



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 10:11 AM GMT

PDB ID : 3KQX
Title : Structure of a protease 1
Authors : McGowan, S.; Whisstock, J.C.
Deposited on : 2009-11-17
Resolution : 2.01 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

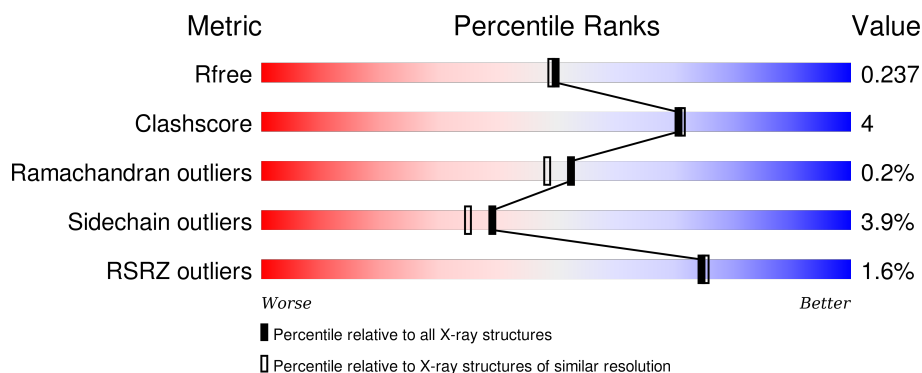
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.01 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	6249 (2.00-2.00)
Clashscore	102246	7340 (2.00-2.00)
Ramachandran outliers	100387	7248 (2.00-2.00)
Sidechain outliers	100360	7247 (2.00-2.00)
RSRZ outliers	91569	6262 (2.00-2.00)

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

Mol	Chain	Length	Quality of chain
1	A	528	<div> <div>%</div> <div> <div></div> <div>88%</div> <div>9%</div> <div>.</div> </div> </div>
1	B	528	<div> <div>2%</div> <div> <div></div> <div>87%</div> <div>9%</div> <div>..</div> </div> </div>
1	C	528	<div> <div>%</div> <div> <div></div> <div>89%</div> <div>8%</div> <div>..</div> </div> </div>
1	D	528	<div> <div>%</div> <div> <div></div> <div>87%</div> <div>9%</div> <div>..</div> </div> </div>
1	E	528	<div> <div></div> <div> <div></div> <div>85%</div> <div>10%</div> <div>..</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	F	528	
1	G	528	
1	H	528	
1	I	528	
1	J	528	
1	K	528	
1	L	528	

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
2	ZN	C	1001	-	-	-	X
2	ZN	D	1001	-	-	-	X
2	ZN	E	1001	-	-	-	X
2	ZN	G	1001	-	-	-	X
2	ZN	H	1001	-	-	-	X
2	ZN	I	1001	-	-	-	X
2	ZN	K	1001	-	-	-	X
2	ZN	L	1001	-	-	-	X
3	CO3	B	1002	-	-	-	X
3	CO3	G	1002	-	-	-	X
3	CO3	I	1002	-	-	-	X
4	SO4	A	2	-	-	-	X
4	SO4	B	12	-	-	-	X
4	SO4	C	16	-	-	-	X
4	SO4	C	6	-	-	-	X
4	SO4	D	10	-	-	-	X
4	SO4	E	11	-	-	-	X
4	SO4	G	23	-	-	-	X
5	1PE	A	24	-	-	-	X
5	1PE	B	40	-	-	-	X
5	1PE	C	41	-	-	-	X
5	1PE	D	23	-	-	-	X
5	1PE	D	44	-	-	-	X
5	1PE	D	62	-	-	-	X
5	1PE	E	28	-	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	1PE	E	35	-	-	-	X
5	1PE	E	43	-	-	-	X
5	1PE	E	46	-	-	-	X
5	1PE	E	8	-	-	-	X
5	1PE	G	12	-	-	-	X
5	1PE	G	16	-	-	-	X
5	1PE	G	30	-	-	-	X
5	1PE	G	58	-	-	-	X
5	1PE	H	51	-	-	-	X
5	1PE	H	54	-	-	-	X
5	1PE	I	27	-	-	X	X
5	1PE	I	61	-	-	X	-
5	1PE	J	15	-	-	-	X
5	1PE	J	2	-	-	-	X
5	1PE	J	45	-	-	-	X
5	1PE	K	36	-	-	-	X
5	1PE	K	5	-	-	-	X
5	1PE	K	50	-	-	-	X
5	1PE	K	55	-	-	-	X
5	1PE	L	29	-	-	-	X
5	1PE	L	59	-	-	-	X
6	2PE	B	13	-	-	-	X
6	2PE	F	63	-	-	-	X

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 50931 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	C	N	O	S	3	1	0
			3944	2536	632	757	19			
1	B	510	Total	C	N	O	S	0	0	0
			3867	2489	624	735	19			
1	C	518	Total	C	N	O	S	0	1	0
			3954	2544	638	753	19			
1	D	514	Total	C	N	O	S	0	0	0
			3931	2532	633	746	20			
1	E	509	Total	C	N	O	S	0	0	0
			3888	2506	622	741	19			
1	F	510	Total	C	N	O	S	0	0	0
			3776	2428	611	718	19			
1	G	514	Total	C	N	O	S	0	0	0
			3945	2536	632	758	19			
1	H	510	Total	C	N	O	S	0	0	0
			3873	2491	625	738	19			
1	I	515	Total	C	N	O	S	0	0	0
			3924	2527	632	746	19			
1	J	514	Total	C	N	O	S	0	0	0
			3931	2532	633	746	20			
1	K	509	Total	C	N	O	S	0	0	0
			3888	2506	623	740	19			
1	L	508	Total	C	N	O	S	0	0	0
			3809	2450	613	727	19			

There are 108 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	152	GLN	ASN	ENGINEERED	UNP Q8IL11
A	515	GLN	ASN	ENGINEERED	UNP Q8IL11
A	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
B	515	GLN	ASN	ENGINEERED	UNP Q8IL11
B	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
C	515	GLN	ASN	ENGINEERED	UNP Q8IL11
C	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
D	515	GLN	ASN	ENGINEERED	UNP Q8IL11
D	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
E	515	GLN	ASN	ENGINEERED	UNP Q8IL11
E	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
F	515	GLN	ASN	ENGINEERED	UNP Q8IL11

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Chain	Residue	Modelled	Actual	Comment	Reference
F	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
G	515	GLN	ASN	ENGINEERED	UNP Q8IL11
G	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
H	515	GLN	ASN	ENGINEERED	UNP Q8IL11
H	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
I	515	GLN	ASN	ENGINEERED	UNP Q8IL11
I	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
J	515	GLN	ASN	ENGINEERED	UNP Q8IL11
J	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
K	515	GLN	ASN	ENGINEERED	UNP Q8IL11
K	546	GLN	ASN	ENGINEERED	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	UNP Q8IL11
L	515	GLN	ASN	ENGINEERED	UNP Q8IL11
L	546	GLN	ASN	ENGINEERED	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 (three-letter code: ZN) (formula: Zn).

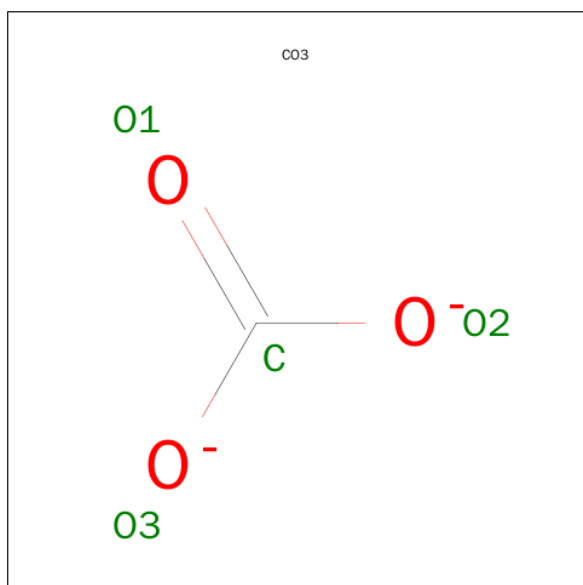
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	G	1	Total Zn 1 1	0	0
2	J	1	Total Zn 1 1	0	0
2	D	1	Total Zn 1 1	0	0
2	K	1	Total Zn 1 1	0	0
2	E	1	Total Zn 1 1	0	0
2	H	1	Total Zn 1 1	0	0
2	B	1	Total Zn 1 1	0	0
2	I	1	Total Zn 1 1	0	0
2	C	1	Total Zn 1 1	0	0
2	A	1	Total Zn 1 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	L	1	Total	Zn	0	0
			1	1		
2	F	1	Total	Zn	0	0
			1	1		

- Molecule 3 is CARBONATE ION (three-letter code: CO3) (formula: CO₃).



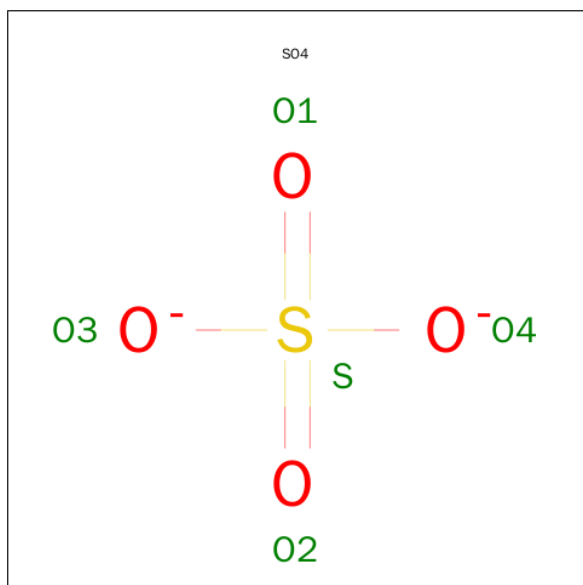
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	1	3		
3	B	1	Total	C	O	0	0
			4	1	3		
3	C	1	Total	C	O	0	0
			4	1	3		
3	D	1	Total	C	O	0	0
			4	1	3		
3	E	1	Total	C	O	0	0
			4	1	3		
3	F	1	Total	C	O	0	0
			4	1	3		
3	G	1	Total	C	O	0	0
			4	1	3		
3	H	1	Total	C	O	0	0
			4	1	3		
3	I	1	Total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

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

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



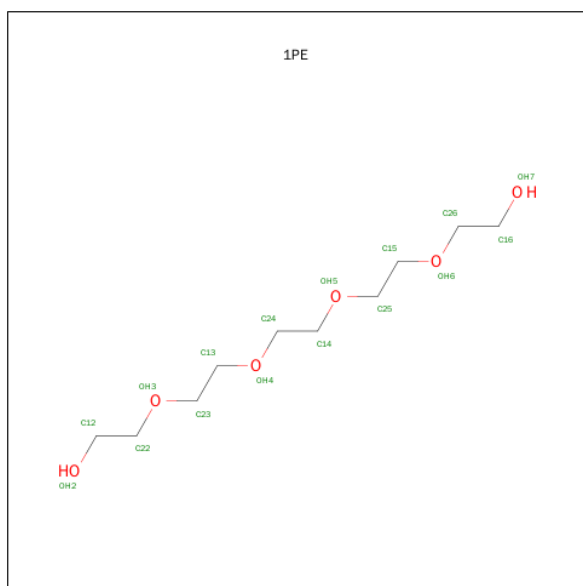
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	O	S	0	0
			5	4	1		
4	A	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		
4	C	1	Total	O	S	0	0
			5	4	1		
4	C	1	Total	O	S	0	0
			5	4	1		
4	C	1	Total	O	S	0	0
			5	4	1		
4	D	1	Total	O	S	0	0
			5	4	1		

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

- Molecule 5 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula: C₁₀H₂₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			9	6	3		
5	A	1	Total	C	O	0	0
			12	8	4		
5	A	1	Total	C	O	0	0
			9	6	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	4	2		
5	B	1	Total	C	O	0	0
			11	7	4		
5	C	1	Total	C	O	0	0
			13	9	4		
5	C	1	Total	C	O	0	0
			9	6	3		
5	C	1	Total	C	O	0	0
			8	5	3		
5	D	1	Total	C	O	0	0
			10	7	3		
5	D	1	Total	C	O	0	0
			9	6	3		
5	D	1	Total	C	O	0	0
			11	8	3		
5	D	1	Total	C	O	0	0
			10	6	4		
5	D	1	Total	C	O	0	0
			11	8	3		
5	D	1	Total	C	O	0	0
			5	3	2		
5	E	1	Total	C	O	0	0
			12	8	4		
5	E	1	Total	C	O	0	0
			12	8	4		
5	E	1	Total	C	O	0	0
			11	7	4		
5	E	1	Total	C	O	0	0
			10	6	4		
5	E	1	Total	C	O	0	0
			8	5	3		
5	E	1	Total	C	O	0	0
			9	6	3		
5	F	1	Total	C	O	0	0
			10	6	4		
5	F	1	Total	C	O	0	0
			10	6	4		
5	F	1	Total	C	O	0	0
			10	6	4		
5	F	1	Total	C	O	0	0
			12	8	4		

