Full wwPDB X-ray Structure Validation Report ⓘ

Nov 22, 2023 – 04:59 PM JST

PDB ID	:	7E74
Title	:	Crystal structure of ENL YEATS domain T3 mutant in complex with histone H3 acetylation at K27
Authors	:	Li, Y.; Li, H.
Deposited on	:	2021-02-25
Resolution	:	2.90 Å(reported)

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

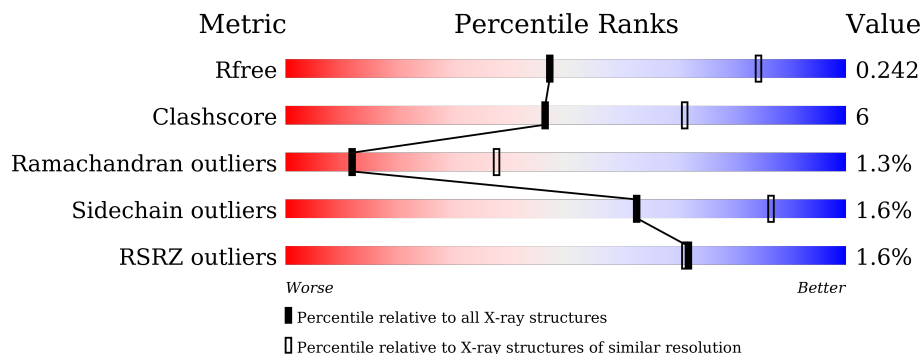|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.90 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	Percentile Ranks	Value
Rfree		0.242
Clashscore		6
Ramachandran outliers		1.3%
Sidechain outliers		1.6%
RSRZ outliers		1.6%

Worse ... *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	155	75% 12% • 12%
1	B	155	81% 7% • 11%
1	C	155	2% 74% 14% • 12%
1	D	155	% 68% 19% • 12%
2	E	4	50% 25% 25% 25% 25%
2	F	4	50% 50% 25% 25%

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Mol	Chain	Length	Quality of chain
2	G	4	25%　　　　25%　　　　50%
2	H	4	50%　　　　25%　　　　25%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 4704 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 Protein ENL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	137	Total	C	N	O	S	0	0	0
			1142	738	202	194	8			
1	B	138	Total	C	N	O	S	0	0	0
			1150	743	203	195	9			
1	C	137	Total	C	N	O	S	0	0	0
			1142	738	202	194	8			
1	D	137	Total	C	N	O	S	0	0	0
			1142	738	202	194	8			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP Q03111
A	-1	SER	-	expression tag	UNP Q03111
A	0	HIS	-	expression tag	UNP Q03111
A	111	LYS	ASN	engineered mutation	UNP Q03111
A	?	-	PRO	deletion	UNP Q03111
A	?	-	PRO	deletion	UNP Q03111
A	147	HIS	-	expression tag	UNP Q03111
A	148	HIS	-	expression tag	UNP Q03111
A	149	HIS	-	expression tag	UNP Q03111
A	150	HIS	-	expression tag	UNP Q03111
A	151	HIS	-	expression tag	UNP Q03111
A	152	HIS	-	expression tag	UNP Q03111
B	-2	GLY	-	expression tag	UNP Q03111
B	-1	SER	-	expression tag	UNP Q03111
B	0	HIS	-	expression tag	UNP Q03111
B	111	LYS	ASN	engineered mutation	UNP Q03111
B	?	-	PRO	deletion	UNP Q03111
B	?	-	PRO	deletion	UNP Q03111
B	147	HIS	-	expression tag	UNP Q03111
B	148	HIS	-	expression tag	UNP Q03111
B	149	HIS	-	expression tag	UNP Q03111

