wwPDB X-ray Structure Validation Summary Report (i)

Sep 14, 2023 – 05:42 AM EDT

PDB ID	:	4V81
Title	:	The crystal structure of yeast CCT reveals intrinsic asymmetry of eukaryotic cytosolic chaperonins
Authors	:	Dekker, C.; Roe, S.M.; McCormack, E.A.; Beuron, F.; Pearl, L.H.; Willison, K.R.
Deposited on	:	2010-10-17
Resolution	:	3.80 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 (i) 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 (i)) 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	:	2.35.1
buster-report	:	1.1.7 (2018)
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)	:	2.35.1

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 3.80 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		0.342
Clashscore		53
Ramachandran outliers		3.8%
Sidechain outliers		12.5%
RSRZ outliers		3.5%

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	1212 (4.00-3.60)
Clashscore	141614	1288 (4.00-3.60)
Ramachandran outliers	138981	1243 (4.00-3.60)
Sidechain outliers	138945	1237 (4.00-3.60)
RSRZ outliers	127900	1121 (4.00-3.60)

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	559	2% / 52% / 39% / 6% ·
1	I	559	5% / 53% / 38% / 6% ·
1	a	559	3% / 89% / 8% ·
1	i	559	3% / 89% / 8% ·

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Mol	Chain	Length	Quality of chain
2	B	527	% 36% 49% 11% ·
2	J	527	3% 34% 51% 12% ·
2	b	527	2% 82% 14% · ·
2	j	527	% 82% 14% · ·
3	C	590	2% 45% 37% 5% 13%
3	K	590	3% 46% 36% 5% 13%
3	c	590	3% 79% 7% 13%
3	k	590	2% 79% 8% 13%
4	D	528	3% 50% 43% 6% ·
4	L	528	5% 50% 43% 5% ·
4	d	528	3% 91% 8% ·
4	l	528	4% 91% 8% ·
5	E	562	3% 48% 39% 6% 7%
5	M	562	6% 48% 39% 6% 7%
5	e	562	4% 84% 9% · 7%
5	m	562	3% 84% 9% · 7%
6	F	546	5% 35% 50% 12% · ·
6	N	546	3% 37% 49% 11% · ·
6	f	546	4% 83% 14% · ·
6	n	546	3% 84% 14% · ·
7	G	550	2% 43% 41% 8% 7%
7	O	550	4% 45% 40% 8% 7%
7	g	550	3% 83% 10% 7%
7	o	550	4% 83% 10% 7%
8	H	568	2% 46% 39% 7% 8%

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Mol	Chain	Length	Quality of chain
8	P	568	7% · 47% · 38% · 7% · 8%
8	h	568	5% · 83% · 9% · 8%
8	p	568	5% · 83% · 9% · 8%

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
10	BEF	C	1102	-	-	X	-
10	BEF	F	602	-	-	X	-
10	BEF	N	602	-	-	X	-
9	ADP	A	601	X	-	-	-
9	ADP	B	601	X	-	-	-
9	ADP	C	1101	X	-	-	-
9	ADP	D	601	X	-	-	-
9	ADP	E	601	X	-	-	-
9	ADP	G	601	X	-	-	-
9	ADP	H	601	X	-	-	-
9	ADP	J	601	X	-	-	-
9	ADP	M	601	X	-	-	-
9	ADP	N	601	X	-	-	-
9	ADP	P	601	X	-	-	-
9	ADP	a	1601	X	-	-	-
9	ADP	b	1601	X	-	-	-
9	ADP	e	1601	X	-	-	-
9	ADP	f	1601	X	-	-	-
9	ADP	g	1601	X	-	-	-
9	ADP	h	1601	X	-	-	-
9	ADP	k	2101	X	-	-	-
9	ADP	m	1601	X	-	-	-
9	ADP	n	1601	X	-	-	-
9	ADP	p	1601	X	-	-	-

2 Entry composition ⓘ

There are 12 unique types of molecules in this entry. The entry contains 111235 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 T-complex protein 1 subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	544	Total	C	N	O	S	0	0	0
			3492	2146	600	732	14			
1	I	544	Total	C	N	O	S	0	0	0
			3492	2146	600	732	14			
1	a	544	Total	C	N	O	S	0	0	0
			3492	2146	600	732	14			
1	i	544	Total	C	N	O	S	0	0	0
			3492	2146	600	732	14			

- Molecule 2 is a protein called T-complex protein 1 subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	513	Total	C	N	O	S	0	0	0
			3459	2125	597	728	9			
2	J	513	Total	C	N	O	S	0	0	0
			3459	2125	597	728	9			
2	b	513	Total	C	N	O	S	0	0	0
			3460	2126	597	728	9			
2	j	513	Total	C	N	O	S	0	0	0
			3457	2123	597	728	9			

- Molecule 3 is a protein called T-complex protein 1 subunit gamma.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	514	Total	C	N	O	S	0	0	0
			3392	2104	590	685	13			
3	K	514	Total	C	N	O	S	0	0	0
			3393	2104	590	685	14			
3	c	514	Total	C	N	O	S	0	0	0
			3395	2106	590	685	14			
3	k	514	Total	C	N	O	S	0	0	0
			3395	2106	590	685	14			

There are 224 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	1001	GLY	-	SEE REMARK 999	UNP P39077
C	1002	SER	-	SEE REMARK 999	UNP P39077
C	1003	GLY	-	SEE REMARK 999	UNP P39077
C	1004	SER	-	SEE REMARK 999	UNP P39077
C	1005	GLY	-	SEE REMARK 999	UNP P39077
C	1006	TRP	-	SEE REMARK 999	UNP P39077
C	1007	SER	-	SEE REMARK 999	UNP P39077
C	1008	HIS	-	SEE REMARK 999	UNP P39077
C	1009	PRO	-	SEE REMARK 999	UNP P39077
C	1010	GLN	-	SEE REMARK 999	UNP P39077
C	1011	PHE	-	SEE REMARK 999	UNP P39077
C	1012	GLU	-	SEE REMARK 999	UNP P39077
C	1013	LYS	-	SEE REMARK 999	UNP P39077
C	1014	GLY	-	SEE REMARK 999	UNP P39077
C	1015	SER	-	SEE REMARK 999	UNP P39077
C	1016	GLY	-	SEE REMARK 999	UNP P39077
C	1017	LYS	-	SEE REMARK 999	UNP P39077
C	1018	ARG	-	SEE REMARK 999	UNP P39077
C	1019	ARG	-	SEE REMARK 999	UNP P39077
C	1020	TRP	-	SEE REMARK 999	UNP P39077
C	1021	LYS	-	SEE REMARK 999	UNP P39077
C	1022	LYS	-	SEE REMARK 999	UNP P39077
C	1023	ASN	-	SEE REMARK 999	UNP P39077
C	1024	PHE	-	SEE REMARK 999	UNP P39077
C	1025	ILE	-	SEE REMARK 999	UNP P39077
C	1026	ALA	-	SEE REMARK 999	UNP P39077
C	1027	VAL	-	SEE REMARK 999	UNP P39077
C	1028	SER	-	SEE REMARK 999	UNP P39077
C	1029	ALA	-	SEE REMARK 999	UNP P39077
C	1030	ALA	-	SEE REMARK 999	UNP P39077
C	1031	ASN	-	SEE REMARK 999	UNP P39077
C	1032	ARG	-	SEE REMARK 999	UNP P39077
C	1033	PHE	-	SEE REMARK 999	UNP P39077
C	1034	LYS	-	SEE REMARK 999	UNP P39077
C	1035	LYS	-	SEE REMARK 999	UNP P39077
C	1036	ILE	-	SEE REMARK 999	UNP P39077
C	1037	SER	-	SEE REMARK 999	UNP P39077
C	1038	SER	-	SEE REMARK 999	UNP P39077
C	1039	SER	-	SEE REMARK 999	UNP P39077
C	1040	GLY	-	SEE REMARK 999	UNP P39077
C	1041	ALA	-	SEE REMARK 999	UNP P39077
C	1042	LEU	-	SEE REMARK 999	UNP P39077

