Full wwPDB X-ray Structure Validation Report (i)

Jan 19, 2026 – 12:51 PM EST

PDB ID	:	9YC7 / pdb_00009yc7
Title	:	Plasmodium falciparum M17 aminopeptidase (PfA-M17) bound to inhibitor 3k (MIPS3415)
Authors	:	Mansouri, M.; McGowan, S.; Webb, C.T.
Deposited on	:	2025-09-18
Resolution	:	2.37 Å(reported)

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

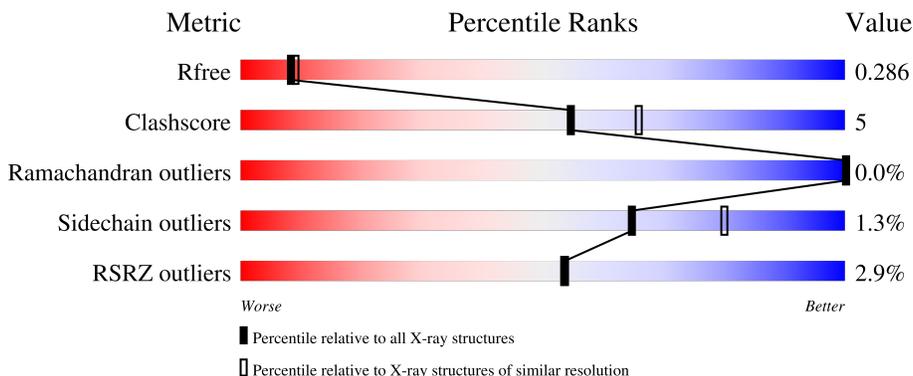|		
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

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 2.37 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.
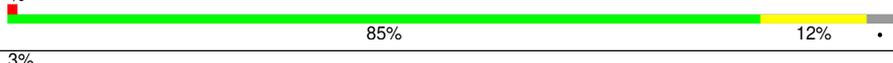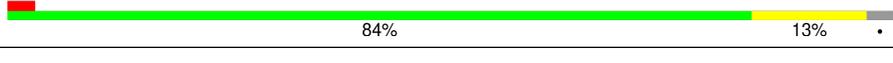
Metric	Percentile Ranks	Value
Rfree		0.286
Clashscore		5
Ramachandran outliers		0.0%
Sidechain outliers		1.3%
RSRZ outliers		2.9%

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$_{free}$	164625	6699 (2.40-2.36)
Clashscore	180529	7414 (2.40-2.36)
Ramachandran outliers	177936	7337 (2.40-2.36)
Sidechain outliers	177891	7338 (2.40-2.36)
RSRZ outliers	164620	6699 (2.40-2.36)

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	527	85% 13% •
1	B	527	9% 86% 11% •
1	C	527	2% 84% 14% •
1	D	527	% 86% 12% •
1	E	527	% 85% 11% •

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Mol	Chain	Length	Quality of chain
1	F	527	4% ... 84% ... 12% ··
1	G	527	% ... 87% ... 11% ·
1	H	527	8% ... 84% ... 13% ·
1	I	527	3% ... 86% ... 13% ·
1	J	527	% ... 83% ... 14% ·
1	K	527	% ... 85% ... 12% ·
1	L	527	3% ... 84% ... 13% ·

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 50351 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 M17 leucyl aminopeptidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	514	Total 3978	C 2551	N 643	O 765	S 19	0	0	0
1	B	514	Total 3950	C 2536	N 642	O 753	S 19	0	1	0
1	C	518	Total 4006	C 2568	N 650	O 768	S 20	0	0	0
1	D	514	Total 3987	C 2560	N 648	O 759	S 20	0	2	0
1	E	510	Total 3965	C 2545	N 643	O 758	S 19	0	0	0
1	F	509	Total 3908	C 2512	N 634	O 744	S 18	0	0	0
1	G	515	Total 3998	C 2564	N 646	O 768	S 20	0	0	0
1	H	510	Total 3915	C 2514	N 638	O 744	S 19	0	0	0
1	I	518	Total 4016	C 2574	N 654	O 769	S 19	0	0	0
1	J	514	Total 3988	C 2559	N 647	O 762	S 20	0	0	0
1	K	510	Total 3954	C 2540	N 643	O 752	S 19	0	0	0
1	L	509	Total 3886	C 2496	N 629	O 742	S 19	0	0	0

There are 108 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	152	GLN	ASN	engineered mutation	UNP Q8IL11
A	515	GLN	ASN	engineered mutation	UNP Q8IL11
A	546	GLN	ASN	engineered mutation	UNP Q8IL11
A	606	HIS	-	expression tag	UNP Q8IL11
A	607	HIS	-	expression tag	UNP Q8IL11

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Chain	Residue	Modelled	Actual	Comment	Reference
A	608	HIS	-	expression tag	UNP Q8IL11
A	609	HIS	-	expression tag	UNP Q8IL11
A	610	HIS	-	expression tag	UNP Q8IL11
A	611	HIS	-	expression tag	UNP Q8IL11
B	152	GLN	ASN	engineered mutation	UNP Q8IL11
B	515	GLN	ASN	engineered mutation	UNP Q8IL11
B	546	GLN	ASN	engineered mutation	UNP Q8IL11
B	606	HIS	-	expression tag	UNP Q8IL11
B	607	HIS	-	expression tag	UNP Q8IL11
B	608	HIS	-	expression tag	UNP Q8IL11
B	609	HIS	-	expression tag	UNP Q8IL11
B	610	HIS	-	expression tag	UNP Q8IL11
B	611	HIS	-	expression tag	UNP Q8IL11
C	152	GLN	ASN	engineered mutation	UNP Q8IL11
C	515	GLN	ASN	engineered mutation	UNP Q8IL11
C	546	GLN	ASN	engineered mutation	UNP Q8IL11
C	606	HIS	-	expression tag	UNP Q8IL11
C	607	HIS	-	expression tag	UNP Q8IL11
C	608	HIS	-	expression tag	UNP Q8IL11
C	609	HIS	-	expression tag	UNP Q8IL11
C	610	HIS	-	expression tag	UNP Q8IL11
C	611	HIS	-	expression tag	UNP Q8IL11
D	152	GLN	ASN	engineered mutation	UNP Q8IL11
D	515	GLN	ASN	engineered mutation	UNP Q8IL11
D	546	GLN	ASN	engineered mutation	UNP Q8IL11
D	606	HIS	-	expression tag	UNP Q8IL11
D	607	HIS	-	expression tag	UNP Q8IL11
D	608	HIS	-	expression tag	UNP Q8IL11
D	609	HIS	-	expression tag	UNP Q8IL11
D	610	HIS	-	expression tag	UNP Q8IL11
D	611	HIS	-	expression tag	UNP Q8IL11
E	152	GLN	ASN	engineered mutation	UNP Q8IL11
E	515	GLN	ASN	engineered mutation	UNP Q8IL11
E	546	GLN	ASN	engineered mutation	UNP Q8IL11
E	606	HIS	-	expression tag	UNP Q8IL11
E	607	HIS	-	expression tag	UNP Q8IL11
E	608	HIS	-	expression tag	UNP Q8IL11
E	609	HIS	-	expression tag	UNP Q8IL11
E	610	HIS	-	expression tag	UNP Q8IL11
E	611	HIS	-	expression tag	UNP Q8IL11
F	152	GLN	ASN	engineered mutation	UNP Q8IL11
F	515	GLN	ASN	engineered mutation	UNP Q8IL11

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Chain	Residue	Modelled	Actual	Comment	Reference
F	546	GLN	ASN	engineered mutation	UNP Q8IL11
F	606	HIS	-	expression tag	UNP Q8IL11
F	607	HIS	-	expression tag	UNP Q8IL11
F	608	HIS	-	expression tag	UNP Q8IL11
F	609	HIS	-	expression tag	UNP Q8IL11
F	610	HIS	-	expression tag	UNP Q8IL11
F	611	HIS	-	expression tag	UNP Q8IL11
G	152	GLN	ASN	engineered mutation	UNP Q8IL11
G	515	GLN	ASN	engineered mutation	UNP Q8IL11
G	546	GLN	ASN	engineered mutation	UNP Q8IL11
G	606	HIS	-	expression tag	UNP Q8IL11
G	607	HIS	-	expression tag	UNP Q8IL11
G	608	HIS	-	expression tag	UNP Q8IL11
G	609	HIS	-	expression tag	UNP Q8IL11
G	610	HIS	-	expression tag	UNP Q8IL11
G	611	HIS	-	expression tag	UNP Q8IL11
H	152	GLN	ASN	engineered mutation	UNP Q8IL11
H	515	GLN	ASN	engineered mutation	UNP Q8IL11
H	546	GLN	ASN	engineered mutation	UNP Q8IL11
H	606	HIS	-	expression tag	UNP Q8IL11
H	607	HIS	-	expression tag	UNP Q8IL11
H	608	HIS	-	expression tag	UNP Q8IL11
H	609	HIS	-	expression tag	UNP Q8IL11
H	610	HIS	-	expression tag	UNP Q8IL11
H	611	HIS	-	expression tag	UNP Q8IL11
I	152	GLN	ASN	engineered mutation	UNP Q8IL11
I	515	GLN	ASN	engineered mutation	UNP Q8IL11
I	546	GLN	ASN	engineered mutation	UNP Q8IL11
I	606	HIS	-	expression tag	UNP Q8IL11
I	607	HIS	-	expression tag	UNP Q8IL11
I	608	HIS	-	expression tag	UNP Q8IL11
I	609	HIS	-	expression tag	UNP Q8IL11
I	610	HIS	-	expression tag	UNP Q8IL11
I	611	HIS	-	expression tag	UNP Q8IL11
J	152	GLN	ASN	engineered mutation	UNP Q8IL11
J	515	GLN	ASN	engineered mutation	UNP Q8IL11
J	546	GLN	ASN	engineered mutation	UNP Q8IL11
J	606	HIS	-	expression tag	UNP Q8IL11
J	607	HIS	-	expression tag	UNP Q8IL11
J	608	HIS	-	expression tag	UNP Q8IL11
J	609	HIS	-	expression tag	UNP Q8IL11
J	610	HIS	-	expression tag	UNP Q8IL11

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Chain	Residue	Modelled	Actual	Comment	Reference
J	611	HIS	-	expression tag	UNP Q8IL11
K	152	GLN	ASN	engineered mutation	UNP Q8IL11
K	515	GLN	ASN	engineered mutation	UNP Q8IL11
K	546	GLN	ASN	engineered mutation	UNP Q8IL11
K	606	HIS	-	expression tag	UNP Q8IL11
K	607	HIS	-	expression tag	UNP Q8IL11
K	608	HIS	-	expression tag	UNP Q8IL11
K	609	HIS	-	expression tag	UNP Q8IL11
K	610	HIS	-	expression tag	UNP Q8IL11
K	611	HIS	-	expression tag	UNP Q8IL11
L	152	GLN	ASN	engineered mutation	UNP Q8IL11
L	515	GLN	ASN	engineered mutation	UNP Q8IL11
L	546	GLN	ASN	engineered mutation	UNP Q8IL11
L	606	HIS	-	expression tag	UNP Q8IL11
L	607	HIS	-	expression tag	UNP Q8IL11
L	608	HIS	-	expression tag	UNP Q8IL11
L	609	HIS	-	expression tag	UNP Q8IL11
L	610	HIS	-	expression tag	UNP Q8IL11
L	611	HIS	-	expression tag	UNP Q8IL11

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Zn 2	0	0
2	B	2	Total 2	Zn 2	0	0
2	C	2	Total 2	Zn 2	0	0
2	D	2	Total 2	Zn 2	0	0
2	E	2	Total 2	Zn 2	0	0
2	F	2	Total 2	Zn 2	0	0
2	G	2	Total 2	Zn 2	0	0
2	H	2	Total 2	Zn 2	0	0
2	I	2	Total 2	Zn 2	0	0
2	J	2	Total 2	Zn 2	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	K	2	Total 2	Zn 2	0	0
2	L	2	Total 2	Zn 2	0	0

- Molecule 3 is CARBONATE ION (CCD ID: CO3) (formula: CO_3).
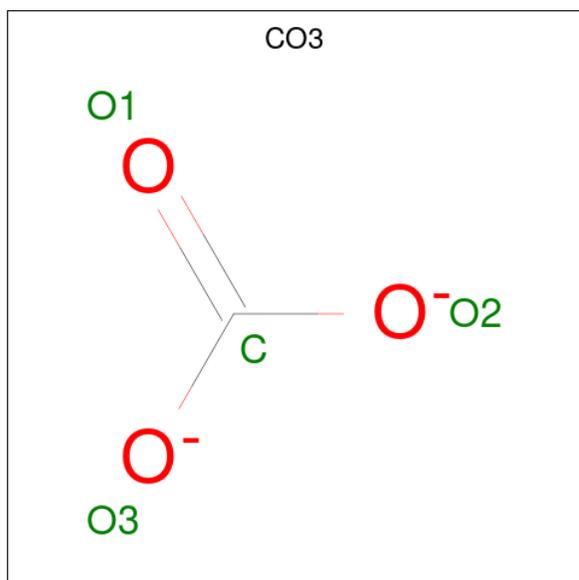
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 4	C 1	O 3	0	0
3	B	1	Total 4	C 1	O 3	0	0
3	C	1	Total 4	C 1	O 3	0	0
3	D	1	Total 4	C 1	O 3	0	0
3	E	1	Total 4	C 1	O 3	0	0
3	F	1	Total 4	C 1	O 3	0	0
3	G	1	Total 4	C 1	O 3	0	0
3	H	1	Total 4	C 1	O 3	0	0
3	I	1	Total 4	C 1	O 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	J	1	Total 4	C 1	O 3	0	0
3	K	1	Total 4	C 1	O 3	0	0
3	L	1	Total 4	C 1	O 3	0	0

- Molecule 4 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).
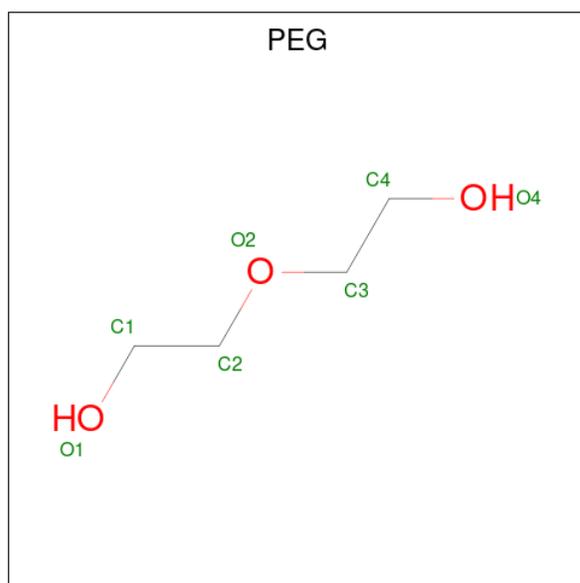
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 7	C 4	O 3	0	0
4	A	1	Total 7	C 4	O 3	0	0
4	A	1	Total 7	C 4	O 3	0	0
4	A	1	Total 7	C 4	O 3	0	0
4	A	1	Total 7	C 4	O 3	0	0
4	B	1	Total 7	C 4	O 3	0	0
4	B	1	Total 7	C 4	O 3	0	0
4	B	1	Total 7	C 4	O 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total 7	C 4	O 3	0	0
4	C	1	Total 7	C 4	O 3	0	0
4	D	1	Total 7	C 4	O 3	0	0
4	D	1	Total 7	C 4	O 3	0	0
4	E	1	Total 7	C 4	O 3	0	0
4	E	1	Total 7	C 4	O 3	0	0
4	E	1	Total 7	C 4	O 3	0	0
4	E	1	Total 7	C 4	O 3	0	0
4	E	1	Total 7	C 4	O 3	0	0
4	E	1	Total 7	C 4	O 3	0	0
4	F	1	Total 7	C 4	O 3	0	0
4	F	1	Total 7	C 4	O 3	0	0
4	F	1	Total 7	C 4	O 3	0	0
4	F	1	Total 7	C 4	O 3	0	0
4	F	1	Total 7	C 4	O 3	0	0
4	G	1	Total 7	C 4	O 3	0	0
4	G	1	Total 7	C 4	O 3	0	0
4	G	1	Total 7	C 4	O 3	0	0
4	H	1	Total 7	C 4	O 3	0	0
4	I	1	Total 7	C 4	O 3	0	0
4	I	1	Total 7	C 4	O 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	I	1	Total 7	C 4	O 3	0	0
4	J	1	Total 7	C 4	O 3	0	0
4	J	1	Total 7	C 4	O 3	0	0
4	J	1	Total 7	C 4	O 3	0	0
4	J	1	Total 7	C 4	O 3	0	0
4	K	1	Total 7	C 4	O 3	0	0
4	K	1	Total 7	C 4	O 3	0	0
4	K	1	Total 7	C 4	O 3	0	0
4	K	1	Total 7	C 4	O 3	0	0
4	K	1	Total 7	C 4	O 3	0	0
4	L	1	Total 7	C 4	O 3	0	0
4	L	1	Total 7	C 4	O 3	0	0
4	L	1	Total 7	C 4	O 3	0	0
4	L	1	Total 7	C 4	O 3	0	0

- Molecule 5 is DIMETHYL SULFOXIDE (CCD ID: DMS) (formula: C_2H_6OS).

