/277
1	I3	0.44	0/208	0.44	0/277
1	I4	0.31	0/208	0.47	0/277
1	J1	0.36	0/208	0.48	0/277
1	J2	0.45	0/208	0.57	0/277
1	J3	0.38	0/208	0.56	0/277



Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	J4	0.37	0/208	0.55	0/277
1	K1	0.29	0/208	0.49	0/277
1	K2	0.30	0/208	0.46	0/277
1	K3	0.34	0/208	0.51	0/277
1	K4	0.32	0/208	0.52	0/277
1	L1	0.58	0/219	0.68	0/291
1	L2	0.34	0/208	0.55	0/277
1	L3	0.28	0/208	0.45	0/277
1	L4	0.33	0/208	0.45	0/277
1	M1	0.32	0/208	0.50	0/277
1	M2	0.31	0/208	0.42	0/277
1	M3	0.28	0/208	0.46	0/277
1	M4	0.28	0/208	0.43	0/277
1	N1	0.33	0/208	0.42	0/277
1	N2	0.34	0/208	0.52	0/277
1	N3	0.31	0/208	0.49	0/277
1	N4	0.30	0/208	0.48	0/277
1	O1	0.27	0/208	0.52	0/277
1	O2	0.38	0/208	0.55	0/277
1	O3	0.27	0/208	0.43	0/277
1	O4	0.30	0/208	0.43	0/277
1	P1	0.31	0/208	0.48	0/277
1	P2	0.30	0/208	0.46	0/277
1	P3	0.30	0/208	0.48	0/277
1	P4	0.28	0/208	0.47	0/277
1	Q1	0.33	0/208	0.54	0/277
1	Q2	0.30	0/208	0.48	0/277
1	Q3	0.30	0/208	0.41	0/277
1	Q4	0.32	0/208	0.53	0/277
1	R1	0.31	0/208	0.40	0/277
1	R2	0.32	0/208	0.49	0/277
1	R3	0.32	0/208	0.49	0/277
1	R4	0.41	0/208	0.46	0/277
1	S1	0.31	0/208	0.52	0/277
1	S2	0.29	0/208	0.48	0/277
1	S3	0.33	0/219	0.52	0/291
1	S4	0.29	0/208	0.45	0/277
1	T1	0.30	0/208	0.56	0/277
1	T2	0.31	0/208	0.48	0/277
1	T3	0.35	0/208	0.57	0/277
1	T4	0.33	0/208	0.50	0/277
1	U1	0.28	0/208	0.46	0/277
1	U2	0.31	0/208	0.41	0/277

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	U3	0.34	0/208	0.52	0/277
1	U4	0.37	0/208	0.53	0/277
1	V1	0.30	0/208	0.41	0/277
1	V2	0.31	0/208	0.53	0/277
1	V3	0.45	0/208	0.58	0/277
1	V4	0.30	0/208	0.47	0/277
1	W1	0.32	0/208	0.50	0/277
1	W2	0.30	0/208	0.53	0/277
1	W3	0.28	0/208	0.46	0/277
1	W4	0.30	0/208	0.52	0/277
1	X1	0.33	0/208	0.52	0/277
1	X2	0.38	0/208	0.43	0/277
1	X3	0.33	0/208	0.56	0/277
1	X4	0.35	0/208	0.50	0/277
1	Y1	0.33	0/208	0.55	0/277
1	Y2	0.34	0/208	0.44	0/277
1	Y3	0.30	0/208	0.42	0/277
1	Y4	0.32	0/208	0.59	0/277
1	Z1	0.28	0/208	0.44	0/277
1	Z2	0.32	0/208	0.54	0/277
1	Z3	0.48	0/208	0.60	0/277
1	Z4	0.34	0/208	0.54	0/277
1	a1	0.32	0/208	0.45	0/277
1	a2	0.34	0/208	0.48	0/277
1	a3	0.33	0/208	0.52	0/277
1	a4	0.33	0/208	0.49	0/277
1	b1	0.30	0/208	0.52	0/277
1	b2	0.30	0/208	0.48	0/277
1	b3	0.28	0/208	0.49	0/277
1	b4	0.33	0/208	0.48	0/277
1	c1	0.30	0/208	0.48	0/277
1	c2	0.30	0/208	0.50	0/277
1	c3	0.31	0/208	0.43	0/277
1	c4	0.39	0/208	0.43	0/277
1	d1	0.28	0/208	0.47	0/277
1	d2	0.30	0/208	0.42	0/277
1	d3	0.30	0/208	0.47	0/277
1	d4	0.29	0/208	0.42	0/277
1	e1	0.32	0/208	0.54	0/277
1	e2	0.35	0/208	0.42	0/277
1	e3	0.30	0/208	0.41	0/277
1	e4	0.34	0/208	0.47	0/277
1	f1	0.25	0/208	0.38	0/277