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Chain	Residue	Modelled	Actual	Comment	Reference
B	150	HIS	-	expression tag	UNP Q03111
B	151	HIS	-	expression tag	UNP Q03111
B	152	HIS	-	expression tag	UNP Q03111
C	-2	GLY	-	expression tag	UNP Q03111
C	-1	SER	-	expression tag	UNP Q03111
C	0	HIS	-	expression tag	UNP Q03111
C	111	LYS	ASN	engineered mutation	UNP Q03111
C	?	-	PRO	deletion	UNP Q03111
C	?	-	PRO	deletion	UNP Q03111
C	147	HIS	-	expression tag	UNP Q03111
C	148	HIS	-	expression tag	UNP Q03111
C	149	HIS	-	expression tag	UNP Q03111
C	150	HIS	-	expression tag	UNP Q03111
C	151	HIS	-	expression tag	UNP Q03111
C	152	HIS	-	expression tag	UNP Q03111
D	-2	GLY	-	expression tag	UNP Q03111
D	-1	SER	-	expression tag	UNP Q03111
D	0	HIS	-	expression tag	UNP Q03111
D	111	LYS	ASN	engineered mutation	UNP Q03111
D	?	-	PRO	deletion	UNP Q03111
D	?	-	PRO	deletion	UNP Q03111
D	147	HIS	-	expression tag	UNP Q03111
D	148	HIS	-	expression tag	UNP Q03111
D	149	HIS	-	expression tag	UNP Q03111
D	150	HIS	-	expression tag	UNP Q03111
D	151	HIS	-	expression tag	UNP Q03111
D	152	HIS	-	expression tag	UNP Q03111

- Molecule 2 is a protein called ALA-ALA-ARG-ALY.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	4	Total	C	N	O	0	0	0
			34	20	8	6			
2	F	4	Total	C	N	O	0	0	0
			34	20	8	6			
2	G	2	Total	C	N	O	0	0	0
			24	14	6	4			
2	H	3	Total	C	N	O	0	0	0
			29	17	7	5			

- Molecule 3 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	4	Total 4	O 4	0	0
3	B	2	Total 2	O 2	0	0
3	D	1	Total 1	O 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 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.
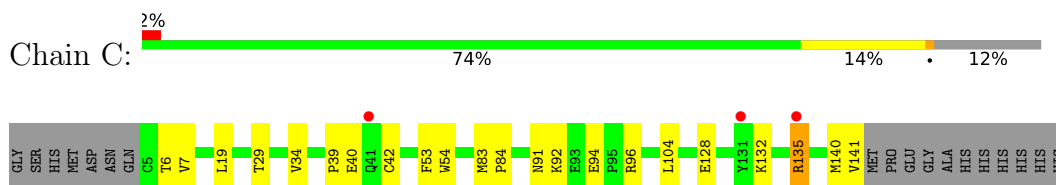
- Molecule 1: Protein ENL
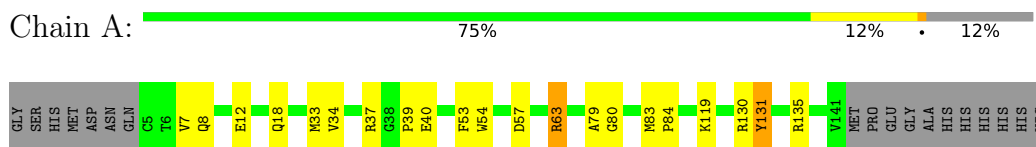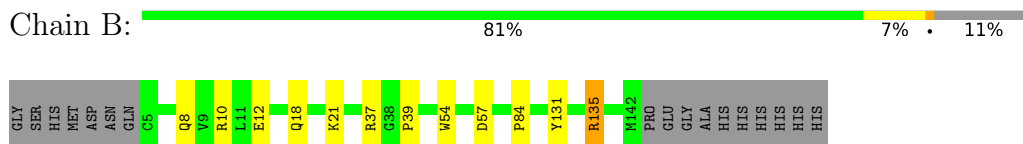
Chain A:

- Molecule 1: Protein ENL

Chain B:

- Molecule 1: Protein ENL

Chain C:

- Molecule 1: Protein ENL

Chain D:

- Molecule 2: ALA-ALA-ARG-ALY

Chain E:

- Molecule 2: ALA-ALA-ARG-ALY

Chain F:

50%

50% 25% 25%

A24 A25 R26 K27

• Molecule 2: ALA-ALA-ARG-ALY

Chain G:

25% 25% 50%

ALA ALA R26 K27

• Molecule 2: ALA-ALA-ARG-ALY

Chain H:

50% 25% 25%

ALA A25 R26 K27
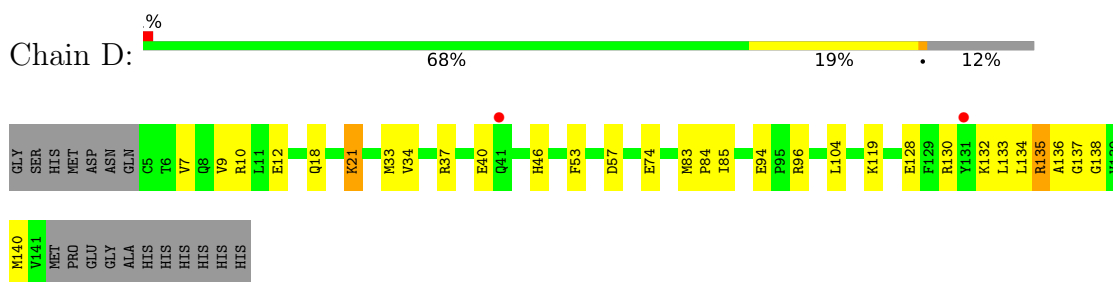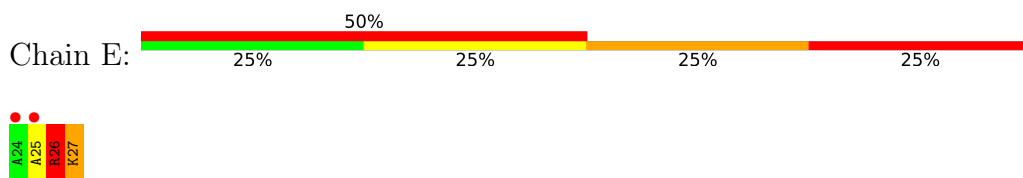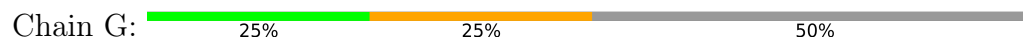
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	82.79Å　　91.31Å　　165.82Å 90.00°　　90.00°　　90.00°	Depositor
Resolution (Å)	45.97　–　2.90 49.31　–　2.90	Depositor EDS
% Data completeness (in resolution range)	99.2 (45.97-2.90) 99.2 (49.31-2.90)	Depositor EDS
R_{merge}	0.24	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.98 (at 2.91Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.208　,　0.248 0.202　,　0.242	Depositor DCC
R_{free} test set	1413 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	45.9	Xtriage
Anisotropy	0.566	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 35.5	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	4704	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 30.04 % 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 1.3979e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ALY

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	0.62	0/1175	0.77	2/1585 (0.1%)
1	B	0.57	0/1183	0.72	1/1595 (0.1%)
1	C	0.60	1/1175 (0.1%)	0.74	2/1585 (0.1%)
1	D	0.59	1/1175 (0.1%)	0.76	1/1585 (0.1%)
2	E	0.81	0/20	1.48	1/25 (4.0%)
2	F	0.97	0/20	0.97	0/25
2	G	0.61	0/10	1.37	0/11
2	H	0.96	0/15	1.11	0/18
All	All	0.60	2/4773 (0.0%)	0.75	7/6429 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	135	ARG	CG-CD	6.62	1.68	1.51
1	C	135	ARG	CB-CG	5.88	1.68	1.52