DMS
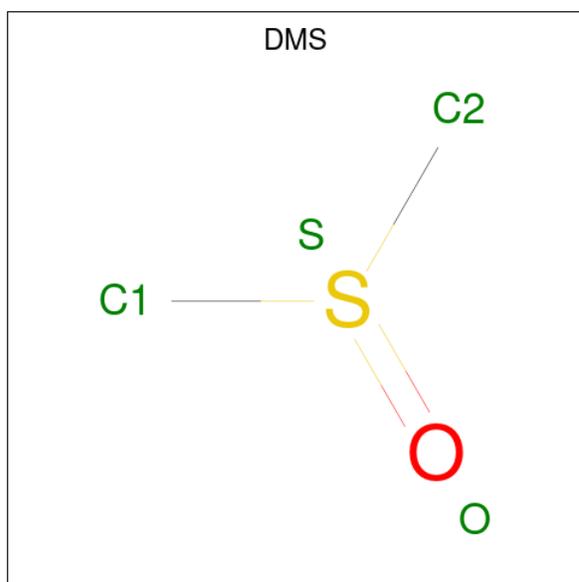
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total 4	C 2	O 1	S 1	0	0
5	A	1	Total 4	C 2	O 1	S 1	0	0
5	B	1	Total 4	C 2	O 1	S 1	0	0
5	B	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	E	1	Total 4	C 2	O 1	S 1	0	0
5	E	1	Total 4	C 2	O 1	S 1	0	0
5	F	1	Total 4	C 2	O 1	S 1	0	0
5	F	1	Total 4	C 2	O 1	S 1	0	0
5	F	1	Total 4	C 2	O 1	S 1	0	0
5	G	1	Total 4	C 2	O 1	S 1	0	0
5	H	1	Total 4	C 2	O 1	S 1	0	0
5	I	1	Total 4	C 2	O 1	S 1	0	0
5	J	1	Total 4	C 2	O 1	S 1	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	J	1	Total 4	C 2	O 1	S 1	0	0
5	J	1	Total 4	C 2	O 1	S 1	0	0
5	J	1	Total 4	C 2	O 1	S 1	0	0
5	K	1	Total 4	C 2	O 1	S 1	0	0
5	L	1	Total 4	C 2	O 1	S 1	0	0

- Molecule 6 is SULFATE ION (CCD ID: SO4) (formula: O_4S).
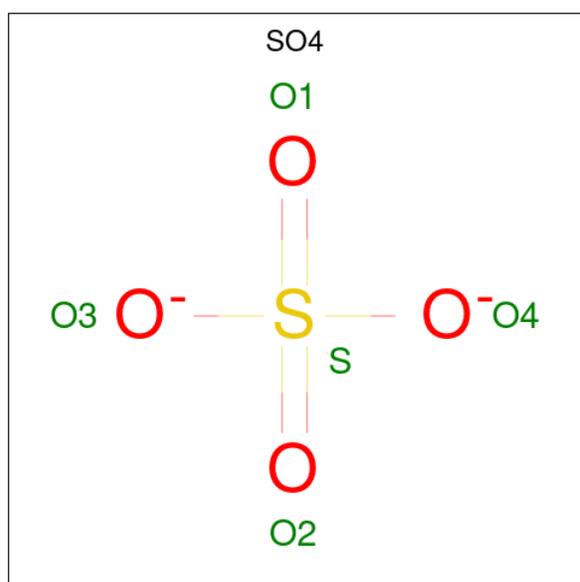
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 5	O 4	S 1	0	0
6	A	1	Total 5	O 4	S 1	0	0
6	B	1	Total 5	O 4	S 1	0	0
6	B	1	Total 5	O 4	S 1	0	0
6	C	1	Total 5	O 4	S 1	0	0
6	C	1	Total 5	O 4	S 1	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	D	1	Total 5	O 4	S 1	0	0
6	E	1	Total 5	O 4	S 1	0	0
6	E	1	Total 5	O 4	S 1	0	0
6	F	1	Total 5	O 4	S 1	0	0
6	F	1	Total 5	O 4	S 1	0	0
6	F	1	Total 5	O 4	S 1	0	0
6	G	1	Total 5	O 4	S 1	0	0
6	I	1	Total 5	O 4	S 1	0	0
6	I	1	Total 5	O 4	S 1	0	0
6	J	1	Total 5	O 4	S 1	0	0
6	J	1	Total 5	O 4	S 1	0	0
6	J	1	Total 5	O 4	S 1	0	0
6	J	1	Total 5	O 4	S 1	0	0
6	K	1	Total 5	O 4	S 1	0	0
6	K	1	Total 5	O 4	S 1	0	0
6	K	1	Total 5	O 4	S 1	0	0
6	L	1	Total 5	O 4	S 1	0	0

- Molecule 7 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).

Full wwPDB X-ray Structure Validation Report

GOL
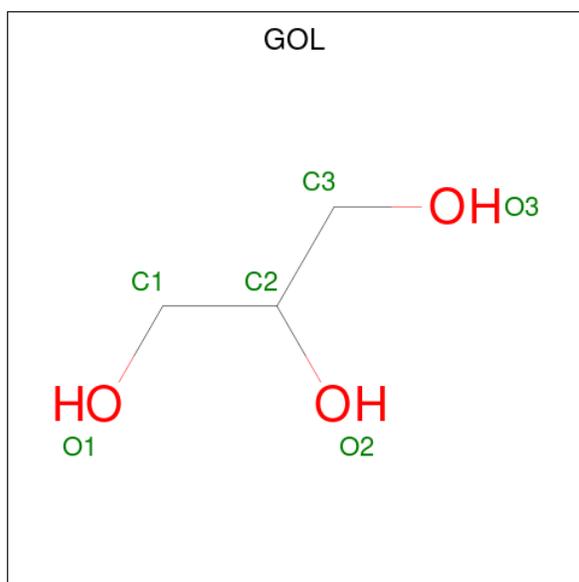
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total 6	C 3	O 3	0	0
7	G	1	Total 6	C 3	O 3	0	0

- Molecule 8 is N-[(1R)-2-(hydroxyamino)-2-oxo-1-(quinolin-7-yl)ethyl]-3,3-dimethylbu tanamide (CCD ID: A1CTH) (formula: $C_{17}H_{21}N_3O_3$) (labeled as "Ligand of Interest" by depositor).

A1CTH
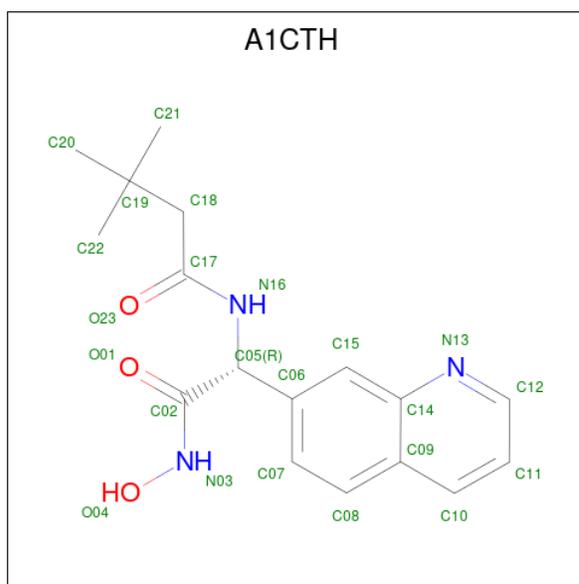
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
8	A	1	Total 23	C 17	N 3	O 3	0	0

- Molecule 9 is PENTAETHYLENE GLYCOL (CCD ID: 1PE) (formula: $C_{10}H_{22}O_6$).
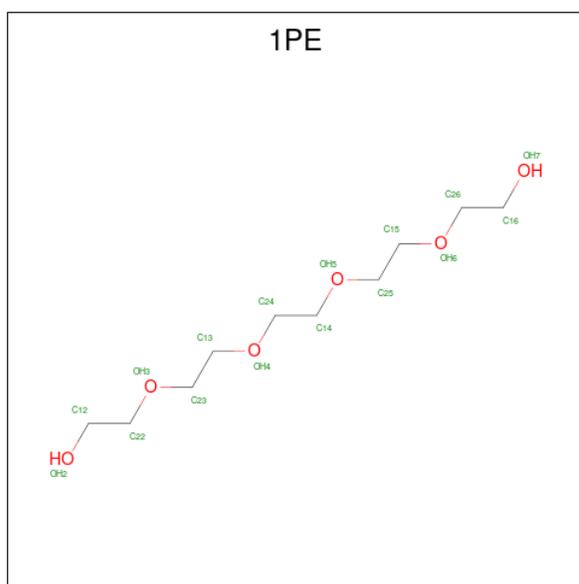
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	C	1	Total 16	C 10	O 6	0	0
9	D	1	Total 16	C 10	O 6	0	0
9	E	1	Total 13	C 8	O 5	0	0
9	H	1	Total 16	C 10	O 6	0	0
9	I	1	Total 16	C 10	O 6	0	0
9	I	1	Total 16	C 10	O 6	0	0
9	L	1	Total 10	C 6	O 4	0	0

- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	226	Total 226	O 226	0	0
10	B	171	Total 171	O 171	0	0
10	C	188	Total 188	O 188	0	0
10	D	208	Total 208	O 208	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	E	192	Total 192	O 192	0	0
10	F	170	Total 170	O 170	0	0
10	G	146	Total 146	O 146	0	0
10	H	140	Total 140	O 140	0	0
10	I	193	Total 193	O 193	0	0
10	J	181	Total 181	O 181	0	0
10	K	157	Total 157	O 157	0	0
10	L	126	Total 126	O 126	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: M17 leucyl aminopeptidase
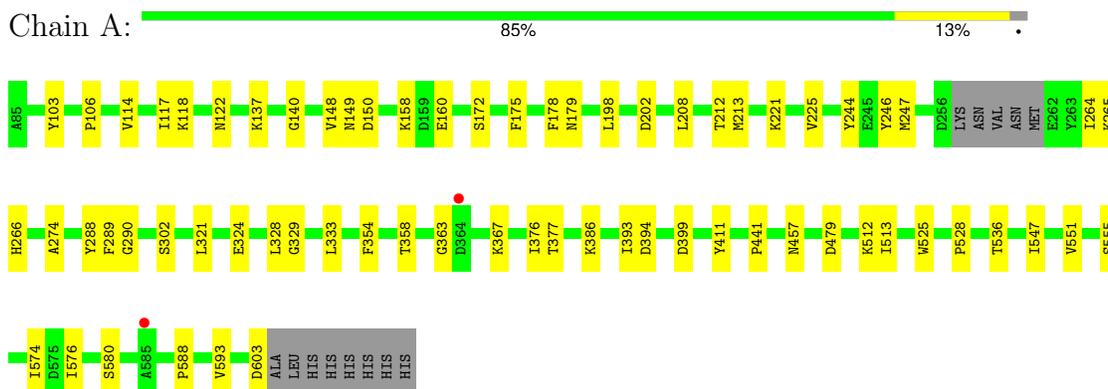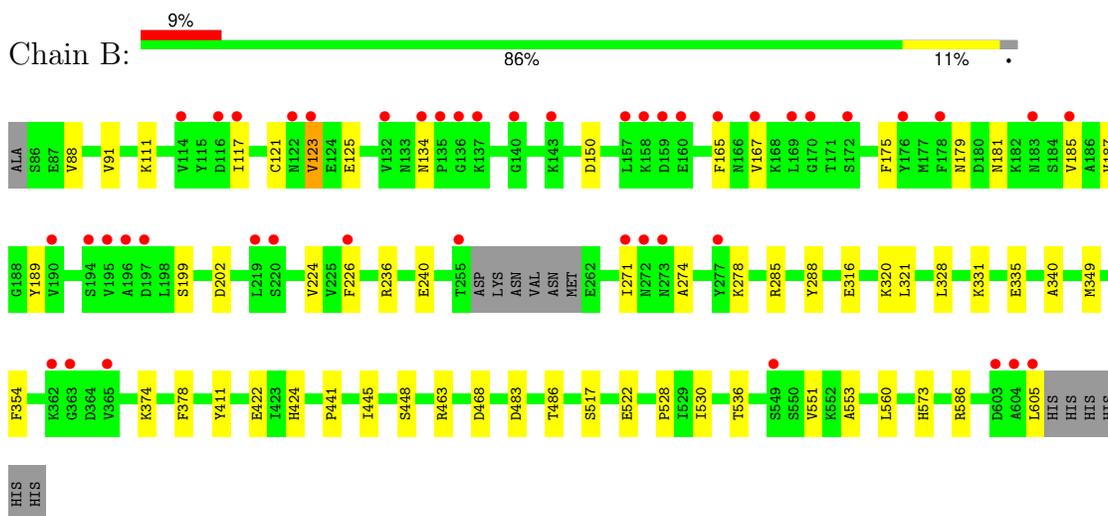
- Molecule 1: M17 leucyl aminopeptidase

- Molecule 1: M17 leucyl aminopeptidase

• Molecule 1: M17 leucyl aminopeptidase

Chain D:

86%   12%

• Molecule 1: M17 leucyl aminopeptidase

Chain E:

85%   11%

• Molecule 1: M17 leucyl aminopeptidase

Chain F:

4%   84%   12%

• Molecule 1: M17 leucyl aminopeptidase

Chain G:

• Molecule 1: M17 leucyl aminopeptidase

Chain H:

• Molecule 1: M17 leucyl aminopeptidase

Chain I:

• Molecule 1: M17 leucyl aminopeptidase
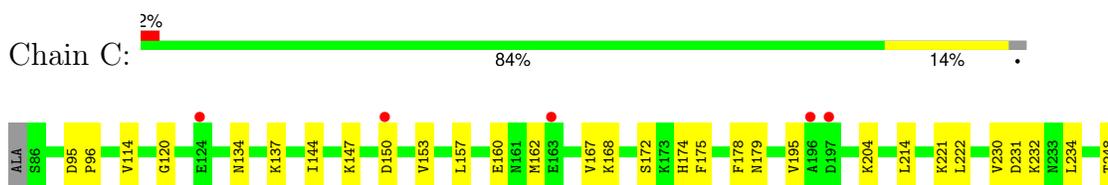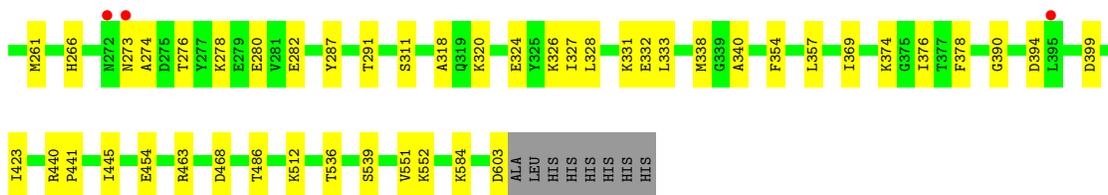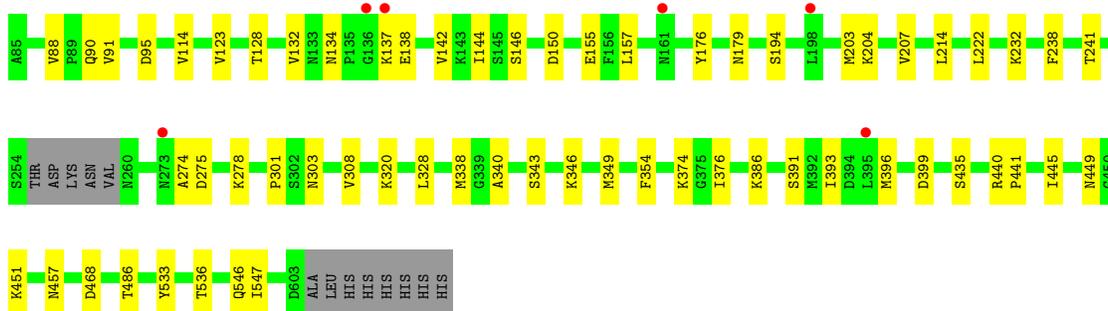
Chain J:

• Molecule 1: M17 leucyl aminopeptidase

Chain K:

• Molecule 1: M17 leucyl aminopeptidase

Chain L:
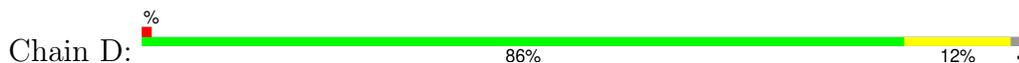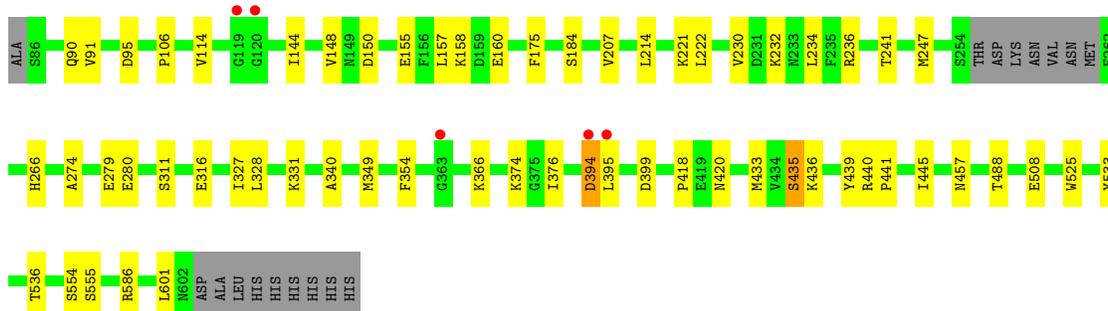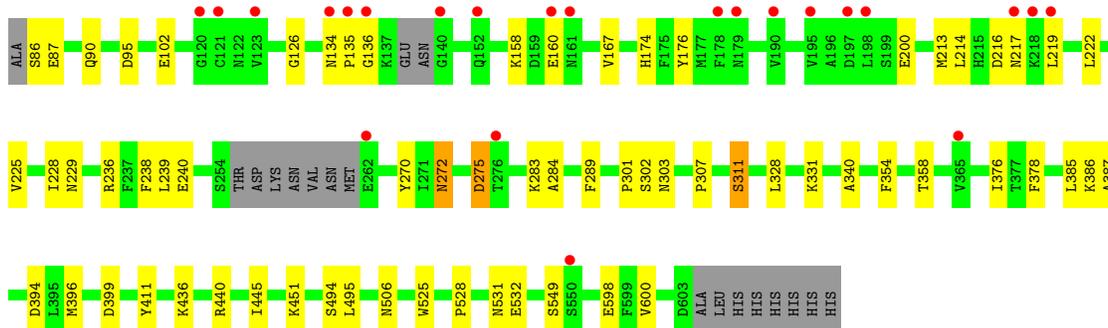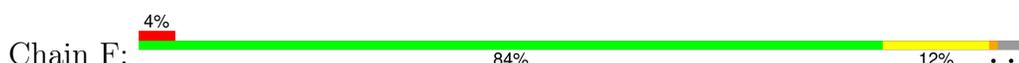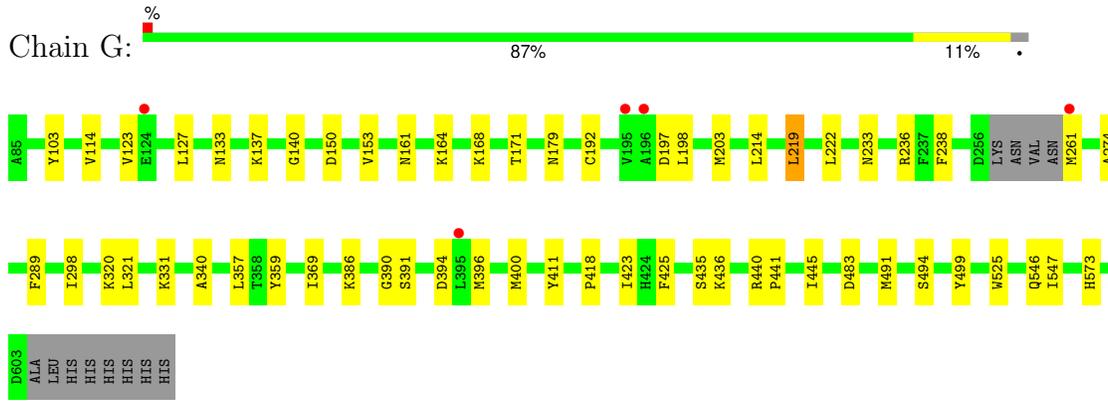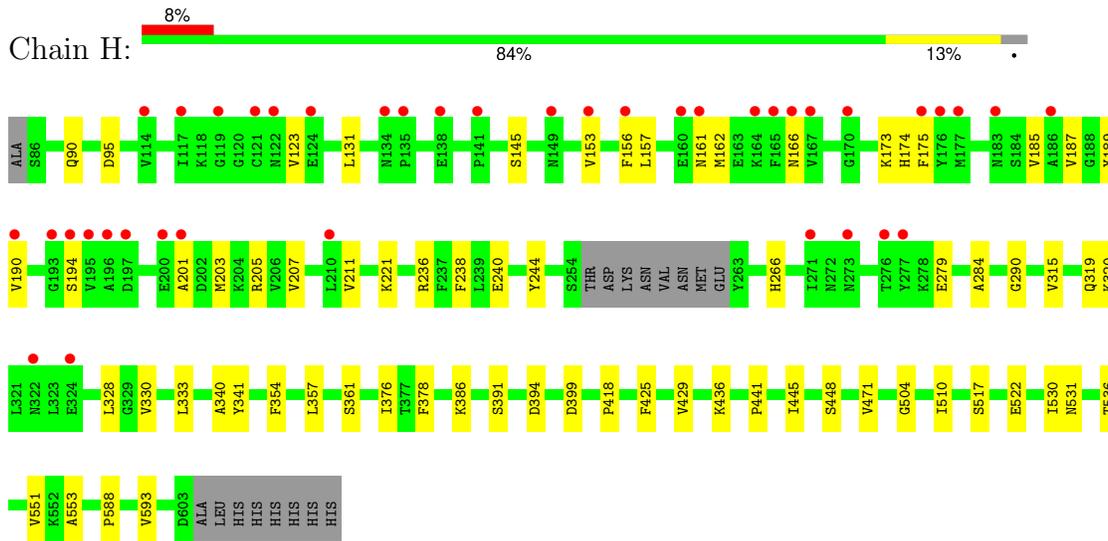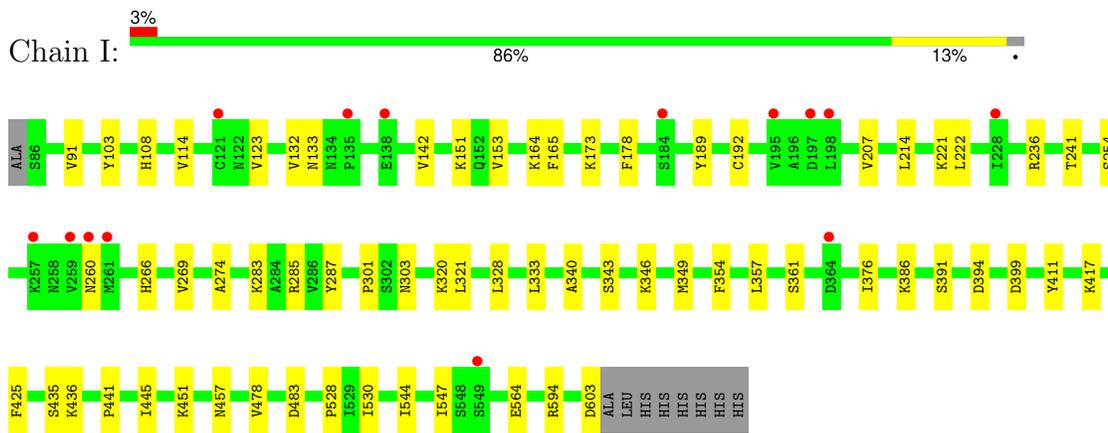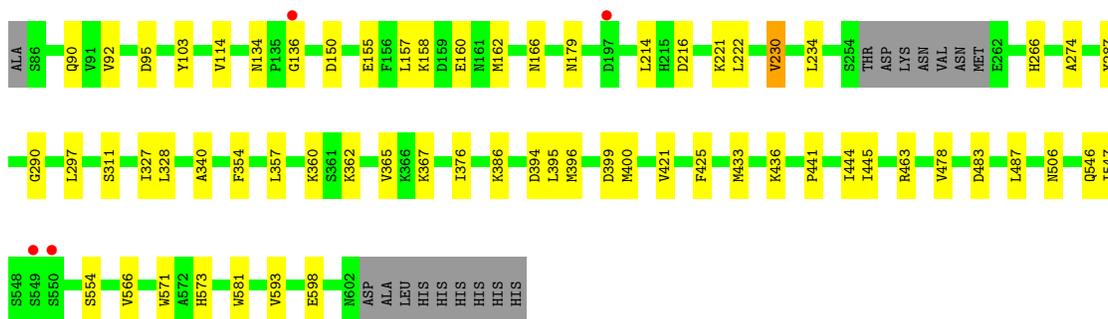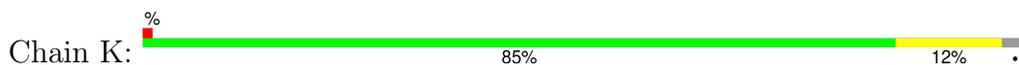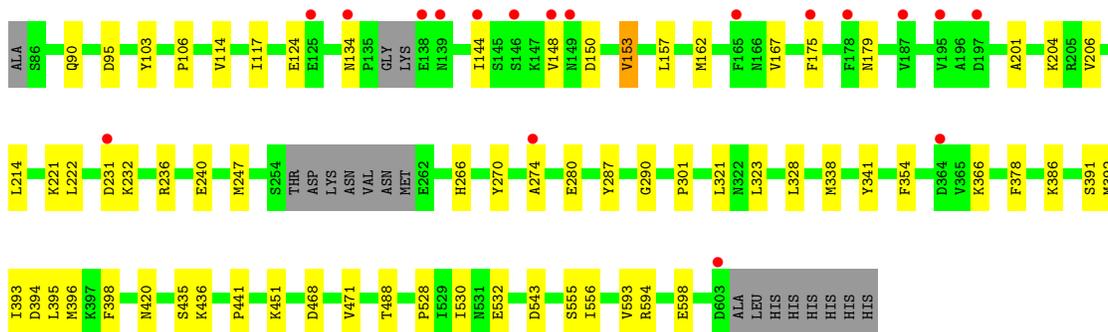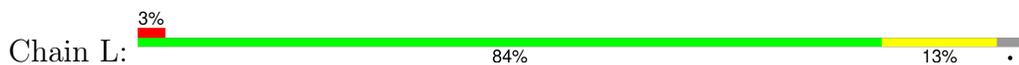
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	173.84Å 177.51Å 230.51Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.30 – 2.37 48.30 – 2.37	Depositor EDS
% Data completeness (in resolution range)	83.1 (48.30-2.37) 86.0 (48.30-2.37)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.98 (at 2.37Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.248 , 0.287 0.249 , 0.286	Depositor DCC
R_{free} test set	13813 reflections (4.80%)	wwPDB-VP
Wilson B-factor (Å^2)	21.3	Xtriage
Anisotropy	0.365	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 40.3	EDS
L-test for twinning[2]	$< |L| > = 0.43, < L^2 > = 0.26$	Xtriage
Estimated twinning fraction	0.000 for k,h,-l	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	50351	wwPDB-VP
Average B, all atoms (Å^2)	26.0	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 48.57 % 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 8.4453e-05. 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: GOL, DMS, CO3, A1CTH, 1PE, SO4, PEG, ZN

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	0.06	0/4055	0.22	0/5492
1	B	0.07	0/4031	0.23	0/5465
1	C	0.07	0/4084	0.22	0/5533
1	D	0.07	0/4064	0.23	0/5503
1	E	0.06	0/4042	0.23	0/5470
1	F	0.06	0/3984	0.22	0/5399
1	G	0.06	0/4075	0.22	0/5515
1	H	0.06	0/3991	0.22	0/5408
1	I	0.06	0/4094	0.21	0/5543
1	J	0.07	0/4065	0.22	0/5501
1	K	0.06	0/4031	0.22	0/5456
1	L	0.06	0/3961	0.22	0/5374
All	All	0.07	0/48477	0.22	0/65659