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	f2	0.33	0/208	0.47	0/277
1	f3	0.31	0/208	0.54	0/277
1	f4	0.28	0/208	0.48	0/277
1	g1	0.30	0/208	0.40	0/277
1	g2	0.29	0/208	0.56	0/277
1	g3	0.31	0/208	0.55	0/277
1	g4	0.26	0/208	0.39	0/277
1	h1	0.29	0/208	0.43	0/277
1	h2	0.31	0/208	0.42	0/277
1	h3	0.29	0/208	0.43	0/277
1	h4	0.31	0/208	0.44	0/277
1	i1	0.31	0/208	0.50	0/277
1	i2	0.32	0/208	0.42	0/277
1	i3	0.31	0/208	0.41	0/277
1	i4	0.32	0/208	0.50	0/277
1	j1	0.27	0/208	0.42	0/277
1	j2	0.34	0/208	0.46	0/277
1	j3	0.30	0/208	0.42	0/277
1	j4	0.38	0/208	0.54	0/277
1	k1	0.29	0/208	0.46	0/277
1	k2	0.30	0/208	0.63	0/277
1	k3	0.29	0/219	0.53	0/291
1	k4	0.30	0/208	0.43	0/277
1	l1	0.27	0/208	0.41	0/277
1	l2	0.30	0/208	0.47	0/277
1	l3	0.27	0/208	0.47	0/277
1	l4	0.28	0/208	0.49	0/277
1	m1	0.28	0/208	0.44	0/277
1	m2	0.27	0/208	0.52	0/277
1	m3	0.27	0/208	0.45	0/277
1	m4	0.27	0/208	0.47	0/277
1	n1	0.27	0/208	0.48	0/277
1	n2	0.28	0/208	0.42	0/277
1	n3	0.27	0/208	0.39	0/277
1	n4	0.27	0/204	0.45	0/273
1	o1	0.37	0/208	0.55	0/277
1	o2	0.33	0/208	0.44	0/277
1	o3	0.29	0/208	0.40	0/277
1	o4	0.26	0/208	0.51	0/277
1	p1	0.32	0/208	0.51	0/277
1	p2	0.29	0/208	0.46	0/277
1	p3	0.30	0/204	0.50	0/273
1	p4	0.26	0/208	0.46	0/277

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	q1	0.37	0/208	0.51	0/277
1	q2	0.26	0/208	0.41	0/277
1	q3	0.32	0/208	0.49	0/277
1	q4	0.29	0/219	0.51	0/291
1	r1	0.30	0/219	0.48	0/291
1	r2	0.27	0/208	0.42	0/277
1	r3	0.30	0/208	0.45	0/277
1	r4	0.28	0/208	0.40	0/277
1	s1	0.33	0/208	0.51	0/277
1	s2	0.29	0/208	0.38	0/277
1	s3	0.31	0/208	0.42	0/277
1	s4	0.32	0/208	0.44	0/277
1	t1	0.31	0/208	0.59	0/277
1	t2	0.29	0/208	0.39	0/277
1	t3	0.31	0/208	0.46	0/277
1	t4	0.34	0/208	0.48	0/277
1	u1	0.56	0/219	0.55	0/291
1	u2	0.29	0/219	0.51	0/291
1	u3	0.33	0/208	0.56	0/277
1	u4	0.33	0/208	0.52	0/277
1	v1	0.33	0/208	0.46	0/277
1	v2	0.27	0/208	0.48	0/277
1	v3	0.30	0/208	0.47	0/277
1	v4	0.29	0/208	0.45	0/277
1	w1	0.28	0/208	0.63	0/277
1	w2	0.30	0/208	0.55	0/277
1	w3	0.32	0/208	0.49	0/277
1	w4	0.36	0/208	0.50	0/277
1	x1	0.29	0/208	0.56	0/277
1	x2	0.28	0/208	0.52	0/277
1	x3	0.26	0/208	0.41	0/277
1	x4	0.37	0/208	0.53	0/277
All	All	0.33	0/49212	0.49	0/65532

