



wwPDB X-ray Structure Validation Summary Report ⓘ

May 16, 2020 – 04:39 pm BST

PDB ID : 5UP9
Title : Crystal Structure of Zn-bound Human Heavy-Chain ferritin variant 122H-delta C-star with para-xylenedihydroxamate
Authors : Bailey, J.B.; Zhang, L.; Chiong, J.A.; Ahn, S.; Tezcan, F.A.
Deposited on : 2017-02-01
Resolution : 2.45 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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
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)	:	2.11

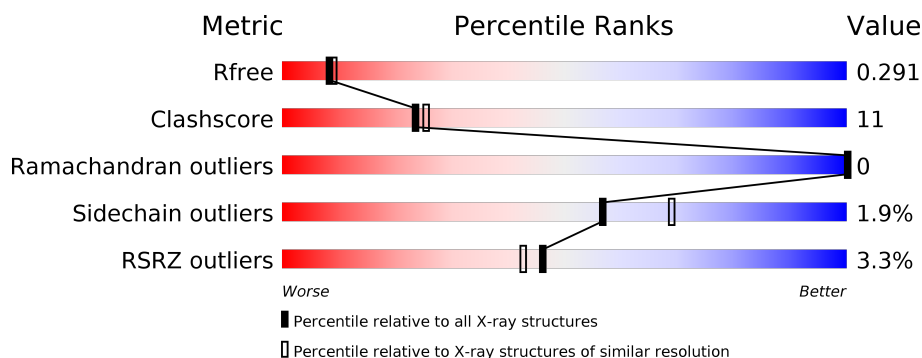
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.45 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	1544 (2.48-2.44)
Clashscore	141614	1613 (2.48-2.44)
Ramachandran outliers	138981	1598 (2.48-2.44)
Sidechain outliers	138945	1598 (2.48-2.44)
RSRZ outliers	127900	1523 (2.48-2.44)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	182	<div> <div>2%</div> <div> <div></div> <div>75%</div> <div>19%</div> <div>• 5%</div> </div> </div>
1	B	182	<div> <div>3%</div> <div> <div></div> <div>75%</div> <div>20%</div> <div>• •</div> </div> </div>
1	C	182	<div> <div>2%</div> <div> <div></div> <div>67%</div> <div>28%</div> <div>5%</div> </div> </div>
1	D	182	<div> <div>2%</div> <div> <div></div> <div>76%</div> <div>19%</div> <div>5%</div> </div> </div>
1	E	182	<div> <div>6%</div> <div> <div></div> <div>76%</div> <div>19%</div> <div>5%</div> </div> </div>
1	F	182	<div> <div>4%</div> <div> <div></div> <div>75%</div> <div>20%</div> <div>• •</div> </div> </div>

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
3	PGE	D	205	-	-	-	X
4	PEG	A	210	-	-	X	-
4	PEG	B	201	-	-	-	X
4	PEG	C	207	-	-	X	-
4	PEG	E	203	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 10129 atoms, of which 270 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 Ferritin heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	172	Total	C	N	O	S	0	2	0
			1413	886	251	272	4			
1	B	174	Total	C	N	O	S	0	2	0
			1421	890	252	275	4			
1	C	173	Total	C	N	O	S	0	1	0
			1430	896	254	276	4			
1	D	173	Total	C	N	O	S	0	3	0
			1426	893	252	277	4			
1	E	173	Total	C	N	O	S	0	2	0
			1426	893	254	275	4			
1	F	174	Total	C	N	O	S	0	2	0
			1431	896	254	277	4			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	86	GLN	LYS	engineered mutation	UNP P02794
A	90	GLU	CYS	engineered mutation	UNP P02794
A	102	ALA	CYS	engineered mutation	UNP P02794
A	122	HIS	THR	engineered mutation	UNP P02794
A	130	ALA	CYS	engineered mutation	UNP P02794
B	86	GLN	LYS	engineered mutation	UNP P02794
B	90	GLU	CYS	engineered mutation	UNP P02794
B	102	ALA	CYS	engineered mutation	UNP P02794
B	122	HIS	THR	engineered mutation	UNP P02794
B	130	ALA	CYS	engineered mutation	UNP P02794
C	86	GLN	LYS	engineered mutation	UNP P02794
C	90	GLU	CYS	engineered mutation	UNP P02794
C	102	ALA	CYS	engineered mutation	UNP P02794
C	122	HIS	THR	engineered mutation	UNP P02794
C	130	ALA	CYS	engineered mutation	UNP P02794
D	86	GLN	LYS	engineered mutation	UNP P02794
D	90	GLU	CYS	engineered mutation	UNP P02794