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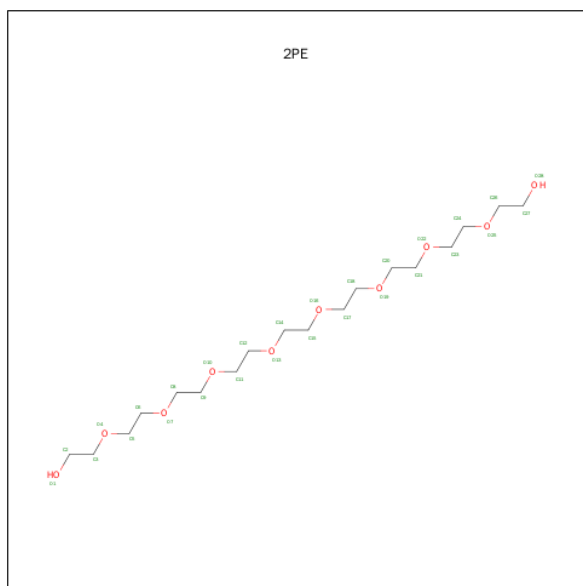
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	G	1	Total	C	O	0	0
			9	6	3		
5	G	1	Total	C	O	0	0
			10	6	4		
5	G	1	Total	C	O	0	0
			7	4	3		
5	G	1	Total	C	O	0	0
			6	4	2		
5	G	1	Total	C	O	0	0
			6	4	2		
5	G	1	Total	C	O	0	0
			15	10	5		
5	H	1	Total	C	O	0	0
			6	4	2		
5	H	1	Total	C	O	0	0
			11	7	4		
5	I	1	Total	C	O	0	0
			15	10	5		
5	I	1	Total	C	O	0	0
			11	8	3		
5	I	1	Total	C	O	0	0
			9	6	3		
5	I	1	Total	C	O	0	0
			5	3	2		
5	J	1	Total	C	O	0	0
			11	7	4		
5	J	1	Total	C	O	0	0
			10	6	4		
5	J	1	Total	C	O	0	0
			12	8	4		
5	J	1	Total	C	O	0	0
			11	8	3		
5	J	1	Total	C	O	0	0
			11	7	4		
5	J	1	Total	C	O	0	0
			9	6	3		
5	K	1	Total	C	O	0	0
			11	7	4		
5	K	1	Total	C	O	0	0
			12	8	4		
5	K	1	Total	C	O	0	0
			12	8	4		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	K	1	Total	C	O	0	0
			11	7	4		
5	K	1	Total	C	O	0	0
			6	4	2		
5	K	1	Total	C	O	0	0
			11	7	4		
5	K	1	Total	C	O	0	0
			8	5	3		
5	L	1	Total	C	O	0	0
			10	6	4		
5	L	1	Total	C	O	0	0
			12	8	4		
5	L	1	Total	C	O	0	0
			10	6	4		
5	L	1	Total	C	O	0	0
			11	7	4		
5	L	1	Total	C	O	0	0
			12	8	4		

- Molecule 6 is NONAETHYLENE GLYCOL (three-letter code: 2PE) (formula: $C_{18}H_{38}O_{10}$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	B	1	Total	C	O	0	0
			24	16	8		
6	B	1	Total	C	O	0	0
			26	17	9		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	F	1	Total	C	O	0	0
			6	4	2		
6	H	1	Total	C	O	0	0
			25	16	9		

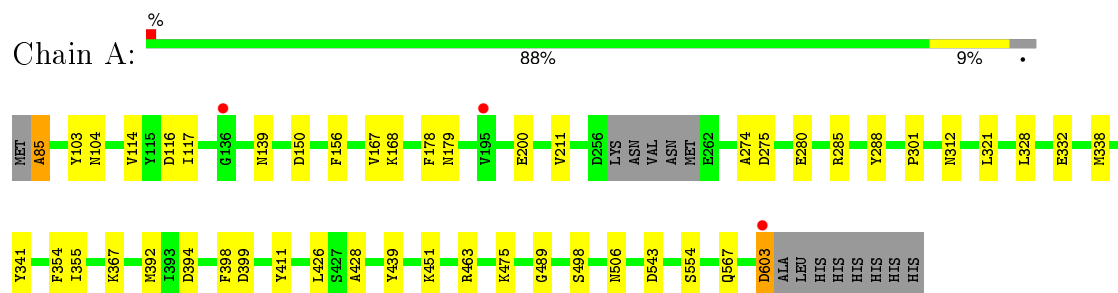
- Molecule 7 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	308	Total	O		0	0
			308	308			
7	B	238	Total	O		0	0
			238	238			
7	C	330	Total	O		0	0
			330	330			
7	D	310	Total	O		0	0
			310	310			
7	E	326	Total	O		0	0
			326	326			
7	F	225	Total	O		0	0
			225	225			
7	G	301	Total	O		0	0
			301	301			
7	H	220	Total	O		0	0
			220	220			
7	I	264	Total	O		0	0
			264	264			
7	J	322	Total	O		0	0
			322	322			
7	K	327	Total	O		0	0
			327	327			
7	L	272	Total	O		0	0
			272	272			

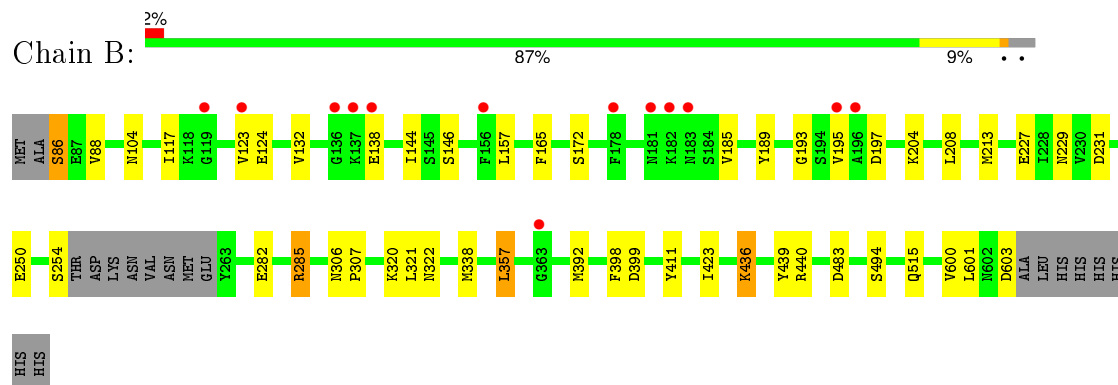
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