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3978	0	3955	44	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	3950	0	3904	35	0
1	C	4006	0	3982	51	0
1	D	3987	0	3971	39	0
1	E	3965	0	3966	38	0
1	F	3908	0	3867	41	0
1	G	3998	0	3990	38	0
1	H	3915	0	3887	39	0
1	I	4016	0	4005	39	0
1	J	3988	0	3984	45	0
1	K	3954	0	3956	39	0
1	L	3886	0	3818	41	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	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
2	G	2	0	0	0	0
2	H	2	0	0	0	0
2	I	2	0	0	0	0
2	J	2	0	0	0	0
2	K	2	0	0	0	0
2	L	2	0	0	0	0
3	A	4	0	0	0	0
3	B	4	0	0	1	0
3	C	4	0	0	1	0
3	D	4	0	0	1	0
3	E	4	0	0	0	0
3	F	4	0	0	0	0
3	G	4	0	0	0	0
3	H	4	0	0	0	0
3	I	4	0	0	0	0
3	J	4	0	0	1	0
3	K	4	0	0	1	0
3	L	4	0	0	0	0
4	A	35	0	50	4	0
4	B	28	0	40	0	0
4	C	7	0	10	1	0
4	D	14	0	20	1	0
4	E	42	0	60	1	0
4	F	35	0	50	2	0
4	G	21	0	30	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	H	7	0	10	0	0
4	I	21	0	30	1	0
4	J	28	0	40	1	0
4	K	35	0	50	4	0
4	L	28	0	40	6	0
5	A	8	0	12	1	0
5	B	8	0	12	1	0
5	C	4	0	6	0	0
5	E	8	0	12	0	0
5	F	12	0	18	3	0
5	G	4	0	6	2	0
5	H	4	0	6	0	0
5	I	4	0	6	0	0
5	J	16	0	24	5	0
5	K	4	0	6	1	0
5	L	4	0	6	0	0
6	A	10	0	0	0	0
6	B	10	0	0	0	0
6	C	10	0	0	1	0
6	D	5	0	0	0	0
6	E	10	0	0	0	0
6	F	15	0	0	0	0
6	G	5	0	0	1	0
6	I	10	0	0	1	0
6	J	20	0	0	0	0
6	K	15	0	0	0	0
6	L	5	0	0	0	0
7	A	6	0	8	0	0
7	G	6	0	8	0	0
8	A	23	0	0	0	0
9	C	16	0	22	0	0
9	D	16	0	22	0	0
9	E	13	0	17	1	0
9	H	16	0	22	2	0
9	I	32	0	44	4	0
9	L	10	0	12	0	0
10	A	226	0	0	1	0
10	B	171	0	0	0	0
10	C	188	0	0	1	0
10	D	208	0	0	1	0
10	E	192	0	0	1	0
10	F	170	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	G	146	0	0	3	0
10	H	140	0	0	0	0
10	I	193	0	0	1	0
10	J	181	0	0	1	0
10	K	157	0	0	0	0
10	L	126	0	0	0	0
All	All	50351	0	47984	453	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (453) 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:D:338:MET:HE3	1:D:468:ASP:HB3	1.62	0.80
1:H:531:ASN:HB2	4:K:701:PEG:H11	1.64	0.78
1:G:298:ILE:HA	1:G:400:MET:HE1	1.66	0.78
1:F:328:LEU:HB2	1:F:354:PHE:HB3	1.67	0.77
1:L:392:MET:HB3	1:L:395:LEU:HD23	1.71	0.73
1:J:132:VAL:HG21	1:J:142:VAL:HG13	1.71	0.72
1:F:451:LYS:HG3	4:F:706:PEG:H21	1.72	0.71
1:A:328:LEU:HB2	1:A:354:PHE:HB3	1.73	0.70
1:A:198:LEU:HD22	1:A:202:ASP:HB3	1.74	0.70
1:E:394:ASP:OD2	1:E:395:LEU:HD22	1.91	0.69
1:K:328:LEU:HB2	1:K:354:PHE:HB3	1.73	0.69
1:J:451:LYS:HE2	5:J:1011:DMS:H12	1.75	0.69
1:L:451:LYS:HG2	4:L:1008:PEG:H41	1.75	0.68
1:J:144:ILE:HG13	1:J:157:LEU:HD22	1.75	0.68
1:B:483:ASP:OD2	1:B:573:HIS:ND1	2.22	0.68
1:C:160:GLU:OE2	1:C:160:GLU:N	2.26	0.68
1:A:106:PRO:HD2	1:A:247:MET:HE1	1.75	0.67
1:F:236:ARG:HG2	1:F:284:ALA:HB2	1.76	0.67
1:E:106:PRO:HD2	1:E:247:MET:HE1	1.75	0.67
1:F:87:GLU:HA	4:F:713:PEG:H31	1.76	0.67
1:E:148:VAL:HG12	1:E:150:ASP:H	1.60	0.67
1:F:217:ASN:HB3	1:F:219:LEU:HD13	1.75	0.67
1:B:226:PHE:HB2	1:B:271:ILE:HG22	1.76	0.66
1:I:173:LYS:NZ	1:K:216:ASP:O	2.26	0.66
1:C:178:PHE:HZ	1:E:155:GLU:HG2	1.60	0.66
1:E:214:LEU:HD11	1:E:222:LEU:HD22	1.77	0.66
1:I:260:ASN:HD22	1:K:166:ASN:HB3	1.61	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:230:VAL:HG12	1:E:234:LEU:HD23	1.78	0.65
1:K:103:TYR:HB3	4:K:705:PEG:H41	1.78	0.65
1:J:230:VAL:HG12	1:J:234:LEU:HD23	1.79	0.65
1:C:584:LYS:H	1:C:584:LYS:HD2	1.62	0.65
1:E:366:LYS:HG3	1:E:420:ASN:HB3	1.78	0.65
1:J:386:LYS:HB2	1:J:393:ILE:HD12	1.79	0.64
1:E:328:LEU:HB2	1:E:354:PHE:HB3	1.79	0.64
1:J:114:VAL:HB	1:J:278:LYS:HD3	1.79	0.64
1:E:311:SER:HB2	1:E:327:ILE:HD12	1.80	0.64
1:G:394:ASP:HA	1:I:441:PRO:HB2	1.79	0.63
1:L:328:LEU:HB2	1:L:354:PHE:HB3	1.80	0.63
1:C:232:LYS:NZ	1:C:280:GLU:OE2	2.27	0.63
1:K:483:ASP:OD1	1:K:573:HIS:ND1	2.32	0.62
1:E:418:PRO:HB3	1:E:601:LEU:HD23	1.81	0.62
1:H:340:ALA:HA	1:H:445:ILE:HD12	1.81	0.62
1:D:320:LYS:HZ1	4:D:1004:PEG:H22	1.65	0.62
1:K:386:LYS:HE3	1:K:396:MET:HE2	1.82	0.62
1:C:340:ALA:HA	1:C:445:ILE:HD12	1.82	0.61
1:E:90:GLN:NE2	1:E:95:ASP:O	2.33	0.61
1:B:340:ALA:HA	1:B:445:ILE:HD12	1.80	0.61
1:L:451:LYS:HZ2	4:L:1008:PEG:H22	1.64	0.61
1:C:376:ILE:HB	1:C:399:ASP:HB3	1.83	0.60
1:I:451:LYS:NZ	1:I:564:GLU:O	2.33	0.60
1:D:144:ILE:HG13	1:D:157:LEU:HD22	1.84	0.60
1:C:326:LYS:NZ	1:C:332:GLU:OE1	2.35	0.59
1:G:331:LYS:H	1:G:331:LYS:HD2	1.66	0.59
1:K:297:LEU:HB3	1:K:400:MET:HE1	1.84	0.59
1:L:90:GLN:NE2	1:L:95:ASP:O	2.35	0.59
1:L:148:VAL:HG21	1:L:157:LEU:HD12	1.83	0.59
1:J:586:ARG:HD2	5:J:1012:DMS:H23	1.84	0.59
1:G:127:LEU:HB2	1:G:219:LEU:HD22	1.84	0.58
1:K:230:VAL:HG22	1:K:234:LEU:HB3	1.85	0.58
1:C:369:ILE:HB	1:C:423:ILE:HD12	1.86	0.58
1:E:586:ARG:NH1	10:E:1106:HOH:O	2.35	0.58
1:I:417:LYS:NZ	10:I:1105:HOH:O	2.37	0.57
1:K:90:GLN:HB3	1:K:95:ASP:HB2	1.86	0.57
1:L:338:MET:HG2	1:L:468:ASP:HB3	1.86	0.57
1:D:328:LEU:HB2	1:D:354:PHE:HB3	1.84	0.57
1:H:436:LYS:HG3	1:I:349:MET:HB3	1.85	0.57
1:K:158:LYS:HE3	1:K:160:GLU:HG2	1.87	0.57
1:B:328:LEU:HB2	1:B:354:PHE:HB3	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:161:ASN:O	1:G:164:LYS:NZ	2.30	0.57
1:E:221:LYS:HG3	1:E:266:HIS:HB2	1.86	0.57
1:J:386:LYS:HB3	1:J:391:SER:HB2	1.86	0.57
1:E:236:ARG:HB2	1:E:280:GLU:HB3	1.87	0.57
1:F:440:ARG:NH1	10:F:805:HOH:O	2.38	0.57
1:H:236:ARG:HG2	1:H:284:ALA:HB2	1.87	0.57
1:H:157:LEU:HA	1:H:162:MET:HE3	1.87	0.56
1:I:328:LEU:HB2	1:I:354:PHE:HB3	1.88	0.56
1:H:441:PRO:HB2	1:I:394:ASP:HA	1.87	0.56
1:I:214:LEU:HD21	1:I:222:LEU:HD22	1.86	0.56
1:A:329:GLY:HA3	5:A:1008:DMS:H12	1.88	0.56
1:H:386:LYS:HB3	1:H:391:SER:HB2	1.86	0.56
1:D:150:ASP:OD2	1:D:179:ASN:HB2	2.06	0.56
1:G:123:VAL:HG21	1:G:153:VAL:HG11	1.87	0.56
1:L:201:ALA:HA	1:L:204:LYS:HE2	1.87	0.56
1:B:441:PRO:HB2	1:C:394:ASP:HA	1.87	0.56
1:D:340:ALA:HA	1:D:445:ILE:HD12	1.88	0.55
1:I:285:ARG:HD2	9:I:1006:1PE:H262	1.89	0.55
4:A:1011:PEG:H22	1:F:531:ASN:H	1.71	0.55
1:E:232:LYS:NZ	1:E:279:GLU:OE2	2.30	0.55
1:E:316:GLU:HG3	9:E:1009:1PE:H142	1.89	0.55
1:F:340:ALA:HA	1:F:445:ILE:HD12	1.89	0.55
1:D:386:LYS:HB3	1:D:391:SER:HB2	1.89	0.55
1:F:126:GLY:H	5:F:711:DMS:H11	1.72	0.55
1:E:144:ILE:HG13	1:E:157:LEU:HD22	1.89	0.55
1:G:261:MET:N	10:G:1112:HOH:O	2.40	0.55
1:I:376:ILE:HB	1:I:399:ASP:HB3	1.88	0.54
1:A:172:SER:HB2	1:A:213:MET:HE3	1.88	0.54
1:F:506:ASN:HD22	5:F:708:DMS:H23	1.72	0.54
1:J:394:ASP:HA	1:L:441:PRO:HB2	1.90	0.54
1:J:311:SER:HB2	1:J:327:ILE:HD12	1.89	0.54
1:I:320:LYS:NZ	9:I:1005:1PE:OH5	2.38	0.54
1:C:168:LYS:NZ	10:C:2111:HOH:O	2.41	0.54
1:D:114:VAL:HG12	1:D:274:ALA:HB1	1.90	0.54
1:D:546:GLN:HG2	1:D:547:ILE:HG23	1.90	0.53
1:A:576:ILE:HD12	1:A:580:SER:HB2	1.91	0.53
1:H:156:PHE:HD1	1:H:161:ASN:HD22	1.55	0.53
1:B:422:GLU:OE1	1:B:424:HIS:NE2	2.37	0.53
1:A:376:ILE:HB	1:A:399:ASP:HB3	1.91	0.53
1:G:483:ASP:OD1	1:G:573:HIS:ND1	2.34	0.53
1:D:214:LEU:HD21	1:D:222:LEU:HD22	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:179:ASN:HD21	1:J:183:ASN:HB2	1.74	0.53
1:A:178:PHE:HZ	1:D:155:GLU:HG2	1.74	0.53
1:G:137:LYS:HD3	1:G:140:GLY:HA2	1.91	0.53
1:G:214:LEU:HD21	1:G:222:LEU:HD22	1.91	0.53
1:C:536:THR:HG21	1:C:551:VAL:HG23	1.90	0.52
1:H:236:ARG:NE	1:H:240:GLU:OE2	2.39	0.52
1:L:214:LEU:HD11	1:L:222:LEU:HD22	1.91	0.52
1:E:376:ILE:HB	1:E:399:ASP:HB3	1.91	0.52
1:E:533:TYR:O	1:E:536:THR:OG1	2.25	0.52
1:H:530:ILE:HA	4:K:701:PEG:H42	1.90	0.52
1:C:134:ASN:HB2	1:C:167:VAL:HG21	1.90	0.52
1:H:315:VAL:O	1:H:319:GLN:HG3	2.10	0.52
1:I:340:ALA:HA	1:I:445:ILE:HD12	1.92	0.52
1:K:114:VAL:HG12	1:K:274:ALA:HB1	1.90	0.52
1:L:221:LYS:HB2	1:L:266:HIS:HB2	1.92	0.52
1:J:150:ASP:O	1:J:154:SER:OG	2.24	0.52
1:K:214:LEU:HD21	1:K:222:LEU:HD22	1.92	0.52
1:D:90:GLN:HB3	1:D:95:ASP:HB2	1.91	0.52
1:J:366:LYS:HG3	1:J:420:ASN:HB3	1.90	0.52
1:K:340:ALA:HA	1:K:445:ILE:HD12	1.91	0.52
1:C:134:ASN:HD22	1:C:137:LYS:HB2	1.73	0.52
1:K:441:PRO:HB2	1:L:394:ASP:HA	1.90	0.52
1:E:340:ALA:HA	1:E:445:ILE:HD12	1.91	0.52
1:J:328:LEU:HB2	1:J:354:PHE:HB3	1.91	0.52
1:H:504:GLY:HA3	1:H:510:ILE:HD11	1.92	0.51
1:A:178:PHE:CZ	1:D:155:GLU:HG2	2.45	0.51
1:C:231:ASP:OD1	1:C:234:LEU:N	2.38	0.51
1:A:114:VAL:HG12	1:A:274:ALA:HB1	1.91	0.51
1:H:123:VAL:HG21	1:H:153:VAL:HG11	1.91	0.51
1:C:512:LYS:NZ	1:C:603:ASP:OD2	2.44	0.51
1:E:331:LYS:H	1:E:331:LYS:HD3	1.76	0.51
1:I:530:ILE:HG23	4:I:1009:PEG:H21	1.93	0.51
1:L:114:VAL:HG12	1:L:274:ALA:HB1	1.93	0.51
1:C:338:MET:HG2	1:C:468:ASP:HB3	1.92	0.51
1:A:150:ASP:OD2	1:A:179:ASN:HB2	2.10	0.51
1:D:132:VAL:HG21	1:D:142:VAL:HG13	1.91	0.51
1:I:123:VAL:HG11	1:I:153:VAL:HG11	1.93	0.51
1:D:376:ILE:HB	1:D:399:ASP:HB3	1.93	0.50
1:I:343:SER:HA	1:I:346:LYS:HD3	1.94	0.50
1:K:506:ASN:HD22	5:K:709:DMS:H13	1.76	0.50
1:A:302:SER:OG	1:A:377:THR:O	2.26	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:390:GLY:N	6:C:706:SO4:O2	2.44	0.50
1:L:90:GLN:HB3	1:L:95:ASP:HB2	1.94	0.50
1:D:204:LYS:HG2	1:D:241:THR:HG21	1.94	0.50
1:B:236:ARG:NE	1:B:240:GLU:OE2	2.42	0.50
1:I:178:PHE:HZ	1:K:155:GLU:HG2	1.77	0.50
1:K:463:ARG:HE	3:K:710:CO3:C	2.25	0.50
1:B:134:ASN:HB2	1:B:167:VAL:HG21	1.94	0.49
1:F:214:LEU:HD21	1:F:222:LEU:HD22	1.94	0.49
1:J:520:SER:HB3	1:J:598:GLU:HG3	1.93	0.49
1:J:114:VAL:HG12	1:J:274:ALA:HB1	1.93	0.49
1:A:122:ASN:HD21	1:A:149:ASN:HD22	1.60	0.49
1:F:376:ILE:HB	1:F:399:ASP:HB3	1.93	0.49
1:I:287:TYR:CD2	1:I:594:ARG:HG2	2.47	0.49
1:A:536:THR:HG21	1:A:551:VAL:HG23	1.95	0.49
1:D:533:TYR:O	1:D:536:THR:HG22	2.12	0.49
1:K:444:ILE:HD12	1:L:301:PRO:HG3	1.94	0.49
1:J:203:MET:HE2	1:J:238:PHE:HD1	1.76	0.49
1:G:150:ASP:OD2	1:G:179:ASN:HB2	2.12	0.49
1:D:91:VAL:HG23	1:D:349:MET:HE1	1.95	0.49
1:B:517:SER:OG	1:B:522:GLU:O	2.26	0.49
1:A:394:ASP:HA	1:C:441:PRO:HB2	1.95	0.49
1:G:114:VAL:HG12	1:G:274:ALA:HB1	1.93	0.49
1:H:328:LEU:HB2	1:H:354:PHE:HB3	1.95	0.49
1:C:214:LEU:HD21	1:C:222:LEU:HD22	1.94	0.48
1:I:457:ASN:HB2	1:I:547:ILE:HD13	1.95	0.48
1:A:148:VAL:HG12	1:A:150:ASP:H	1.78	0.48
1:D:138:GLU:OE2	1:D:194:SER:HB2	2.14	0.48
1:L:153:VAL:O	1:L:157:LEU:N	2.44	0.48
1:B:316:GLU:O	1:B:320:LYS:HG2	2.13	0.48
1:F:385:LEU:HD23	1:F:387:ALA:HB2	1.96	0.48
1:H:90:GLN:HB3	1:H:95:ASP:HB2	1.95	0.48
1:F:283:LYS:NZ	1:F:598:GLU:OE2	2.38	0.48
1:E:114:VAL:HG12	1:E:274:ALA:HB1	1.96	0.48
1:E:331:LYS:HD3	1:E:331:LYS:N	2.29	0.48
1:F:238:PHE:HD2	1:F:239:LEU:HD12	1.77	0.48
1:H:173:LYS:HB2	1:H:189:TYR:CE1	2.49	0.48
1:L:103:TYR:HB2	4:L:1010:PEG:H41	1.96	0.48
1:F:134:ASN:HB3	1:F:167:VAL:HG21	1.95	0.48
1:L:488:THR:HG21	1:L:555:SER:HA	1.96	0.48
1:A:265:LYS:HE2	1:A:266:HIS:CE1	2.50	0.47
9:H:1003:1PE:H122	9:H:1003:1PE:H232	1.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:357:LEU:HB2	1:J:425:PHE:HB2	1.96	0.47
1:B:175:PHE:HD1	1:F:176:TYR:HB2	1.79	0.47
1:B:199:SER:OG	1:B:202:ASP:OD2	2.22	0.47
1:G:321:LEU:HD11	1:G:411:TYR:HA	1.96	0.47
1:I:133:ASN:HB3	1:I:192:CYS:HB2	1.95	0.47
1:A:386:LYS:HB2	1:A:393:ILE:HD12	1.96	0.47
1:L:236:ARG:HB2	1:L:280:GLU:HB3	1.96	0.47
1:I:103:TYR:N	6:I:1004:SO4:O4	2.41	0.47
1:I:165:PHE:HB3	1:I:189:TYR:OH	2.15	0.47
1:L:117:ILE:HG12	1:L:270:TYR:HB3	1.96	0.47
1:E:374:LYS:HE3	1:E:376:ILE:HG12	1.97	0.47
1:H:361:SER:OG	1:H:418:PRO:O	2.24	0.47
1:I:333:LEU:HD21	1:I:354:PHE:HB2	1.97	0.47
1:K:367:LYS:HB3	1:K:421:VAL:HG12	1.96	0.47
1:A:137:LYS:HE3	1:A:140:GLY:HA2	1.97	0.47
1:D:203:MET:HE2	1:D:238:PHE:HD1	1.80	0.47
1:D:457:ASN:HB2	1:D:547:ILE:HD13	1.95	0.47
1:F:229:ASN:ND2	10:F:809:HOH:O	2.43	0.47
1:G:203:MET:HE3	1:G:238:PHE:HB2	1.95	0.47
1:G:390:GLY:H	5:G:1004:DMS:H12	1.79	0.47
1:J:530:ILE:HD12	1:J:556:ILE:HD13	1.96	0.47
1:L:231:ASP:OD1	1:L:232:LYS:N	2.47	0.47
1:H:203:MET:HE3	1:H:238:PHE:HB2	1.96	0.47