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Chain	Residue	Modelled	Actual	Comment	Reference
D	102	ALA	CYS	engineered mutation	UNP P02794
D	122	HIS	THR	engineered mutation	UNP P02794
D	130	ALA	CYS	engineered mutation	UNP P02794
E	86	GLN	LYS	engineered mutation	UNP P02794
E	90	GLU	CYS	engineered mutation	UNP P02794
E	102	ALA	CYS	engineered mutation	UNP P02794
E	122	HIS	THR	engineered mutation	UNP P02794
E	130	ALA	CYS	engineered mutation	UNP P02794
F	86	GLN	LYS	engineered mutation	UNP P02794
F	90	GLU	CYS	engineered mutation	UNP P02794
F	102	ALA	CYS	engineered mutation	UNP P02794
F	122	HIS	THR	engineered mutation	UNP P02794
F	130	ALA	CYS	engineered mutation	UNP P02794

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

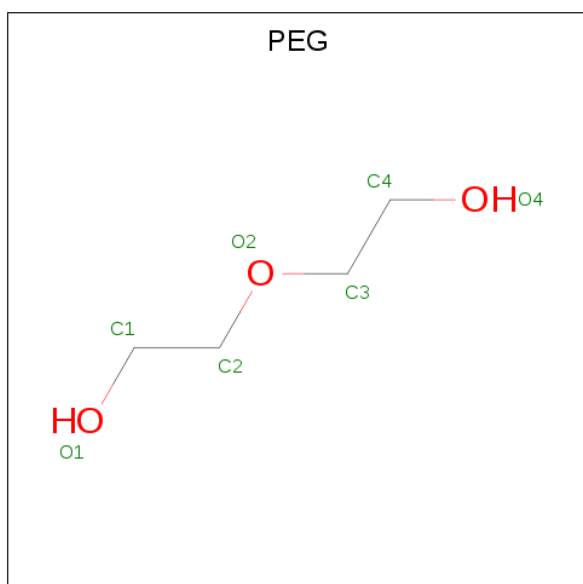
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	D	2	Total Zn 2 2	0	0
2	E	2	Total Zn 2 2	0	0
2	B	4	Total Zn 4 4	0	0
2	C	5	Total Zn 5 5	0	0
2	A	4	Total Zn 4 4	0	0
2	F	2	Total Zn 2 2	0	0

- Molecule 3 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: C₆H₁₄O₄).



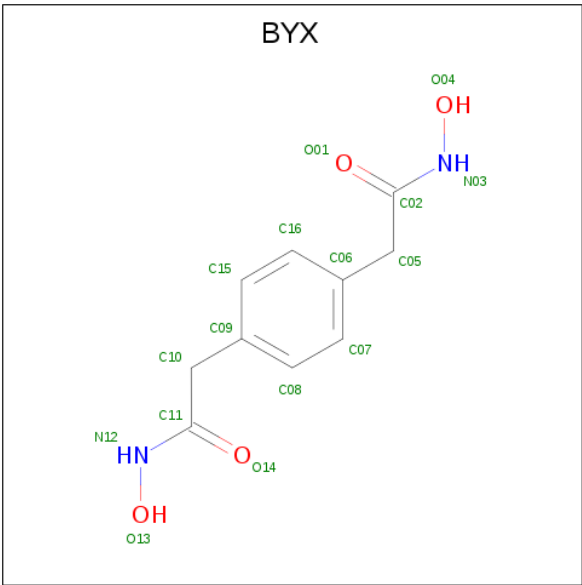
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	0	0
			24	6	14	4		
3	A	1	Total	C	H	O	0	0
			24	6	14	4		
3	D	1	Total	C	H	O	0	0
			24	6	14	4		
3	D	1	Total	C	H	O	0	0
			24	6	14	4		
3	D	1	Total	C	H	O	0	0
			24	6	14	4		