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1043	GLY	-	SEE REMARK 999	UNP P39077
C	1044	SER	-	SEE REMARK 999	UNP P39077
C	1045	GLY	-	SEE REMARK 999	UNP P39077
C	1046	HIS	-	SEE REMARK 999	UNP P39077
C	1047	HIS	-	SEE REMARK 999	UNP P39077
C	1048	HIS	-	SEE REMARK 999	UNP P39077
C	1049	HIS	-	SEE REMARK 999	UNP P39077
C	1050	HIS	-	SEE REMARK 999	UNP P39077
C	1051	HIS	-	SEE REMARK 999	UNP P39077
C	1052	HIS	-	SEE REMARK 999	UNP P39077
C	1053	HIS	-	SEE REMARK 999	UNP P39077
C	1054	GLY	-	SEE REMARK 999	UNP P39077
C	1055	SER	-	SEE REMARK 999	UNP P39077
C	1056	GLY	-	SEE REMARK 999	UNP P39077
K	1001	GLY	-	SEE REMARK 999	UNP P39077
K	1002	SER	-	SEE REMARK 999	UNP P39077
K	1003	GLY	-	SEE REMARK 999	UNP P39077
K	1004	SER	-	SEE REMARK 999	UNP P39077
K	1005	GLY	-	SEE REMARK 999	UNP P39077
K	1006	TRP	-	SEE REMARK 999	UNP P39077
K	1007	SER	-	SEE REMARK 999	UNP P39077
K	1008	HIS	-	SEE REMARK 999	UNP P39077
K	1009	PRO	-	SEE REMARK 999	UNP P39077
K	1010	GLN	-	SEE REMARK 999	UNP P39077
K	1011	PHE	-	SEE REMARK 999	UNP P39077
K	1012	GLU	-	SEE REMARK 999	UNP P39077
K	1013	LYS	-	SEE REMARK 999	UNP P39077
K	1014	GLY	-	SEE REMARK 999	UNP P39077
K	1015	SER	-	SEE REMARK 999	UNP P39077
K	1016	GLY	-	SEE REMARK 999	UNP P39077
K	1017	LYS	-	SEE REMARK 999	UNP P39077
K	1018	ARG	-	SEE REMARK 999	UNP P39077
K	1019	ARG	-	SEE REMARK 999	UNP P39077
K	1020	TRP	-	SEE REMARK 999	UNP P39077
K	1021	LYS	-	SEE REMARK 999	UNP P39077
K	1022	LYS	-	SEE REMARK 999	UNP P39077
K	1023	ASN	-	SEE REMARK 999	UNP P39077
K	1024	PHE	-	SEE REMARK 999	UNP P39077
K	1025	ILE	-	SEE REMARK 999	UNP P39077
K	1026	ALA	-	SEE REMARK 999	UNP P39077
K	1027	VAL	-	SEE REMARK 999	UNP P39077
K	1028	SER	-	SEE REMARK 999	UNP P39077

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Chain	Residue	Modelled	Actual	Comment	Reference
K	1029	ALA	-	SEE REMARK 999	UNP P39077
K	1030	ALA	-	SEE REMARK 999	UNP P39077
K	1031	ASN	-	SEE REMARK 999	UNP P39077
K	1032	ARG	-	SEE REMARK 999	UNP P39077
K	1033	PHE	-	SEE REMARK 999	UNP P39077
K	1034	LYS	-	SEE REMARK 999	UNP P39077
K	1035	LYS	-	SEE REMARK 999	UNP P39077
K	1036	ILE	-	SEE REMARK 999	UNP P39077
K	1037	SER	-	SEE REMARK 999	UNP P39077
K	1038	SER	-	SEE REMARK 999	UNP P39077
K	1039	SER	-	SEE REMARK 999	UNP P39077
K	1040	GLY	-	SEE REMARK 999	UNP P39077
K	1041	ALA	-	SEE REMARK 999	UNP P39077
K	1042	LEU	-	SEE REMARK 999	UNP P39077
K	1043	GLY	-	SEE REMARK 999	UNP P39077
K	1044	SER	-	SEE REMARK 999	UNP P39077
K	1045	GLY	-	SEE REMARK 999	UNP P39077
K	1046	HIS	-	SEE REMARK 999	UNP P39077
K	1047	HIS	-	SEE REMARK 999	UNP P39077
K	1048	HIS	-	SEE REMARK 999	UNP P39077
K	1049	HIS	-	SEE REMARK 999	UNP P39077
K	1050	HIS	-	SEE REMARK 999	UNP P39077
K	1051	HIS	-	SEE REMARK 999	UNP P39077
K	1052	HIS	-	SEE REMARK 999	UNP P39077
K	1053	HIS	-	SEE REMARK 999	UNP P39077
K	1054	GLY	-	SEE REMARK 999	UNP P39077
K	1055	SER	-	SEE REMARK 999	UNP P39077
K	1056	GLY	-	SEE REMARK 999	UNP P39077
c	2001	GLY	-	SEE REMARK 999	UNP P39077
c	2002	SER	-	SEE REMARK 999	UNP P39077
c	2003	GLY	-	SEE REMARK 999	UNP P39077
c	2004	SER	-	SEE REMARK 999	UNP P39077
c	2005	GLY	-	SEE REMARK 999	UNP P39077
c	2006	TRP	-	SEE REMARK 999	UNP P39077
c	2007	SER	-	SEE REMARK 999	UNP P39077
c	2008	HIS	-	SEE REMARK 999	UNP P39077
c	2009	PRO	-	SEE REMARK 999	UNP P39077
c	2010	GLN	-	SEE REMARK 999	UNP P39077
c	2011	PHE	-	SEE REMARK 999	UNP P39077
c	2012	GLU	-	SEE REMARK 999	UNP P39077
c	2013	LYS	-	SEE REMARK 999	UNP P39077
c	2014	GLY	-	SEE REMARK 999	UNP P39077

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Chain	Residue	Modelled	Actual	Comment	Reference
c	2015	SER	-	SEE REMARK 999	UNP P39077
c	2016	GLY	-	SEE REMARK 999	UNP P39077
c	2017	LYS	-	SEE REMARK 999	UNP P39077
c	2018	ARG	-	SEE REMARK 999	UNP P39077
c	2019	ARG	-	SEE REMARK 999	UNP P39077
c	2020	TRP	-	SEE REMARK 999	UNP P39077
c	2021	LYS	-	SEE REMARK 999	UNP P39077
c	2022	LYS	-	SEE REMARK 999	UNP P39077
c	2023	ASN	-	SEE REMARK 999	UNP P39077
c	2024	PHE	-	SEE REMARK 999	UNP P39077
c	2025	ILE	-	SEE REMARK 999	UNP P39077
c	2026	ALA	-	SEE REMARK 999	UNP P39077
c	2027	VAL	-	SEE REMARK 999	UNP P39077
c	2028	SER	-	SEE REMARK 999	UNP P39077
c	2029	ALA	-	SEE REMARK 999	UNP P39077
c	2030	ALA	-	SEE REMARK 999	UNP P39077
c	2031	ASN	-	SEE REMARK 999	UNP P39077
c	2032	ARG	-	SEE REMARK 999	UNP P39077
c	2033	PHE	-	SEE REMARK 999	UNP P39077
c	2034	LYS	-	SEE REMARK 999	UNP P39077
c	2035	LYS	-	SEE REMARK 999	UNP P39077
c	2036	ILE	-	SEE REMARK 999	UNP P39077
c	2037	SER	-	SEE REMARK 999	UNP P39077
c	2038	SER	-	SEE REMARK 999	UNP P39077
c	2039	SER	-	SEE REMARK 999	UNP P39077
c	2040	GLY	-	SEE REMARK 999	UNP P39077
c	2041	ALA	-	SEE REMARK 999	UNP P39077
c	2042	LEU	-	SEE REMARK 999	UNP P39077
c	2043	GLY	-	SEE REMARK 999	UNP P39077
c	2044	SER	-	SEE REMARK 999	UNP P39077
c	2045	GLY	-	SEE REMARK 999	UNP P39077
c	2046	HIS	-	SEE REMARK 999	UNP P39077
c	2047	HIS	-	SEE REMARK 999	UNP P39077
c	2048	HIS	-	SEE REMARK 999	UNP P39077
c	2049	HIS	-	SEE REMARK 999	UNP P39077
c	2050	HIS	-	SEE REMARK 999	UNP P39077
c	2051	HIS	-	SEE REMARK 999	UNP P39077
c	2052	HIS	-	SEE REMARK 999	UNP P39077
c	2053	HIS	-	SEE REMARK 999	UNP P39077
c	2054	GLY	-	SEE REMARK 999	UNP P39077
c	2055	SER	-	SEE REMARK 999	UNP P39077
c	2056	GLY	-	SEE REMARK 999	UNP P39077