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	135	ARG	NE-CZ-NH1	-9.96	115.32	120.30
1	C	135	ARG	CG-CD-NE	-8.72	93.49	111.80
1	A	131	TYR	CB-CG-CD2	8.35	126.01	121.00
1	D	135	ARG	CB-CG-CD	7.38	130.80	111.60
1	A	131	TYR	CB-CG-CD1	-6.34	117.20	121.00
2	E	26	ARG	NE-CZ-NH1	-5.67	117.46	120.30
1	C	135	ARG	CA-CB-CG	5.14	124.70	113.40

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	1142	0	1138	14	0
1	B	1150	0	1147	9	0
1	C	1142	0	1138	17	0
1	D	1142	0	1138	23	0
2	E	34	0	35	2	0
2	F	34	0	35	1	0
2	G	24	0	26	1	0
2	H	29	0	30	0	0
3	A	4	0	0	0	0
3	B	2	0	0	0	0
3	D	1	0	0	0	0
All	All	4704	0	4687	59	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 6.

All (59) 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:C:135:ARG:CZ	1:C:135:ARG:HA	2.08	0.83
1:D:21:LYS:HE2	1:D:21:LYS:H	1.47	0.78
1:A:131:TYR:CE1	1:A:135:ARG:HB2	2.23	0.74
1:B:57:ASP:OD2	2:F:27:ALY:O	2.07	0.73
1:A:84:PRO:HG3	1:C:84:PRO:HG3	1.72	0.71
1:C:135:ARG:HA	1:C:135:ARG:NH2	2.16	0.61
1:C:135:ARG:HA	1:C:135:ARG:NE	2.15	0.60
1:D:134:LEU:O	1:D:137:GLY:N	2.35	0.58
1:B:84:PRO:HG3	1:D:84:PRO:HG3	1.85	0.58
1:D:9:VAL:HG21	1:D:133:LEU:HD22	1.86	0.57
1:D:12:GLU:HB2	1:D:37:ARG:HG3	1.87	0.57
1:B:10:ARG:HG3	1:B:39:PRO:HG2	1.87	0.56
1:D:134:LEU:O	1:D:136:ALA:N	2.40	0.54
1:A:34:VAL:HG11	1:A:83:MET:HE1	1.90	0.54
1:D:10:ARG:HE	1:D:119:LYS:HG3	1.72	0.53
1:B:131:TYR:CE1	1:B:135:ARG:NH2	2.76	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:21:LYS:H	1:D:21:LYS:CE	2.20	0.52
1:B:21:LYS:HE3	1:C:92:LYS:HE3	1.93	0.51
1:A:8:GLN:OE1	1:A:119:LYS:HE3	2.10	0.51
1:B:12:GLU:OE1	1:B:37:ARG:NH2	2.44	0.51
1:A:12:GLU:HB2	1:A:37:ARG:HG3	1.92	0.50
1:A:79:ALA:HB3	2:E:27:ALY:HG3	1.94	0.50
1:C:34:VAL:HG11	1:C:83:MET:HE1	1.93	0.50
1:D:34:VAL:HG11	1:D:83:MET:HE1	1.94	0.50
1:C:7:VAL:HG22	1:C:140:MET:HG2	1.95	0.49
1:A:54:TRP:HB2	1:A:84:PRO:HD2	1.96	0.48
1:C:6:THR:O	1:C:141:VAL:HG22	2.13	0.48
1:D:33:MET:HG2	1:D:34:VAL:N	2.27	0.48
1:A:80:GLY:O	2:E:26:ARG:HA	2.14	0.47
1:C:135:ARG:NE	1:C:135:ARG:CA	2.76	0.47
1:D:34:VAL:HG21	1:D:83:MET:HE2	1.96	0.46
1:D:10:ARG:NE	1:D:119:LYS:HE3	2.31	0.46
1:C:19:LEU:HD12	1:C:29:THR:O	2.15	0.46
1:B:57:ASP:OD1	1:B:57:ASP:N	2.48	0.45
1:A:33:MET:HG2	1:A:34:VAL:N	2.30	0.45
1:B:54:TRP:HB2	1:B:84:PRO:HD2	1.99	0.45
1:A:57:ASP:OD1	2:G:27:ALY:O	2.35	0.45
1:B:21:LYS:CE	1:C:92:LYS:HE3	2.46	0.44
1:D:46:HIS:O	1:D:132:LYS:HB3	2.18	0.44
1:D:134:LEU:HA	1:D:138:GLY:HA3	2.00	0.44
1:A:39:PRO:O	1:A:40:GLU:C	2.57	0.44
1:C:94:GLU:OE2	1:C:96:ARG:HG3	2.17	0.43
1:D:33:MET:HG3	1:D:74:GLU:HG2	1.99	0.43
1:D:83:MET:HE2	1:D:85:ILE:HD11	2.00	0.43
1:A:54:TRP:CH2	1:A:63:ARG:HD2	2.53	0.43
1:C:53:PHE:HD2	1:C:83:MET:CE	2.31	0.43
1:C:54:TRP:HB2	1:C:84:PRO:HD2	1.99	0.43
1:D:128:GLU:O	1:D:132:LYS:HG3	2.18	0.43
1:C:39:PRO:O	1:C:42:CYS:HB2	2.18	0.42
1:C:128:GLU:O	1:C:132:LYS:HG3	2.19	0.42
1:D:140:MET:HE2	1:D:140:MET:HB3	1.83	0.42
1:D:53:PHE:HD1	1:D:83:MET:CE	2.33	0.42
1:D:130:ARG:HH11	1:D:130:ARG:HD3	1.68	0.42
1:D:94:GLU:OE2	1:D:96:ARG:HG3	2.21	0.41
1:C:91:ASN:O	1:C:96:ARG:HD2	2.21	0.41
1:D:83:MET:HE3	1:D:85:ILE:HG12	2.02	0.41
1:D:7:VAL:HG21	1:D:130:ARG:HG3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:7:VAL:HG21	1:A:130:ARG:HG3	2.03	0.40
1:A:53:PHE:HD2	1:A:83:MET:CE	2.34	0.40