1:C:282:GLU:HA	1:C:282:GLU:OE2	2.14	0.47
1:C:331:LYS:HA	1:C:331:LYS:HD3	1.61	0.47
1:J:156:PHE:CD2	1:J:177:MET:HE1	2.50	0.47
1:A:411:TYR:HE1	4:A:1004:PEG:H11	1.80	0.46
1:C:174:HIS:HB3	1:E:175:PHE:CD2	2.49	0.46
1:G:359:TYR:OH	1:G:418:PRO:O	2.29	0.46
1:I:357:LEU:HB2	1:I:425:PHE:HB2	1.96	0.46
1:J:533:TYR:O	1:J:536:THR:HG22	2.15	0.46
1:B:536:THR:HG21	1:B:551:VAL:HG23	1.95	0.46
1:A:122:ASN:ND2	1:A:149:ASN:HD22	2.14	0.46
1:A:246:TYR:HE2	1:A:264:ILE:HG12	1.80	0.46
1:A:244:TYR:OH	1:A:588:PRO:O	2.32	0.46
1:E:158:LYS:HE3	1:E:160:GLU:HB3	1.96	0.46
1:L:287:TYR:OH	1:L:598:GLU:OE2	2.30	0.46
1:A:512:LYS:NZ	1:A:603:ASP:OD1	2.46	0.46
1:C:454:GLU:OE1	1:C:539:SER:OG	2.34	0.46
1:E:488:THR:HG21	1:E:555:SER:HA	1.98	0.46
1:D:88:VAL:HG22	1:D:308:VAL:HB	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:386:LYS:HB2	1:D:393:ILE:HD12	1.96	0.46
1:E:440:ARG:HD2	1:F:302:SER:HB2	1.97	0.46
1:G:394:ASP:OD1	1:G:394:ASP:N	2.43	0.46
1:L:134:ASN:HB3	1:L:167:VAL:HG21	1.98	0.46
1:L:532:GLU:HB2	4:L:1009:PEG:H31	1.97	0.46
1:A:363:GLY:N	10:A:1103:HOH:O	2.36	0.46
1:A:117:ILE:HD11	1:A:225:VAL:HG13	1.97	0.46
1:A:290:GLY:C	1:A:593:VAL:HG11	2.41	0.46
1:H:244:TYR:OH	1:H:588:PRO:O	2.31	0.46
1:B:175:PHE:N	1:B:187:VAL:O	2.47	0.46
1:B:285:ARG:HA	1:B:288:TYR:HB3	1.98	0.46
1:D:134:ASN:OD1	1:D:137:LYS:HE3	2.15	0.46
1:J:214:LEU:HB3	1:J:246:TYR:CE1	2.51	0.46
1:K:395:LEU:HD11	1:K:581:TRP:CG	2.50	0.46
1:L:530:ILE:HD12	1:L:556:ILE:HD13	1.98	0.46
1:G:192:CYS:HB3	1:G:198:LEU:HD11	1.97	0.45
1:J:214:LEU:HD21	1:J:222:LEU:HD22	1.98	0.45
1:J:486:THR:HG22	1:J:577:ALA:HA	1.97	0.45
1:E:457:ASN:HD21	4:E:1005:PEG:H21	1.80	0.45
1:J:545:ASN:ND2	5:J:1010:DMS:H21	2.31	0.45
1:A:333:LEU:HD21	1:A:354:PHE:HB2	1.97	0.45
1:J:278:LYS:HE3	5:J:1008:DMS:H11	1.98	0.45
1:J:463:ARG:NE	3:J:1009:CO3:O2	2.47	0.45
1:K:221:LYS:HB2	1:K:266:HIS:HB2	1.98	0.45
1:L:341:TYR:N	1:L:468:ASP:OD2	2.40	0.45
1:B:321:LEU:HD11	1:B:411:TYR:HA	1.99	0.45
1:D:374:LYS:NZ	1:D:486:THR:O	2.49	0.45
1:F:289:PHE:HD2	1:F:411:TYR:CZ	2.34	0.45
1:G:133:ASN:HB3	1:G:192:CYS:HB2	1.99	0.45
1:K:311:SER:HB2	1:K:327:ILE:HD12	1.97	0.45
1:K:441:PRO:HD2	1:L:378:PHE:CZ	2.51	0.45
1:A:158:LYS:HE3	1:A:160:GLU:HB3	1.99	0.45
1:A:175:PHE:HD1	1:D:176:TYR:HB2	1.81	0.45
1:A:441:PRO:HD2	1:B:378:PHE:CZ	2.52	0.45
1:G:233:ASN:OD1	1:G:236:ARG:NH1	2.41	0.45
1:H:290:GLY:C	1:H:593:VAL:HG11	2.42	0.45
1:H:376:ILE:HB	1:H:399:ASP:HB3	1.98	0.45
1:K:566:VAL:HG11	1:K:571:TRP:HB2	1.99	0.45
1:B:463:ARG:N	3:B:1002:CO3:O2	2.47	0.45
1:G:441:PRO:HD2	1:H:378:PHE:CZ	2.52	0.45
1:G:499:TYR:HE1	4:L:1009:PEG:H42	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:173:LYS:HA	1:H:173:LYS:HD3	1.67	0.45
1:B:165:PHE:HB3	1:B:189:TYR:OH	2.17	0.45
1:H:357:LEU:HB2	1:H:425:PHE:HB2	1.99	0.45
1:K:487:LEU:HD22	1:K:573:HIS:CE1	2.51	0.45
1:C:134:ASN:ND2	1:C:137:LYS:HD2	2.32	0.45
1:H:174:HIS:HB3	1:L:175:PHE:CD2	2.52	0.45
1:E:207:VAL:HG11	1:E:241:THR:HG22	1.99	0.44
1:G:440:ARG:NH1	10:G:1116:HOH:O	2.48	0.44
1:J:230:VAL:O	1:J:277:TYR:OH	2.33	0.44
1:C:157:LEU:HA	1:C:162:MET:HE2	1.99	0.44
1:D:275:ASP:HA	1:D:278:LYS:HD2	2.00	0.44
1:G:491:MET:HA	1:G:494:SER:HG	1.82	0.44
1:K:367:LYS:HB2	1:K:367:LYS:HE2	1.70	0.44
1:F:272:ASN:OD1	1:F:272:ASN:N	2.50	0.44
1:F:386:LYS:HE3	1:F:396:MET:HG3	1.98	0.44
1:H:320:LYS:NZ	9:H:1003:1PE:H221	2.32	0.44
1:B:181:ASN:O	1:B:181:ASN:ND2	2.46	0.44
1:E:441:PRO:HD2	1:F:378:PHE:CZ	2.53	0.44
1:A:513:ILE:HD12	1:A:574:ILE:HD11	1.99	0.44
1:L:150:ASP:OD2	1:L:179:ASN:HB2	2.17	0.44
1:C:274:ALA:O	1:C:278:LYS:HG3	2.18	0.44
1:G:386:LYS:HE3	1:G:396:MET:HE3	2.00	0.44
1:G:390:GLY:H	5:G:1004:DMS:H23	1.82	0.44
1:G:525:TRP:CZ3	1:L:528:PRO:HB3	2.53	0.44
1:B:91:VAL:HG23	1:B:349:MET:HE1	2.00	0.44
1:D:203:MET:HE2	1:D:238:PHE:CD1	2.53	0.44
1:F:216:ASP:C	1:F:217:ASN:HD22	2.26	0.44
1:F:225:VAL:HG22	1:F:270:TYR:HB2	1.98	0.44
1:A:302:SER:HB2	1:C:440:ARG:HD2	2.00	0.44
1:A:321:LEU:HD11	1:A:411:TYR:HA	2.00	0.44
1:A:367:LYS:HA	1:A:479:ASP:OD2	2.18	0.44
1:B:125:GLU:HB2	5:B:1007:DMS:H22	2.00	0.44
1:C:552:LYS:HA	1:C:552:LYS:HD3	1.61	0.44
1:G:357:LEU:HB2	1:G:425:PHE:HB2	2.00	0.44
1:B:123:VAL:HG12	1:B:185:VAL:HG21	1.99	0.43
1:E:435:SER:OG	1:E:436:LYS:N	2.51	0.43
1:L:543:ASP:HB3	4:L:1008:PEG:H11	1.99	0.43
1:C:328:LEU:HB2	1:C:354:PHE:HB3	1.99	0.43
1:E:232:LYS:HE2	1:E:280:GLU:OE2	2.18	0.43
1:F:303:ASN:OD1	1:F:303:ASN:N	2.51	0.43
1:H:341:TYR:OH	1:H:429:VAL:O	2.29	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:386:LYS:HB2	1:L:393:ILE:HD12	1.99	0.43
1:B:274:ALA:O	1:B:278:LYS:HG3	2.17	0.43
1:C:221:LYS:HE2	1:C:266:HIS:HB2	2.00	0.43
1:A:208:LEU:O	1:A:212:THR:HG23	2.19	0.43
1:B:374:LYS:NZ	1:B:486:THR:O	2.47	0.43
1:I:91:VAL:HG23	1:I:349:MET:HE1	2.00	0.43
1:I:108:HIS:CD2	9:I:1006:1PE:H151	2.53	0.43
1:C:318:ALA:HB2	1:C:357:LEU:HD22	1.99	0.43
1:G:369:ILE:HB	1:G:423:ILE:HD13	2.01	0.43
1:I:114:VAL:HG12	1:I:274:ALA:HB1	2.00	0.43
1:I:236:ARG:HD2	1:I:283:LYS:HG2	2.00	0.43
1:I:435:SER:OG	1:I:436:LYS:N	2.51	0.43
1:J:359:TYR:OH	1:J:418:PRO:O	2.30	0.43
1:A:525:TRP:CZ3	1:F:528:PRO:HB3	2.54	0.43
1:C:287:TYR:O	1:C:291:THR:HG23	2.19	0.43
1:E:441:PRO:HB2	1:F:394:ASP:HA	2.00	0.43
1:F:301:PRO:HB2	1:F:303:ASN:OD1	2.19	0.43
1:G:103:TYR:HB2	6:G:1006:SO4:O3	2.18	0.43
1:G:331:LYS:H	1:G:331:LYS:CD	2.31	0.43
1:I:386:LYS:HB3	1:I:391:SER:HB2	2.01	0.43
1:L:386:LYS:HE3	1:L:396:MET:HG3	2.01	0.43
1:A:118:LYS:HB2	1:A:118:LYS:HE2	1.70	0.43
1:C:273:ASN:O	1:C:276:THR:OG1	2.37	0.43
1:C:463:ARG:N	3:C:708:CO3:O2	2.40	0.43
1:I:132:VAL:HG21	1:I:142:VAL:HG13	2.00	0.43
1:J:214:LEU:HD11	1:J:222:LEU:HD22	2.01	0.43
1:K:546:GLN:HG2	1:K:547:ILE:HG23	2.01	0.43
1:C:374:LYS:NZ	1:C:486:THR:O	2.51	0.43
1:G:546:GLN:N	10:G:1120:HOH:O	2.52	0.43
1:H:333:LEU:HD21	1:H:354:PHE:HB2	2.01	0.43
1:I:221:LYS:HG3	1:I:266:HIS:HB2	2.01	0.43
1:L:106:PRO:HD2	1:L:247:MET:HE1	2.01	0.43
1:A:302:SER:CB	1:C:440:ARG:HD2	2.49	0.42
1:C:120:GLY:HA2	1:C:147:LYS:HG3	2.01	0.42
1:G:289:PHE:HD2	1:G:411:TYR:CZ	2.37	0.42
1:H:517:SER:OG	1:H:522:GLU:O	2.34	0.42
1:I:320:LYS:HB3	9:I:1006:1PE:H121	2.00	0.42
1:J:236:ARG:HG2	1:J:284:ALA:HB2	2.00	0.42
1:K:157:LEU:HD23	1:K:162:MET:HE3	2.00	0.42
1:K:436:LYS:HB3	1:K:436:LYS:HE2	1.91	0.42
1:F:494:SER:OG	1:F:495:LEU:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:321:LEU:HD11	1:I:411:TYR:HA	2.00	0.42
1:K:287:TYR:OH	1:K:598:GLU:OE2	2.35	0.42
1:C:333:LEU:HD21	1:C:354:PHE:HB2	2.02	0.42
1:J:338:MET:HE3	1:J:468:ASP:HB3	2.01	0.42
1:B:111:LYS:HA	1:B:111:LYS:HD2	1.77	0.42
1:B:530:ILE:O	1:B:560:LEU:HD11	2.19	0.42
1:C:144:ILE:HG13	1:C:157:LEU:HG	2.01	0.42
1:D:440:ARG:HH11	1:E:433:MET:HE2	1.85	0.42
1:H:175:PHE:N	1:H:187:VAL:O	2.45	0.42
1:H:207:VAL:O	1:H:211:VAL:HG23	2.19	0.42
1:H:551:VAL:HG12	1:H:553:ALA:H	1.83	0.42
1:J:103:TYR:HA	1:J:289:PHE:CZ	2.55	0.42
1:L:144:ILE:HD12	1:L:162:MET:SD	2.59	0.42
1:D:123:VAL:HG12	1:D:128:THR:HG21	2.02	0.42
1:C:320:LYS:HG2	4:C:704:PEG:H42	2.02	0.42
1:D:435:SER:HB2	1:F:436:LYS:HB3	2.02	0.42
1:I:151:LYS:HB3	1:I:151:LYS:HE2	1.86	0.42
1:K:376:ILE:HB	1:K:399:ASP:HB3	2.01	0.42
1:B:528:PRO:HB3	1:E:525:TRP:CZ3	2.55	0.42
1:H:123:VAL:HG12	1:H:185:VAL:HG21	2.02	0.42
1:K:360:LYS:HE2	1:K:365:VAL:HG21	2.01	0.42
1:B:551:VAL:HG12	1:B:553:ALA:H	1.85	0.42
1:D:449:ASN:ND2	1:D:451:LYS:HD2	2.35	0.42
1:G:435:SER:OG	1:G:436:LYS:N	2.52	0.42
1:H:221:LYS:HB2	1:H:266:HIS:HB2	2.01	0.42
1:I:528:PRO:HB3	1:J:525:TRP:CZ3	2.55	0.42
1:K:134:ASN:HD22	1:K:136:GLY:H	1.68	0.42
4:K:712:PEG:H21	4:K:712:PEG:H41	1.89	0.42
1:B:448:SER:OG	1:B:468:ASP:OD1	2.37	0.42
1:F:90:GLN:HB3	1:F:95:ASP:HB2	2.02	0.42
1:J:103:TYR:HB2	4:J:1004:PEG:H41	2.02	0.42
1:K:357:LEU:HB2	1:K:425:PHE:HB2	2.02	0.42
1:L:366:LYS:HG3	1:L:420:ASN:HB3	2.01	0.42
4:A:1011:PEG:H42	1:F:532:GLU:HB2	2.02	0.41
1:C:230:VAL:HB	1:C:234:LEU:HB3	2.01	0.41
1:D:232:LYS:HB3	1:D:232:LYS:HE3	1.76	0.41
1:J:278:LYS:HD2	5:J:1008:DMS:H21	2.02	0.41
1:K:362:LYS:HE2	1:K:362:LYS:HB3	1.79	0.41
1:A:528:PRO:HB3	1:F:525:TRP:CZ3	2.55	0.41
1:C:153:VAL:HG12	1:C:157:LEU:HD22	2.03	0.41
1:G:441:PRO:HB2	1:H:394:ASP:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:205:ARG:H	1:H:205:ARG:HG2	1.69	0.41
1:J:395:LEU:HB2	10:J:1198:HOH:O	2.20	0.41
1:J:440:ARG:HH11	1:K:433:MET:HE2	1.85	0.41
3:D:1002:CO3:O1	10:D:1101:HOH:O	2.21	0.41
1:J:123:VAL:HG21	1:J:153:VAL:HG11	2.02	0.41
1:L:240:GLU:OE1	1:L:594:ARG:NH1	2.44	0.41
1:A:457:ASN:HB2	1:A:547:ILE:HD13	2.02	0.41
1:F:174:HIS:ND1	1:F:213:MET:HE2	2.35	0.41
1:G:168:LYS:HB3	1:G:171:THR:OG1	2.20	0.41
1:K:290:GLY:C	1:K:593:VAL:HG11	2.45	0.41
1:L:435:SER:OG	1:L:436:LYS:N	2.53	0.41
1:B:441:PRO:HD2	1:C:378:PHE:CZ	2.56	0.41
1:C:160:GLU:N	1:C:160:GLU:CD	2.79	0.41
1:D:303:ASN:HB3	1:F:440:ARG:HH21	1.85	0.41
1:H:536:THR:HG21	1:H:551:VAL:HG23	2.02	0.41
1:I:207:VAL:HG11	1:I:241:THR:HG22	2.02	0.41
4:A:1013:PEG:H31	1:B:586:ARG:HH11	1.84	0.41
1:F:307:PRO:O	1:F:311:SER:OG	2.37	0.41
1:B:150:ASP:OD2	1:B:179:ASN:HB2	2.20	0.41
1:B:331:LYS:O	1:B:335:GLU:HG3	2.21	0.41
1:J:222:LEU:HB3	1:J:264:ILE:HD13	2.03	0.41
1:J:301:PRO:HB2	1:J:303:ASN:OD1	2.21	0.41
1:L:321:LEU:HB2	1:L:323:LEU:HG	2.03	0.41
1:E:91:VAL:HG23	1:E:349:MET:HE1	2.03	0.41
1:F:236:ARG:NE	1:F:240:GLU:OE2	2.54	0.41
1:K:150:ASP:OD2	1:K:179:ASN:HB2	2.21	0.41
1:A:221:LYS:HG3	1:A:266:HIS:HB2	2.03	0.41
1:C:114:VAL:HG12	1:C:274:ALA:HB1	2.03	0.41
1:C:248:THR:OG1	1:C:261:MET:HE1	2.21	0.41
1:F:158:LYS:HD2	1:F:160:GLU:OE2	2.21	0.41
1:H:131:LEU:HD23	1:H:190:VAL:HB	2.03	0.41
1:J:129:ILE:HD13	1:J:129:ILE:HA	1.89	0.41
1:A:324:GLU:HB2	1:A:358:THR:HB	2.03	0.41
1:C:95:ASP:HA	1:C:96:PRO:HD3	1.97	0.41
1:C:150:ASP:OD2	1:C:179:ASN:HB2	2.20	0.41
1:F:331:LYS:HG3	5:F:712:DMS:H21	2.03	0.41
1:L:338:MET:HG2	1:L:468:ASP:CB	2.50	0.41
1:A:103:TYR:HA	1:A:289:PHE:CZ	2.57	0.40
1:C:204:LYS:HE2	1:C:204:LYS:HB2	1.62	0.40
1:C:311:SER:HB2	1:C:327:ILE:HD12	2.03	0.40
1:F:275:ASP:OD1	1:F:275:ASP:N	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:340:ALA:HA	1:G:445:ILE:HD12	2.02	0.40
1:I:164:LYS:HE2	1:I:165:PHE:CZ	2.56	0.40
1:I:301:PRO:HB2	1:I:303:ASN:OD1	2.21	0.40
1:J:441:PRO:HB2	1:K:394:ASP:HA	2.03	0.40
1:D:301:PRO:HB2	1:D:303:ASN:OD1	2.21	0.40
1:D:343:SER:HA	1:D:346:LYS:HD3	2.03	0.40
1:J:500:ALA:HB3	1:J:524:VAL:HG22	2.02	0.40
1:C:162:MET:HE1	1:C:175:PHE:CE2	2.57	0.40
1:D:207:VAL:HG11	1:D:241:THR:HG22	2.02	0.40
1:G:103:TYR:CE2	1:G:320:LYS:HE3	2.56	0.40
1:H:201:ALA:O	1:H:205:ARG:HG2	2.22	0.40
1:L:290:GLY:C	1:L:593:VAL:HG11	2.47	0.40
1:B:331:LYS:HD2	1:B:331:LYS:HA	1.91	0.40
1:D:204:LYS:HE2	1:D:204:LYS:HB2	1.77	0.40
1:D:441:PRO:HB2	1:E:394:ASP:HA	2.03	0.40
1:J:156:PHE:CG	1:J:177:MET:HE1	2.55	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	510/527 (97%)	493 (97%)	17 (3%)	0	100	100
1	B	511/527 (97%)	492 (96%)	19 (4%)	0	100	100
1	C	516/527 (98%)	504 (98%)	12 (2%)	0	100	100
1	D	512/527 (97%)	497 (97%)	14 (3%)	1 (0%)	44	57
1	E	506/527 (96%)	495 (98%)	11 (2%)	0	100	100
1	F	503/527 (95%)	485 (96%)	16 (3%)	2 (0%)	30	41
1	G	511/527 (97%)	495 (97%)	16 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	506/527 (96%)	492 (97%)	14 (3%)	0	100	100
1	I	516/527 (98%)	504 (98%)	12 (2%)	0	100	100
1	J	510/527 (97%)	497 (98%)	13 (2%)	0	100	100
1	K	506/527 (96%)	489 (97%)	17 (3%)	0	100	100
1	L	503/527 (95%)	487 (97%)	16 (3%)	0	100	100
All	All	6110/6324 (97%)	5930 (97%)	177 (3%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	396	MET
1	F	136	GLY
1	F	135	PRO