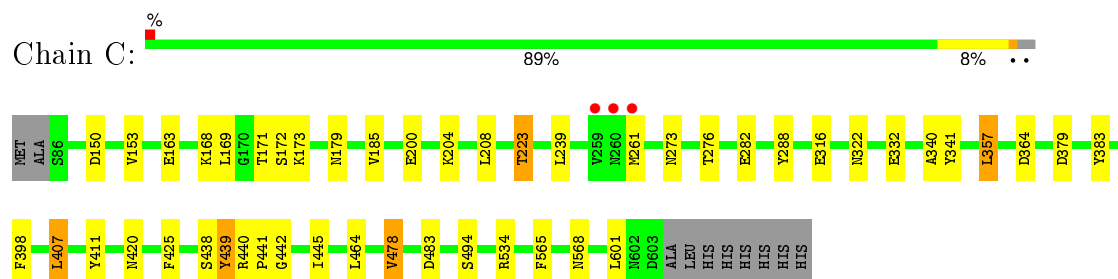
- Molecule 1: M17 leucyl aminopeptidase



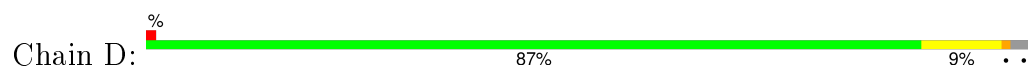
- Molecule 1: M17 leucyl aminopeptidase

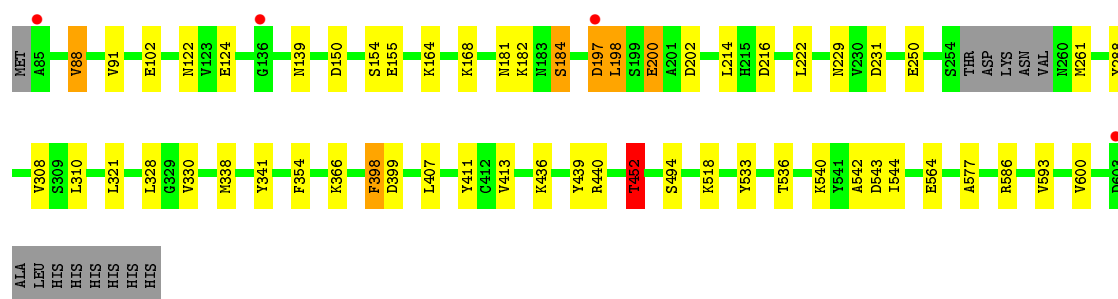


- Molecule 1: M17 leucyl aminopeptidase



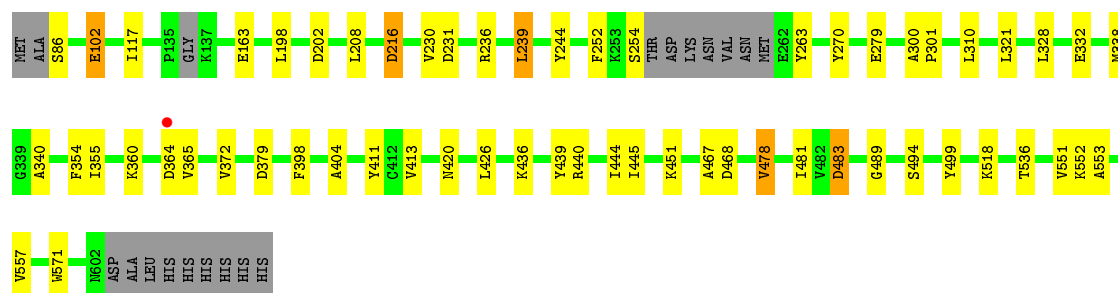
- Molecule 1: M17 leucyl aminopeptidase





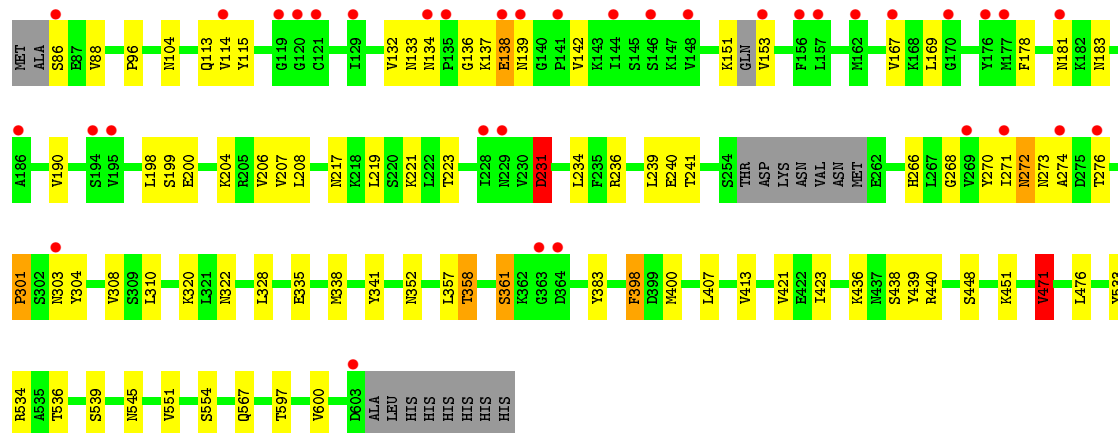
- Molecule 1: M17 leucyl aminopeptidase

Chain E: 85% 10%



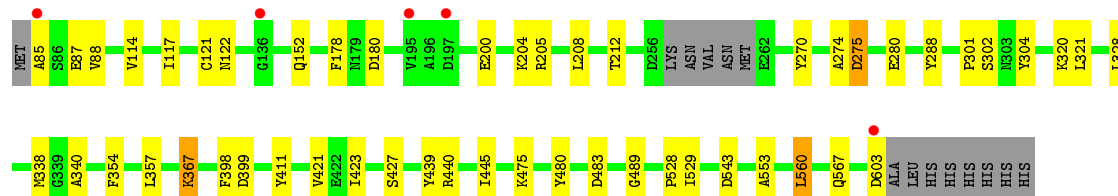
- Molecule 1: M17 leucyl aminopeptidase

Chain F: 7% 80% 15%

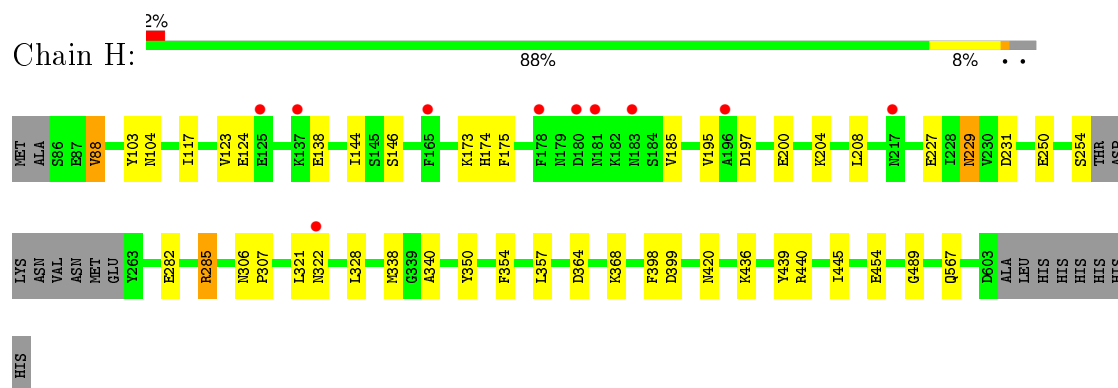


- Molecule 1: M17 leucyl aminopeptidase

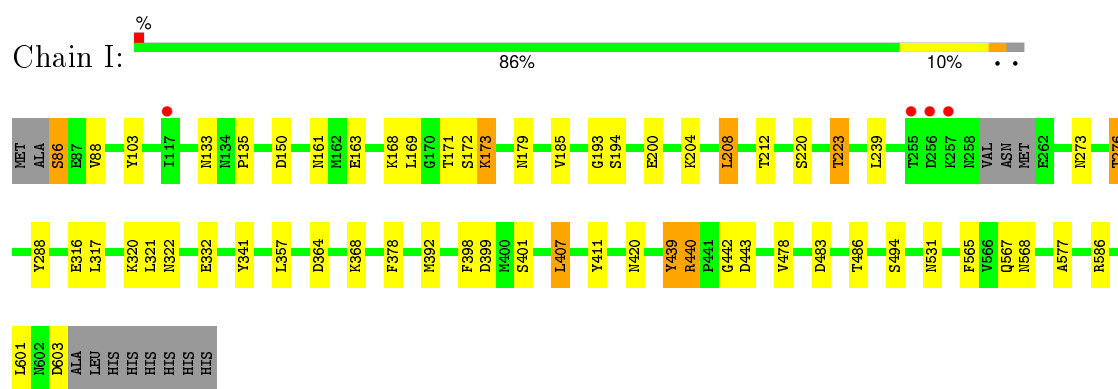
Chain G: 88% 9%



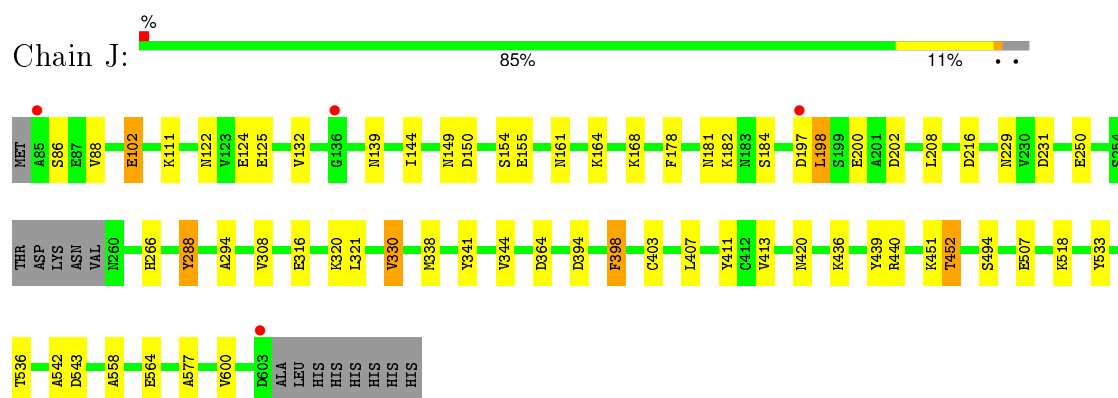
- Molecule 1: M17 leucyl aminopeptidase



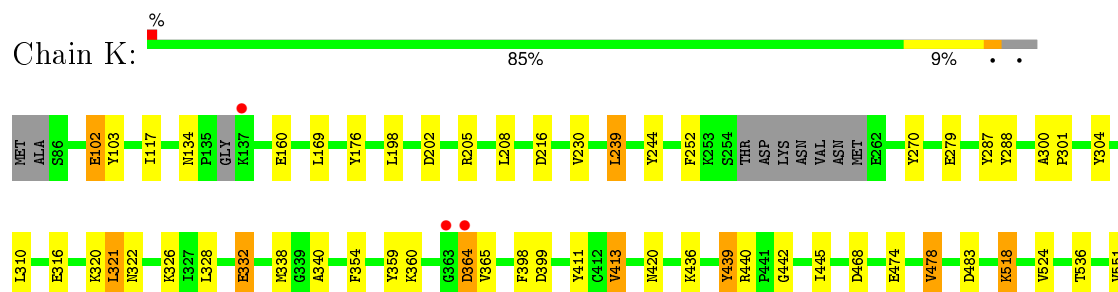
- Molecule 1: M17 leucyl aminopeptidase



- Molecule 1: M17 leucyl aminopeptidase

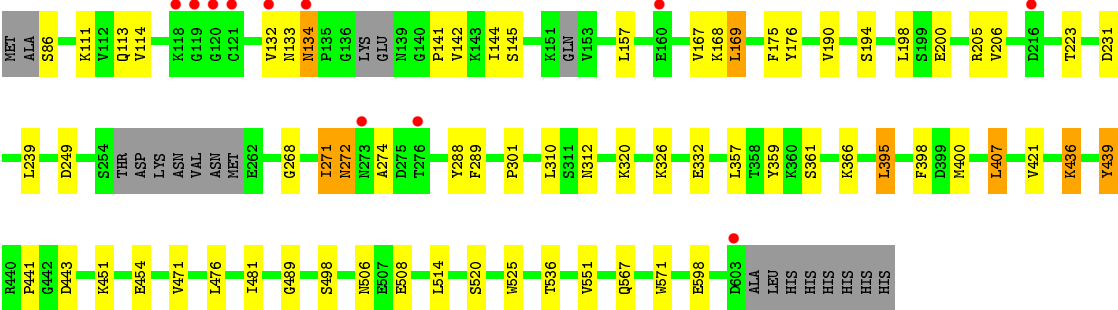
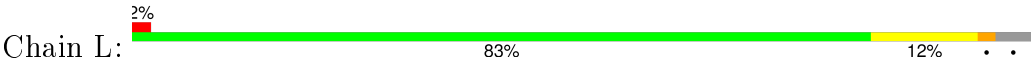


- Molecule 1: M17 leucyl aminopeptidase





● Molecule 1: M17 leucyl aminopeptidase



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	173.40Å 176.81Å 224.25Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	56.08 – 2.01 56.06 – 2.01	Depositor EDS
% Data completeness (in resolution range)	99.7 (56.08-2.01) 99.7 (56.06-2.01)	Depositor EDS
R_{merge}	0.37	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.33 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.180 , 0.232 0.188 , 0.237	Depositor DCC
R_{free} test set	22798 reflections (5.29%)	DCC
Wilson B-factor (Å ²)	16.9	Xtriage
Anisotropy	0.725	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 59.0	EDS
Estimated twinning fraction	0.000 for k,h,-l	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	7 of 455164 reflections (0.002%)	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	50931	wwPDB-VP
Average B, all atoms (Å ²)	17.0	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 50.61 % 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 6.3078e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹ Intensities estimated from amplitudes.

² Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: SO4, CO3, 2PE, ZN, 1PE

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	1.13	3/4023 (0.1%)	0.89	7/5456 (0.1%)
1	B	1.00	2/3944 (0.1%)	0.87	9/5357 (0.2%)
1	C	1.14	7/4035 (0.2%)	0.93	8/5476 (0.1%)
1	D	1.17	8/4008 (0.2%)	0.90	5/5435 (0.1%)
1	E	1.21	10/3964 (0.3%)	0.99	10/5378 (0.2%)
1	F	0.97	2/3850 (0.1%)	0.84	4/5243 (0.1%)
1	G	1.15	5/4022 (0.1%)	0.88	5/5455 (0.1%)
1	H	0.98	3/3950 (0.1%)	0.83	3/5365 (0.1%)
1	I	1.13	9/4001 (0.2%)	0.93	5/5429 (0.1%)
1	J	1.16	9/4008 (0.2%)	0.89	4/5435 (0.1%)
1	K	1.23	12/3964 (0.3%)	0.93	7/5378 (0.1%)
1	L	1.15	6/3883 (0.2%)	0.91	4/5279 (0.1%)
All	All	1.12	76/47652 (0.2%)	0.90	71/64686 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1

All (76) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	K	176	TYR	CD1-CE1	8.27	1.51	1.39
1	C	341	TYR	CD1-CE1	7.98	1.51	1.39
1	K	413	VAL	CB-CG2	-7.94	1.36	1.52
1	K	561	PHE	CE1-CZ	7.23	1.51	1.37
1	D	88	VAL	CB-CG2	-7.10	1.38	1.52
1	H	88	VAL	CB-CG1	-7.08	1.38	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	I	161	ASN	C-N	7.05	1.50	1.34
1	D	91	VAL	CB-CG2	6.99	1.67	1.52
1	D	88	VAL	C-N	6.94	1.47	1.34
1	G	88	VAL	CB-CG2	6.89	1.67	1.52
1	J	88	VAL	CB-CG1	-6.70	1.38	1.52
1	L	454	GLU	CG-CD	6.70	1.61	1.51
1	J	558	ALA	CA-CB	6.64	1.66	1.52
1	L	289	PHE	C-N	6.58	1.44	1.33
1	L	471	VAL	CB-CG2	6.37	1.66	1.52
1	C	439	TYR	CD1-CE1	6.33	1.48	1.39
1	K	439	TYR	CD1-CE1	6.25	1.48	1.39
1	E	102	GLU	CD-OE1	6.20	1.32	1.25
1	E	413	VAL	CB-CG2	-6.11	1.40	1.52
1	J	403	CYS	CB-SG	6.08	1.92	1.82
1	K	359	TYR	CD2-CE2	6.02	1.48	1.39
1	J	294	ALA	CA-CB	5.99	1.65	1.52
1	J	102	GLU	CG-CD	5.94	1.60	1.51
1	J	341	TYR	CD1-CE1	5.91	1.48	1.39
1	B	411	TYR	CD1-CE1	5.90	1.48	1.39
1	I	439	TYR	CD1-CE1	5.88	1.48	1.39
1	L	439	TYR	CD1-CE1	5.88	1.48	1.39
1	E	557	VAL	CB-CG1	5.76	1.65	1.52
1	C	411	TYR	CD1-CE1	5.72	1.48	1.39
1	D	88	VAL	CB-CG1	-5.71	1.40	1.52
1	G	87	GLU	CG-CD	5.66	1.60	1.51
1	K	332	GLU	CD-OE2	5.66	1.31	1.25
1	J	288	TYR	CD2-CE2	5.64	1.47	1.39
1	F	471	VAL	CB-CG1	5.64	1.64	1.52
1	E	499	TYR	CD2-CE2	5.63	1.47	1.39
1	D	593	VAL	CB-CG1	5.61	1.64	1.52
1	E	332	GLU	CD-OE2	5.58	1.31	1.25
1	C	425	PHE	CE1-CZ	5.58	1.48	1.37
1	A	211	VAL	CB-CG1	5.57	1.64	1.52
1	J	88	VAL	CB-CG2	-5.56	1.41	1.52
1	I	88	VAL	CB-CG1	5.55	1.64	1.52
1	K	304	TYR	CD1-CE1	5.55	1.47	1.39
1	I	411	TYR	CD2-CE2	5.52	1.47	1.39
1	H	454	GLU	CB-CG	5.49	1.62	1.52
1	K	359	TYR	CD1-CE1	5.47	1.47	1.39
1	I	378	PHE	CE1-CZ	5.46	1.47	1.37
1	K	440	ARG	CG-CD	5.45	1.65	1.51
1	A	554	SER	CB-OG	-5.36	1.35	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	304	TYR	CD2-CE2	5.34	1.47	1.39
1	D	200	GLU	CG-CD	5.34	1.59	1.51
1	I	86	SER	N-CA	5.33	1.57	1.46
1	G	427	SER	CB-OG	5.33	1.49	1.42
1	L	443	ASP	N-CA	5.33	1.57	1.46
1	A	85	ALA	C-N	-5.28	1.22	1.34
1	I	341	TYR	CD1-CE1	5.26	1.47	1.39
1	C	282	GLU	CB-CG	5.25	1.62	1.52
1	I	440	ARG	CD-NE	-5.22	1.37	1.46
1	E	413	VAL	CB-CG1	-5.21	1.42	1.52
1	D	102	GLU	CG-CD	5.20	1.59	1.51
1	D	341	TYR	CD1-CE1	5.20	1.47	1.39
1	C	565	PHE	CE2-CZ	5.20	1.47	1.37
1	K	287	TYR	CD2-CE2	5.20	1.47	1.39
1	E	244	TYR	CD2-CE2	5.19	1.47	1.39
1	K	102	GLU	CD-OE1	5.18	1.31	1.25
1	I	565	PHE	CE2-CZ	5.17	1.47	1.37
1	K	244	TYR	CD1-CE1	5.14	1.47	1.39
1	H	104	ASN	CB-CG	5.11	1.62	1.51
1	E	404	ALA	CA-CB	5.07	1.63	1.52
1	E	467	ALA	CA-CB	5.04	1.63	1.52
1	B	88	VAL	CB-CG1	-5.04	1.42	1.52
1	L	359	TYR	CD1-CE1	5.04	1.47	1.39
1	G	553	ALA	CA-CB	5.03	1.63	1.52
1	F	335	GLU	CG-CD	5.03	1.59	1.51
1	E	163	GLU	CB-CG	-5.02	1.42	1.52
1	C	440	ARG	CD-NE	-5.01	1.38	1.46
1	J	344	VAL	CB-CG2	5.00	1.63	1.52