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Chain	Residue	Modelled	Actual	Comment	Reference
k	2001	GLY	-	SEE REMARK 999	UNP P39077
k	2002	SER	-	SEE REMARK 999	UNP P39077
k	2003	GLY	-	SEE REMARK 999	UNP P39077
k	2004	SER	-	SEE REMARK 999	UNP P39077
k	2005	GLY	-	SEE REMARK 999	UNP P39077
k	2006	TRP	-	SEE REMARK 999	UNP P39077
k	2007	SER	-	SEE REMARK 999	UNP P39077
k	2008	HIS	-	SEE REMARK 999	UNP P39077
k	2009	PRO	-	SEE REMARK 999	UNP P39077
k	2010	GLN	-	SEE REMARK 999	UNP P39077
k	2011	PHE	-	SEE REMARK 999	UNP P39077
k	2012	GLU	-	SEE REMARK 999	UNP P39077
k	2013	LYS	-	SEE REMARK 999	UNP P39077
k	2014	GLY	-	SEE REMARK 999	UNP P39077
k	2015	SER	-	SEE REMARK 999	UNP P39077
k	2016	GLY	-	SEE REMARK 999	UNP P39077
k	2017	LYS	-	SEE REMARK 999	UNP P39077
k	2018	ARG	-	SEE REMARK 999	UNP P39077
k	2019	ARG	-	SEE REMARK 999	UNP P39077
k	2020	TRP	-	SEE REMARK 999	UNP P39077
k	2021	LYS	-	SEE REMARK 999	UNP P39077
k	2022	LYS	-	SEE REMARK 999	UNP P39077
k	2023	ASN	-	SEE REMARK 999	UNP P39077
k	2024	PHE	-	SEE REMARK 999	UNP P39077
k	2025	ILE	-	SEE REMARK 999	UNP P39077
k	2026	ALA	-	SEE REMARK 999	UNP P39077
k	2027	VAL	-	SEE REMARK 999	UNP P39077
k	2028	SER	-	SEE REMARK 999	UNP P39077
k	2029	ALA	-	SEE REMARK 999	UNP P39077
k	2030	ALA	-	SEE REMARK 999	UNP P39077
k	2031	ASN	-	SEE REMARK 999	UNP P39077
k	2032	ARG	-	SEE REMARK 999	UNP P39077
k	2033	PHE	-	SEE REMARK 999	UNP P39077
k	2034	LYS	-	SEE REMARK 999	UNP P39077
k	2035	LYS	-	SEE REMARK 999	UNP P39077
k	2036	ILE	-	SEE REMARK 999	UNP P39077
k	2037	SER	-	SEE REMARK 999	UNP P39077
k	2038	SER	-	SEE REMARK 999	UNP P39077
k	2039	SER	-	SEE REMARK 999	UNP P39077
k	2040	GLY	-	SEE REMARK 999	UNP P39077
k	2041	ALA	-	SEE REMARK 999	UNP P39077
k	2042	LEU	-	SEE REMARK 999	UNP P39077

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Chain	Residue	Modelled	Actual	Comment	Reference
k	2043	GLY	-	SEE REMARK 999	UNP P39077
k	2044	SER	-	SEE REMARK 999	UNP P39077
k	2045	GLY	-	SEE REMARK 999	UNP P39077
k	2046	HIS	-	SEE REMARK 999	UNP P39077
k	2047	HIS	-	SEE REMARK 999	UNP P39077
k	2048	HIS	-	SEE REMARK 999	UNP P39077
k	2049	HIS	-	SEE REMARK 999	UNP P39077
k	2050	HIS	-	SEE REMARK 999	UNP P39077
k	2051	HIS	-	SEE REMARK 999	UNP P39077
k	2052	HIS	-	SEE REMARK 999	UNP P39077
k	2053	HIS	-	SEE REMARK 999	UNP P39077
k	2054	GLY	-	SEE REMARK 999	UNP P39077
k	2055	SER	-	SEE REMARK 999	UNP P39077
k	2056	GLY	-	SEE REMARK 999	UNP P39077

- Molecule 4 is a protein called T-complex protein 1 subunit delta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	522	Total 3398	C 2092	N 609	O 686	S 11	0	0	0
4	L	522	Total 3398	C 2092	N 609	O 686	S 11	0	0	0
4	d	522	Total 3398	C 2092	N 609	O 686	S 11	0	0	0
4	l	522	Total 3398	C 2092	N 609	O 686	S 11	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	345	ASP	GLY	engineered mutation	UNP P39078
L	345	ASP	GLY	engineered mutation	UNP P39078
d	1345	ASP	GLY	engineered mutation	UNP P39078
l	1345	ASP	GLY	engineered mutation	UNP P39078

- Molecule 5 is a protein called T-complex protein 1 subunit epsilon.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	525	Total 3437	C 2110	N 599	O 720	S 8	0	0	0
5	M	525	Total 3437	C 2110	N 599	O 720	S 8	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	e	525	Total 3437	C 2110	N 599	O 720	S 8	0	0	0
5	m	525	Total 3437	C 2110	N 599	O 720	S 8	0	0	0

- Molecule 6 is a protein called T-complex protein 1 subunit zeta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	533	Total 3631	C 2253	N 629	O 740	S 9	0	0	0
6	N	533	Total 3628	C 2250	N 629	O 740	S 9	0	0	0
6	f	533	Total 3633	C 2255	N 630	O 739	S 9	0	0	0
6	n	533	Total 3629	C 2252	N 629	O 739	S 9	0	0	0

- Molecule 7 is a protein called T-complex protein 1 subunit eta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	509	Total 3317	C 2055	N 583	O 669	S 10	0	0	0
7	O	509	Total 3314	C 2052	N 583	O 669	S 10	0	0	0
7	g	509	Total 3314	C 2052	N 583	O 669	S 10	0	0	0
7	o	509	Total 3314	C 2052	N 583	O 669	S 10	0	0	0

- Molecule 8 is a protein called T-complex protein 1 subunit theta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	525	Total 3487	C 2161	N 608	O 705	S 13	0	0	0
8	P	525	Total 3487	C 2161	N 608	O 705	S 13	0	0	0
8	h	525	Total 3485	C 2159	N 608	O 705	S 13	0	0	0
8	p	525	Total 3487	C 2161	N 608	O 705	S 13	0	0	0

- Molecule 9 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:

$C_{10}H_{15}N_5O_{10}P_2$).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	A	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	B	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	C	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	D	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	E	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	F	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	G	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	H	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	J	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	L	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	M	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	N	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	P	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	a	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	b	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	e	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	f	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	g	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	h	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	k	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	l	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	m	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	n	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	p	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

- Molecule 10 is BERYLLIUM TRIFLUORIDE ION (three-letter code: BEF) (formula: BeF_3).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	A	1	Total 4	Be 1	F 3	0	0
10	B	1	Total 4	Be 1	F 3	0	0
10	C	1	Total 4	Be 1	F 3	0	0
10	D	1	Total 4	Be 1	F 3	0	0
10	E	1	Total 4	Be 1	F 3	0	0
10	F	1	Total 4	Be 1	F 3	0	0
10	G	1	Total 4	Be 1	F 3	0	0
10	H	1	Total 4	Be 1	F 3	0	0
10	J	1	Total 4	Be 1	F 3	0	0
10	L	1	Total 4	Be 1	F 3	0	0
10	M	1	Total 4	Be 1	F 3	0	0
10	N	1	Total 4	Be 1	F 3	0	0
10	P	1	Total 4	Be 1	F 3	0	0
10	a	1	Total 4	Be 1	F 3	0	0
10	b	1	Total 4	Be 1	F 3	0	0
10	e	1	Total 4	Be 1	F 3	0	0
10	f	1	Total 4	Be 1	F 3	0	0
10	g	1	Total 4	Be 1	F 3	0	0
10	h	1	Total 4	Be 1	F 3	0	0
10	k	1	Total 4	Be 1	F 3	0	0
10	l	1	Total 4	Be 1	F 3	0	0
10	m	1	Total 4	Be 1	F 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	n	1	Total	Be	F	0	0
			4	1	3		
10	p	1	Total	Be	F	0	0
			4	1	3		

- Molecule 11 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	I	1	Total	O	S	0	0
			5	4	1		
11	K	1	Total	O	S	0	0
			5	4	1		
11	O	1	Total	O	S	0	0
			5	4	1		
11	c	1	Total	O	S	0	0
			5	4	1		
11	d	1	Total	O	S	0	0
			5	4	1		
11	i	1	Total	O	S	0	0
			5	4	1		
11	j	1	Total	O	S	0	0
			5	4	1		
11	o	1	Total	O	S	0	0
			5	4	1		

- Molecule 12 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	B	1	Total 1	O 1	0	0
12	E	1	Total 1	O 1	0	0
12	G	1	Total 1	O 1	0	0
12	M	1	Total 1	O 1	0	0
12	e	1	Total 1	O 1	0	0
12	g	1	Total 1	O 1	0	0
12	m	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: T-complex protein 1 subunit alpha

Chain A:

- Molecule 1: T-complex protein 1 subunit alpha

Chain I:

• Molecule 1: T-complex protein 1 subunit alpha

Chain a:

• Molecule 1: T-complex protein 1 subunit alpha

Chain i:

• Molecule 2: T-complex protein 1 subunit beta

Chain B:

• Molecule 2: T-complex protein 1 subunit beta

Chain J:

• Molecule 2: T-complex protein 1 subunit beta

Chain b:

• Molecule 2: T-complex protein 1 subunit beta

Chain j:

• Molecule 3: T-complex protein 1 subunit gamma

Chain C:

• Molecule 3: T-complex protein 1 subunit gamma

Chain K:

Q508 S509 V510 K511 T512 A513 I514 A517 C518 L519 L520 L521 R522 V523 D524 D525 I526 V527 S528 G529 V530 R531 LYS GLN GLU

• Molecule 3: T-complex protein 1 subunit gamma

Chain c:

3%

79% 7% 13%

MET GLN ALA PRO VAL V1006 F1007 M1008 T1016 Q1019 I1025 T1026 A1030 R1036 M1044 L1048 M1052 L1057 I1064 P1142 V1143 D1144 V1145 E1146 I1165 K1170 V1182 R1183 K1184 D1185 L1186 GLY GLN THR VAL GLU GLY GLU PRO ASN PHE GLU I1198 I1209 P1210