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	435/454 (96%)	433 (100%)	2 (0%)	86	93
1	B	426/454 (94%)	420 (99%)	6 (1%)	62	78
1	C	438/454 (96%)	435 (99%)	3 (1%)	81	90
1	D	434/454 (96%)	433 (100%)	1 (0%)	92	97
1	E	436/454 (96%)	430 (99%)	6 (1%)	62	78
1	F	421/454 (93%)	411 (98%)	10 (2%)	44	62
1	G	439/454 (97%)	435 (99%)	4 (1%)	75	87
1	H	423/454 (93%)	416 (98%)	7 (2%)	56	73
1	I	440/454 (97%)	433 (98%)	7 (2%)	58	75
1	J	437/454 (96%)	427 (98%)	10 (2%)	45	64
1	K	433/454 (95%)	429 (99%)	4 (1%)	75	87
1	L	416/454 (92%)	410 (99%)	6 (1%)	62	78

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	5178/5448 (95%)	5112 (99%)	66 (1%)	65 80

All (66) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	288	TYR
1	A	555	SER
1	B	88	VAL
1	B	117	ILE
1	B	121	CYS
1	B	123	VAL
1	B	224	VAL
1	B	605	LEU
1	C	172	SER
1	C	195	VAL
1	C	324	GLU
1	D	146	SER
1	E	184	SER
1	E	394	ASP
1	E	435	SER
1	E	439	TYR
1	E	508	GLU
1	E	554	SER
1	F	86	SER
1	F	102	GLU
1	F	200	GLU
1	F	228	ILE
1	F	272	ASN
1	F	275	ASP
1	F	311	SER
1	F	358	THR
1	F	549	SER
1	F	600	VAL
1	G	197	ASP
1	G	219	LEU
1	G	391	SER
1	G	547	ILE
1	H	145	SER
1	H	166	ASN
1	H	194	SER
1	H	279	GLU
1	H	330	VAL

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Mol	Chain	Res	Type
1	H	448	SER
1	H	471	VAL
1	I	254	SER
1	I	269	VAL
1	I	361	SER
1	I	478	VAL
1	I	483	ASP
1	I	544	ILE
1	I	603	ASP
1	J	146	SER
1	J	172	SER
1	J	199	SER
1	J	220	SER
1	J	228	ILE
1	J	262	GLU
1	J	278	LYS
1	J	288	TYR
1	J	322	ASN
1	J	398	PHE
1	K	92	VAL
1	K	230	VAL
1	K	478	VAL
1	K	554	SER
1	L	124	GLU
1	L	153	VAL
1	L	206	VAL
1	L	391	SER
1	L	398	PHE
1	L	471	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (53) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	90	GLN
1	A	122	ASN
1	A	139	ASN
1	A	152	GLN
1	A	161	ASN
1	A	567	GLN
1	B	113	GLN
1	B	215	HIS
1	B	233	ASN

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Mol	Chain	Res	Type
1	B	384	ASN
1	B	521	ASN
1	B	602	ASN
1	C	134	ASN
1	C	272	ASN
1	C	420	ASN
1	D	174	HIS
1	D	272	ASN
1	D	515	GLN
1	E	511	ASN
1	E	531	ASN
1	F	104	ASN
1	F	437	ASN
1	G	90	GLN
1	G	134	ASN
1	G	139	ASN
1	G	272	ASN
1	G	515	GLN
1	G	531	ASN
1	G	545	ASN
1	G	602	ASN
1	H	104	ASN
1	H	152	GLN
1	H	161	ASN
1	H	266	HIS
1	I	149	ASN
1	I	260	ASN
1	I	266	HIS
1	I	511	ASN
1	I	531	ASN
1	I	545	ASN
1	J	161	ASN
1	J	166	ASN
1	J	273	ASN
1	J	322	ASN
1	J	511	ASN
1	K	90	GLN
1	K	104	ASN
1	K	134	ASN
1	K	319	GLN
1	K	602	ASN
1	L	90	GLN

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Mol	Chain	Res	Type
1	L	161	ASN
1	L	183	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 oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

Of 131 ligands modelled in this entry, 24 are monoatomic - leaving 107 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	B	1009	-	6,6,6	0.11	0	5,5,5	0.09	0
4	PEG	G	1003	-	6,6,6	0.11	0	5,5,5	0.09	0
5	DMS	J	1010	-	3,3,3	0.66	0	3,3,3	0.51	0
6	SO4	A	1006	-	4,4,4	0.23	0	6,6,6	0.08	0
4	PEG	E	1005	-	6,6,6	0.12	0	5,5,5	0.08	0
3	CO3	I	1007	-	3,3,3	0.83	0	2,3,3	0.12	0
4	PEG	F	704	-	6,6,6	0.11	0	5,5,5	0.09	0
6	SO4	C	706	-	4,4,4	0.23	0	6,6,6	0.08	0
6	SO4	I	1004	-	4,4,4	0.24	0	6,6,6	0.07	0
4	PEG	B	1005	-	6,6,6	0.11	0	5,5,5	0.10	0
4	PEG	G	1005	-	6,6,6	0.11	0	5,5,5	0.10	0
4	PEG	K	712	-	6,6,6	0.11	0	5,5,5	0.07	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$\|Z\|>2$	Counts	RMSZ	#$\|Z\|>2$
7	GOL	G	1008	-	5,5,5	0.92	0	5,5,5	1.09	0
6	SO4	E	1010	-	4,4,4	0.24	0	6,6,6	0.07	0
4	PEG	B	1010	-	6,6,6	0.12	0	5,5,5	0.07	0
6	SO4	J	1005	-	4,4,4	0.24	0	6,6,6	0.08	0
9	1PE	E	1009	-	12,12,15	0.11	0	11,11,14	0.13	0
9	1PE	I	1005	-	15,15,15	0.11	0	14,14,14	0.09	0
4	PEG	I	1011	-	6,6,6	0.10	0	5,5,5	0.11	0
4	PEG	J	1014	-	6,6,6	0.11	0	5,5,5	0.11	0
5	DMS	B	1008	-	3,3,3	0.67	0	3,3,3	0.53	0
6	SO4	J	1006	-	4,4,4	0.23	0	6,6,6	0.08	0
4	PEG	F	713	-	6,6,6	0.11	0	5,5,5	0.10	0
5	DMS	B	1007	-	3,3,3	0.66	0	3,3,3	0.50	0
3	CO3	F	710	-	3,3,3	0.79	0	2,3,3	0.09	0
5	DMS	A	1005	-	3,3,3	0.67	0	3,3,3	0.53	0
4	PEG	A	1012	-	6,6,6	0.11	0	5,5,5	0.08	0
4	PEG	L	1010	-	6,6,6	0.10	0	5,5,5	0.12	0
4	PEG	J	1004	-	6,6,6	0.11	0	5,5,5	0.08	0
6	SO4	C	705	-	4,4,4	0.23	0	6,6,6	0.07	0
5	DMS	F	708	-	3,3,3	0.67	0	3,3,3	0.52	0
5	DMS	L	1007	-	3,3,3	0.67	0	3,3,3	0.52	0
4	PEG	L	1008	-	6,6,6	0.11	0	5,5,5	0.09	0
9	1PE	L	1005	-	9,9,15	0.09	0	8,8,14	0.17	0
6	SO4	F	709	-	4,4,4	0.23	0	6,6,6	0.07	0
3	CO3	K	710	-	3,3,3	0.84	0	2,3,3	0.22	0
4	PEG	K	711	-	6,6,6	0.12	0	5,5,5	0.10	0
6	SO4	B	1006	-	4,4,4	0.24	0	6,6,6	0.08	0
4	PEG	I	1009	-	6,6,6	0.13	0	5,5,5	0.03	0
4	PEG	J	1003	-	6,6,6	0.11	0	5,5,5	0.10	0
4	PEG	F	706	-	6,6,6	0.10	0	5,5,5	0.09	0
5	DMS	A	1008	-	3,3,3	0.67	0	3,3,3	0.52	0
6	SO4	L	1003	-	4,4,4	0.23	0	6,6,6	0.08	0
6	SO4	K	708	-	4,4,4	0.24	0	6,6,6	0.08	0
5	DMS	H	1005	-	3,3,3	0.67	0	3,3,3	0.54	0
5	DMS	E	1012	-	3,3,3	0.67	0	3,3,3	0.51	0
4	PEG	E	1006	-	6,6,6	0.11	0	5,5,5	0.09	0
8	A1CTH	A	1010	2	23,24,24	2.46	8 (34%)	29,34,34	1.24	2 (6%)
5	DMS	J	1011	-	3,3,3	0.65	0	3,3,3	0.50	0
5	DMS	J	1008	-	3,3,3	0.67	0	3,3,3	0.51	0
3	CO3	L	1006	-	3,3,3	0.83	0	2,3,3	0.17	0
4	PEG	L	1009	-	6,6,6	0.11	0	5,5,5	0.08	0
4	PEG	G	1009	-	6,6,6	0.12	0	5,5,5	0.07	0
4	PEG	A	1004	-	6,6,6	0.11	0	5,5,5	0.09	0
6	SO4	G	1006	-	4,4,4	0.24	0	6,6,6	0.07	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
6	SO4	D	1005	-	4,4,4	0.24	0	6,6,6	0.08	0
3	CO3	J	1009	-	3,3,3	0.83	0	2,3,3	0.13	0
4	PEG	B	1011	-	6,6,6	0.11	0	5,5,5	0.10	0
5	DMS	C	701	-	3,3,3	0.67	0	3,3,3	0.49	0
9	1PE	C	707	-	15,15,15	0.11	0	14,14,14	0.10	0
4	PEG	A	1011	-	6,6,6	0.10	0	5,5,5	0.09	0
5	DMS	F	711	-	3,3,3	0.67	0	3,3,3	0.50	0
6	SO4	F	701	-	4,4,4	0.22	0	6,6,6	0.08	0
3	CO3	A	1002	-	3,3,3	0.81	0	2,3,3	0.09	0
3	CO3	D	1002	-	3,3,3	0.86	0	2,3,3	0.11	0
4	PEG	K	706	-	6,6,6	0.12	0	5,5,5	0.08	0
5	DMS	F	712	-	3,3,3	0.67	0	3,3,3	0.54	0
9	1PE	D	1006	-	15,15,15	0.11	0	14,14,14	0.09	0
6	SO4	K	707	-	4,4,4	0.23	0	6,6,6	0.08	0
4	PEG	K	701	-	6,6,6	0.10	0	5,5,5	0.10	0
5	DMS	I	1008	-	3,3,3	0.66	0	3,3,3	0.49	0
6	SO4	F	705	-	4,4,4	0.24	0	6,6,6	0.08	0
4	PEG	E	1014	-	6,6,6	0.10	0	5,5,5	0.11	0
6	SO4	J	1007	-	4,4,4	0.23	0	6,6,6	0.08	0
4	PEG	L	1004	-	6,6,6	0.10	0	5,5,5	0.10	0
6	SO4	B	1004	-	4,4,4	0.23	0	6,6,6	0.10	0
7	GOL	A	1009	-	5,5,5	0.96	0	5,5,5	1.06	0
4	PEG	E	1004	-	6,6,6	0.11	0	5,5,5	0.10	0
4	PEG	C	704	-	6,6,6	0.12	0	5,5,5	0.06	0
4	PEG	F	714	-	6,6,6	0.11	0	5,5,5	0.08	0
3	CO3	C	708	-	3,3,3	0.87	0	2,3,3	0.17	0
6	SO4	J	1013	-	4,4,4	0.22	0	6,6,6	0.08	0
5	DMS	J	1012	-	3,3,3	0.67	0	3,3,3	0.57	0
4	PEG	D	1004	-	6,6,6	0.12	0	5,5,5	0.08	0
9	1PE	I	1006	-	15,15,15	0.11	0	14,14,14	0.08	0
3	CO3	H	1004	-	3,3,3	0.80	0	2,3,3	0.05	0
4	PEG	F	707	-	6,6,6	0.12	0	5,5,5	0.09	0
4	PEG	K	705	-	6,6,6	0.11	0	5,5,5	0.09	0
6	SO4	A	1007	-	4,4,4	0.24	0	6,6,6	0.07	0
4	PEG	E	1007	-	6,6,6	0.11	0	5,5,5	0.09	0
5	DMS	G	1004	-	3,3,3	0.67	0	3,3,3	0.54	0
4	PEG	H	1006	-	6,6,6	0.11	0	5,5,5	0.09	0
5	DMS	E	1011	-	3,3,3	0.67	0	3,3,3	0.52	0
4	PEG	D	1007	-	6,6,6	0.11	0	5,5,5	0.10	0
4	PEG	A	1014	-	6,6,6	0.11	0	5,5,5	0.09	0
9	1PE	H	1003	-	15,15,15	0.12	0	14,14,14	0.10	0
3	CO3	E	1002	-	3,3,3	0.81	0	2,3,3	0.09	0
6	SO4	E	1008	-	4,4,4	0.23	0	6,6,6	0.08	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	PEG	A	1013	-	6,6,6	0.11	0	5,5,5	0.10	0
5	DMS	K	709	-	3,3,3	0.66	0	3,3,3	0.51	0
3	CO3	B	1002	-	3,3,3	0.85	0	2,3,3	0.23	0
4	PEG	E	1013	-	6,6,6	0.12	0	5,5,5	0.09	0
3	CO3	G	1007	-	3,3,3	0.81	0	2,3,3	0.13	0
6	SO4	I	1003	-	4,4,4	0.24	0	6,6,6	0.07	0
4	PEG	I	1010	-	6,6,6	0.11	0	5,5,5	0.10	0
6	SO4	K	704	-	4,4,4	0.23	0	6,6,6	0.07	0
4	PEG	J	1015	-	6,6,6	0.12	0	5,5,5	0.07	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	B	1009	-	-	3/4/4/4	-
4	PEG	A	1011	-	-	1/4/4/4	-
4	PEG	J	1004	-	-	1/4/4/4	-
9	1PE	L	1005	-	-	3/7/7/13	-
4	PEG	L	1008	-	-	3/4/4/4	-
4	PEG	D	1004	-	-	2/4/4/4	-
4	PEG	G	1003	-	-	1/4/4/4	-
4	PEG	E	1005	-	-	4/4/4/4	-
4	PEG	K	711	-	-	3/4/4/4	-
9	1PE	I	1006	-	-	4/13/13/13	-
4	PEG	K	706	-	-	1/4/4/4	-
4	PEG	I	1009	-	-	2/4/4/4	-
4	PEG	J	1003	-	-	0/4/4/4	-
4	PEG	F	707	-	-	4/4/4/4	-
4	PEG	K	705	-	-	2/4/4/4	-
4	PEG	F	706	-	-	2/4/4/4	-
4	PEG	E	1007	-	-	2/4/4/4	-
9	1PE	D	1006	-	-	4/13/13/13	-
4	PEG	F	704	-	-	1/4/4/4	-
4	PEG	H	1006	-	-	1/4/4/4	-
4	PEG	B	1005	-	-	1/4/4/4	-
4	PEG	K	701	-	-	2/4/4/4	-
4	PEG	D	1007	-	-	1/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PEG	G	1005	-	-	2/4/4/4	-
4	PEG	E	1006	-	-	0/4/4/4	-
4	PEG	A	1014	-	-	1/4/4/4	-
4	PEG	K	712	-	-	2/4/4/4	-
8	A1CTH	A	1010	2	-	3/19/19/19	0/2/2/2
7	GOL	G	1008	-	-	0/4/4/4	-
9	1PE	H	1003	-	-	7/13/13/13	-
4	PEG	A	1013	-	-	1/4/4/4	-
4	PEG	B	1010	-	-	3/4/4/4	-
4	PEG	E	1014	-	-	1/4/4/4	-
4	PEG	C	704	-	-	3/4/4/4	-
4	PEG	L	1009	-	-	2/4/4/4	-
4	PEG	G	1009	-	-	0/4/4/4	-
4	PEG	E	1013	-	-	2/4/4/4	-
9	1PE	E	1009	-	-	4/10/10/13	-
4	PEG	A	1004	-	-	2/4/4/4	-
4	PEG	I	1011	-	-	1/4/4/4	-
4	PEG	J	1014	-	-	2/4/4/4	-
9	1PE	I	1005	-	-	7/13/13/13	-
4	PEG	L	1004	-	-	3/4/4/4	-
4	PEG	F	713	-	-	2/4/4/4	-
4	PEG	B	1011	-	-	3/4/4/4	-
9	1PE	C	707	-	-	8/13/13/13	-
4	PEG	A	1012	-	-	3/4/4/4	-
4	PEG	L	1010	-	-	2/4/4/4	-
4	PEG	J	1015	-	-	0/4/4/4	-
7	GOL	A	1009	-	-	0/4/4/4	-
4	PEG	I	1010	-	-	2/4/4/4	-
4	PEG	E	1004	-	-	3/4/4/4	-
4	PEG	F	714	-	-	2/4/4/4	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	1010	A1CTH	C17-N16	7.53	1.50	1.34
8	A	1010	A1CTH	C09-C14	-3.80	1.36	1.42
8	A	1010	A1CTH	C07-C06	3.53	1.44	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	A	1010	A1CTH	O04-N03	3.53	1.48	1.40
8	A	1010	A1CTH	C12-N13	3.28	1.38	1.32
8	A	1010	A1CTH	C05-N16	3.12	1.51	1.46
8	A	1010	A1CTH	C08-C09	2.10	1.46	1.42
8	A	1010	A1CTH	C15-C14	2.08	1.45	1.41

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	A	1010	A1CTH	C18-C17-N16	2.65	120.07	115.65
8	A	1010	A1CTH	C11-C12-N13	-2.55	120.23	123.97

There are no chirality outliers.