There are no symmetry-related clashes.

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	135/155 (87%)	132 (98%)	3 (2%)	0	100	100
1	B	136/155 (88%)	135 (99%)	1 (1%)	0	100	100
1	C	135/155 (87%)	131 (97%)	3 (2%)	1 (1%)	22	54
1	D	135/155 (87%)	130 (96%)	2 (2%)	3 (2%)	6	24
2	E	2/4 (50%)	0	0	2 (100%)	0	0
2	F	2/4 (50%)	0	1 (50%)	1 (50%)	0	0
2	H	1/4 (25%)	1 (100%)	0	0	100	100
All	All	546/632 (86%)	529 (97%)	10 (2%)	7 (1%)	12	37

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	57	ASP
2	F	26	ARG
1	C	40	GLU
1	D	40	GLU
1	D	135	ARG
2	E	25	ALA
2	E	26	ARG

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	126/141 (89%)	124 (98%)	2 (2%)	62	86
1	B	127/141 (90%)	125 (98%)	2 (2%)	62	86
1	C	126/141 (89%)	125 (99%)	1 (1%)	81	94
1	D	126/141 (89%)	123 (98%)	3 (2%)	49	79
2	E	1/1 (100%)	1 (100%)	0	100	100
2	F	1/1 (100%)	1 (100%)	0	100	100
2	G	1/1 (100%)	1 (100%)	0	100	100
2	H	1/1 (100%)	1 (100%)	0	100	100
All	All	509/568 (90%)	501 (98%)	8 (2%)	62	86

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	GLN
1	A	63	ARG
1	B	8	GLN
1	B	18	GLN
1	C	104	LEU
1	D	18	GLN
1	D	21	LYS
1	D	104	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	124	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
2	ALY	G	27	2	11,12,12	1.72	1 (9%)	13,14,14	2.23	3 (23%)
2	ALY	H	27	2	11,12,12	1.66	2 (18%)	13,14,14	2.14	4 (30%)
2	ALY	F	27	2	11,12,12	1.73	2 (18%)	13,14,14	2.15	4 (30%)
2	ALY	E	27	2	11,12,12	1.71	2 (18%)	13,14,14	1.85	3 (23%)