All (71) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	I	440	ARG	NE-CZ-NH2	-17.05	111.77	120.30
1	E	440	ARG	NE-CZ-NH1	-15.81	112.39	120.30
1	C	440	ARG	NE-CZ-NH2	-15.27	112.66	120.30
1	E	440	ARG	NE-CZ-NH2	14.10	127.35	120.30
1	B	86	SER	O-C-N	-11.07	104.98	122.70
1	I	440	ARG	NE-CZ-NH1	10.59	125.60	120.30
1	C	440	ARG	NE-CZ-NH1	8.93	124.77	120.30
1	E	216	ASP	CB-CG-OD1	-8.59	110.57	118.30
1	K	440	ARG	NE-CZ-NH2	-8.41	116.10	120.30
1	B	86	SER	CA-C-N	8.10	135.02	117.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	116	ASP	CB-CG-OD1	7.92	125.42	118.30
1	C	534	ARG	NE-CZ-NH1	7.79	124.19	120.30
1	H	285	ARG	NE-CZ-NH2	-7.42	116.59	120.30
1	I	407	LEU	CB-CG-CD1	7.18	123.20	111.00
1	A	399	ASP	CB-CG-OD2	-7.02	111.98	118.30
1	K	216	ASP	CB-CG-OD2	6.96	124.57	118.30
1	A	463	ARG	NE-CZ-NH2	-6.82	116.89	120.30
1	H	321	LEU	C-N-CA	-6.69	104.98	121.70
1	F	338	MET	CG-SD-CE	-6.68	89.51	100.20
1	D	586	ARG	NE-CZ-NH1	6.65	123.63	120.30
1	G	399	ASP	CB-CG-OD2	-6.58	112.38	118.30
1	C	534	ARG	NE-CZ-NH2	-6.58	117.01	120.30
1	B	399	ASP	CB-CG-OD1	6.52	124.17	118.30
1	A	285	ARG	NE-CZ-NH2	-6.52	117.04	120.30
1	A	338	MET	CG-SD-CE	-6.35	90.04	100.20
1	C	407	LEU	CB-CG-CD1	6.28	121.67	111.00
1	E	236	ARG	NE-CZ-NH2	-6.24	117.18	120.30
1	G	338	MET	CG-SD-CE	-6.21	90.26	100.20
1	E	413	VAL	CG1-CB-CG2	-6.18	101.01	110.90
1	F	440	ARG	NE-CZ-NH2	-6.17	117.22	120.30
1	D	399	ASP	CB-CG-OD2	-6.03	112.87	118.30
1	B	321	LEU	C-N-CA	-6.03	106.63	121.70
1	E	231	ASP	CB-CG-OD2	6.00	123.70	118.30
1	G	440	ARG	CG-CD-NE	-5.86	99.50	111.80
1	B	285	ARG	NE-CZ-NH2	-5.79	117.41	120.30
1	E	379	ASP	CB-CG-OD1	5.78	123.50	118.30
1	C	478	VAL	CG1-CB-CG2	5.74	120.09	110.90
1	A	280	GLU	OE1-CD-OE2	-5.62	116.56	123.30
1	G	399	ASP	CB-CG-OD1	5.61	123.34	118.30
1	K	321	LEU	CB-CG-CD1	-5.61	101.47	111.00
1	C	357	LEU	CB-CG-CD1	5.59	120.51	111.00
1	H	440	ARG	CG-CD-NE	-5.51	100.24	111.80
1	J	440	ARG	NE-CZ-NH2	-5.46	117.57	120.30
1	E	279	GLU	CB-CA-C	-5.44	99.52	110.40
1	L	289	PHE	O-C-N	5.44	132.44	123.20
1	J	88	VAL	CG1-CB-CG2	-5.43	102.20	110.90
1	F	534	ARG	NE-CZ-NH1	5.43	123.02	120.30
1	J	231	ASP	CB-CG-OD2	5.41	123.17	118.30
1	J	440	ARG	CG-CD-NE	-5.40	100.46	111.80
1	E	478	VAL	CG1-CB-CG2	5.32	119.42	110.90
1	L	407	LEU	CA-CB-CG	5.32	127.53	115.30
1	A	285	ARG	NE-CZ-NH1	5.31	122.95	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	K	279	GLU	CB-CA-C	-5.31	99.78	110.40
1	B	440	ARG	NE-CZ-NH2	-5.25	117.67	120.30
1	B	357	LEU	CB-CG-CD1	5.25	119.92	111.00
1	L	249	ASP	CB-CG-OD2	-5.23	113.59	118.30
1	I	443	ASP	CB-CG-OD1	5.22	123.00	118.30
1	B	399	ASP	CB-CG-OD2	-5.22	113.60	118.30
1	F	440	ARG	CG-CD-NE	-5.21	100.85	111.80
1	I	586	ARG	NE-CZ-NH2	-5.21	117.69	120.30
1	B	440	ARG	CG-CD-NE	-5.20	100.88	111.80
1	E	239	LEU	CA-CB-CG	5.20	127.25	115.30
1	C	379	ASP	CB-CG-OD1	5.20	122.98	118.30
1	K	239	LEU	CB-CG-CD1	5.17	119.79	111.00
1	K	440	ARG	CG-CD-NE	-5.16	100.97	111.80
1	L	395	LEU	CA-CB-CG	5.15	127.15	115.30
1	G	280	GLU	OE1-CD-OE2	-5.11	117.17	123.30
1	D	452	THR	N-CA-CB	-5.07	100.66	110.30
1	D	440	ARG	CG-CD-NE	-5.03	101.24	111.80
1	K	478	VAL	CG1-CB-CG2	5.02	118.93	110.90
1	D	231	ASP	CB-CG-OD2	5.01	122.81	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	86	SER	Mainchain

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	3944	0	3872	31	0
1	B	3867	0	3762	31	2
1	C	3954	0	3879	17	0
1	D	3931	0	3866	35	1
1	E	3888	0	3810	28	0
1	F	3776	0	3585	58	0
1	G	3945	0	3873	29	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	H	3873	0	3768	23	2
1	I	3924	0	3849	34	0
1	J	3931	0	3866	57	0
1	K	3888	0	3812	34	0
1	L	3809	0	3651	44	1
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
2	I	1	0	0	0	0
2	J	1	0	0	0	0
2	K	1	0	0	0	0
2	L	1	0	0	0	0
3	A	4	0	0	0	0
3	B	4	0	0	0	0
3	C	4	0	0	0	0
3	D	4	0	0	0	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	0	0
3	K	4	0	0	0	0
3	L	4	0	0	0	0
4	A	10	0	0	1	0
4	B	10	0	0	1	0
4	C	15	0	0	0	0
4	D	15	0	0	0	0
4	E	5	0	0	0	0
4	G	5	0	0	0	0
4	I	5	0	0	0	0
4	J	5	0	0	0	0
4	K	10	0	0	2	0
5	A	36	0	36	6	0
5	B	11	0	12	6	0
5	C	30	0	32	2	0
5	D	56	0	60	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	E	62	0	71	6	0
5	F	42	0	51	5	0
5	G	53	0	59	4	0
5	H	17	0	16	3	0
5	I	40	0	45	21	0
5	J	64	0	74	22	0
5	K	71	0	76	5	0
5	L	55	0	66	11	0
6	B	50	0	64	11	0
6	F	6	0	4	0	0
6	H	25	0	33	1	0
7	A	308	0	0	4	0
7	B	238	0	0	3	1
7	C	330	0	0	5	1
7	D	310	0	0	4	0
7	E	326	0	0	2	0
7	F	225	0	0	4	0
7	G	301	0	0	8	0
7	H	220	0	0	6	0
7	I	264	0	0	5	0
7	J	322	0	0	13	0
7	K	327	0	0	7	0
7	L	272	0	0	8	0
All	All	50931	0	46292	416	4

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 4.