L1225 N1226 E1239 V1244 C1248 P1249 L1250 E1251 Y1252 E1256 S1257 Q1258 T1259 N1260 I1261 E1262 I1263 E1264 K1265 W1269 T1297 S1302 D1303 K1321 V1331 I1336 T1350 N1351 F1365 D1369 N1370 CYS LYS PRO GLY SER GLY SER TRP SER PRO GLN PHE

GLU LYS GLY SER GLY LYS ARG ARG TRP LYS LYS ASN PHE ILE ALA VAL SER ALA ALA ASN ARG PHE LYS LYS ILE SER SER SER GLY ALA LEU GLY SER GLY HIS HIS HIS HIS HIS HIS HIS G2054 P1410 Q1433 R1454 T1455 L1456 A1460 K1490 I1491 V1492 W1500

L1519 R1531 LYS GLN GLU

• Molecule 3: T-complex protein 1 subunit gamma

Chain k:

2%

79% 8% 13%

MET GLN ALA PRO VAL V1006 F1007 M1008 Q1012 T1016 Q1019 I1025 T1026 A1030 R1036 M1044 L1048 L1049 D1050 P1051 M1052 L1057 I1064 P1142 V1143 D1144 I1165 K1170 V1182 R1183 K1184 D1185 L1186 GLY GLN THR VAL GLU GLY GLU PRO ASN PHE GLU I1198

I1209 P1210 L1225 N1226 V1229 E1239 V1243 C1248 P1249 L1250 E1251 Y1252 E1256 S1257 Q1258 T1259 K1265 T1297 S1302 D1303 K1321 N1370 CYS LYS GLU PRO GLY SER GLY SER GLY TRP SER HIS PRO GLN PHE GLU LYS GLY SER GLY LYS ARG ARG TRP LYS LYS ASN

PHE ILE ALA VAL SER ALA ALA ASN ARG PHE LYS LYS ILE SER SER SER GLY ALA LEU GLY SER GLY HIS HIS HIS HIS HIS HIS HIS G2054 G1384 P1410 Q1433 R1454 T1455 L1456 A1460 G1483 K1490 I1491 V1492 W1500 L1519 R1531 LYS GLN GLU

• Molecule 4: T-complex protein 1 subunit delta

Chain D:

3%

50% 43% 6%

MET SER ALA LYS VAL PRO S7 N8 A9 T10 F11 K12 E15 K16 P17 V20 R21 K22 A23 N24 I25 I26 A27 A28 R29 S30 D33 R36 T37 S38 M44 D45 K46 M47 I48 K49 T50 E54 I55 S58 N59 D60 T63 I64 L65 K66 A69 I70 L71 H72 P73

V74 A75 R76 M77 L78 V79 E80 V81 Q85 A89 G92 T93 T94 S95 V96 V97 I98 L99 T100 L103 L104 E108 R109 L110 L111 N112 I115 I119 I120 S123 F124 Q125 A128 V132 D133 I134 L135 M138 C139 S143 L144 S145 D146 R147 E148 Q149 L150 V151

A154 S157 L158 S159 S160 K161 I162 V163 Y166 S167 S168 F169 L170 A171 P172 L173 A174 V175 D176 S177 V178 I181 S182 D183 E184 N185 S186 K187 N188 N192 D193 I194 R195 L196 V197 K198 K199 V200 I204 D205 D206 T207 E208 M209 I210 V214 L215 T216 Q217 T218 A219 I220 K221

• Molecule 4: T-complex protein 1 subunit delta

• Molecule 4: T-complex protein 1 subunit delta

I1263 R1294 N1298 V1312 V1350 V1377 A1382 M1385 R1392 G1409 L1410 R1424 K1427 S1431 N1461 E1474 D1480 G1481 I1482 R1485 L1502 R1528

• Molecule 4: T-complex protein 1 subunit delta

Chain l:
4%
91%
8%

MET SER ALA LYS VAL PRO S1007 N1008 A1009 P1017 I1070 T1094 S1095 I1098 L1099 T1100 L1135 C1139 S1143 L1144 S1145 D1146 R1147 K1161 I1162 V1163 V1175 K1187 N1188 D1193 I1194 K1198 D1205 M1209 I1210 V1213 A1219 A1223 K1231 I1241

N1251 I1252 I1253 Y1257 I1263 C1283 N1284 S1291 R1294 D1295 A1296 V1297 N1298 V1350 R1367 M1370 P1373 T1374 A1382 M1385 R1392 L1410 R1424 K1427 S1431 A1437 N1461 E1474 I1482 R1485 L1502 R1528

• Molecule 5: T-complex protein 1 subunit epsilon

Chain E:
3%
48%
39%
6%
7%

MET ALA ALA ARG PRO GLN GLN PRO PRO MET GLU MET PRO ASP LEU SER ASN ALA ILE VAL ALA GLN ASP GLU MET GLY ARG PRO PHE I30 I31 V32 K33 D34 Q35 G36 N37 K38 K39 E45 A46 K47 K48 S49 H50 I51 R55 A58 I61 R68 G69 L70 D71 K72 I73

L74 I75 S76 P77 D78 G79 E80 I81 T82 I83 T84 N85 D86 G87 A88 T89 I90 Q93 M94 E95 L96 D97 N98 E99 I100 A101 K102 L103 L104 V105 Q106 L107 S108 K109 E114 I115 G116 T119 T120 V123 V124 S127 A128 D131 Q132 A133 L134 I137 H142 P143 I144 K145

I146 A147 N148 G149 F150 D151 A157 I158 C165 D166 D167 I168 S169 A170 S171 N172 D173 E174 L175 F176 L180 L181 R182 A183 A184 K185 T186 S187 L188 G189 S190 V193 H197 D198 R199 F200 V205 N210 D215 R216 K217 D218 D222 K225 M226 Q227 D236 S237 K238

L239 I240 N241 I244 L245 D246 K247 S250 H251 P252 Q253 M254 P255 LYS CYS VAL LEU PRO K261 E262 G263 S264 D265 G266 V267 K268 L269 A270 I271 L272 T273 C274 P275 P276 E277 P278 P279 K280 P281 K282 T283 K284 H285 Y295 Q296 K297 Y301 D304 I310 K314 D319 V320

C323 Q324 W325 G326 F327 A331 N332 L335 L336 Q337 N338 D339 L340 P341 A342 V343 R344 W345 V346 G347 Q348 G349 E350 L351 E352 H353 I354 A355 I356 S357 I362 V363 P364 R365 D368 L369 S370 K373 T376 R379 I380 Y381 E382 Q383 G386 T387 T388 R391 E396

Q397 T401 K402 F407 V408 R409 G410 S411 N412 K413 M414 E418 L423 H424 D425 C428 V429 V430 R431 N432 L433 V434 S437 R438 V439 V440 A445 A446 E447 V448 T449 M450 S451 V454 S455 E456 R462 Q466 Y467 A468 F469 R470 G471 F472 A473 Q474 A475 L476 D477 T478

I479 P480 L483 A484 E485 P491 I492 G493 T497 L498 K499 S500 K501 K504 E505 K506 I507 S508 N509 I510 G511 V512 D513 C514 D521 M522 K523 E524 L525 V528 K535 I538 L539 T542 Q543 L544 M547 S557 S558 K559 ASP GLU TYR

• Molecule 5: T-complex protein 1 subunit epsilon

Chain M:
6%
48%
39%
6%
7%

MET ALA ALA ARG PRO GLN GLN PRO PRO MET GLU MET PRO ASP LEU SER ASN ALA ILE VAL ALA GLN ASP GLU MET GLY ARG PRO PHE I30 I31 V32 K33 D34 Q35 G36 N37 K38 K39 E45 A46 K47 K48 S49 H50 I51 R55 A58 I61 G66 P67 R68 G69 L70 D71

• Molecule 5: T-complex protein 1 subunit epsilon

Chain e:

• Molecule 5: T-complex protein 1 subunit epsilon

Chain m:

T1388 E1396 Q1397 S1398 K1402 R1431 R1438 V1439 V1440 R1462 F1469 I1492 G1493 I1507 C1514 K1535 M1547 K1559 ASP GLU TYR

• Molecule 6: T-complex protein 1 subunit zeta

Chain F:

5%
35%　　　　　　50%　　　　12%　　• •

M1 S2 L3 Q4 L5 L6 N7 P8 E11 S12 L13 R14 R15 D16 A17 A18 L19 K20 V21 N22 V23 T24 S25 A26 E27 G28 L29 Q30 S31 V32 L33 E34 T35 N36 L37 G38 P39 T42 L43 K44 M45 L46 V47 D48 I53 K54 L55 T56 K57 D58 V61 L62 L63 T64 E65 M66

Q67 I68 P71 T72 A73 V74 L75 I76 A79 A80 A81 A82 Q83 I86 T87 G88 D89 G90 T91 T92 T93 V94 V95 V98 L101 L102 A105 H106 R107 F108 I109 V113 H114 P115 R116 I117 I118 G121 F122 E123 I124 A125 S129 L133 F136 K137 I138 T141