- Molecule 4 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	H	O	0	0
			17	4	10	3		
4	A	1	Total	C	H	O	0	0
			17	4	10	3		
4	A	1	Total	C	H	O	0	0
			17	4	10	3		
4	A	1	Total	C	H	O	0	0
			17	4	10	3		
4	B	1	Total	C	H	O	0	0
			17	4	10	3		
4	B	1	Total	C	H	O	0	0
			17	4	10	3		
4	C	1	Total	C	H	O	0	0
			17	4	10	3		
4	C	1	Total	C	H	O	0	0
			17	4	10	3		
4	C	1	Total	C	H	O	0	0
			17	4	10	3		
4	C	1	Total	C	H	O	0	0
			17	4	10	3		
4	C	1	Total	C	H	O	0	0
			17	4	10	3		
4	C	1	Total	C	H	O	0	0
			17	4	10	3		
4	D	1	Total	C	H	O	0	0
			17	4	10	3		
4	D	1	Total	C	H	O	0	0
			17	4	10	3		
4	E	1	Total	C	H	O	0	0
			17	4	10	3		
4	E	1	Total	C	H	O	0	0
			17	4	10	3		
4	F	1	Total	C	H	O	0	0
			17	4	10	3		
4	F	1	Total	C	H	O	0	0
			17	4	10	3		
4	F	1	Total	C	H	O	0	0
			17	4	10	3		

- Molecule 5 is 2,2'-(1,4-phenylene)bis(N-hydroxyacetamide) (three-letter code: BYX) (formula: C₁₀H₁₂N₂O₄).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	B	1	Total	C	H	N	O	0	0
			26	10	10	2	4		

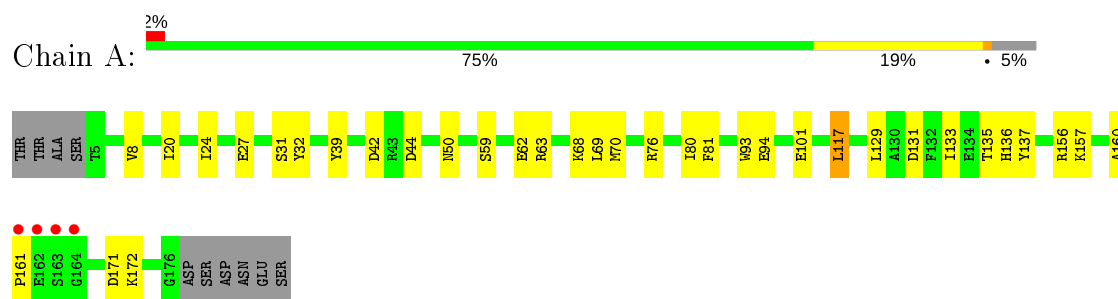
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	166	Total	O	0	0
			166	166		
6	B	178	Total	O	0	0
			178	178		
6	C	180	Total	O	0	0
			180	180		
6	D	201	Total	O	0	0
			201	201		
6	E	172	Total	O	0	0
			172	172		
6	F	197	Total	O	0	0
			197	197		

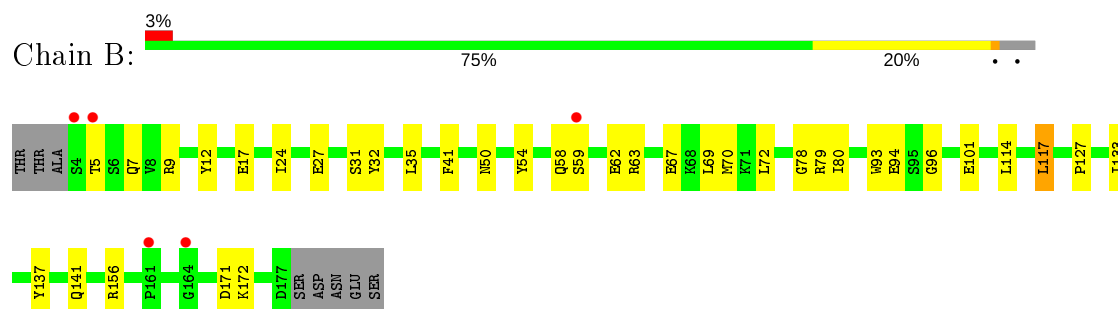
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