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 4.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 4.3 Torsion angles [i](#)

### 4.3.1 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	A1	25/27 (93%)	25 (100%)	0	0	100	100
1	A2	25/27 (93%)	25 (100%)	0	0	100	100
1	A3	25/27 (93%)	25 (100%)	0	0	100	100
1	A4	25/27 (93%)	25 (100%)	0	0	100	100
1	B1	25/27 (93%)	25 (100%)	0	0	100	100
1	B2	25/27 (93%)	25 (100%)	0	0	100	100
1	B3	25/27 (93%)	25 (100%)	0	0	100	100
1	B4	25/27 (93%)	25 (100%)	0	0	100	100
1	C1	25/27 (93%)	24 (96%)	1 (4%)	0	100	100
1	C2	25/27 (93%)	25 (100%)	0	0	100	100
1	C3	25/27 (93%)	25 (100%)	0	0	100	100
1	C4	25/27 (93%)	25 (100%)	0	0	100	100
1	D1	25/27 (93%)	25 (100%)	0	0	100	100
1	D2	25/27 (93%)	25 (100%)	0	0	100	100
1	D3	25/27 (93%)	25 (100%)	0	0	100	100
1	D4	25/27 (93%)	25 (100%)	0	0	100	100
1	E1	26/27 (96%)	26 (100%)	0	0	100	100
1	E2	25/27 (93%)	25 (100%)	0	0	100	100
1	E3	25/27 (93%)	25 (100%)	0	0	100	100
1	E4	25/27 (93%)	25 (100%)	0	0	100	100
1	F1	25/27 (93%)	25 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	F2	25/27 (93%)	25 (100%)	0	0	100	100
1	F3	25/27 (93%)	25 (100%)	0	0	100	100
1	F4	25/27 (93%)	25 (100%)	0	0	100	100
1	G1	25/27 (93%)	25 (100%)	0	0	100	100
1	G2	26/27 (96%)	26 (100%)	0	0	100	100
1	G3	25/27 (93%)	25 (100%)	0	0	100	100
1	G4	25/27 (93%)	25 (100%)	0	0	100	100
1	H1	25/27 (93%)	25 (100%)	0	0	100	100
1	H2	25/27 (93%)	25 (100%)	0	0	100	100
1	H3	25/27 (93%)	25 (100%)	0	0	100	100
1	H4	25/27 (93%)	25 (100%)	0	0	100	100
1	I1	25/27 (93%)	25 (100%)	0	0	100	100
1	I2	25/27 (93%)	25 (100%)	0	0	100	100
1	I3	25/27 (93%)	25 (100%)	0	0	100	100
1	I4	25/27 (93%)	25 (100%)	0	0	100	100
1	J1	25/27 (93%)	25 (100%)	0	0	100	100
1	J2	25/27 (93%)	25 (100%)	0	0	100	100
1	J3	25/27 (93%)	25 (100%)	0	0	100	100
1	J4	25/27 (93%)	25 (100%)	0	0	100	100
1	K1	25/27 (93%)	25 (100%)	0	0	100	100
1	K2	25/27 (93%)	25 (100%)	0	0	100	100
1	K3	25/27 (93%)	25 (100%)	0	0	100	100
1	K4	25/27 (93%)	25 (100%)	0	0	100	100