N142 L143 S144 N145 D146 R147 L151 Q152 V153 A154 R155 S156 S157 L158 L159 T160 K161 A164 D165 L166 T167 E168 V169 L170 T171 P172 I173 V174 T175 V178 L179 S180 V181 Y182 D183 A184 Q185 A186 D187 N188 L189 D190 M193 V194 E195 I196 M197 Q198 M199 Q200 H201 L202 S203 P204 K205 D206

T207 T208 F209 I210 K211 G212 L213 V214 L215 D216 H217 H221 P222 D223 M224 P225 T226 R227 V228 K229 N230 A231 Y232 V233 L234 I235 L236 N237 V238 S239 L240 E241 Y242 E243 K244 T245 E246 V247 N248 S249 G250 F251 A256 A264 K268 L274 K275 K276 I277 I278 D279 L280 K281 ASN GLU

VAL CYS GLY MET ASP PRO ASP LYS GLY F293 V294 I295 I296 N297 Q298 D302 D307 V308 F309 A310 K311 I314 L315 A316 L317 K321 R322 R323 N324 R327 L328 Q329 L330 V331 T332 G333 Q337 N338 S339 D342 L343 S344 P345 Q346 I347 F350 S351 L353 V354 Y355 Q356

E362 K363 F364 T365 Y366 V367 T368 E369 N370 T371 D372 P373 K374 S375 C376 T377 I378 L379 I380 K381 G382 S383 T384 A387 L388 A389 Q390 T391 K392 D393 A394 V395 L399 R400 A401 V402 V405 L406 K407 D408 K409 N410 I411 I412 P413 G414 A415 G416 Y419 I420 A421 L422 S423 R424 Y425

L426 R427 S428 A429 N430 M431 N432 K433 L434 G435 A436 K437 G438 K439 T440 K441 T442 G443 I444 E445 A446 F447 A448 E449 A450 L451 L452 V453 I454 P455 K456 T457 L458 V459 K460 G463 F464 D465 P466 L467 D468 D478 D479 A480 Q481 D482 S483 D484 E485 T486 R487 Y488 V489 G490 V491 D492 D497

S498 P501 T502 I503 E504 G505 I506 W507 D508 S509 V512 L513 R514 N515 A516 I517 T518 G519 A520 T521 G522 I523 A524 S525 N526 L527 L528 L529 C530 D531 E532 L533 A536 G537 R538 S539 T540 L541 K542 E543 T544 PRO GLN

• Molecule 6: T-complex protein 1 subunit zeta

Chain N:

3%
37%　　　　　　49%　　　11%　　• •

M1 S2 L3 Q4 L5 L6 N7 P8 E11 S12 L13 R14 R15 D16 A17 A18 L19 K20 V21 N22 V23 T24 E27 G28 L29 Q30 S31 V32 L33 E34 T35 N36 L37 G38 P39 T42 L43 K44 M45 L46 V47 D48 I53 K54 L55 T56 K57 D58 V61 L62 L63 T64 E65 I68

P71 T72 A73 V74 L75 I76 A79 A80 A81 A82 Q83 I86 T87 G88 D89 G90 T91 T92 T93 V94 V95 V98 L101 L102 A105 H106 R107 F108 I109 V113 H114 P115 R116 I117 I118 G121 F122 E123 I124 A125 S129 L133 F136 K137 I138 T141 N142 L143

S144 N145 D146 R147 L151 Q152 V153 A154 R155 S156 S157 L158 L159 T160 A164 D165 L166 T167 E168 V169 L170 T171 P172 I173 V174 T175 V178 L179 S180 V181 Y182 D183 A184 Q185 A186 D187 N188 L189 D190 M193 V194 E195 I196 M197 Q198 M199 Q200 H201 L202 S203 P204 K205 D206 T207 T208 F209

• Molecule 6: T-complex protein 1 subunit zeta

Chain f:

• Molecule 6: T-complex protein 1 subunit zeta

Chain n:

• Molecule 7: T-complex protein 1 subunit eta

Chain G:

• Molecule 7: T-complex protein 1 subunit eta

Chain O:

- Molecule 7: T-complex protein 1 subunit eta

Chain g:

- Molecule 7: T-complex protein 1 subunit eta

Chain o:

- Molecule 8: T-complex protein 1 subunit theta

Chain H:

• Molecule 8: T-complex protein 1 subunit theta

• Molecule 8: T-complex protein 1 subunit theta

Chain h:

• Molecule 8: T-complex protein 1 subunit theta

Chain p:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	159.10Å 162.54Å 268.10Å 85.23° 81.15° 61.17°	Depositor
Resolution (Å)	89.95 – 3.80	Depositor
	89.95 – 3.80	EDS
% Data completeness (in resolution range)	91.6 (89.95-3.80)	Depositor
	91.6 (89.95-3.80)	EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$< I/\sigma(I) >$ [1]	2.18 (at 3.78Å)	Xtriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, R_{free}	0.307 , 0.344	Depositor
	0.310 , 0.342	DCC
R_{free} test set	10483 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	112.3	Xtriage
Anisotropy	0.288	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 192.9	EDS
L-test for twinning[2]	$< |L| > = 0.46$, $< L^2 > = 0.28$	Xtriage
Estimated twinning fraction	0.024 for -h,-h+k,-l	Xtriage
F_o,F_c correlation	0.86	EDS
Total number of atoms	111235	wwPDB-VP
Average B, all atoms (Å^2)	141.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.01% of the height of the origin peak. No significant pseudotranslation is detected.*

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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: BEF, SO4, ADP

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	0.23	0/3515	0.47	1/4835 (0.0%)
1	I	0.23	0/3515	0.47	1/4835 (0.0%)
1	a	0.23	0/3515	0.47	1/4835 (0.0%)
1	i	0.23	0/3515	0.47	1/4835 (0.0%)
2	B	0.26	0/3480	0.49	0/4754
2	J	0.26	0/3480	0.49	0/4754
2	b	0.26	0/3481	0.49	0/4755
2	j	0.26	0/3478	0.49	0/4751
3	C	0.23	0/3421	0.46	0/4689
3	K	0.23	0/3422	0.46	0/4690
3	c	0.23	0/3424	0.46	0/4693
3	k	0.23	0/3424	0.46	0/4693
4	D	0.23	0/3421	0.46	2/4683 (0.0%)
4	L	0.23	0/3421	0.45	1/4683 (0.0%)
4	d	0.23	0/3421	0.45	1/4683 (0.0%)
4	l	0.23	0/3421	0.45	1/4683 (0.0%)
5	E	0.23	0/3466	0.46	0/4739
5	M	0.23	0/3466	0.46	0/4739
5	e	0.23	0/3466	0.46	0/4739
5	m	0.23	0/3466	0.46	0/4739
6	F	0.26	0/3663	0.52	1/5008 (0.0%)
6	N	0.26	0/3660	0.52	1/5004 (0.0%)
6	f	0.26	0/3665	0.52	1/5009 (0.0%)
6	n	0.26	0/3661	0.52	1/5005 (0.0%)
7	G	0.23	0/3342	0.46	0/4578
7	O	0.23	0/3339	0.45	0/4574
7	g	0.23	0/3339	0.45	0/4574
7	o	0.23	0/3339	0.45	0/4574
8	H	0.22	0/3522	0.42	0/4825
8	P	0.22	0/3522	0.42	0/4825
8	h	0.22	0/3519	0.42	0/4820
8	p	0.22	0/3522	0.42	0/4825

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
All	All	0.24	0/111311	0.47	13/152428 (0.0%)

There are no bond length outliers.

The worst 5 of 13 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	I	437	ALA	CB-CA-C	8.54	122.92	110.10
1	i	1437	ALA	CB-CA-C	8.53	122.89	110.10
1	A	437	ALA	CB-CA-C	8.53	122.89	110.10
1	a	1437	ALA	CB-CA-C	8.52	122.88	110.10
4	L	350	VAL	N-CA-C	-6.53	93.36	111.00