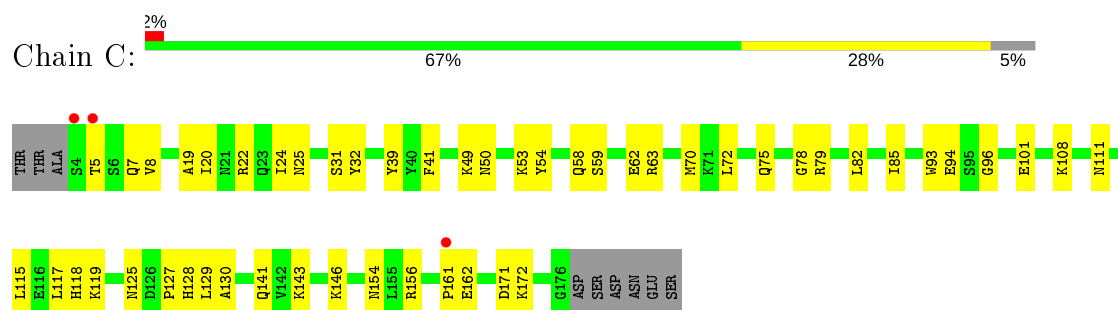
- Molecule 1: Ferritin heavy chain



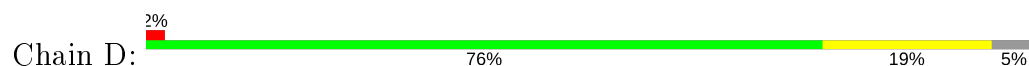
- Molecule 1: Ferritin heavy chain

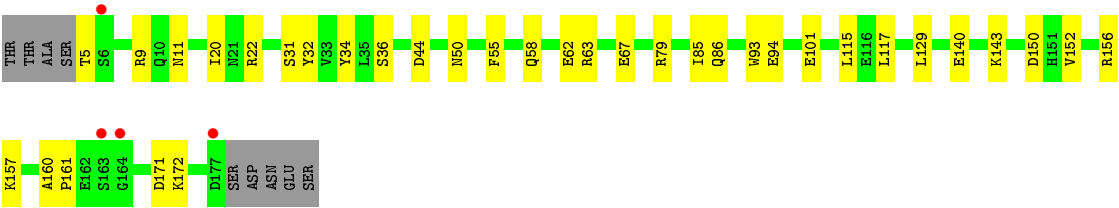


- Molecule 1: Ferritin heavy chain

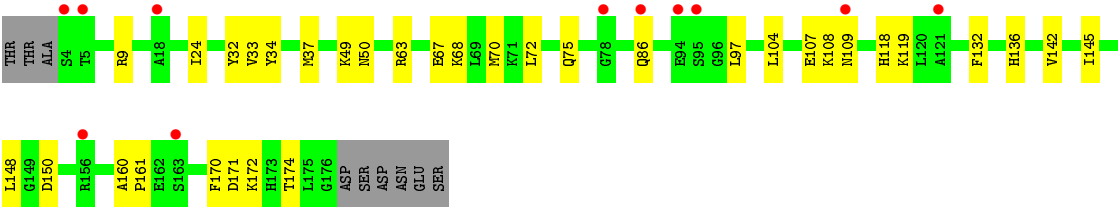


- Molecule 1: Ferritin heavy chain

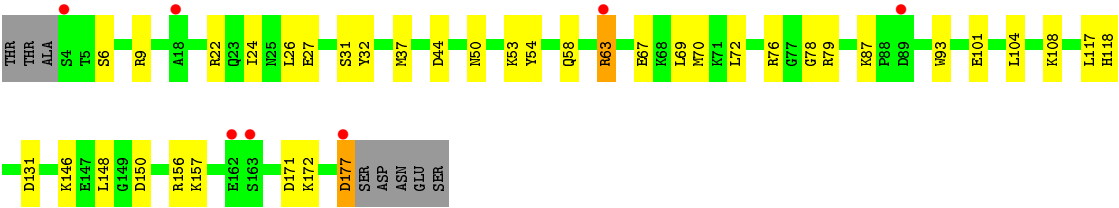




● Molecule 1: Ferritin heavy chain



● Molecule 1: Ferritin heavy chain



4 Data and refinement statistics

Property	Value	Source
Space group	I 4	Depositor
Cell constants a, b, c, α , β , γ	149.88Å 149.88Å 162.23Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.40 – 2.45 47.75 – 2.45	Depositor EDS
% Data completeness (in resolution range)	(Not available) (47.40-2.45) 99.1 (47.75-2.45)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.97 (at 2.45Å)	Xtriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.241 , 0.289 0.239 , 0.291	Depositor DCC
R_{free} test set	3193 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å ²)	21.2	Xtriage
Anisotropy	0.159	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 59.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.55$, $\langle L^2 \rangle = 0.39$	Xtriage
Estimated twinning fraction	0.000 for -h,k,-l	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	10129	wwPDB-VP
Average B, all atoms (Å ²)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.83% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, PEG, PGE, BYX