All (119) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	D	1006	1PE	OH6-C15-C25-OH5
9	H	1003	1PE	C12-C22-OH3-C23
4	A	1004	PEG	O2-C3-C4-O4
4	E	1005	PEG	O2-C3-C4-O4
4	E	1007	PEG	O1-C1-C2-O2
4	E	1013	PEG	O1-C1-C2-O2
4	F	707	PEG	O2-C3-C4-O4
9	C	707	1PE	OH7-C16-C26-OH6
9	I	1006	1PE	OH4-C13-C23-OH3
4	A	1013	PEG	O1-C1-C2-O2
4	B	1010	PEG	O1-C1-C2-O2
4	C	704	PEG	O2-C3-C4-O4
4	E	1007	PEG	O2-C3-C4-O4
4	H	1006	PEG	O2-C3-C4-O4
4	K	711	PEG	O2-C3-C4-O4
4	K	712	PEG	O1-C1-C2-O2
4	A	1012	PEG	O1-C1-C2-O2
4	B	1009	PEG	O2-C3-C4-O4
4	I	1009	PEG	O2-C3-C4-O4
4	I	1010	PEG	O2-C3-C4-O4
4	J	1014	PEG	O2-C3-C4-O4
9	I	1005	1PE	OH7-C16-C26-OH6
9	L	1005	1PE	OH6-C15-C25-OH5
4	C	704	PEG	C4-C3-O2-C2
4	D	1004	PEG	O1-C1-C2-O2
4	D	1004	PEG	O2-C3-C4-O4

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Mol	Chain	Res	Type	Atoms
4	E	1004	PEG	O2-C3-C4-O4
4	E	1005	PEG	O1-C1-C2-O2
9	H	1003	1PE	OH7-C16-C26-OH6
4	I	1009	PEG	C1-C2-O2-C3
4	F	706	PEG	O2-C3-C4-O4
4	I	1011	PEG	O1-C1-C2-O2
4	K	705	PEG	O2-C3-C4-O4
4	L	1009	PEG	O1-C1-C2-O2
9	D	1006	1PE	OH7-C16-C26-OH6
9	I	1005	1PE	OH2-C12-C22-OH3
9	L	1005	1PE	OH5-C14-C24-OH4
9	I	1005	1PE	OH4-C13-C23-OH3
9	D	1006	1PE	OH4-C13-C23-OH3
4	B	1005	PEG	O2-C3-C4-O4
4	B	1010	PEG	O2-C3-C4-O4
4	F	704	PEG	O2-C3-C4-O4
4	I	1010	PEG	O1-C1-C2-O2
4	L	1008	PEG	O1-C1-C2-O2
9	H	1003	1PE	OH2-C12-C22-OH3
9	C	707	1PE	OH6-C15-C25-OH5
4	B	1010	PEG	C4-C3-O2-C2
9	H	1003	1PE	OH6-C15-C25-OH5
4	L	1008	PEG	O2-C3-C4-O4
9	H	1003	1PE	OH4-C13-C23-OH3
9	C	707	1PE	OH5-C14-C24-OH4
4	B	1011	PEG	C1-C2-O2-C3
4	E	1005	PEG	C4-C3-O2-C2
9	C	707	1PE	C15-C25-OH5-C14
9	I	1005	1PE	C24-C14-OH5-C25
9	C	707	1PE	C12-C22-OH3-C23
9	C	707	1PE	C13-C23-OH3-C22
9	E	1009	1PE	C23-C13-OH4-C24
4	K	701	PEG	C4-C3-O2-C2
4	L	1010	PEG	C4-C3-O2-C2
4	K	711	PEG	C4-C3-O2-C2
9	I	1006	1PE	C25-C15-OH6-C26
4	F	707	PEG	O1-C1-C2-O2
4	K	711	PEG	O1-C1-C2-O2
9	I	1005	1PE	OH5-C14-C24-OH4
9	E	1009	1PE	C12-C22-OH3-C23
4	E	1004	PEG	C4-C3-O2-C2
4	A	1014	PEG	C1-C2-O2-C3

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Mol	Chain	Res	Type	Atoms
9	D	1006	1PE	C25-C15-OH6-C26
4	L	1004	PEG	C1-C2-O2-C3
4	A	1012	PEG	C4-C3-O2-C2
4	K	712	PEG	C4-C3-O2-C2
4	K	705	PEG	C4-C3-O2-C2
4	B	1011	PEG	O2-C3-C4-O4
4	G	1003	PEG	O1-C1-C2-O2
4	L	1004	PEG	O2-C3-C4-O4
4	L	1010	PEG	O1-C1-C2-O2
8	A	1010	A1CTH	C17-C18-C19-C20
8	A	1010	A1CTH	C17-C18-C19-C22
4	J	1004	PEG	C1-C2-O2-C3
9	L	1005	1PE	C23-C13-OH4-C24
4	D	1007	PEG	O1-C1-C2-O2
4	E	1004	PEG	O1-C1-C2-O2
9	I	1006	1PE	C13-C23-OH3-C22
4	F	714	PEG	C1-C2-O2-C3
4	A	1011	PEG	O1-C1-C2-O2
4	G	1005	PEG	O1-C1-C2-O2
4	E	1014	PEG	C1-C2-O2-C3
4	F	713	PEG	C1-C2-O2-C3
9	I	1005	1PE	C25-C15-OH6-C26
4	G	1005	PEG	O2-C3-C4-O4
4	F	707	PEG	C4-C3-O2-C2
4	L	1004	PEG	C4-C3-O2-C2
9	C	707	1PE	C24-C14-OH5-C25
4	L	1009	PEG	C1-C2-O2-C3
4	F	714	PEG	O2-C3-C4-O4
4	B	1009	PEG	C1-C2-O2-C3
4	B	1011	PEG	O1-C1-C2-O2
4	K	706	PEG	C1-C2-O2-C3
4	A	1004	PEG	C1-C2-O2-C3
8	A	1010	A1CTH	C17-C18-C19-C21
4	B	1009	PEG	O1-C1-C2-O2
9	H	1003	1PE	C25-C15-OH6-C26
4	F	707	PEG	C1-C2-O2-C3
4	K	701	PEG	O1-C1-C2-O2
9	E	1009	1PE	OH4-C13-C23-OH3
4	L	1008	PEG	C4-C3-O2-C2
9	C	707	1PE	C23-C13-OH4-C24
9	H	1003	1PE	C23-C13-OH4-C24
4	A	1012	PEG	C1-C2-O2-C3

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Mol	Chain	Res	Type	Atoms
4	C	704	PEG	O1-C1-C2-O2
4	F	713	PEG	C4-C3-O2-C2
9	I	1006	1PE	OH6-C15-C25-OH5
4	J	1014	PEG	C4-C3-O2-C2
4	E	1013	PEG	C1-C2-O2-C3
9	I	1005	1PE	C15-C25-OH5-C14
9	E	1009	1PE	C24-C14-OH5-C25
4	E	1005	PEG	C1-C2-O2-C3
4	F	706	PEG	C4-C3-O2-C2

There are no ring outliers.

39 monomers are involved in 49 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	J	1010	DMS	1	0
4	E	1005	PEG	1	0
6	C	706	SO4	1	0
6	I	1004	SO4	1	0
4	K	712	PEG	1	0
9	E	1009	1PE	1	0
9	I	1005	1PE	1	0
4	F	713	PEG	1	0
5	B	1007	DMS	1	0
4	L	1010	PEG	1	0
4	J	1004	PEG	1	0
5	F	708	DMS	1	0
4	L	1008	PEG	3	0
3	K	710	CO3	1	0
4	I	1009	PEG	1	0
4	F	706	PEG	1	0
5	A	1008	DMS	1	0
5	J	1011	DMS	1	0
5	J	1008	DMS	2	0
4	L	1009	PEG	2	0
4	A	1004	PEG	1	0
6	G	1006	SO4	1	0
3	J	1009	CO3	1	0
4	A	1011	PEG	2	0
5	F	711	DMS	1	0
3	D	1002	CO3	1	0
5	F	712	DMS	1	0
4	K	701	PEG	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	704	PEG	1	0
3	C	708	CO3	1	0
5	J	1012	DMS	1	0
4	D	1004	PEG	1	0
9	I	1006	1PE	3	0
4	K	705	PEG	1	0
5	G	1004	DMS	2	0
9	H	1003	1PE	2	0
4	A	1013	PEG	1	0
5	K	709	DMS	1	0
3	B	1002	CO3	1	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 A1CTH A 1010

Bond lengths   Bond angles

Torsions   Rings
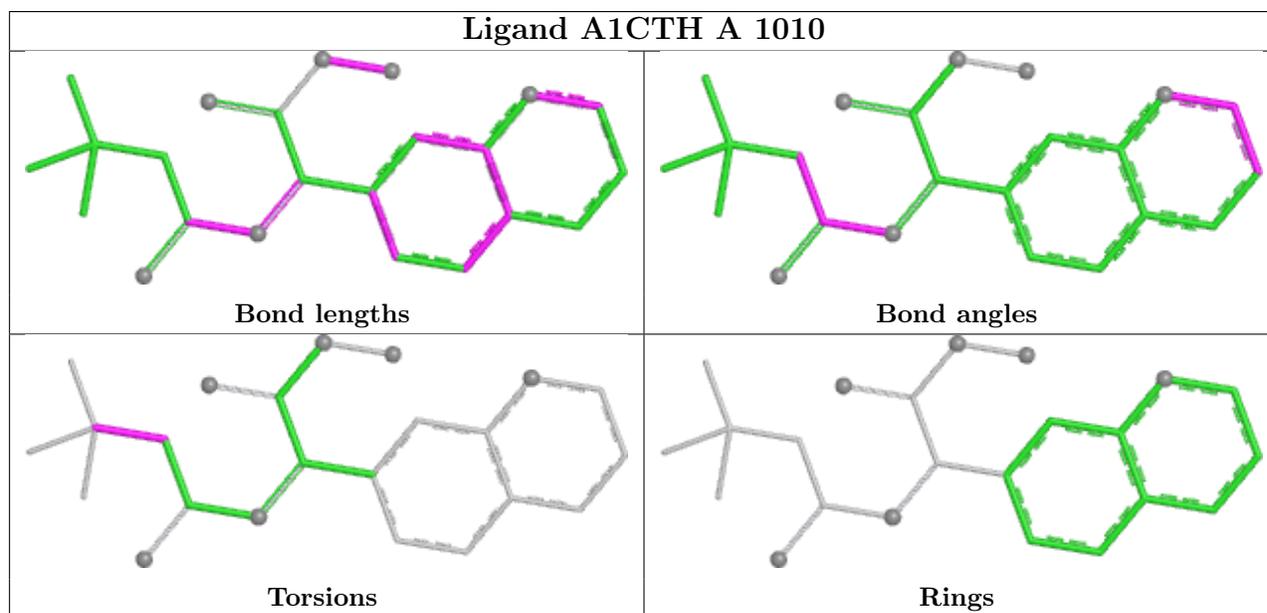
5.7 Other polymers ⓘ

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(Å^2)	Q<0.9
1	A	514/527 (97%)	0.15	2 (0%)	89	88	15, 22, 39, 75	1 (0%)
1	B	514/527 (97%)	0.49	45 (8%)	17	17	14, 25, 59, 81	1 (0%)
1	C	518/527 (98%)	0.20	8 (1%)	71	71	14, 22, 48, 69	0
1	D	514/527 (97%)	0.14	6 (1%)	76	75	14, 22, 39, 56	2 (0%)
1	E	510/527 (96%)	0.08	5 (0%)	79	79	15, 21, 38, 58	0
1	F	509/527 (96%)	0.38	23 (4%)	39	39	15, 24, 54, 72	0
1	G	515/527 (97%)	0.15	5 (0%)	79	79	15, 22, 41, 66	0
1	H	510/527 (96%)	0.46	40 (7%)	20	20	14, 24, 61, 82	1 (0%)
1	I	518/527 (98%)	0.27	14 (2%)	56	55	15, 23, 50, 72	0
1	J	514/527 (97%)	0.12	6 (1%)	76	75	14, 22, 41, 63	0
1	K	510/527 (96%)	0.09	4 (0%)	82	82	15, 21, 37, 61	0
1	L	509/527 (96%)	0.31	18 (3%)	47	48	15, 23, 53, 77	0
All	All	6155/6324 (97%)	0.24	176 (2%)	54	53	14, 22, 50, 82	5 (0%)

All (176) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	196	ALA	5.5
1	C	395	LEU	4.9
1	B	176	TYR	4.8
1	H	322	ASN	4.8
1	K	136	GLY	4.3
1	L	231	ASP	3.9
1	H	119	GLY	3.9
1	G	395	LEU	3.8
1	E	119	GLY	3.7
1	B	117	ILE	3.7
1	B	273	ASN	3.7

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Mol	Chain	Res	Type	RSRZ
1	I	135	PRO	3.6
1	H	149	ASN	3.6
1	G	261	MET	3.6
1	B	194	SER	3.5
1	F	136	GLY	3.5
1	L	138	GLU	3.4
1	B	178	PHE	3.4
1	B	604	ALA	3.3
1	H	194	SER	3.3
1	L	134	ASN	3.3
1	B	196	ALA	3.3
1	B	219	LEU	3.2
1	L	149	ASN	3.2
1	H	195	VAL	3.2
1	I	197	ASP	3.1
1	B	362	LYS	3.1
1	D	395[A]	LEU	3.1
1	F	217	ASN	3.0
1	F	123	VAL	3.0
1	B	136	GLY	3.0
1	I	195	VAL	3.0
1	H	170	GLY	3.0
1	F	178	PHE	3.0
1	L	148	VAL	3.0
1	H	135	PRO	2.9
1	H	122	ASN	2.9
1	K	550	SER	2.9
1	H	156	PHE	2.9
1	F	135	PRO	2.9
1	G	124	GLU	2.9
1	F	134	ASN	2.9
1	B	158	LYS	2.8
1	B	271	ILE	2.8
1	B	114	VAL	2.8
1	I	259	VAL	2.8
1	I	364	ASP	2.7
1	B	185	VAL	2.7
1	J	85	ALA	2.7
1	H	141	PRO	2.7
1	F	550	SER	2.6
1	I	198	LEU	2.6
1	I	260	ASN	2.6