All (416) 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:L:271:ILE:O	1:L:272:ASN:HB2	1.41	1.11
5:H:54:1PE:H251	7:H:4310:HOH:O	1.52	1.09
1:F:271:ILE:O	1:F:272:ASN:HB2	1.47	1.07
1:F:138:GLU:N	1:F:139:ASN:HA	1.54	1.07
1:D:184:SER:HB2	5:D:62:1PE:H261	1.36	1.06
1:F:138:GLU:H	1:F:139:ASN:HA	1.11	1.03
1:H:322:ASN:HB3	7:H:4184:HOH:O	1.61	1.01
1:F:133:ASN:HA	1:F:167:VAL:HG11	1.44	1.00
1:F:301:PRO:HB2	1:F:303:ASN:OD1	1.64	0.97
1:L:451:LYS:NZ	5:L:25:1PE:H142	1.79	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:156:PHE:CD2	1:A:156:PHE:CZ	2.42	0.96
1:K:338:MET:HE3	1:K:468:ASP:HB3	1.49	0.94
1:K:338:MET:CE	1:K:468:ASP:HB3	1.99	0.92
1:I:392:MET:CE	5:I:27:1PE:H142	2.00	0.92
1:L:271:ILE:O	1:L:272:ASN:CB	2.18	0.92
1:L:133:ASN:HA	1:L:167:VAL:HG11	1.51	0.92
1:J:139:ASN:ND2	1:J:168:LYS:HB2	1.85	0.90
1:B:104:ASN:HB2	6:B:13:2PE:C12	2.02	0.89
1:L:451:LYS:HZ3	5:L:25:1PE:H142	1.35	0.87
1:A:328:LEU:HG	1:A:332:GLU:OE1	1.75	0.86
1:E:338:MET:CE	1:E:468:ASP:HB3	2.04	0.86
1:D:452:THR:HG21	1:E:252:PHE:O	1.74	0.86
1:J:411:TYR:HE1	5:J:2:1PE:H151	1.39	0.85
5:I:61:1PE:H142	7:J:3537:HOH:O	1.77	0.84
1:E:338:MET:HE3	1:E:468:ASP:HB3	1.60	0.83
1:L:223:THR:HG23	7:L:3527:HOH:O	1.78	0.83
1:K:536:THR:HG21	1:K:551:VAL:HG23	1.62	0.81
1:F:138:GLU:N	1:F:139:ASN:CA	2.42	0.81
1:I:531:ASN:H	5:I:61:1PE:C25	1.95	0.79
1:E:536:THR:HG21	1:E:551:VAL:HG23	1.62	0.79
1:F:132:VAL:HG21	1:F:142:VAL:HG13	1.64	0.79
1:B:104:ASN:HB2	6:B:13:2PE:H122	1.64	0.79
1:F:320:LYS:HE3	5:F:32:1PE:H261	1.64	0.78
1:K:103:TYR:HB2	4:K:19:SO4:O1	1.84	0.78
1:K:332:GLU:HG2	7:K:1169:HOH:O	1.84	0.77
1:C:261:MET:CB	7:C:1283:HOH:O	2.31	0.77
1:J:452:THR:CG2	1:J:543:ASP:H	1.97	0.76
1:L:332:GLU:HG3	7:L:2155:HOH:O	1.85	0.76
1:I:392:MET:HE1	5:I:27:1PE:H142	1.67	0.76
1:J:139:ASN:HD22	1:J:168:LYS:HB2	1.51	0.75
1:F:236:ARG:O	1:F:240:GLU:HG3	1.86	0.75
1:J:411:TYR:CE1	5:J:2:1PE:H151	2.20	0.75
1:J:452:THR:HG21	1:K:252:PHE:O	1.86	0.74
1:D:139:ASN:ND2	1:D:168:LYS:HB2	2.03	0.73
1:L:451:LYS:HZ3	5:L:25:1PE:H131	1.52	0.73
5:I:61:1PE:H241	7:J:4349:HOH:O	1.87	0.73
1:I:392:MET:CE	5:I:27:1PE:C14	2.67	0.73
1:F:88:VAL:HG22	1:F:308:VAL:HB	1.70	0.72
1:K:328:LEU:HD12	1:K:328:LEU:N	2.05	0.71
1:L:231:ASP:HB2	7:L:3184:HOH:O	1.90	0.71
5:I:61:1PE:C24	7:J:4349:HOH:O	2.37	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:392:MET:HE3	5:B:40:1PE:H241	1.73	0.71
1:L:167:VAL:O	1:L:167:VAL:HG12	1.91	0.70
1:B:392:MET:CE	5:B:40:1PE:H241	2.21	0.70
1:F:358:THR:HG22	7:F:1366:HOH:O	1.89	0.70
1:J:507:GLU:CG	7:J:3451:HOH:O	2.40	0.70
1:F:536:THR:HG21	1:F:551:VAL:HG23	1.72	0.69
1:J:451:LYS:NZ	5:J:45:1PE:H241	2.06	0.69
1:K:198:LEU:HD22	1:K:202:ASP:HB3	1.74	0.69
5:I:27:1PE:C23	7:I:4260:HOH:O	2.40	0.69
1:J:452:THR:HG22	1:J:543:ASP:H	1.58	0.69
1:J:102:GLU:HG3	7:J:653:HOH:O	1.92	0.68
1:D:182:LYS:CG	7:D:2867:HOH:O	2.41	0.68
5:F:53:1PE:H242	7:F:4301:HOH:O	1.93	0.68
1:D:184:SER:HB2	5:D:62:1PE:C26	2.17	0.68
1:D:452:THR:HG22	1:D:543:ASP:H	1.57	0.68
5:E:28:1PE:H242	7:E:2510:HOH:O	1.94	0.68
1:L:489:GLY:HA3	5:L:59:1PE:H232	1.76	0.67
1:E:338:MET:HE2	1:E:468:ASP:HB3	1.77	0.67
5:H:51:1PE:C25	7:H:4259:HOH:O	2.43	0.67
1:F:361:SER:HB2	1:F:421:VAL:O	1.94	0.67
1:C:150:ASP:OD1	1:C:179:ASN:HB2	1.95	0.66
1:G:205:ARG:HD2	7:G:3946:HOH:O	1.96	0.66
1:J:451:LYS:HZ3	5:J:45:1PE:H241	1.60	0.65
1:D:452:THR:CG2	1:D:543:ASP:H	2.07	0.65
1:A:603:ASP:C	7:A:1914:HOH:O	2.35	0.65
1:J:316:GLU:HG3	5:J:3:1PE:H141	1.78	0.65
1:I:577:ALA:HB1	5:I:27:1PE:H131	1.80	0.65
1:L:133:ASN:HA	1:L:167:VAL:CG1	2.26	0.65
1:I:150:ASP:OD1	1:I:179:ASN:HB2	1.97	0.64
1:D:533:TYR:O	1:D:536:THR:HG22	1.97	0.64
1:K:338:MET:HE2	1:K:468:ASP:HB3	1.79	0.64
1:H:117:ILE:HD11	1:H:146:SER:OG	1.98	0.63
1:J:111:LYS:HG2	5:J:49:1PE:H241	1.80	0.63
1:A:392:MET:HE2	5:A:24:1PE:H242	1.79	0.63
1:B:392:MET:CE	5:B:40:1PE:C24	2.77	0.63
1:H:368:LYS:HD2	7:H:2601:HOH:O	1.97	0.63
1:I:364:ASP:O	1:I:420:ASN:HA	1.98	0.63
1:G:204:LYS:HD3	7:G:3689:HOH:O	1.98	0.63
1:B:104:ASN:HB2	6:B:13:2PE:H121	1.79	0.63
1:B:320:LYS:HB3	6:B:14:2PE:H182	1.81	0.62
1:C:168:LYS:O	1:C:171:THR:HG22	1.98	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:316:GLU:CD	5:J:3:1PE:H252	2.21	0.61
1:J:533:TYR:O	1:J:536:THR:HG22	2.00	0.61
1:F:217:ASN:HB3	1:F:219:LEU:HD21	1.81	0.61
6:B:13:2PE:H92	6:B:14:2PE:H121	1.83	0.61
1:L:133:ASN:CA	1:L:167:VAL:HG11	2.27	0.60
1:K:524:VAL:O	5:K:52:1PE:H242	2.00	0.60
5:C:18:1PE:H231	7:C:997:HOH:O	2.01	0.60
1:J:198:LEU:HD12	1:J:202:ASP:HB3	1.82	0.59
1:F:167:VAL:O	1:F:167:VAL:HG12	2.02	0.59
1:J:320:LYS:HE2	5:J:3:1PE:H251	1.83	0.59
1:J:125:GLU:HB2	7:J:2472:HOH:O	2.01	0.59
1:H:103:TYR:HB3	6:H:6:2PE:H262	1.84	0.59
1:J:330:VAL:CG2	7:J:4324:HOH:O	2.50	0.59
1:C:273:ASN:O	1:C:276:THR:HG22	2.02	0.59
1:L:451:LYS:HZ1	5:L:25:1PE:H142	1.62	0.59
1:I:392:MET:HE2	5:I:27:1PE:C14	2.33	0.59
1:J:577:ALA:HB1	5:J:15:1PE:H142	1.85	0.59
1:F:451:LYS:HG2	5:F:33:1PE:H141	1.84	0.58
5:G:16:1PE:H151	7:G:3348:HOH:O	2.03	0.58
1:J:452:THR:HG23	1:J:542:ALA:HB1	1.85	0.58
1:I:316:GLU:CG	5:I:21:1PE:H232	2.33	0.58
1:F:88:VAL:HG22	1:F:308:VAL:CB	2.33	0.58
1:D:198:LEU:HD12	1:D:202:ASP:HB3	1.86	0.58
1:K:316:GLU:HG3	5:K:4:1PE:H152	1.85	0.58
1:K:322:ASN:CG	7:K:3103:HOH:O	2.42	0.58
1:C:223:THR:HG23	7:C:2469:HOH:O	2.03	0.58
1:A:451:LYS:HG2	5:A:57:1PE:H141	1.86	0.58
1:L:114:VAL:HG12	1:L:274:ALA:HB1	1.85	0.58
1:F:88:VAL:HG22	1:F:308:VAL:CG1	2.35	0.57
1:L:506:ASN:OD1	1:L:508:GLU:HG2	2.04	0.57
1:A:392:MET:CE	5:A:24:1PE:H242	2.34	0.57
1:I:603:ASP:C	7:I:3131:HOH:O	2.43	0.57
1:D:88:VAL:HG22	1:D:308:VAL:HB	1.87	0.57
1:K:328:LEU:N	1:K:328:LEU:CD1	2.68	0.56
1:K:332:GLU:CG	7:K:1169:HOH:O	2.48	0.56
1:I:316:GLU:HG2	5:I:21:1PE:H232	1.87	0.56
1:E:198:LEU:HD22	1:E:202:ASP:HB3	1.87	0.56
1:D:150:ASP:O	1:D:154:SER:HB2	2.05	0.56
1:F:567:GLN:HG2	7:F:2592:HOH:O	2.05	0.56
1:I:567:GLN:CG	7:I:1222:HOH:O	2.52	0.56
5:L:29:1PE:H242	7:L:4242:HOH:O	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:328:LEU:HB2	1:A:354:PHE:HB3	1.86	0.56
1:A:451:LYS:CG	5:A:57:1PE:H141	2.35	0.56
1:C:172:SER:O	1:C:173:LYS:HD2	2.04	0.56
1:F:448:SER:OG	1:F:471:VAL:HG21	2.06	0.56
1:D:577:ALA:HB1	5:D:23:1PE:H142	1.86	0.56
1:I:320:LYS:HE2	5:I:21:1PE:H231	1.86	0.55
1:A:104:ASN:ND2	4:A:1:SO4:O4	2.39	0.55
1:E:328:LEU:N	1:E:328:LEU:HD12	2.21	0.55
1:J:139:ASN:HD21	1:J:168:LYS:HB2	1.71	0.55
1:A:489:GLY:HA3	5:A:24:1PE:H252	1.89	0.55
1:L:361:SER:O	1:L:366:LYS:HE3	2.06	0.55
1:J:111:LYS:HE3	5:J:49:1PE:H251	1.88	0.55
1:F:536:THR:HG21	1:F:551:VAL:CG2	2.37	0.55
1:I:368:LYS:HD3	7:I:3404:HOH:O	2.07	0.55
1:C:364:ASP:O	1:C:420:ASN:HA	2.07	0.55
1:F:423:ILE:HD13	1:F:600:VAL:HG11	1.89	0.55
1:A:178:PHE:CZ	1:D:155:GLU:HG2	2.42	0.55
1:B:204:LYS:O	1:B:208:LEU:HD23	2.07	0.55
1:K:328:LEU:HB2	1:K:354:PHE:HB3	1.87	0.55
1:F:303:ASN:OD1	1:F:304:TYR:HD2	1.90	0.54
1:J:111:LYS:HE3	5:J:49:1PE:C25	2.38	0.54
1:I:223:THR:HG23	7:I:2724:HOH:O	2.07	0.54
1:I:208:LEU:O	1:I:212:THR:HG23	2.07	0.54
6:B:13:2PE:C9	6:B:14:2PE:H121	2.38	0.54
5:J:2:1PE:H152	7:J:785:HOH:O	2.07	0.54
1:I:172:SER:O	1:I:173:LYS:HD2	2.07	0.54
1:J:320:LYS:CE	5:J:3:1PE:H251	2.37	0.53
1:J:452:THR:HG23	1:J:543:ASP:H	1.72	0.53
1:D:139:ASN:HD22	1:D:168:LYS:HB2	1.74	0.53
1:H:567:GLN:CG	7:H:1096:HOH:O	2.55	0.53
1:C:494:SER:HB3	1:D:494:SER:HB3	1.91	0.53
1:A:506:ASN:ND2	7:A:2309:HOH:O	2.41	0.53
1:H:204:LYS:O	1:H:208:LEU:HD23	2.08	0.53
1:A:114:VAL:HG12	1:A:274:ALA:HB1	1.90	0.53
1:A:475:LYS:NZ	7:A:734:HOH:O	2.41	0.53
1:K:322:ASN:HB3	7:K:3103:HOH:O	2.08	0.53
1:J:330:VAL:HG22	7:J:4324:HOH:O	2.09	0.53
1:J:150:ASP:O	1:J:154:SER:HB2	2.08	0.52
1:H:175:PHE:HD1	1:L:176:TYR:HB2	1.74	0.52
5:I:61:1PE:H242	7:J:4349:HOH:O	2.06	0.52
1:I:168:LYS:O	1:I:171:THR:HG22	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:164:LYS:HD2	7:J:3457:HOH:O	2.09	0.52
1:A:321:LEU:HD11	1:A:411:TYR:HA	1.90	0.52
1:E:364:ASP:O	1:E:420:ASN:HA	2.10	0.52
1:L:508:GLU:HG2	7:L:3277:HOH:O	2.10	0.52
1:L:536:THR:HG21	1:L:551:VAL:HG23	1.92	0.52
1:G:328:LEU:HD12	1:G:328:LEU:N	2.25	0.52
1:A:328:LEU:N	1:A:328:LEU:HD12	2.25	0.51
1:J:321:LEU:HD11	1:J:411:TYR:HA	1.92	0.51
1:E:340:ALA:HA	1:E:445:ILE:HD12	1.91	0.51
1:K:360:LYS:HE3	1:K:365:VAL:HG21	1.91	0.51
1:K:322:ASN:CB	7:K:3103:HOH:O	2.58	0.51
1:F:132:VAL:HG21	1:F:142:VAL:CG1	2.39	0.51
1:E:444:ILE:O	1:F:303:ASN:ND2	2.43	0.51
1:L:514:LEU:HB3	5:L:29:1PE:H241	1.91	0.51
1:G:529:ILE:CG2	1:G:560:LEU:HD13	2.41	0.51
1:G:321:LEU:HD11	1:G:411:TYR:HA	1.92	0.51
1:K:364:ASP:O	1:K:420:ASN:HA	2.10	0.51
1:B:117:ILE:HD11	1:B:146:SER:OG	2.10	0.51
1:F:133:ASN:HA	1:F:167:VAL:CG1	2.30	0.51
1:H:124:GLU:O	1:H:185:VAL:HG12	2.11	0.50
1:E:489:GLY:HA2	5:E:28:1PE:H141	1.93	0.50
1:A:341:TYR:CE1	1:A:428:ALA:HB1	2.47	0.50
1:J:122:ASN:HB3	7:J:3215:HOH:O	2.10	0.50
1:H:340:ALA:HA	1:H:445:ILE:HD12	1.93	0.50
1:F:567:GLN:CG	7:F:2592:HOH:O	2.59	0.50
1:I:273:ASN:O	1:I:276:THR:HG22	2.11	0.50
1:B:195:VAL:HG12	1:B:197:ASP:H	1.75	0.50
1:E:328:LEU:HB2	1:E:354:PHE:HB3	1.94	0.49
1:I:392:MET:HE2	5:I:27:1PE:H141	1.93	0.49
1:C:340:ALA:HA	1:C:445:ILE:HD12	1.95	0.49
1:K:518:LYS:NZ	5:K:52:1PE:H142	2.27	0.49
1:L:86:SER:HB2	1:L:312:ASN:OD1	2.12	0.49
1:F:114:VAL:HG12	1:F:274:ALA:HB1	1.95	0.49