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	0.26	0/1443	0.42	0/1947
1	B	0.26	0/1451	0.41	0/1959
1	C	0.26	0/1460	0.42	0/1967
1	D	0.27	0/1459	0.42	0/1969
1	E	0.26	0/1456	0.42	0/1963
1	F	0.26	0/1461	0.41	0/1970
All	All	0.26	0/8730	0.42	0/11775

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1413	0	1330	34	0
1	B	1421	0	1328	27	0
1	C	1430	0	1364	48	0
1	D	1426	0	1338	29	0
1	E	1426	0	1350	35	0
1	F	1431	0	1350	36	0
2	A	4	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	4	0	0	0	0
2	C	5	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
3	A	20	28	28	1	0
3	D	30	42	42	5	0
4	A	28	40	40	5	0
4	B	14	20	20	0	0
4	C	42	60	60	10	0
4	D	14	20	20	0	0
4	E	14	20	20	4	0
4	F	21	30	30	2	0
5	B	16	10	0	0	0
6	A	166	0	0	8	1
6	B	178	0	0	3	0
6	C	180	0	0	9	0
6	D	201	0	0	6	1
6	E	172	0	0	8	1
6	F	197	0	0	14	1
All	All	9859	270	8320	191	2

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 11.

The worst 5 of 191 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:B:9:ARG:NH1	1:B:12:TYR:O	2.02	0.92
1:B:101:GLU:OE2	1:B:156[B]:ARG:NH2	2.12	0.81
1:A:76:ARG:HA	4:A:210:PEG:H42	1.62	0.81
1:A:131:ASP:O	1:A:135:THR:HG22	1.81	0.81
1:C:161:PRO:HD2	1:C:162:GLU:OE1	1.82	0.80

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:446:HOH:O	6:F:482:HOH:O[4_575]	2.07	0.13
6:D:432:HOH:O	6:E:411:HOH:O[3_755]	2.08	0.12

5.3 Torsion angles

5.3.1 Protein backbone

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	171/182 (94%)	168 (98%)	3 (2%)	0	100	100
1	B	173/182 (95%)	169 (98%)	4 (2%)	0	100	100
1	C	172/182 (94%)	167 (97%)	5 (3%)	0	100	100
1	D	173/182 (95%)	170 (98%)	3 (2%)	0	100	100
1	E	172/182 (94%)	168 (98%)	4 (2%)	0	100	100
1	F	173/182 (95%)	169 (98%)	4 (2%)	0	100	100
All	All	1034/1092 (95%)	1011 (98%)	23 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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	148/160 (92%)	146 (99%)	2 (1%)	67	77
1	B	148/160 (92%)	145 (98%)	3 (2%)	55	67
1	C	152/160 (95%)	150 (99%)	2 (1%)	69	79
1	D	150/160 (94%)	146 (97%)	4 (3%)	44	57
1	E	151/160 (94%)	150 (99%)	1 (1%)	84	90
1	F	151/160 (94%)	145 (96%)	6 (4%)	31	41
All	All	900/960 (94%)	882 (98%)	18 (2%)	57	67

5 of 18 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	32	TYR
1	D	115	LEU
1	F	63[A]	ARG
1	C	32	TYR
1	D	5	THR