1	L1	26/27 (96%)	26 (100%)	0	0	100	100
1	L2	25/27 (93%)	25 (100%)	0	0	100	100
1	L3	25/27 (93%)	25 (100%)	0	0	100	100
1	L4	25/27 (93%)	25 (100%)	0	0	100	100
1	M1	25/27 (93%)	25 (100%)	0	0	100	100
1	M2	25/27 (93%)	25 (100%)	0	0	100	100
1	M3	25/27 (93%)	25 (100%)	0	0	100	100
1	M4	25/27 (93%)	25 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	N1	25/27 (93%)	24 (96%)	1 (4%)	0	100	100
1	N2	25/27 (93%)	25 (100%)	0	0	100	100
1	N3	25/27 (93%)	25 (100%)	0	0	100	100
1	N4	25/27 (93%)	25 (100%)	0	0	100	100
1	O1	25/27 (93%)	25 (100%)	0	0	100	100
1	O2	25/27 (93%)	25 (100%)	0	0	100	100
1	O3	25/27 (93%)	25 (100%)	0	0	100	100
1	O4	25/27 (93%)	25 (100%)	0	0	100	100
1	P1	25/27 (93%)	25 (100%)	0	0	100	100
1	P2	25/27 (93%)	25 (100%)	0	0	100	100
1	P3	25/27 (93%)	25 (100%)	0	0	100	100
1	P4	25/27 (93%)	25 (100%)	0	0	100	100
1	Q1	25/27 (93%)	25 (100%)	0	0	100	100
1	Q2	25/27 (93%)	25 (100%)	0	0	100	100
1	Q3	25/27 (93%)	24 (96%)	1 (4%)	0	100	100
1	Q4	25/27 (93%)	25 (100%)	0	0	100	100
1	R1	25/27 (93%)	25 (100%)	0	0	100	100
1	R2	25/27 (93%)	25 (100%)	0	0	100	100
1	R3	25/27 (93%)	25 (100%)	0	0	100	100
1	R4	25/27 (93%)	25 (100%)	0	0	100	100
1	S1	25/27 (93%)	25 (100%)	0	0	100	100
1	S2	25/27 (93%)	25 (100%)	0	0	100	100
1	S3	26/27 (96%)	26 (100%)	0	0	100	100
1	S4	25/27 (93%)	25 (100%)	0	0	100	100
1	T1	25/27 (93%)	25 (100%)	0	0	100	100
1	T2	25/27 (93%)	25 (100%)	0	0	100	100
1	T3	25/27 (93%)	25 (100%)	0	0	100	100
1	T4	25/27 (93%)	25 (100%)	0	0	100	100
1	U1	25/27 (93%)	25 (100%)	0	0	100	100
1	U2	25/27 (93%)	25 (100%)	0	0	100	100
1	U3	25/27 (93%)	25 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	U4	25/27 (93%)	25 (100%)	0	0	100	100
1	V1	25/27 (93%)	25 (100%)	0	0	100	100
1	V2	25/27 (93%)	24 (96%)	1 (4%)	0	100	100
1	V3	25/27 (93%)	25 (100%)	0	0	100	100
1	V4	25/27 (93%)	25 (100%)	0	0	100	100
1	W1	25/27 (93%)	24 (96%)	1 (4%)	0	100	100
1	W2	25/27 (93%)	25 (100%)	0	0	100	100
1	W3	21/27 (78%)	21 (100%)	0	0	100	100
All	All	2275/2457 (93%)	2270 (100%)	5 (0%)	0	100	100