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Mol	Chain	Res	Type	RSRZ
1	K	197	ASP	2.6
1	F	262	GLU	2.6
1	H	324	GLU	2.6
1	L	603	ASP	2.6
1	L	139	ASN	2.6
1	B	220[A]	SER	2.6
1	H	193	GLY	2.5
1	H	186	ALA	2.5
1	L	178	PHE	2.5
1	H	210	LEU	2.5
1	B	135	PRO	2.5
1	L	144	ILE	2.5
1	I	549	SER	2.5
1	D	136	GLY	2.5
1	B	123	VAL	2.5
1	F	219	LEU	2.5
1	H	134	ASN	2.5
1	F	218	LYS	2.5
1	E	394	ASP	2.5
1	L	175	PHE	2.5
1	H	160	GLU	2.5
1	H	201	ALA	2.5
1	H	276	THR	2.5
1	H	271	ILE	2.4
1	H	114	VAL	2.4
1	H	166	ASN	2.4
1	J	136	GLY	2.4
1	B	172	SER	2.4
1	I	257	LYS	2.4
1	F	140	GLY	2.4
1	F	160	GLU	2.4
1	B	134	ASN	2.4
1	H	121	CYS	2.4
1	I	121	CYS	2.4
1	B	165	PHE	2.3
1	B	190	VAL	2.3
1	A	364	ASP	2.3
1	B	140	GLY	2.3
1	H	161	ASN	2.3
1	H	183	ASN	2.3
1	F	276	THR	2.3
1	H	175	PHE	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	170	GLY	2.3
1	B	160	GLU	2.3
1	B	183	ASN	2.3
1	B	197	ASP	2.3
1	B	549	SER	2.3
1	J	603	ASP	2.3
1	E	363	GLY	2.3
1	H	277	TYR	2.3
1	H	177	MET	2.3
1	B	226	PHE	2.3
1	C	196	ALA	2.2
1	L	195	VAL	2.2
1	H	165	PHE	2.2
1	F	152	GLN	2.2
1	H	138	GLU	2.2
1	B	169	LEU	2.2
1	B	277	TYR	2.2
1	D	273	ASN	2.2
1	G	196	ALA	2.2
1	B	255	THR	2.2
1	H	167	VAL	2.2
1	J	195	VAL	2.2
1	B	137	LYS	2.2
1	B	603	ASP	2.2
1	L	364	ASP	2.2
1	B	605	LEU	2.2
1	D	161[A]	ASN	2.2
1	L	274	ALA	2.2
1	B	132	VAL	2.2
1	H	164	LYS	2.2
1	H	197	ASP	2.2
1	K	549	SER	2.2
1	C	124	GLU	2.2
1	H	124	GLU	2.2
1	J	419	GLU	2.2
1	L	125	GLU	2.2
1	B	122	ASN	2.2
1	B	272	ASN	2.2
1	H	273	ASN	2.2
1	J	183	ASN	2.2
1	F	365	VAL	2.2
1	F	197	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	I	261	MET	2.2
1	B	363	GLY	2.1
1	B	157	LEU	2.1
1	D	198	LEU	2.1
1	F	195	VAL	2.1
1	L	165	PHE	2.1
1	B	116	ASP	2.1
1	I	138	GLU	2.1
1	E	120	GLY	2.1
1	F	120	GLY	2.1
1	I	184	SER	2.1
1	A	585	ALA	2.1
1	B	365	VAL	2.1
1	F	190	VAL	2.1
1	H	190	VAL	2.1
1	C	163	GLU	2.1
1	C	150	ASP	2.1
1	B	143	LYS	2.1
1	C	273	ASN	2.1
1	F	198	LEU	2.1
1	L	187	VAL	2.1
1	H	117	ILE	2.1
1	D	137	LYS	2.1
1	F	179	ASN	2.1
1	H	200	GLU	2.0
1	H	153	VAL	2.0
1	L	197	ASP	2.0
1	C	272	ASN	2.0
1	B	167	VAL	2.0
1	B	195	VAL	2.0
1	G	195	VAL	2.0
1	H	176	TYR	2.0
1	B	159	ASP	2.0
1	C	197	ASP	2.0
1	L	146	SER	2.0
1	I	228	ILE	2.0
1	E	395	LEU	2.0
1	F	161	ASN	2.0
1	F	121	CYS	2.0

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 oligosaccharides 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
2	ZN	F	702	1/1	0.63	0.17	121,121,121,121	0
2	ZN	L	1001	1/1	0.68	0.17	112,112,112,112	0
4	PEG	E	1006	7/7	0.68	0.18	29,35,39,41	0
4	PEG	I	1011	7/7	0.69	0.21	32,34,41,44	0
5	DMS	F	711	4/4	0.69	0.20	35,46,57,65	0
5	DMS	J	1011	4/4	0.70	0.22	36,37,45,60	0
2	ZN	J	1002	1/1	0.74	0.15	69,69,69,69	0
2	ZN	B	1001	1/1	0.74	0.14	61,61,61,61	0
2	ZN	G	1002	1/1	0.74	0.14	94,94,94,94	0
4	PEG	L	1009	7/7	0.75	0.16	29,38,41,54	0
4	PEG	G	1009	7/7	0.75	0.20	29,31,42,51	0
4	PEG	K	711	7/7	0.75	0.17	30,31,45,47	0
5	DMS	E	1011	4/4	0.76	0.19	50,50,58,60	0
6	SO4	E	1008	5/5	0.76	0.19	57,64,76,80	0
6	SO4	K	707	5/5	0.76	0.17	48,56,67,70	0
9	1PE	L	1005	10/16	0.76	0.14	37,41,51,52	0
8	A1CTH	A	1010	23/23	0.77	0.19	36,40,54,59	0
2	ZN	H	1002	1/1	0.78	0.15	92,92,92,92	0
5	DMS	L	1007	4/4	0.79	0.18	29,44,60,81	0
4	PEG	F	713	7/7	0.80	0.18	27,32,43,44	0
6	SO4	F	709	5/5	0.80	0.15	70,72,83,98	0
4	PEG	B	1011	7/7	0.80	0.16	39,41,48,59	0
5	DMS	J	1012	4/4	0.80	0.19	28,46,46,71	0
2	ZN	I	1001	1/1	0.80	0.18	107,107,107,107	0
2	ZN	L	1002	1/1	0.81	0.12	68,68,68,68	0
4	PEG	G	1005	7/7	0.81	0.14	22,30,31,45	0
2	ZN	C	702	1/1	0.82	0.15	58,58,58,58	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	DMS	B	1008	4/4	0.82	0.20	49,49,53,57	0
4	PEG	B	1010	7/7	0.82	0.17	36,39,46,47	0
2	ZN	K	702	1/1	0.82	0.16	98,98,98,98	0
7	GOL	G	1008	6/6	0.82	0.13	22,28,35,37	0
4	PEG	E	1005	7/7	0.82	0.18	23,26,38,42	0
2	ZN	D	1001	1/1	0.82	0.11	75,75,75,75	0
6	SO4	B	1006	5/5	0.83	0.18	40,41,65,75	0
4	PEG	E	1014	7/7	0.83	0.14	33,34,43,45	0
5	DMS	H	1005	4/4	0.83	0.15	28,35,37,62	0
5	DMS	J	1008	4/4	0.83	0.16	44,52,57,66	0
2	ZN	H	1001	1/1	0.83	0.12	73,73,73,73	0
4	PEG	C	704	7/7	0.83	0.14	27,35,43,44	0
9	1PE	D	1006	16/16	0.83	0.12	27,41,52,59	0
5	DMS	F	708	4/4	0.83	0.17	29,50,59,61	0
2	ZN	E	1003	1/1	0.84	0.12	72,72,72,72	0
4	PEG	K	712	7/7	0.84	0.22	32,33,36,38	0
4	PEG	I	1009	7/7	0.84	0.14	17,21,22,28	0
4	PEG	L	1010	7/7	0.84	0.17	32,39,48,48	0
5	DMS	A	1008	4/4	0.84	0.17	41,44,55,73	0
3	CO3	J	1009	4/4	0.84	0.16	27,29,32,32	0
4	PEG	J	1014	7/7	0.84	0.12	28,37,43,50	0
9	1PE	I	1005	16/16	0.84	0.15	24,41,59,60	0
9	1PE	I	1006	16/16	0.84	0.15	25,35,49,50	0
6	SO4	A	1006	5/5	0.84	0.15	42,51,64,66	0
4	PEG	A	1013	7/7	0.85	0.13	23,33,37,51	0
4	PEG	F	714	7/7	0.85	0.12	25,26,31,40	0
4	PEG	A	1011	7/7	0.85	0.14	23,33,38,41	0
4	PEG	D	1004	7/7	0.85	0.13	19,29,36,40	0
4	PEG	A	1012	7/7	0.86	0.10	22,28,30,35	0
2	ZN	E	1001	1/1	0.86	0.12	77,77,77,77	0
6	SO4	C	706	5/5	0.86	0.11	40,56,58,76	0
9	1PE	H	1003	16/16	0.86	0.13	34,38,45,54	0
3	CO3	F	710	4/4	0.86	0.16	15,17,18,22	0
4	PEG	F	707	7/7	0.86	0.13	18,23,28,30	0
5	DMS	F	712	4/4	0.86	0.11	21,25,43,63	0
6	SO4	J	1007	5/5	0.87	0.16	44,48,54,69	0
4	PEG	J	1004	7/7	0.87	0.15	23,28,36,41	0
4	PEG	J	1015	7/7	0.87	0.12	19,27,33,36	0
6	SO4	K	708	5/5	0.88	0.16	54,62,74,80	0
5	DMS	I	1008	4/4	0.88	0.14	41,42,48,62	0
4	PEG	L	1004	7/7	0.88	0.13	27,33,38,42	0
9	1PE	C	707	16/16	0.88	0.12	25,37,61,64	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	PEG	E	1013	7/7	0.88	0.11	18,21,27,32	0
4	PEG	K	706	7/7	0.88	0.11	24,32,36,37	0
6	SO4	J	1006	5/5	0.88	0.13	43,43,61,63	0
4	PEG	H	1006	7/7	0.88	0.10	22,27,34,38	0
3	CO3	D	1002	4/4	0.88	0.16	26,27,31,31	0
6	SO4	E	1010	5/5	0.89	0.15	40,46,54,55	0
4	PEG	I	1010	7/7	0.89	0.13	19,33,45,50	0
3	CO3	L	1006	4/4	0.89	0.15	36,36,37,43	0
9	1PE	E	1009	13/16	0.89	0.11	26,31,36,41	0
5	DMS	B	1007	4/4	0.89	0.15	45,52,63,66	0
3	CO3	A	1002	4/4	0.89	0.15	13,20,21,28	0
2	ZN	G	1001	1/1	0.89	0.10	64,64,64,64	0
4	PEG	G	1003	7/7	0.89	0.10	24,31,33,34	0
3	CO3	E	1002	4/4	0.90	0.10	14,21,24,24	0
5	DMS	C	701	4/4	0.90	0.17	40,41,51,56	0
7	GOL	A	1009	6/6	0.90	0.16	22,28,33,34	0
4	PEG	A	1014	7/7	0.90	0.11	20,27,32,38	0
2	ZN	I	1002	1/1	0.90	0.12	73,73,73,73	0
4	PEG	L	1008	7/7	0.90	0.10	21,21,33,33	0
4	PEG	K	701	7/7	0.91	0.16	18,26,27,32	0
6	SO4	K	704	5/5	0.91	0.12	36,43,59,60	0
3	CO3	C	708	4/4	0.91	0.20	14,23,26,28	0
3	CO3	H	1004	4/4	0.91	0.12	22,24,26,26	0
5	DMS	K	709	4/4	0.91	0.16	33,35,43,46	0
2	ZN	D	1003	1/1	0.91	0.09	64,64,64,64	0
5	DMS	E	1012	4/4	0.91	0.10	28,32,40,48	0
4	PEG	D	1007	7/7	0.91	0.10	13,27,33,41	0
4	PEG	J	1003	7/7	0.91	0.09	16,23,24,26	0
6	SO4	D	1005	5/5	0.91	0.13	47,50,61,64	0
3	CO3	K	710	4/4	0.91	0.19	36,36,39,41	0
5	DMS	G	1004	4/4	0.91	0.13	32,36,48,51	0
4	PEG	B	1005	7/7	0.91	0.09	26,30,38,41	0
3	CO3	B	1002	4/4	0.91	0.13	15,15,19,29	0
4	PEG	F	704	7/7	0.92	0.10	17,21,23,29	0
4	PEG	F	706	7/7	0.92	0.07	15,23,24,27	0
4	PEG	E	1007	7/7	0.92	0.09	22,23,26,27	0
6	SO4	L	1003	5/5	0.92	0.13	40,44,52,55	0
6	SO4	J	1005	5/5	0.92	0.11	40,41,66,68	0
3	CO3	G	1007	4/4	0.92	0.17	31,31,32,43	0
4	PEG	E	1004	7/7	0.92	0.08	15,19,27,31	0
2	ZN	B	1003	1/1	0.93	0.08	43,43,43,43	0
4	PEG	A	1004	7/7	0.94	0.08	16,19,26,26	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	DMS	A	1005	4/4	0.94	0.11	32,47,50,55	0
2	ZN	F	703	1/1	0.94	0.07	54,54,54,54	0
5	DMS	J	1010	4/4	0.94	0.15	36,43,48,53	0
6	SO4	F	705	5/5	0.94	0.12	30,42,52,58	0
4	PEG	K	705	7/7	0.94	0.08	14,18,22,26	0
6	SO4	G	1006	5/5	0.94	0.14	39,43,48,63	0
6	SO4	C	705	5/5	0.94	0.16	47,49,55,57	0
2	ZN	C	703	1/1	0.95	0.10	41,41,41,41	0
4	PEG	B	1009	7/7	0.95	0.07	18,26,33,33	0
6	SO4	A	1007	5/5	0.96	0.13	26,36,42,43	0
2	ZN	A	1001	1/1	0.96	0.12	76,76,76,76	0
2	ZN	K	703	1/1	0.96	0.05	65,65,65,65	0
6	SO4	I	1004	5/5	0.97	0.08	31,34,38,38	0
2	ZN	J	1001	1/1	0.97	0.12	66,66,66,66	0
3	CO3	I	1007	4/4	0.97	0.06	15,21,23,25	0
6	SO4	B	1004	5/5	0.98	0.06	19,19,21,22	0
6	SO4	J	1013	5/5	0.98	0.06	14,15,22,24	0
2	ZN	A	1003	1/1	0.98	0.07	43,43,43,43	0
6	SO4	I	1003	5/5	0.98	0.07	19,21,24,27	0
6	SO4	F	701	5/5	0.99	0.06	16,19,23,24	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 A1CTH A 1010:

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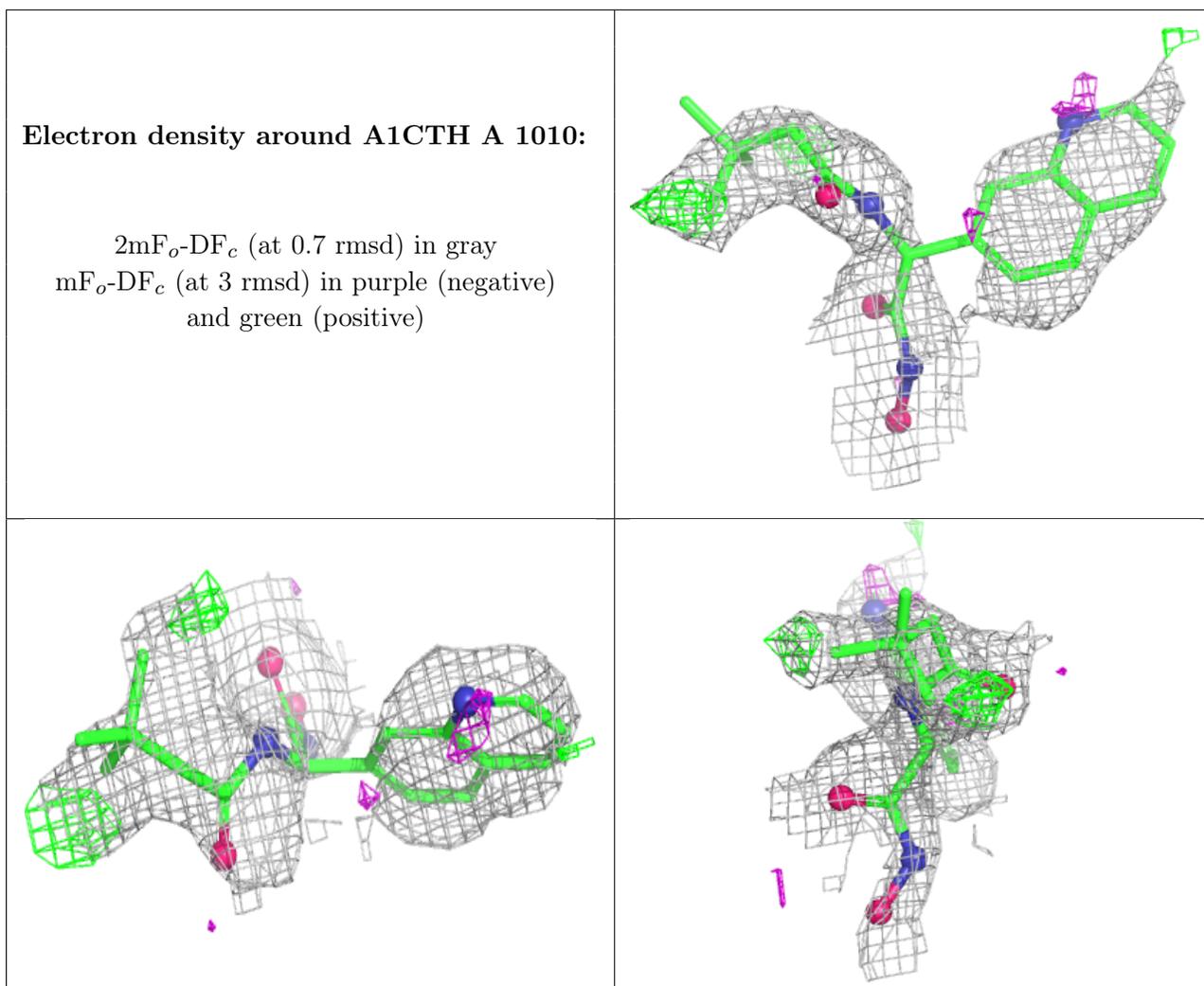
6.5 Other polymers (i)

There are no such residues in this entry.