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	3492	0	3026	298	0
1	I	3492	0	3026	291	0
1	a	3492	0	3026	0	0
1	i	3492	0	3026	0	0
2	B	3459	0	3146	476	0
2	J	3459	0	3146	479	0
2	b	3460	0	3148	0	0
2	j	3457	0	3139	0	0
3	C	3392	0	3019	295	0
3	K	3393	0	3022	272	0
3	c	3395	0	3029	0	0
3	k	3395	0	3029	0	0
4	D	3398	0	3010	337	0
4	L	3398	0	3010	315	0
4	d	3398	0	3010	0	0
4	l	3398	0	3010	0	0
5	E	3437	0	2943	285	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	M	3437	0	2943	289	0
5	e	3437	0	2943	0	0
5	m	3437	0	2943	0	0
6	F	3631	0	3330	640	0
6	N	3628	0	3321	629	0
6	f	3633	0	3333	0	0
6	n	3629	0	3322	0	0
7	G	3317	0	2920	382	0
7	O	3314	0	2911	375	0
7	g	3314	0	2911	0	0
7	o	3314	0	2911	0	0
8	H	3487	0	3109	296	0
8	P	3487	0	3109	273	0
8	h	3485	0	3103	0	0
8	p	3487	0	3109	0	0
9	A	27	0	11	3	0
9	B	27	0	11	8	0
9	C	27	0	12	7	0
9	D	27	0	11	8	0
9	E	27	0	11	2	0
9	F	27	0	11	6	0
9	G	27	0	11	5	0
9	H	27	0	12	3	0
9	J	27	0	11	5	0
9	L	27	0	11	7	0
9	M	27	0	11	6	0
9	N	27	0	11	6	0
9	P	27	0	12	5	0
9	a	27	0	11	0	0
9	b	27	0	11	0	0
9	e	27	0	12	0	0
9	f	27	0	11	0	0
9	g	27	0	11	0	0
9	h	27	0	12	0	0
9	k	27	0	11	0	0
9	l	27	0	11	0	0
9	m	27	0	11	0	0
9	n	27	0	11	0	0
9	p	27	0	12	0	0
10	A	4	0	0	0	0
10	B	4	0	0	0	0
10	C	4	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	D	4	0	0	0	0
10	E	4	0	0	0	0
10	F	4	0	0	2	0
10	G	4	0	0	0	0
10	H	4	0	0	0	0
10	J	4	0	0	0	0
10	L	4	0	0	1	0
10	M	4	0	0	0	0
10	N	4	0	0	3	0
10	P	4	0	0	0	0
10	a	4	0	0	0	0
10	b	4	0	0	0	0
10	e	4	0	0	0	0
10	f	4	0	0	0	0
10	g	4	0	0	0	0
10	h	4	0	0	0	0
10	k	4	0	0	0	0
10	l	4	0	0	0	0
10	m	4	0	0	0	0
10	n	4	0	0	0	0
10	p	4	0	0	0	0
11	I	5	0	0	0	0
11	K	5	0	0	0	0
11	O	5	0	0	0	0
11	c	5	0	0	0	0
11	d	5	0	0	0	0
11	i	5	0	0	0	0
11	j	5	0	0	0	0
11	o	5	0	0	0	0
12	B	1	0	0	0	0
12	E	1	0	0	0	0
12	G	1	0	0	0	0
12	M	1	0	0	0	0
12	e	1	0	0	0	0
12	g	1	0	0	0	0
12	m	1	0	0	0	0
All	All	111235	0	98253	5533	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 53.

The worst 5 of 5533 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)
2:B:4:GLN:HA	2:B:5:ILE:CG1	1.37	1.53
2:J:4:GLN:HA	2:J:5:ILE:CG1	1.37	1.48
6:N:36:ASN:HB3	6:N:57:LYS:NZ	1.28	1.46
6:F:151:LEU:CD1	6:F:175:THR:CG2	1.90	1.46
6:N:151:LEU:CD1	6:N:175:THR:CG2	1.90	1.46

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	538/559 (96%)	441 (82%)	78 (14%)	19 (4%)	3	31
1	I	538/559 (96%)	441 (82%)	78 (14%)	19 (4%)	3	31
1	a	538/559 (96%)	441 (82%)	78 (14%)	19 (4%)	3	31
1	i	538/559 (96%)	441 (82%)	78 (14%)	19 (4%)	3	31
2	B	509/527 (97%)	417 (82%)	67 (13%)	25 (5%)	2	24
2	J	509/527 (97%)	417 (82%)	67 (13%)	25 (5%)	2	24
2	b	509/527 (97%)	417 (82%)	68 (13%)	24 (5%)	2	24
2	j	509/527 (97%)	417 (82%)	67 (13%)	25 (5%)	2	24
3	C	508/590 (86%)	420 (83%)	68 (13%)	20 (4%)	3	28
3	K	508/590 (86%)	421 (83%)	67 (13%)	20 (4%)	3	28
3	c	508/590 (86%)	419 (82%)	70 (14%)	19 (4%)	3	29
3	k	508/590 (86%)	420 (83%)	68 (13%)	20 (4%)	3	28
4	D	520/528 (98%)	429 (82%)	79 (15%)	12 (2%)	6	38
4	L	520/528 (98%)	429 (82%)	79 (15%)	12 (2%)	6	38
4	d	520/528 (98%)	429 (82%)	79 (15%)	12 (2%)	6	38
4	l	520/528 (98%)	429 (82%)	79 (15%)	12 (2%)	6	38

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	E	521/562 (93%)	443 (85%)	59 (11%)	19 (4%)	3	30
5	M	521/562 (93%)	443 (85%)	59 (11%)	19 (4%)	3	30
5	e	521/562 (93%)	442 (85%)	60 (12%)	19 (4%)	3	30
5	m	521/562 (93%)	443 (85%)	59 (11%)	19 (4%)	3	30
6	F	529/546 (97%)	429 (81%)	82 (16%)	18 (3%)	3	31
6	N	529/546 (97%)	429 (81%)	82 (16%)	18 (3%)	3	31
6	f	529/546 (97%)	429 (81%)	82 (16%)	18 (3%)	3	31
6	n	529/546 (97%)	429 (81%)	82 (16%)	18 (3%)	3	31
7	G	505/550 (92%)	424 (84%)	60 (12%)	21 (4%)	3	26
7	O	505/550 (92%)	424 (84%)	60 (12%)	21 (4%)	3	26
7	g	505/550 (92%)	424 (84%)	60 (12%)	21 (4%)	3	26
7	o	505/550 (92%)	424 (84%)	60 (12%)	21 (4%)	3	26
8	H	521/568 (92%)	439 (84%)	58 (11%)	24 (5%)	2	24
8	P	521/568 (92%)	439 (84%)	58 (11%)	24 (5%)	2	24
8	h	521/568 (92%)	439 (84%)	58 (11%)	24 (5%)	2	24
8	p	521/568 (92%)	439 (84%)	58 (11%)	24 (5%)	2	24
All	All	16604/17720 (94%)	13767 (83%)	2207 (13%)	630 (4%)	3	29

5 of 630 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	5	ILE
2	B	165	ILE
2	B	184	LEU
2	B	185	LYS
2	B	307	GLU

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	301/471 (64%)	274 (91%)	27 (9%)	9	37
1	I	301/471 (64%)	274 (91%)	27 (9%)	9	37
1	a	301/471 (64%)	274 (91%)	27 (9%)	9	37
1	i	301/471 (64%)	274 (91%)	27 (9%)	9	37
2	B	320/441 (73%)	263 (82%)	57 (18%)	2	12
2	J	320/441 (73%)	263 (82%)	57 (18%)	2	12
2	b	320/441 (73%)	262 (82%)	58 (18%)	1	12
2	j	319/441 (72%)	262 (82%)	57 (18%)	2	12
3	C	295/497 (59%)	268 (91%)	27 (9%)	9	35
3	K	296/497 (60%)	269 (91%)	27 (9%)	9	36
3	c	297/497 (60%)	270 (91%)	27 (9%)	9	36
3	k	297/497 (60%)	270 (91%)	27 (9%)	9	36
4	D	290/454 (64%)	261 (90%)	29 (10%)	7	32
4	L	290/454 (64%)	261 (90%)	29 (10%)	7	32
4	d	290/454 (64%)	261 (90%)	29 (10%)	7	32
4	l	290/454 (64%)	261 (90%)	29 (10%)	7	32
5	E	293/483 (61%)	257 (88%)	36 (12%)	4	24
5	M	293/483 (61%)	257 (88%)	36 (12%)	4	24
5	e	293/483 (61%)	257 (88%)	36 (12%)	4	24
5	m	293/483 (61%)	257 (88%)	36 (12%)	4	24
6	F	334/463 (72%)	273 (82%)	61 (18%)	1	11
6	N	333/463 (72%)	273 (82%)	60 (18%)	1	12
6	f	334/463 (72%)	272 (81%)	62 (19%)	1	11
6	n	333/463 (72%)	272 (82%)	61 (18%)	1	11
7	G	275/454 (61%)	241 (88%)	34 (12%)	4	24
7	O	274/454 (60%)	240 (88%)	34 (12%)	4	24
7	g	274/454 (60%)	240 (88%)	34 (12%)	4	24
7	o	274/454 (60%)	240 (88%)	34 (12%)	4	24
8	H	307/473 (65%)	276 (90%)	31 (10%)	7	32
8	P	307/473 (65%)	276 (90%)	31 (10%)	7	32
8	h	306/473 (65%)	275 (90%)	31 (10%)	7	32
8	p	307/473 (65%)	276 (90%)	31 (10%)	7	32

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
All	All	9658/14944 (65%)	8449 (88%)	1209 (12%)	4	24

5 of 1209 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	i	1402	LEU
7	o	1043	THR
2	j	1197	LYS
1	i	1350	PHE
4	l	1392	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 306 such sidechains are listed below:

Mol	Chain	Res	Type
1	i	1121	HIS
6	n	1217	HIS
1	i	1391	ASN
3	k	1325	ASN
8	p	1101	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5   Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6   Ligand geometry ⓘ