1:L:167:VAL:O	1:L:167:VAL:CG1	2.60	0.49
1:J:564:GLU:OE1	5:J:45:1PE:C23	2.61	0.49
1:B:193:GLY:HA3	7:B:2860:HOH:O	2.12	0.49
1:G:567:GLN:HA	7:G:1057:HOH:O	2.13	0.49
1:B:124:GLU:O	1:B:185:VAL:HG12	2.13	0.49
1:L:144:ILE:HD13	1:L:157:LEU:HD22	1.95	0.49
1:J:320:LYS:HZ1	5:J:3:1PE:H262	1.76	0.48
1:G:567:GLN:CG	7:G:1057:HOH:O	2.60	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:214:LEU:HD21	1:D:222:LEU:HD22	1.95	0.48
1:F:320:LYS:NZ	5:F:32:1PE:H142	2.27	0.48
1:B:392:MET:HE2	5:B:40:1PE:C24	2.43	0.48
1:B:392:MET:HE2	5:B:40:1PE:H241	1.96	0.48
1:F:138:GLU:H	1:F:139:ASN:CA	2.03	0.48
1:J:111:LYS:CG	5:J:49:1PE:H241	2.44	0.48
1:B:392:MET:HE3	5:B:40:1PE:C24	2.40	0.48
1:E:321:LEU:HD11	1:E:411:TYR:HA	1.96	0.48
1:D:540:LYS:HE2	7:E:1955:HOH:O	2.13	0.48
1:H:174:HIS:HB3	1:L:175:PHE:CD1	2.49	0.48
1:D:452:THR:HG23	1:D:542:ALA:HB1	1.96	0.47
7:B:2124:HOH:O	1:E:551:VAL:HG13	2.13	0.47
1:A:301:PRO:HB3	1:C:442:GLY:O	2.13	0.47
6:B:13:2PE:H111	6:B:14:2PE:C26	2.44	0.47
1:F:273:ASN:O	1:F:276:THR:HB	2.15	0.47
1:B:165:PHE:HB3	1:B:189:TYR:OH	2.15	0.47
1:F:104:ASN:ND2	5:F:31:1PE:H162	2.30	0.47
1:L:320:LYS:HB3	5:L:1:1PE:H161	1.96	0.47
1:D:413:VAL:CG2	1:D:600:VAL:HG21	2.44	0.47
1:D:122:ASN:OD1	1:D:124:GLU:HG2	2.15	0.47
1:L:481:ILE:O	1:L:571:TRP:HA	2.15	0.47
1:F:133:ASN:CA	1:F:167:VAL:HG11	2.31	0.47
1:F:271:ILE:O	1:F:272:ASN:CB	2.33	0.47
1:F:597:THR:O	1:F:600:VAL:HG22	2.16	0.47
1:B:282:GLU:OE2	1:B:285:ARG:HD2	2.14	0.47
1:G:529:ILE:HG22	1:G:560:LEU:CD1	2.45	0.46
1:G:85:ALA:N	7:G:3686:HOH:O	2.48	0.46
1:B:104:ASN:CB	6:B:13:2PE:H142	2.46	0.46
1:A:341:TYR:CD1	1:A:428:ALA:HB1	2.50	0.46
1:G:475:LYS:NZ	7:G:4313:HOH:O	2.48	0.46
1:F:132:VAL:O	1:F:167:VAL:HG13	2.15	0.46
1:J:181:ASN:O	1:J:182:LYS:HB2	2.15	0.46
1:F:151:LYS:O	1:F:153:VAL:N	2.48	0.46
1:J:364:ASP:O	1:J:420:ASN:HA	2.15	0.46
1:F:96:PRO:HG3	1:F:304:TYR:CZ	2.49	0.46
1:C:494:SER:HB3	1:D:494:SER:CB	2.45	0.46
1:J:398:PHE:C	1:J:398:PHE:CD2	2.87	0.46
1:J:338:MET:HB3	1:J:338:MET:HE2	1.82	0.46
1:E:117:ILE:HG12	1:E:270:TYR:HB3	1.98	0.46
1:B:144:ILE:HD13	1:B:157:LEU:HD13	1.98	0.46
1:D:197:ASP:OD1	1:D:197:ASP:N	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:338:MET:CE	1:K:468:ASP:CB	2.85	0.45
1:E:360:LYS:HE3	1:E:365:VAL:HG21	1.97	0.45
1:A:150:ASP:OD1	1:A:179:ASN:HB2	2.15	0.45
1:L:508:GLU:CG	7:L:3277:HOH:O	2.63	0.45
1:J:543:ASP:HB3	5:J:45:1PE:H242	1.97	0.45
1:G:178:PHE:CZ	1:J:155:GLU:HG2	2.51	0.45
1:H:282:GLU:OE2	1:H:285:ARG:HD2	2.16	0.45
1:A:392:MET:HB2	1:A:392:MET:HE3	1.86	0.45
1:G:489:GLY:HA2	5:G:16:1PE:H142	1.97	0.45
1:A:103:TYR:CD1	5:A:20:1PE:H251	2.51	0.45
1:G:301:PRO:HB3	1:I:442:GLY:O	2.16	0.45
1:B:104:ASN:CB	6:B:13:2PE:H122	2.42	0.45
5:C:41:1PE:C13	7:C:4276:HOH:O	2.63	0.45
1:J:149:ASN:CB	7:J:622:HOH:O	2.65	0.45
1:K:169:LEU:HD11	1:K:205:ARG:HB2	1.99	0.45
1:F:181:ASN:HB2	1:F:183:ASN:ND2	2.32	0.45
1:H:364:ASP:O	1:H:420:ASN:HA	2.17	0.45
1:H:195:VAL:HG12	1:H:197:ASP:H	1.82	0.45
1:H:200:GLU:HB2	7:H:3506:HOH:O	2.16	0.45
5:K:55:1PE:C13	7:K:2810:HOH:O	2.65	0.45
1:G:340:ALA:HA	1:G:445:ILE:HD12	1.99	0.45
1:H:328:LEU:HB2	1:H:354:PHE:HB3	1.98	0.45
1:A:85:ALA:HA	1:A:312:ASN:OD1	2.17	0.45
1:B:104:ASN:HB3	6:B:13:2PE:H142	1.98	0.45
1:K:326:LYS:HD2	1:K:328:LEU:HD11	1.99	0.45
1:J:132:VAL:HG11	1:J:144:ILE:HD13	1.97	0.45
1:D:398:PHE:C	1:D:398:PHE:CD2	2.88	0.45
1:D:540:LYS:NZ	7:D:1047:HOH:O	2.47	0.44
1:K:442:GLY:O	1:L:301:PRO:HB3	2.16	0.44
1:L:451:LYS:HZ2	5:L:25:1PE:H222	1.82	0.44
1:F:448:SER:OG	1:F:471:VAL:CG2	2.66	0.44
1:L:320:LYS:HE3	5:L:56:1PE:OH7	2.18	0.44
1:B:306:ASN:HB2	1:B:307:PRO:CD	2.47	0.44
1:F:207:VAL:HG11	1:F:241:THR:HG22	1.98	0.44
1:E:263:TYR:CE2	5:E:46:1PE:H242	2.52	0.44
1:I:531:ASN:ND2	5:I:61:1PE:C25	2.80	0.44
1:C:150:ASP:OD2	1:C:153:VAL:HG23	2.16	0.44
1:D:88:VAL:HG22	1:D:308:VAL:CG1	2.48	0.44
1:F:190:VAL:HG11	1:F:206:VAL:HG13	2.00	0.44
1:G:320:LYS:HD3	5:G:58:1PE:H161	2.00	0.44
1:G:152:GLN:HG2	1:G:180:ASP:OD1	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:341:TYR:CE1	1:F:352:ASN:ND2	2.86	0.44
1:E:536:THR:HG21	1:E:551:VAL:CG2	2.42	0.44
1:D:181:ASN:O	1:D:182:LYS:HB2	2.18	0.44
1:J:178:PHE:CD1	1:J:182:LYS:O	2.71	0.44
1:A:178:PHE:HZ	1:D:155:GLU:HG2	1.83	0.44
1:G:275:ASP:HB2	7:G:3761:HOH:O	2.17	0.44
1:B:132:VAL:O	1:B:132:VAL:HG23	2.17	0.44
1:K:552:LYS:HD3	1:K:552:LYS:N	2.33	0.44
1:I:133:ASN:HB2	1:I:193:GLY:O	2.17	0.44
5:D:9:1PE:H221	7:D:4114:HOH:O	2.17	0.44
1:J:413:VAL:HG21	1:J:600:VAL:HG21	2.00	0.44
1:I:135:PRO:HA	1:I:194:SER:O	2.18	0.44
1:J:111:LYS:NZ	5:J:49:1PE:H141	2.32	0.44
1:C:464:LEU:HD23	1:C:464:LEU:HA	1.81	0.44
1:K:338:MET:HE2	1:K:468:ASP:CB	2.48	0.44
1:J:111:LYS:HD2	1:J:266:HIS:CE1	2.52	0.44
1:F:413:VAL:HG22	1:F:600:VAL:HG21	2.00	0.44
1:D:321:LEU:HD11	1:D:411:TYR:HA	1.98	0.44
1:G:122:ASN:OD1	5:G:48:1PE:H151	2.18	0.43
1:F:204:LYS:O	1:F:208:LEU:HG	2.18	0.43
1:A:139:ASN:HD21	1:A:168:LYS:HD2	1.83	0.43
1:L:169:LEU:HD13	1:L:205:ARG:HD3	1.98	0.43
1:J:394:ASP:HA	1:L:441:PRO:HB2	2.00	0.43
1:G:367:LYS:HD3	1:G:480:TYR:HE2	1.83	0.43
1:D:518:LYS:HE3	5:D:34:1PE:OH6	2.18	0.43
4:K:18:SO4:O2	1:L:436:LYS:HG2	2.18	0.43
1:A:498[B]:SER:HB3	1:F:533:TYR:CE2	2.52	0.43
1:E:451:LYS:HG2	5:E:43:1PE:H141	2.00	0.43
1:G:328:LEU:HB2	1:G:354:PHE:HB3	1.99	0.43
1:H:338:MET:HB3	1:H:338:MET:HE2	1.95	0.43
1:F:221:LYS:CG	1:F:266:HIS:HB2	2.49	0.43
1:F:178:PHE:HA	1:F:183:ASN:O	2.19	0.43
1:J:413:VAL:CG2	1:J:600:VAL:HG21	2.49	0.43
1:F:137:LYS:O	1:F:138:GLU:CB	2.66	0.43
1:L:451:LYS:HZ1	5:L:25:1PE:H251	1.84	0.43
1:E:551:VAL:HG12	1:E:553:ALA:H	1.83	0.43
1:D:338:MET:HB3	1:D:338:MET:HE2	1.77	0.43
1:J:320:LYS:HB3	5:J:2:1PE:H161	2.00	0.43
1:J:518:LYS:HZ2	5:J:60:1PE:H241	1.84	0.43
1:I:320:LYS:HD3	5:I:21:1PE:H161	2.01	0.43
1:J:161:ASN:OD1	1:J:164:LYS:HE2	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:115:TYR:HB2	1:F:270:TYR:CD2	2.54	0.43
1:A:543:ASP:OD2	1:B:254:SER:HB3	2.19	0.42
5:D:44:1PE:H251	1:E:254:SER:OG	2.19	0.42
1:J:320:LYS:HZ1	5:J:3:1PE:H251	1.83	0.42
1:B:423:ILE:HD11	1:B:600:VAL:CG1	2.50	0.42
1:K:340:ALA:HA	1:K:445:ILE:HD12	2.01	0.42
1:L:567:GLN:CG	7:L:2622:HOH:O	2.67	0.42
1:G:114:VAL:HG12	1:G:274:ALA:HB1	1.99	0.42
1:L:190:VAL:HG11	1:L:206:VAL:HG13	2.01	0.42
1:I:392:MET:CE	5:I:27:1PE:H141	2.48	0.42
1:L:567:GLN:HG2	7:L:2622:HOH:O	2.19	0.42
1:L:134:ASN:OD1	1:L:141:PRO:HD2	2.19	0.42
1:G:208:LEU:O	1:G:212:THR:HG23	2.20	0.42
1:I:316:GLU:HG2	5:I:21:1PE:C23	2.48	0.42
1:F:322:ASN:HB3	1:K:160:GLU:OE1	2.19	0.42
1:E:372:VAL:O	1:E:483:ASP:HA	2.19	0.42
1:F:231:ASP:HB3	1:F:234:LEU:H	1.84	0.42
1:G:302:SER:HB2	1:I:440:ARG:HD3	2.02	0.42
1:H:144:ILE:HG23	1:H:227:GLU:OE2	2.19	0.42
1:K:551:VAL:HG12	1:K:553:ALA:H	1.85	0.42
1:J:518:LYS:HE3	5:J:60:1PE:H241	2.02	0.42
1:K:321:LEU:HD11	1:K:411:TYR:HA	2.00	0.42
1:D:168:LYS:CG	7:D:2707:HOH:O	2.67	0.42
1:K:320:LYS:HD3	5:K:4:1PE:H222	2.01	0.42
1:I:401:SER:HB2	1:I:486:THR:HG23	2.00	0.42
1:G:543:ASP:OD2	1:H:254:SER:HB3	2.20	0.42
1:F:383:TYR:HE2	1:F:438:SER:HB2	1.85	0.42
1:F:223:THR:HA	1:F:268:GLY:O	2.20	0.42
1:A:567:GLN:HA	7:A:4057:HOH:O	2.18	0.42
1:A:394:ASP:HA	1:C:441:PRO:HB2	2.02	0.42
1:F:328:LEU:HD12	1:F:328:LEU:N	2.35	0.42
1:F:398:PHE:CD2	1:F:398:PHE:C	2.92	0.42
1:E:489:GLY:CA	5:E:28:1PE:H141	2.50	0.41
1:B:172:SER:HB2	1:B:213:MET:HE1	2.02	0.41
1:E:355:ILE:O	1:E:426:LEU:HA	2.20	0.41
1:A:355:ILE:O	1:A:426:LEU:HA	2.20	0.41
1:F:539:SER:HB2	1:F:545:ASN:OD1	2.20	0.41
1:I:103:TYR:CD1	5:I:21:1PE:H251	2.55	0.41
1:E:481:ILE:O	1:E:571:TRP:HA	2.21	0.41
1:H:306:ASN:HB2	1:H:307:PRO:CD	2.50	0.41
1:H:307:PRO:HD2	1:H:350:TYR:CB	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:421:VAL:CG2	1:G:423:ILE:HD11	2.51	0.41
1:F:303:ASN:ND2	1:F:304:TYR:CE2	2.89	0.41
1:B:144:ILE:HG23	1:B:227:GLU:OE2	2.20	0.41
1:B:436:LYS:HG2	4:B:3:SO4:O2	2.19	0.41
1:K:117:ILE:HG12	1:K:270:TYR:HB3	2.02	0.41
6:B:13:2PE:H121	6:B:13:2PE:H91	1.34	0.41
1:G:302:SER:CB	1:I:440:ARG:HD3	2.50	0.41
1:H:229:ASN:N	1:H:229:ASN:OD1	2.53	0.41
1:C:383:TYR:HE2	1:C:438:SER:HB2	1.86	0.41
1:I:317:LEU:HG	1:I:321:LEU:HD12	2.01	0.41
1:L:520:SER:HB3	1:L:598:GLU:HG3	2.01	0.41
1:K:474:GLU:HB3	7:K:3297:HOH:O	2.20	0.41
1:I:531:ASN:HD22	5:I:61:1PE:C25	2.34	0.41
1:L:223:THR:HA	1:L:268:GLY:O	2.21	0.41
1:J:122:ASN:OD1	1:J:124:GLU:HG2	2.21	0.41
1:D:328:LEU:HB2	1:D:354:PHE:HB3	2.02	0.41
1:H:489:GLY:HA2	5:H:51:1PE:H141	2.03	0.41
1:C:223:THR:CG2	7:C:2469:HOH:O	2.65	0.41
1:J:164:LYS:HE3	1:J:164:LYS:HB2	1.83	0.41
1:D:413:VAL:HG21	1:D:600:VAL:HG21	2.03	0.41
1:E:300:ALA:HA	1:E:301:PRO:HD3	1.84	0.41
1:I:494:SER:HB3	1:J:494:SER:CB	2.51	0.41
1:A:167:VAL:O	1:A:168:LYS:C	2.60	0.41
1:B:515:GLN:HG2	7:B:2431:HOH:O	2.20	0.41
1:K:300:ALA:HA	1:K:301:PRO:HD3	1.76	0.41
1:B:338:MET:HE2	1:B:338:MET:HB3	1.89	0.41
1:B:494:SER:HB3	1:E:494:SER:HB3	2.03	0.41
1:D:544:ILE:CD1	1:D:564:GLU:HG3	2.50	0.40
1:C:494:SER:CB	1:D:494:SER:HB3	2.51	0.40
1:G:529:ILE:HG22	1:G:560:LEU:HD13	2.02	0.40
1:G:121:CYS:HA	1:G:270:TYR:CE2	2.57	0.40
1:H:175:PHE:CD1	1:L:176:TYR:HB2	2.56	0.40
1:L:132:VAL:HG21	1:L:142:VAL:HG13	2.02	0.40
1:G:528:PRO:HD3	1:L:525:TRP:CE2	2.57	0.40
1:E:489:GLY:HA2	5:E:28:1PE:H251	2.03	0.40
5:D:612:1PE:H241	5:D:612:1PE:H232	1.85	0.40
1:J:86:SER:HB2	1:J:308:VAL:HG13	2.03	0.40