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

Mol	Chain	Res	Type
1	A	154	ASN
1	C	141	GLN
1	D	139	ASN
1	F	122	HIS

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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 44 ligands modelled in this entry, 19 are monoatomic - leaving 25 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	PEG	F	203	-	6,6,6	0.47	0	5,5,5	0.33	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	BYX	B	207	2	16,16,16	4.15	4 (25%)	20,20,20	1.44	3 (15%)
4	PEG	C	208	-	6,6,6	0.51	0	5,5,5	0.24	0
4	PEG	C	206	-	6,6,6	0.49	0	5,5,5	0.34	0
4	PEG	A	210	-	6,6,6	0.47	0	5,5,5	0.63	0
4	PEG	C	209	-	6,6,6	0.48	0	5,5,5	0.29	0
3	PGE	D	204	-	9,9,9	0.50	0	8,8,8	0.34	0
4	PEG	D	207	-	6,6,6	0.49	0	5,5,5	0.32	0
4	PEG	A	208	-	6,6,6	0.49	0	5,5,5	0.31	0
4	PEG	B	201	-	6,6,6	0.48	0	5,5,5	0.22	0
4	PEG	C	210	-	6,6,6	0.46	0	5,5,5	0.38	0
4	PEG	D	206	-	6,6,6	0.48	0	5,5,5	0.26	0
3	PGE	D	203	-	9,9,9	0.51	0	8,8,8	0.33	0
3	PGE	A	206	-	9,9,9	0.50	0	8,8,8	0.31	0
3	PGE	D	205	-	9,9,9	0.50	0	8,8,8	0.39	0
4	PEG	F	205	-	6,6,6	0.53	0	5,5,5	0.32	0
4	PEG	C	211	-	6,6,6	0.48	0	5,5,5	0.34	0
4	PEG	A	207	-	6,6,6	0.47	0	5,5,5	0.45	0
4	PEG	A	209	-	6,6,6	0.48	0	5,5,5	0.22	0
4	PEG	B	206	-	6,6,6	0.49	0	5,5,5	0.30	0
4	PEG	F	204	-	6,6,6	0.47	0	5,5,5	0.42	0
3	PGE	A	205	-	9,9,9	0.52	0	8,8,8	0.28	0
4	PEG	E	204	-	6,6,6	0.48	0	5,5,5	0.34	0
4	PEG	C	207	-	6,6,6	0.47	0	5,5,5	0.44	0
4	PEG	E	203	-	6,6,6	0.46	0	5,5,5	0.38	0

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
4	PEG	F	203	-	-	1/4/4/4	-
5	BYX	B	207	2	-	0/12/12/12	0/1/1/1
4	PEG	C	208	-	-	2/4/4/4	-
4	PEG	C	206	-	-	2/4/4/4	-
4	PEG	A	210	-	-	3/4/4/4	-
4	PEG	C	209	-	-	1/4/4/4	-
3	PGE	D	204	-	-	4/7/7/7	-
4	PEG	D	207	-	-	2/4/4/4	-
4	PEG	A	208	-	-	1/4/4/4	-
4	PEG	B	201	-	-	3/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PEG	C	210	-	-	1/4/4/4	-
4	PEG	D	206	-	-	3/4/4/4	-
3	PGE	D	203	-	-	1/7/7/7	-
3	PGE	A	206	-	-	6/7/7/7	-
3	PGE	D	205	-	-	5/7/7/7	-
4	PEG	F	205	-	-	3/4/4/4	-
4	PEG	C	211	-	-	3/4/4/4	-
4	PEG	A	207	-	-	4/4/4/4	-
4	PEG	A	209	-	-	1/4/4/4	-
4	PEG	B	206	-	-	2/4/4/4	-
4	PEG	F	204	-	-	2/4/4/4	-
3	PGE	A	205	-	-	4/7/7/7	-
4	PEG	E	204	-	-	2/4/4/4	-
4	PEG	C	207	-	-	1/4/4/4	-
4	PEG	E	203	-	-	0/4/4/4	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	207	BYX	C02-N03	11.65	1.45	1.32
5	B	207	BYX	C11-N12	11.37	1.44	1.32
5	B	207	BYX	O01-C02	-2.08	1.19	1.23
5	B	207	BYX	O14-C11	-2.06	1.19	1.23

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	207	BYX	O14-C11-N12	-3.31	119.21	123.27
5	B	207	BYX	O01-C02-N03	-2.98	119.61	123.27
5	B	207	BYX	C10-C11-N12	2.12	119.80	116.14

There are no chirality outliers.

5 of 57 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	205	PGE	O3-C5-C6-O4
3	A	205	PGE	O2-C3-C4-O3
4	D	206	PEG	O2-C3-C4-O4
3	D	204	PGE	C3-C4-O3-C5

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Mol	Chain	Res	Type	Atoms
3	D	204	PGE	O2-C3-C4-O3

There are no ring outliers.