56 ligands 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	#$|Z| > 2$
10	BEF	D	602	-	0,3,3	-	-	-		
9	ADP	k	2101	10	24,29,29	2.04	9 (37%)	29,45,45	1.97	9 (31%)
9	ADP	L	601	-	24,29,29	2.06	9 (37%)	29,45,45	1.94	8 (27%)
10	BEF	e	1602	-	0,3,3	-	-	-		
11	SO4	i	1600	-	4,4,4	0.12	0	6,6,6	0.30	0
10	BEF	l	1602	9	0,3,3	-	-	-		
10	BEF	b	1602	9	0,3,3	-	-	-		
10	BEF	L	602	-	0,3,3	-	-	-		
9	ADP	N	601	10	24,29,29	2.07	9 (37%)	29,45,45	2.08	9 (31%)
11	SO4	j	1600	-	4,4,4	0.10	0	6,6,6	0.20	0
9	ADP	m	1601	-	24,29,29	2.08	9 (37%)	29,45,45	2.01	6 (20%)
9	ADP	h	1601	10	24,29,29	2.06	9 (37%)	29,45,45	1.82	8 (27%)
10	BEF	C	1102	-	0,3,3	-	-	-		
11	SO4	d	1600	-	4,4,4	0.13	0	6,6,6	0.13	0
9	ADP	p	1601	10	24,29,29	2.09	9 (37%)	29,45,45	1.92	8 (27%)
9	ADP	e	1601	-	24,29,29	2.05	9 (37%)	29,45,45	2.02	8 (27%)
9	ADP	D	601	-	24,29,29	2.06	9 (37%)	29,45,45	1.96	8 (27%)
11	SO4	c	2101	-	4,4,4	0.18	0	6,6,6	0.18	0
9	ADP	J	601	10	24,29,29	2.06	9 (37%)	29,45,45	2.13	10 (34%)
9	ADP	E	601	10	24,29,29	2.09	9 (37%)	29,45,45	2.15	9 (31%)
11	SO4	o	1600	-	4,4,4	0.14	0	6,6,6	0.10	0
9	ADP	H	601	-	24,29,29	2.05	9 (37%)	29,45,45	1.95	8 (27%)
10	BEF	g	1602	-	0,3,3	-	-	-		
10	BEF	G	602	-	0,3,3	-	-	-		
11	SO4	O	600	-	4,4,4	0.15	0	6,6,6	0.12	0
11	SO4	K	1101	-	4,4,4	0.14	0	6,6,6	0.21	0
9	ADP	B	601	10	24,29,29	2.11	10 (41%)	29,45,45	2.11	9 (31%)
10	BEF	N	602	9	0,3,3	-	-	-		
10	BEF	J	602	9	0,3,3	-	-	-		
9	ADP	M	601	-	24,29,29	2.03	10 (41%)	29,45,45	1.98	6 (20%)
11	SO4	I	600	-	4,4,4	0.16	0	6,6,6	0.17	0
10	BEF	f	1602	-	0,3,3	-	-	-		
10	BEF	F	602	-	0,3,3	-	-	-		
9	ADP	G	601	-	24,29,29	2.11	9 (37%)	29,45,45	2.13	9 (31%)
10	BEF	h	1602	9	0,3,3	-	-	-		

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
9	ADP	n	1601	-	24,29,29	2.03	8 (33%)	29,45,45	1.93	8 (27%)
10	BEF	A	602	9	0,3,3	-	-	-		
10	BEF	E	602	9	0,3,3	-	-	-		
10	BEF	H	602	-	0,3,3	-	-	-		
10	BEF	n	1602	-	0,3,3	-	-	-		
10	BEF	P	602	-	0,3,3	-	-	-		
10	BEF	m	1602	-	0,3,3	-	-	-		
9	ADP	A	601	10	24,29,29	2.07	9 (37%)	29,45,45	2.09	9 (31%)
9	ADP	a	1601	-	24,29,29	2.06	9 (37%)	29,45,45	2.09	8 (27%)
9	ADP	F	601	-	24,29,29	2.09	9 (37%)	29,45,45	1.98	8 (27%)
9	ADP	l	1601	10	24,29,29	2.10	9 (37%)	29,45,45	2.15	9 (31%)
9	ADP	P	601	-	24,29,29	2.03	9 (37%)	29,45,45	1.92	9 (31%)
10	BEF	a	1602	-	0,3,3	-	-	-		
10	BEF	p	1602	9	0,3,3	-	-	-		
9	ADP	g	1601	-	24,29,29	2.07	9 (37%)	29,45,45	1.92	8 (27%)
10	BEF	k	2102	9	0,3,3	-	-	-		
9	ADP	f	1601	-	24,29,29	2.08	9 (37%)	29,45,45	2.11	8 (27%)
10	BEF	B	602	9	0,3,3	-	-	-		
9	ADP	b	1601	10	24,29,29	2.08	9 (37%)	29,45,45	2.07	8 (27%)
9	ADP	C	1101	-	24,29,29	2.04	9 (37%)	29,45,45	1.94	8 (27%)
10	BEF	M	602	-	0,3,3	-	-	-		

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
9	ADP	k	2101	10	2/2/6/6	4/12/32/32	0/3/3/3
9	ADP	L	601	-	-	4/12/32/32	0/3/3/3
9	ADP	N	601	10	2/2/6/6	4/12/32/32	0/3/3/3
9	ADP	m	1601	-	2/2/6/6	5/12/32/32	0/3/3/3
9	ADP	h	1601	10	1/1/6/6	1/12/32/32	0/3/3/3
9	ADP	p	1601	10	1/1/6/6	3/12/32/32	0/3/3/3
9	ADP	e	1601	-	2/2/6/6	5/12/32/32	0/3/3/3
9	ADP	D	601	-	2/2/6/6	3/12/32/32	0/3/3/3
9	ADP	J	601	10	2/2/6/6	6/12/32/32	0/3/3/3
9	ADP	E	601	10	1/1/6/6	5/12/32/32	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	ADP	H	601	-	1/1/6/6	4/12/32/32	0/3/3/3
9	ADP	B	601	10	2/2/6/6	3/12/32/32	0/3/3/3
9	ADP	M	601	-	2/2/6/6	7/12/32/32	0/3/3/3
9	ADP	G	601	-	1/1/6/6	3/12/32/32	0/3/3/3
9	ADP	n	1601	-	1/1/6/6	4/12/32/32	0/3/3/3
9	ADP	A	601	10	2/2/6/6	4/12/32/32	0/3/3/3
9	ADP	a	1601	-	2/2/6/6	7/12/32/32	0/3/3/3
9	ADP	F	601	-	-	8/12/32/32	0/3/3/3
9	ADP	l	1601	10	-	3/12/32/32	0/3/3/3
9	ADP	P	601	-	1/1/6/6	1/12/32/32	0/3/3/3
9	ADP	g	1601	-	1/1/6/6	4/12/32/32	0/3/3/3
9	ADP	f	1601	-	2/2/6/6	4/12/32/32	0/3/3/3
9	ADP	b	1601	10	2/2/6/6	8/12/32/32	0/3/3/3
9	ADP	C	1101	-	2/2/6/6	5/12/32/32	0/3/3/3

The worst 5 of 217 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	p	1601	ADP	PB-O1B	4.77	1.65	1.50
9	N	601	ADP	PB-O1B	4.66	1.65	1.50
9	l	1601	ADP	PB-O1B	4.66	1.65	1.50
9	E	601	ADP	PB-O1B	4.66	1.65	1.50
9	h	1601	ADP	PB-O1B	4.65	1.65	1.50

The worst 5 of 198 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	G	601	ADP	PA-O3A-PB	-6.32	111.12	132.83
9	J	601	ADP	N3-C2-N1	-5.96	119.36	128.68
9	H	601	ADP	N3-C2-N1	-5.82	119.58	128.68
9	l	1601	ADP	N3-C2-N1	-5.71	119.76	128.68
9	a	1601	ADP	N3-C2-N1	-5.65	119.86	128.68

5 of 34 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
9	A	601	ADP	C4'
9	A	601	ADP	C3'
9	B	601	ADP	C4'

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Mol	Chain	Res	Type	Atom
9	B	601	ADP	C3'
9	C	1101	ADP	C4'

5 of 105 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	601	ADP	C5'-O5'-PA-O3A
9	B	601	ADP	PB-O3A-PA-O5'
9	C	1101	ADP	C5'-O5'-PA-O1A
9	C	1101	ADP	C5'-O5'-PA-O3A
9	D	601	ADP	C4'-C5'-O5'-PA

There are no ring outliers.