There are no Ramachandran outliers to report.

#### 4.3.2 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	A1	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	A2	22/22 (100%)	22 (100%)	0	100	100
1	A3	22/22 (100%)	22 (100%)	0	100	100
1	A4	22/22 (100%)	22 (100%)	0	100	100
1	B1	22/22 (100%)	22 (100%)	0	100	100
1	B2	22/22 (100%)	19 (86%)	3 (14%)	3	7
1	B3	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	B4	22/22 (100%)	22 (100%)	0	100	100
1	C1	22/22 (100%)	22 (100%)	0	100	100
1	C2	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	C3	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	C4	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	D1	22/22 (100%)	22 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D2	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	D3	22/22 (100%)	22 (100%)	0	100	100
1	D4	22/22 (100%)	22 (100%)	0	100	100
1	E1	23/22 (104%)	23 (100%)	0	100	100
1	E2	22/22 (100%)	22 (100%)	0	100	100
1	E3	22/22 (100%)	19 (86%)	3 (14%)	3	7
1	E4	22/22 (100%)	22 (100%)	0	100	100
1	F1	22/22 (100%)	22 (100%)	0	100	100
1	F2	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	F3	22/22 (100%)	22 (100%)	0	100	100
1	F4	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	G1	22/22 (100%)	19 (86%)	3 (14%)	3	7
1	G2	23/22 (104%)	23 (100%)	0	100	100
1	G3	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	G4	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	H1	22/22 (100%)	22 (100%)	0	100	100
1	H2	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	H3	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	H4	22/22 (100%)	22 (100%)	0	100	100
1	I1	22/22 (100%)	22 (100%)	0	100	100
1	I2	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	I3	22/22 (100%)	22 (100%)	0	100	100
1	I4	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	J1	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	J2	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	J3	22/22 (100%)	22 (100%)	0	100	100
1	J4	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	K1	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	K2	22/22 (100%)	22 (100%)	0	100	100
1	K3	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	K4	22/22 (100%)	22 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	L1	23/22 (104%)	23 (100%)	0	100	100
1	L2	22/22 (100%)	22 (100%)	0	100	100
1	L3	22/22 (100%)	22 (100%)	0	100	100
1	L4	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	M1	22/22 (100%)	22 (100%)	0	100	100
1	M2	22/22 (100%)	22 (100%)	0	100	100
1	M3	22/22 (100%)	22 (100%)	0	100	100
1	M4	22/22 (100%)	22 (100%)	0	100	100
1	N1	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	N2	22/22 (100%)	22 (100%)	0	100	100
1	N3	22/22 (100%)	22 (100%)	0	100	100
1	N4	22/22 (100%)	22 (100%)	0	100	100
1	O1	22/22 (100%)	22 (100%)	0	100	100
1	O2	22/22 (100%)	22 (100%)	0	100	100
1	O3	22/22 (100%)	22 (100%)	0	100	100
1	O4	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	P1	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	P2	22/22 (100%)	22 (100%)	0	100	100
1	P3	22/22 (100%)	22 (100%)	0	100	100
1	P4	22/22 (100%)	22 (100%)	0	100	100
1	Q1	22/22 (100%)	22 (100%)	0	100	100
1	Q2	22/22 (100%)	22 (100%)	0	100	100
1	Q3	22/22 (100%)	22 (100%)	0	100	100
1	Q4	22/22 (100%)	22 (100%)	0	100	100
1	R1	22/22 (100%)	22 (100%)	0	100	100
1	R2	22/22 (100%)	22 (100%)	0	100	100
1	R3	22/22 (100%)	22 (100%)	0	100	100
1	R4	22/22 (100%)	18 (82%)	4 (18%)	1	3
1	S1	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	S2	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	S3	23/22 (104%)	22 (96%)	1 (4%)	29	53

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	S4	22/22 (100%)	22 (100%)	0	100	100
1	T1	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	T2	22/22 (100%)	22 (100%)	0	100	100
1	T3	22/22 (100%)	22 (100%)	0	100	100
1	T4	22/22 (100%)	20 (91%)	2 (9%)	9	18
1	U1	22/22 (100%)	22 (100%)	0	100	100
1	U2	22/22 (100%)	22 (100%)	0	100	100
1	U3	22/22 (100%)	22 (100%)	0	100	100
1	U4	22/22 (100%)	22 (100%)	0	100	100
1	V1	22/22 (100%)	22 (100%)	0	100	100
1	V2	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	V3	22/22 (100%)	19 (86%)	3 (14%)	3	7
1	V4	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	W1	22/22 (100%)	21 (96%)	1 (4%)	27	51
1	W2	22/22 (100%)	22 (100%)	0	100	100
1	W3	20/22 (91%)	20 (100%)	0	100	100
All	All	2004/2002 (100%)	1944 (97%)	60 (3%)	41	68

5 of 60 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J1	1	SER
1	V3	8	ARG
1	L4	2	LYS
1	V2	22	GLU
1	W1	3	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 10 such sidechains are listed below:

Mol	Chain	Res	Type
1	M1	15	HIS
1	O1	15	HIS
1	Q2	15	HIS
1	G4	15	HIS
1	H4	15	HIS

### 4.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 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](#)

103 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 [i](#)

There are no such residues in this entry.

### 4.8 Polymer linkage issues [i](#)

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.