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:366:LYS:CE	7:B:895:HOH:O[4_455]	1.60	0.60
1:B:322:ASN:ND2	1:H:322:ASN:ND2[2_664]	1.72	0.48
1:B:322:ASN:CG	1:H:322:ASN:ND2[2_664]	2.10	0.10
1:L:332:GLU:OE1	7:C:3017:HOH:O[1_556]	2.12	0.08

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	511/528 (97%)	501 (98%)	10 (2%)	0	100	100
1	B	506/528 (96%)	493 (97%)	11 (2%)	2 (0%)	39	33
1	C	517/528 (98%)	508 (98%)	9 (2%)	0	100	100
1	D	510/528 (97%)	500 (98%)	10 (2%)	0	100	100
1	E	503/528 (95%)	492 (98%)	11 (2%)	0	100	100
1	F	504/528 (96%)	483 (96%)	16 (3%)	5 (1%)	19	11
1	G	510/528 (97%)	499 (98%)	11 (2%)	0	100	100
1	H	506/528 (96%)	491 (97%)	13 (3%)	2 (0%)	39	33
1	I	511/528 (97%)	503 (98%)	8 (2%)	0	100	100
1	J	510/528 (97%)	499 (98%)	11 (2%)	0	100	100
1	K	503/528 (95%)	490 (97%)	13 (3%)	0	100	100
1	L	500/528 (95%)	486 (97%)	13 (3%)	1 (0%)	52	48
All	All	6091/6336 (96%)	5945 (98%)	136 (2%)	10 (0%)	52	48

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	138	GLU
1	F	272	ASN
1	L	272	ASN
1	B	138	GLU

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Mol	Chain	Res	Type
1	H	138	GLU
1	F	301	PRO
1	F	231	ASP
1	B	123	VAL
1	F	136	GLY
1	H	123	VAL

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	421/455 (92%)	413 (98%)	8 (2%)	65	67
1	B	405/455 (89%)	395 (98%)	10 (2%)	55	55
1	C	419/455 (92%)	399 (95%)	20 (5%)	31	26
1	D	416/455 (91%)	399 (96%)	17 (4%)	37	32
1	E	412/455 (90%)	398 (97%)	14 (3%)	44	41
1	F	380/455 (84%)	359 (94%)	21 (6%)	27	21
1	G	421/455 (92%)	410 (97%)	11 (3%)	54	54
1	H	407/455 (90%)	397 (98%)	10 (2%)	55	55
1	I	415/455 (91%)	391 (94%)	24 (6%)	25	19
1	J	416/455 (91%)	401 (96%)	15 (4%)	42	39
1	K	412/455 (90%)	396 (96%)	16 (4%)	39	35
1	L	391/455 (86%)	367 (94%)	24 (6%)	23	17
All	All	4915/5460 (90%)	4725 (96%)	190 (4%)	39	35

All (190) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	117	ILE
1	A	200	GLU
1	A	275	ASP
1	A	288	TYR

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Mol	Chain	Res	Type
1	A	367	LYS
1	A	398	PHE
1	A	439	TYR
1	A	603	ASP
1	B	229	ASN
1	B	231	ASP
1	B	250	GLU
1	B	357	LEU
1	B	398	PHE
1	B	436	LYS
1	B	439	TYR
1	B	483	ASP
1	B	601	LEU
1	B	603	ASP
1	C	163	GLU
1	C	169	LEU
1	C	185	VAL
1	C	200	GLU
1	C	204	LYS
1	C	208	LEU
1	C	223	THR
1	C	239	LEU
1	C	288	TYR
1	C	316	GLU
1	C	322	ASN
1	C	332	GLU
1	C	357	LEU
1	C	398	PHE
1	C	407	LEU
1	C	439	TYR
1	C	478	VAL
1	C	483	ASP
1	C	568	ASN
1	C	601	LEU
1	D	164	LYS
1	D	184	SER
1	D	197	ASP
1	D	198	LEU
1	D	200	GLU
1	D	216	ASP
1	D	229	ASN
1	D	250	GLU

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Mol	Chain	Res	Type
1	D	261	MET
1	D	288	TYR
1	D	310	LEU
1	D	330	VAL
1	D	398	PHE
1	D	407	LEU
1	D	436	LYS
1	D	439	TYR
1	D	452	THR
1	E	86	SER
1	E	102	GLU
1	E	208	LEU
1	E	216	ASP
1	E	230	VAL
1	E	239	LEU
1	E	310	LEU
1	E	398	PHE
1	E	436	LYS
1	E	439	TYR
1	E	478	VAL
1	E	483	ASP
1	E	518	LYS
1	E	552	LYS
1	F	86	SER
1	F	113	GLN
1	F	134	ASN
1	F	169	LEU
1	F	198	LEU
1	F	199	SER
1	F	200	GLU
1	F	231	ASP
1	F	239	LEU
1	F	310	LEU
1	F	357	LEU
1	F	358	THR
1	F	361	SER
1	F	398	PHE
1	F	400	MET
1	F	407	LEU
1	F	436	LYS
1	F	439	TYR
1	F	471	VAL

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Mol	Chain	Res	Type
1	F	476	LEU
1	F	554	SER
1	G	117	ILE
1	G	200	GLU
1	G	275	ASP
1	G	288	TYR
1	G	357	LEU
1	G	367	LYS
1	G	398	PHE
1	G	439	TYR
1	G	483	ASP
1	G	560	LEU
1	G	603	ASP
1	H	88	VAL
1	H	173	LYS
1	H	229	ASN
1	H	231	ASP
1	H	250	GLU
1	H	357	LEU
1	H	398	PHE
1	H	399	ASP
1	H	436	LYS
1	H	439	TYR
1	I	86	SER
1	I	163	GLU
1	I	169	LEU
1	I	173	LYS
1	I	185	VAL
1	I	200	GLU
1	I	204	LYS
1	I	208	LEU
1	I	220	SER
1	I	223	THR
1	I	239	LEU
1	I	276	THR
1	I	288	TYR
1	I	322	ASN
1	I	332	GLU
1	I	357	LEU
1	I	398	PHE
1	I	399	ASP
1	I	407	LEU

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Mol	Chain	Res	Type
1	I	439	TYR
1	I	478	VAL
1	I	483	ASP
1	I	568	ASN
1	I	601	LEU
1	J	184	SER
1	J	197	ASP
1	J	198	LEU
1	J	200	GLU
1	J	208	LEU
1	J	216	ASP
1	J	229	ASN
1	J	250	GLU
1	J	288	TYR
1	J	330	VAL
1	J	398	PHE
1	J	407	LEU
1	J	436	LYS
1	J	439	TYR
1	J	452	THR
1	K	102	GLU
1	K	134	ASN
1	K	208	LEU
1	K	230	VAL
1	K	239	LEU
1	K	288	TYR
1	K	310	LEU
1	K	364	ASP
1	K	398	PHE
1	K	399	ASP
1	K	413	VAL
1	K	436	LYS
1	K	439	TYR
1	K	478	VAL
1	K	483	ASP
1	K	518	LYS
1	L	111	LYS
1	L	113	GLN
1	L	134	ASN
1	L	145	SER
1	L	168	LYS
1	L	169	LEU

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Mol	Chain	Res	Type
1	L	194	SER
1	L	198	LEU
1	L	200	GLU
1	L	239	LEU
1	L	271	ILE
1	L	288	TYR
1	L	310	LEU
1	L	326	LYS
1	L	357	LEU
1	L	395	LEU
1	L	398	PHE
1	L	400	MET
1	L	407	LEU
1	L	421	VAL
1	L	436	LYS
1	L	439	TYR
1	L	476	LEU
1	L	498	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	183	ASN
1	A	506	ASN
1	B	139	ASN
1	B	319	GLN
1	B	322	ASN
1	C	183	ASN
1	C	272	ASN
1	D	139	ASN
1	D	273	ASN
1	E	161	ASN
1	E	273	ASN
1	F	104	ASN
1	F	113	GLN
1	F	134	ASN
1	F	183	ASN
1	F	322	ASN
1	H	139	ASN
1	H	319	GLN
1	H	322	ASN
1	I	113	GLN