17 monomers are involved in 79 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	L	601	ADP	7	0
10	L	602	BEF	1	0
9	N	601	ADP	6	0
10	C	1102	BEF	3	0
9	D	601	ADP	8	0
9	J	601	ADP	5	0
9	E	601	ADP	2	0
9	H	601	ADP	3	0
9	B	601	ADP	8	0
10	N	602	BEF	3	0
9	M	601	ADP	6	0
10	F	602	BEF	2	0
9	G	601	ADP	5	0
9	A	601	ADP	3	0
9	F	601	ADP	6	0
9	P	601	ADP	5	0
9	C	1101	ADP	7	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand ADP k 2101

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP L 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP N 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP m 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP h 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP p 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP e 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP D 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP J 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP E 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP H 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP B 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP M 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP G 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP n 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP A 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP a 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP F 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP l 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP P 601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP g 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP f 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP b 1601

Bond lengths

Bond angles

Torsions

Rings

Ligand ADP C 1101

Bond lengths

Bond angles

Torsions

Rings

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(Å²)	Q<0.9
1	A	544/559 (97%)	-0.00	13 (2%)	59	50	72, 134, 206, 254	0
1	I	544/559 (97%)	0.02	27 (4%)	28	25	72, 134, 206, 254	0
1	a	544/559 (97%)	-0.09	15 (2%)	53	43	72, 134, 206, 254	0
1	i	544/559 (97%)	-0.06	14 (2%)	56	47	72, 134, 206, 254	0
2	B	513/527 (97%)	-0.11	5 (0%)	82	76	47, 120, 192, 236	0
2	J	513/527 (97%)	0.05	18 (3%)	44	36	47, 120, 192, 236	0
2	b	513/527 (97%)	-0.10	8 (1%)	72	64	47, 120, 192, 236	0
2	j	513/527 (97%)	-0.09	7 (1%)	75	68	47, 120, 192, 236	0
3	C	514/590 (87%)	0.06	10 (1%)	66	59	73, 141, 205, 295	0
3	K	514/590 (87%)	0.01	18 (3%)	44	36	73, 141, 205, 295	0
3	c	514/590 (87%)	0.03	18 (3%)	44	36	73, 141, 205, 295	0
3	k	514/590 (87%)	-0.08	10 (1%)	66	59	73, 141, 205, 295	0
4	D	522/528 (98%)	0.00	15 (2%)	51	42	70, 149, 232, 297	0
4	L	522/528 (98%)	0.07	26 (4%)	28	25	70, 149, 232, 297	0
4	d	522/528 (98%)	0.01	15 (2%)	51	42	70, 149, 232, 297	0
4	l	522/528 (98%)	0.09	21 (4%)	38	32	70, 149, 232, 297	0
5	E	525/562 (93%)	0.05	16 (3%)	50	40	56, 138, 238, 297	0
5	M	525/562 (93%)	0.22	31 (5%)	22	18	56, 138, 238, 297	0
5	e	525/562 (93%)	0.02	20 (3%)	40	33	56, 138, 238, 297	0
5	m	525/562 (93%)	-0.06	15 (2%)	51	42	56, 138, 238, 297	0
6	F	533/546 (97%)	0.11	27 (5%)	28	24	42, 116, 214, 301	0
6	N	533/546 (97%)	0.05	18 (3%)	45	37	42, 116, 214, 301	0
6	f	533/546 (97%)	0.07	20 (3%)	40	33	42, 116, 214, 301	0
6	n	533/546 (97%)	0.05	19 (3%)	42	35	42, 116, 214, 301	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
7	G	509/550 (92%)	0.03	13 (2%)	56	47	65, 136, 207, 264	0
7	O	509/550 (92%)	0.13	23 (4%)	33	28	65, 136, 207, 264	0
7	g	509/550 (92%)	-0.05	15 (2%)	51	42	65, 136, 207, 264	0
7	o	509/550 (92%)	0.09	23 (4%)	33	28	65, 136, 207, 264	0
8	H	525/568 (92%)	0.01	11 (2%)	63	55	70, 148, 236, 294	0
8	P	525/568 (92%)	0.26	37 (7%)	16	12	70, 148, 236, 294	0
8	h	525/568 (92%)	0.16	27 (5%)	28	24	70, 148, 236, 294	0
8	p	525/568 (92%)	0.11	26 (4%)	28	25	70, 148, 236, 294	0
All	All	16740/17720 (94%)	0.03	581 (3%)	44	36	42, 136, 217, 301	0

The worst 5 of 581 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
5	e	1387	THR	13.7
5	M	387	THR	12.0
7	o	1228	GLY	11.4
5	m	1387	THR	9.9
1	a	1552	PRO	8.9

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 monosaccharides 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(Å²)	Q<0.9
10	BEF	M	602	4/4	0.78	0.23	152,158,161,170	0
10	BEF	J	602	4/4	0.80	0.29	235,236,240,246	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
10	BEF	a	1602	4/4	0.85	0.24	235,239,240,241	0
9	ADP	M	601	27/27	0.87	0.26	43,113,256,333	0
9	ADP	l	1601	27/27	0.87	0.29	62,105,189,226	0
10	BEF	E	602	4/4	0.87	0.44	240,241,242,244	0
10	BEF	G	602	4/4	0.89	0.42	236,237,238,239	0
10	BEF	B	602	4/4	0.89	0.33	210,215,215,215	0
9	ADP	L	601	27/27	0.90	0.24	102,157,212,241	0
9	ADP	A	601	27/27	0.90	0.35	46,110,243,330	0
9	ADP	f	1601	27/27	0.90	0.28	13,50,316,499	0
9	ADP	B	601	27/27	0.90	0.27	62,105,202,218	0
9	ADP	m	1601	27/27	0.90	0.24	13,87,195,273	0
10	BEF	A	602	4/4	0.90	0.36	246,247,249,251	0
10	BEF	C	1102	4/4	0.91	0.21	104,105,105,120	0
9	ADP	E	601	27/27	0.91	0.32	11,102,242,288	0
10	BEF	b	1602	4/4	0.91	0.19	154,158,161,163	0
9	ADP	C	1101	27/27	0.92	0.28	38,135,163,237	0
9	ADP	G	601	27/27	0.92	0.21	12,133,240,248	0
9	ADP	a	1601	27/27	0.92	0.23	50,112,239,328	0
11	SO4	j	1600	5/5	0.92	0.29	79,96,98,100	0
10	BEF	L	602	4/4	0.93	0.17	172,177,177,180	0
9	ADP	J	601	27/27	0.93	0.24	74,85,241,279	0
9	ADP	n	1601	27/27	0.93	0.26	27,94,337,491	0
9	ADP	h	1601	27/27	0.93	0.33	40,139,153,188	0
9	ADP	e	1601	27/27	0.93	0.20	30,116,232,274	0
9	ADP	D	601	27/27	0.94	0.20	41,92,238,264	0
9	ADP	P	601	27/27	0.94	0.24	73,153,161,164	0
9	ADP	g	1601	27/27	0.94	0.19	26,159,211,215	0
9	ADP	p	1601	27/27	0.94	0.21	11,114,136,239	0
10	BEF	k	2102	4/4	0.94	0.09	68,69,80,82	0
11	SO4	I	600	5/5	0.94	0.28	98,103,110,113	0
9	ADP	H	601	27/27	0.94	0.24	11,112,145,153	0
9	ADP	N	601	27/27	0.95	0.24	11,88,232,484	0
9	ADP	b	1601	27/27	0.95	0.20	44,69,220,243	0
10	BEF	f	1602	4/4	0.95	0.23	167,170,171,173	0
9	ADP	F	601	27/27	0.95	0.30	11,105,323,481	0
10	BEF	m	1602	4/4	0.95	0.26	185,193,195,196	0
9	ADP	k	2101	27/27	0.95	0.28	80,131,164,321	0
11	SO4	O	600	5/5	0.95	0.27	78,79,92,100	0
11	SO4	c	2101	5/5	0.95	0.28	82,98,107,111	0
11	SO4	d	1600	5/5	0.95	0.28	106,109,115,118	0
10	BEF	N	602	4/4	0.95	0.31	112,120,121,122	0
11	SO4	o	1600	5/5	0.95	0.23	107,107,115,117	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
11	SO4	K	1101	5/5	0.96	0.35	84,89,97,102	0
11	SO4	i	1600	5/5	0.96	0.28	91,94,103,116	0
10	BEF	e	1602	4/4	0.96	0.21	201,205,207,207	0
10	BEF	l	1602	4/4	0.96	0.13	28,61,73,75	0
10	BEF	n	1602	4/4	0.97	0.23	163,167,167,173	0
10	BEF	p	1602	4/4	0.97	0.13	84,99,102,108	0
10	BEF	F	602	4/4	0.97	0.26	157,163,163,171	0
10	BEF	D	602	4/4	0.97	0.11	81,84,91,92	0
10	BEF	g	1602	4/4	0.97	0.18	162,165,165,166	0
10	BEF	h	1602	4/4	0.98	0.15	85,93,93,106	0
10	BEF	P	602	4/4	0.99	0.12	158,158,158,162	0
10	BEF	H	602	4/4	0.99	0.12	101,103,104,110	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around ADP M 601:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP l 1601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP L 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP A 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP f 1601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP B 601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP m 1601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP E 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP C 1101:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP G 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP a 1601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP J 601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP n 1601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP h 1601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP e 1601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP D 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP P 601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP g 1601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP p 1601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP H 601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP N 601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP b 1601:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP F 601:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around ADP k 2101:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

6.5 Other polymers ⓘ

There are no such residues in this entry.