10 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	208	PEG	3	0
4	A	210	PEG	5	0
4	C	209	PEG	1	0
3	D	204	PGE	2	0
4	C	210	PEG	1	0
3	D	203	PGE	3	0
3	A	206	PGE	1	0
4	F	205	PEG	2	0
4	C	207	PEG	5	0
4	E	203	PEG	4	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 ⓘ

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	172/182 (94%)	0.38	4 (2%) 60 56	15, 23, 34, 53	0
1	B	174/182 (95%)	0.42	5 (2%) 51 47	15, 23, 34, 55	0
1	C	173/182 (95%)	0.35	3 (1%) 70 67	14, 22, 36, 68	0
1	D	173/182 (95%)	0.43	4 (2%) 60 56	15, 23, 36, 61	0
1	E	173/182 (95%)	0.53	11 (6%) 19 16	16, 23, 36, 59	0
1	F	174/182 (95%)	0.51	7 (4%) 38 35	17, 23, 37, 66	0
All	All	1039/1092 (95%)	0.44	34 (3%) 46 43	14, 23, 36, 68	0

The worst 5 of 34 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	163	SER	5.0
1	C	4	SER	4.9
1	D	177	ASP	3.5
1	B	4	SER	3.5
1	E	5	THR	3.4

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

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
3	PGE	A	206	10/10	0.61	0.35	33,53,64,66	0
4	PEG	A	208	7/7	0.68	0.37	36,54,83,83	0
2	ZN	C	204	1/1	0.69	0.12	50,50,50,50	1
4	PEG	B	206	7/7	0.69	0.28	29,51,60,65	0
3	PGE	D	204	10/10	0.70	0.30	28,45,60,64	0
4	PEG	D	207	7/7	0.72	0.21	28,45,53,61	0
4	PEG	D	206	7/7	0.73	0.32	41,54,65,68	0
3	PGE	D	205	10/10	0.73	0.46	36,59,71,81	0
4	PEG	B	201	7/7	0.73	0.40	25,42,51,52	0
4	PEG	C	209	7/7	0.74	0.36	21,27,37,40	0
4	PEG	C	210	7/7	0.76	0.32	35,47,61,61	0
4	PEG	C	206	7/7	0.76	0.20	48,58,74,74	0
4	PEG	A	207	7/7	0.77	0.35	34,42,49,51	0
4	PEG	E	204	7/7	0.77	0.31	29,46,66,71	0
4	PEG	A	209	7/7	0.78	0.23	44,53,75,75	0
3	PGE	A	205	10/10	0.80	0.23	30,46,61,61	0
4	PEG	F	203	7/7	0.80	0.34	39,51,72,72	0
4	PEG	C	208	7/7	0.81	0.33	23,37,50,50	0
4	PEG	F	204	7/7	0.82	0.16	37,58,70,70	0
3	PGE	D	203	10/10	0.83	0.28	23,38,48,53	0
4	PEG	C	207	7/7	0.83	0.34	20,38,50,60	0
4	PEG	F	205	7/7	0.85	0.27	14,29,36,36	0
4	PEG	C	211	7/7	0.86	0.17	34,43,50,57	0
2	ZN	A	204	1/1	0.88	0.07	62,62,62,62	0
4	PEG	A	210	7/7	0.88	0.27	16,23,41,41	0
4	PEG	E	203	7/7	0.89	0.30	27,37,47,47	0
5	BYX	B	207	16/16	0.91	0.28	30,40,49,54	0
2	ZN	B	204	1/1	0.94	0.06	43,43,43,43	1
2	ZN	C	205	1/1	0.97	0.04	59,59,59,59	0
2	ZN	A	203	1/1	0.98	0.11	54,54,54,54	1
2	ZN	E	202	1/1	0.98	0.07	30,30,30,30	0
2	ZN	B	203	1/1	0.99	0.05	28,28,28,28	0
2	ZN	A	202	1/1	0.99	0.04	31,31,31,31	0
2	ZN	C	202	1/1	0.99	0.05	25,25,25,25	0
2	ZN	C	203	1/1	0.99	0.06	29,29,29,29	0
2	ZN	F	202	1/1	0.99	0.04	30,30,30,30	0
2	ZN	F	201	1/1	0.99	0.07	25,25,25,25	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	ZN	B	205	1/1	0.99	0.06	23,23,23,23	0
2	ZN	B	202	1/1	0.99	0.06	23,23,23,23	0
2	ZN	C	201	1/1	0.99	0.04	26,26,26,26	0
2	ZN	D	202	1/1	0.99	0.04	28,28,28,28	0
2	ZN	A	201	1/1	0.99	0.07	25,25,25,25	0
2	ZN	D	201	1/1	0.99	0.03	28,28,28,28	0
2	ZN	E	201	1/1	0.99	0.06	27,27,27,27	0

6.5 Other polymers [i](#)

There are no such residues in this entry.