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
2	ALY	G	27	2	-	0/12/12/12	-
2	ALY	H	27	2	-	2/12/12/12	-
2	ALY	F	27	2	-	3/12/12/12	-
2	ALY	E	27	2	-	4/12/12/12	-

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	27	ALY	O-C	4.75	1.36	1.22
2	G	27	ALY	O-C	4.72	1.36	1.22
2	H	27	ALY	O-C	4.48	1.35	1.22
2	E	27	ALY	O-C	4.47	1.35	1.22
2	F	27	ALY	CH-NZ	2.17	1.40	1.34
2	H	27	ALY	OXT-C	-2.10	1.23	1.30
2	E	27	ALY	OXT-C	-2.08	1.23	1.30

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	G	27	ALY	OXT-C-CA	5.47	132.00	113.38
2	F	27	ALY	OXT-C-CA	5.44	131.91	113.38
2	H	27	ALY	OXT-C-CA	5.28	131.35	113.38
2	G	27	ALY	OXT-C-O	-4.63	113.58	124.09
2	E	27	ALY	OXT-C-CA	4.32	128.09	113.38
2	E	27	ALY	OXT-C-O	-3.77	115.54	124.09
2	F	27	ALY	OXT-C-O	-3.60	115.91	124.09
2	H	27	ALY	OXT-C-O	-3.20	116.83	124.09
2	H	27	ALY	O-C-CA	-2.92	111.82	122.14
2	F	27	ALY	O-C-CA	-2.82	112.18	122.14
2	E	27	ALY	CB-CA-N	2.54	116.83	110.17
2	H	27	ALY	CB-CA-N	2.34	116.30	110.17
2	G	27	ALY	O-C-CA	-2.19	114.40	122.14
2	F	27	ALY	CE-NZ-CH	2.19	125.92	122.56

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	27	ALY	OXT-C-CA-CB
2	H	27	ALY	OXT-C-CA-CB
2	E	27	ALY	N-CA-CB-CG
2	F	27	ALY	O-C-CA-CB
2	H	27	ALY	O-C-CA-CB
2	E	27	ALY	OXT-C-CA-CB
2	E	27	ALY	C-CA-CB-CG
2	E	27	ALY	O-C-CA-CB
2	F	27	ALY	OXT-C-CA-N

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	27	ALY	1	0
2	F	27	ALY	1	0
2	E	27	ALY	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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	137/155 (88%)	-0.19	0	100	100	28, 40, 64, 78	0
1	B	138/155 (89%)	-0.21	0	100	100	31, 40, 63, 81	0
1	C	137/155 (88%)	-0.06	3 (2%)	62	59	30, 42, 71, 89	0
1	D	137/155 (88%)	0.04	2 (1%)	73	73	31, 46, 72, 100	0
2	E	3/4 (75%)	2.16	2 (66%)	0	0	51, 51, 64, 70	0
2	F	3/4 (75%)	5.09	2 (66%)	0	0	62, 62, 88, 97	0
2	G	1/4 (25%)	0.47	0	100	100	65, 65, 65, 65	0
2	H	2/4 (50%)	0.30	0	100	100	47, 47, 47, 58	0
All	All	558/636 (87%)	-0.06	9 (1%)	72	71	28, 42, 71, 100	0

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	F	24	ALA	9.7
2	F	25	ALA	5.6
2	E	24	ALA	4.1
1	C	41	GLN	3.7
1	C	131	TYR	3.0
1	D	131	TYR	3.0
1	D	41	GLN	2.8
1	C	135	ARG	2.6
2	E	25	ALA	2.0

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

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
2	ALY	F	27	13/13	0.93	0.20	34,53,65,65	0
2	ALY	G	27	13/13	0.93	0.22	34,46,66,68	0
2	ALY	E	27	13/13	0.96	0.20	32,38,54,58	0
2	ALY	H	27	13/13	0.97	0.20	33,41,50,60	0

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.