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Mol	Chain	Res	Type
1	I	272	ASN
1	J	139	ASN
1	J	273	ASN
1	J	437	ASN
1	K	161	ASN
1	L	113	GLN
1	L	322	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 98 ligands modelled in this entry, 12 are monoatomic - leaving 86 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	SO4	A	1	-	4,4,4	0.29	0	6,6,6	0.69	0
3	CO3	A	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	A	19	-	8,8,15	0.58	0	7,7,14	0.71	0
4	SO4	A	2	-	4,4,4	0.59	0	6,6,6	0.79	0
5	1PE	A	20	-	11,11,15	0.92	0	10,10,14	0.89	0
5	1PE	A	24	-	8,8,15	0.62	0	7,7,14	0.90	0
5	1PE	A	57	-	5,5,15	0.68	0	4,4,14	0.52	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	CO3	B	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
4	SO4	B	12	-	4,4,4	0.27	0	6,6,6	0.37	0
6	2PE	B	13	-	23,23,27	0.61	0	22,22,26	0.36	0
6	2PE	B	14	-	25,25,27	0.52	0	24,24,26	0.61	0
4	SO4	B	3	-	4,4,4	0.99	0	6,6,6	0.36	0
5	1PE	B	40	-	10,10,15	0.67	0	9,9,14	0.94	1 (11%)
3	CO3	C	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
4	SO4	C	15	-	4,4,4	0.14	0	6,6,6	0.14	0
4	SO4	C	16	-	4,4,4	0.19	0	6,6,6	0.81	0
5	1PE	C	17	-	12,12,15	0.74	0	11,11,14	0.91	0
5	1PE	C	18	-	8,8,15	0.46	0	7,7,14	0.85	0
5	1PE	C	41	-	7,7,15	0.59	0	6,6,14	0.43	0
4	SO4	C	6	-	4,4,4	1.60	1 (25%)	6,6,6	0.49	0
4	SO4	D	10	-	4,4,4	0.31	0	6,6,6	0.26	0
3	CO3	D	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	D	23	-	10,10,15	0.69	0	9,9,14	0.50	0
5	1PE	D	34	-	9,9,15	0.55	0	8,8,14	1.00	0
5	1PE	D	44	-	10,10,15	0.74	0	9,9,14	0.76	0
4	SO4	D	5	-	4,4,4	0.47	0	6,6,6	0.84	0
5	1PE	D	612	-	8,8,15	0.77	0	7,7,14	0.63	0
5	1PE	D	62	-	4,4,15	0.54	0	3,3,14	0.67	0
4	SO4	D	7	-	4,4,4	0.47	0	6,6,6	0.38	0
5	1PE	D	9	-	9,9,15	0.58	0	8,8,14	0.52	0
3	CO3	E	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
4	SO4	E	11	-	4,4,4	0.22	0	6,6,6	0.26	0
5	1PE	E	28	-	10,10,15	0.91	0	9,9,14	0.73	0
5	1PE	E	35	-	9,9,15	0.57	0	8,8,14	0.55	0
5	1PE	E	43	-	7,7,15	0.54	0	6,6,14	0.48	0
5	1PE	E	46	-	8,8,15	0.62	0	7,7,14	0.61	0
5	1PE	E	7	-	11,11,15	0.73	0	10,10,14	0.68	0
5	1PE	E	8	-	11,11,15	0.63	0	10,10,14	0.80	0
3	CO3	F	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	F	31	-	9,9,15	0.51	0	8,8,14	0.53	0
5	1PE	F	32	-	9,9,15	0.61	0	8,8,14	0.46	0
5	1PE	F	33	-	9,9,15	0.61	0	8,8,14	0.65	0
5	1PE	F	53	-	11,11,15	0.77	0	10,10,14	0.44	0
6	2PE	F	63	-	5,5,27	0.73	0	4,4,26	0.45	0
3	CO3	G	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	G	12	-	8,8,15	0.65	0	7,7,14	0.50	0
5	1PE	G	16	-	9,9,15	0.56	0	8,8,14	0.70	0
4	SO4	G	23	-	4,4,4	0.43	0	6,6,6	0.44	0
5	1PE	G	30	-	6,6,15	0.33	0	5,5,14	0.49	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	1PE	G	47	-	5,5,15	0.60	0	4,4,14	0.79	0
5	1PE	G	48	-	5,5,15	0.55	0	4,4,14	0.59	0
5	1PE	G	58	-	14,14,15	0.64	0	13,13,14	0.90	0
3	CO3	H	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	H	51	-	5,5,15	0.74	0	4,4,14	0.51	0
5	1PE	H	54	-	10,10,15	0.65	0	9,9,14	0.75	0
6	2PE	H	6	-	24,24,27	0.52	0	23,23,26	0.76	0
3	CO3	I	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
4	SO4	I	17	-	4,4,4	0.91	0	6,6,6	0.22	0
5	1PE	I	21	-	14,14,15	0.59	0	13,13,14	0.57	0
5	1PE	I	22	-	10,10,15	0.77	0	9,9,14	0.82	0
5	1PE	I	27	-	8,8,15	0.52	0	7,7,14	0.32	0
5	1PE	I	61	-	4,4,15	0.27	0	3,3,14	0.62	0
3	CO3	J	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	J	15	-	11,11,15	0.70	0	10,10,14	0.70	0
5	1PE	J	2	-	10,10,15	0.56	0	9,9,14	1.21	1 (11%)
4	SO4	J	20	-	4,4,4	0.21	0	6,6,6	0.35	0
5	1PE	J	3	-	9,9,15	0.81	0	8,8,14	1.01	0
5	1PE	J	45	-	10,10,15	0.62	0	9,9,14	0.49	0
5	1PE	J	49	-	10,10,15	0.69	0	9,9,14	0.89	0
5	1PE	J	60	-	8,8,15	0.70	0	7,7,14	0.66	0
3	CO3	K	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
4	SO4	K	18	-	4,4,4	0.64	0	6,6,6	0.55	0
4	SO4	K	19	-	4,4,4	0.61	0	6,6,6	0.31	0
5	1PE	K	36	-	10,10,15	0.80	0	9,9,14	0.52	0
5	1PE	K	4	-	11,11,15	1.05	0	10,10,14	1.33	1 (10%)
5	1PE	K	42	-	10,10,15	0.59	0	9,9,14	0.50	0
5	1PE	K	5	-	11,11,15	0.56	0	10,10,14	0.69	0
5	1PE	K	50	-	5,5,15	0.56	0	4,4,14	0.38	0
5	1PE	K	52	-	10,10,15	0.49	0	9,9,14	0.66	0
5	1PE	K	55	-	7,7,15	0.50	0	6,6,14	0.41	0
5	1PE	L	1	-	9,9,15	0.45	0	8,8,14	0.77	0
3	CO3	L	1002	-	0,3,3	0.00	-	0,3,3	0.00	-
5	1PE	L	25	-	11,11,15	0.49	0	10,10,14	0.53	0
5	1PE	L	29	-	9,9,15	0.38	0	8,8,14	0.85	0
5	1PE	L	56	-	10,10,15	0.66	0	9,9,14	0.49	0
5	1PE	L	59	-	11,11,15	0.66	0	10,10,14	0.75	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	SO4	A	1	-	-	0/0/0/0	0/0/0/0
3	CO3	A	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	A	19	-	-	0/6/6/13	0/0/0/0
4	SO4	A	2	-	-	0/0/0/0	0/0/0/0
5	1PE	A	20	-	-	0/9/9/13	0/0/0/0
5	1PE	A	24	-	-	0/6/6/13	0/0/0/0
5	1PE	A	57	-	-	0/3/3/13	0/0/0/0
3	CO3	B	1002	-	-	0/0/0/0	0/0/0/0
4	SO4	B	12	-	-	0/0/0/0	0/0/0/0
6	2PE	B	13	-	-	0/21/21/25	0/0/0/0
6	2PE	B	14	-	-	0/23/23/25	0/0/0/0
4	SO4	B	3	-	-	0/0/0/0	0/0/0/0
5	1PE	B	40	-	-	0/8/8/13	0/0/0/0
3	CO3	C	1002	-	-	0/0/0/0	0/0/0/0
4	SO4	C	15	-	-	0/0/0/0	0/0/0/0
4	SO4	C	16	-	-	0/0/0/0	0/0/0/0
5	1PE	C	17	-	-	0/10/10/13	0/0/0/0
5	1PE	C	18	-	-	0/6/6/13	0/0/0/0
5	1PE	C	41	-	-	0/5/5/13	0/0/0/0
4	SO4	C	6	-	-	0/0/0/0	0/0/0/0
4	SO4	D	10	-	-	0/0/0/0	0/0/0/0
3	CO3	D	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	D	23	-	-	0/8/8/13	0/0/0/0
5	1PE	D	34	-	-	0/7/7/13	0/0/0/0
5	1PE	D	44	-	-	0/8/8/13	0/0/0/0
4	SO4	D	5	-	-	0/0/0/0	0/0/0/0
5	1PE	D	612	-	-	0/6/6/13	0/0/0/0
5	1PE	D	62	-	-	0/2/2/13	0/0/0/0
4	SO4	D	7	-	-	0/0/0/0	0/0/0/0
5	1PE	D	9	-	-	0/7/7/13	0/0/0/0
3	CO3	E	1002	-	-	0/0/0/0	0/0/0/0
4	SO4	E	11	-	-	0/0/0/0	0/0/0/0
5	1PE	E	28	-	-	0/8/8/13	0/0/0/0
5	1PE	E	35	-	-	0/7/7/13	0/0/0/0
5	1PE	E	43	-	-	0/5/5/13	0/0/0/0
5	1PE	E	46	-	-	0/6/6/13	0/0/0/0
5	1PE	E	7	-	-	0/9/9/13	0/0/0/0
5	1PE	E	8	-	-	0/9/9/13	0/0/0/0
3	CO3	F	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	F	31	-	-	0/7/7/13	0/0/0/0
5	1PE	F	32	-	-	0/7/7/13	0/0/0/0
5	1PE	F	33	-	-	0/7/7/13	0/0/0/0
5	1PE	F	53	-	-	0/9/9/13	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	2PE	F	63	-	-	0/3/3/25	0/0/0/0
3	CO3	G	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	G	12	-	-	0/6/6/13	0/0/0/0
5	1PE	G	16	-	-	0/7/7/13	0/0/0/0
4	SO4	G	23	-	-	0/0/0/0	0/0/0/0
5	1PE	G	30	-	-	0/4/4/13	0/0/0/0
5	1PE	G	47	-	-	0/3/3/13	0/0/0/0
5	1PE	G	48	-	-	0/3/3/13	0/0/0/0
5	1PE	G	58	-	-	0/12/12/13	0/0/0/0
3	CO3	H	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	H	51	-	-	0/3/3/13	0/0/0/0
5	1PE	H	54	-	-	0/8/8/13	0/0/0/0
6	2PE	H	6	-	-	0/22/22/25	0/0/0/0
3	CO3	I	1002	-	-	0/0/0/0	0/0/0/0
4	SO4	I	17	-	-	0/0/0/0	0/0/0/0
5	1PE	I	21	-	-	0/12/12/13	0/0/0/0
5	1PE	I	22	-	-	0/8/8/13	0/0/0/0
5	1PE	I	27	-	-	0/6/6/13	0/0/0/0
5	1PE	I	61	-	-	0/2/2/13	0/0/0/0
3	CO3	J	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	J	15	-	-	0/9/9/13	0/0/0/0
5	1PE	J	2	-	-	0/8/8/13	0/0/0/0
4	SO4	J	20	-	-	0/0/0/0	0/0/0/0
5	1PE	J	3	-	-	0/7/7/13	0/0/0/0
5	1PE	J	45	-	-	0/8/8/13	0/0/0/0
5	1PE	J	49	-	-	0/8/8/13	0/0/0/0
5	1PE	J	60	-	-	0/6/6/13	0/0/0/0
3	CO3	K	1002	-	-	0/0/0/0	0/0/0/0
4	SO4	K	18	-	-	0/0/0/0	0/0/0/0
4	SO4	K	19	-	-	0/0/0/0	0/0/0/0
5	1PE	K	36	-	-	0/8/8/13	0/0/0/0
5	1PE	K	4	-	-	0/9/9/13	0/0/0/0
5	1PE	K	42	-	-	0/8/8/13	0/0/0/0
5	1PE	K	5	-	-	0/9/9/13	0/0/0/0
5	1PE	K	50	-	-	0/3/3/13	0/0/0/0
5	1PE	K	52	-	-	0/8/8/13	0/0/0/0
5	1PE	K	55	-	-	0/5/5/13	0/0/0/0
5	1PE	L	1	-	-	0/7/7/13	0/0/0/0
3	CO3	L	1002	-	-	0/0/0/0	0/0/0/0
5	1PE	L	25	-	-	0/9/9/13	0/0/0/0
5	1PE	L	29	-	-	0/7/7/13	0/0/0/0
5	1PE	L	56	-	-	0/8/8/13	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	1PE	L	59	-	-	0/9/9/13	0/0/0/0

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	6	SO4	O1-S	2.49	1.55	1.47

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	J	2	1PE	OH5-C25-C15	-2.56	98.99	110.36
5	B	40	1PE	OH5-C14-C24	2.27	120.47	110.36
5	K	4	1PE	OH5-C14-C24	3.14	124.33	110.36

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

48 monomers are involved in 114 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1	SO4	1	0
5	A	20	1PE	1	0
5	A	24	1PE	3	0
5	A	57	1PE	2	0
6	B	13	2PE	10	0
6	B	14	2PE	4	0
4	B	3	SO4	1	0
5	B	40	1PE	6	0
5	C	18	1PE	1	0
5	C	41	1PE	1	0
5	D	23	1PE	1	0
5	D	34	1PE	1	0
5	D	44	1PE	1	0
5	D	612	1PE	1	0
5	D	62	1PE	2	0
5	D	9	1PE	1	0
5	E	28	1PE	4	0
5	E	43	1PE	1	0
5	E	46	1PE	1	0
5	F	31	1PE	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	F	32	1PE	2	0
5	F	33	1PE	1	0
5	F	53	1PE	1	0
5	G	16	1PE	2	0
5	G	48	1PE	1	0
5	G	58	1PE	1	0
5	H	51	1PE	2	0
5	H	54	1PE	1	0
6	H	6	2PE	1	0
5	I	21	1PE	6	0
5	I	27	1PE	8	0
5	I	61	1PE	7	0
5	J	15	1PE	1	0
5	J	2	1PE	4	0
5	J	3	1PE	6	0
5	J	45	1PE	4	0
5	J	49	1PE	5	0
5	J	60	1PE	2	0
4	K	18	SO4	1	0
4	K	19	SO4	1	0
5	K	4	1PE	2	0
5	K	52	1PE	2	0
5	K	55	1PE	1	0
5	L	1	1PE	1	0
5	L	25	1PE	6	0
5	L	29	1PE	2	0
5	L	56	1PE	1	0
5	L	59	1PE	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	514/528 (97%)	-0.35	3 (0%) 90 90	6, 13, 30, 50	1 (0%)
1	B	510/528 (96%)	-0.05	13 (2%) 61 61	5, 16, 49, 65	1 (0%)
1	C	518/528 (98%)	-0.30	3 (0%) 90 90	4, 13, 35, 54	0
1	D	514/528 (97%)	-0.29	4 (0%) 87 88	5, 12, 30, 50	0
1	E	509/528 (96%)	-0.39	1 (0%) 95 95	5, 11, 25, 42	0
1	F	510/528 (96%)	0.06	36 (7%) 19 20	4, 15, 39, 56	0
1	G	514/528 (97%)	-0.32	5 (0%) 84 84	6, 12, 30, 51	0
1	H	510/528 (96%)	-0.07	10 (1%) 68 69	5, 16, 49, 65	1 (0%)
1	I	515/528 (97%)	-0.19	4 (0%) 87 88	5, 13, 35, 50	0
1	J	514/528 (97%)	-0.32	4 (0%) 87 88	5, 12, 30, 53	0
1	K	509/528 (96%)	-0.39	3 (0%) 90 90	5, 11, 25, 42	0
1	L	508/528 (96%)	-0.14	11 (2%) 65 66	4, 12, 36, 47	0
All	All	6145/6336 (96%)	-0.23	97 (1%) 74 75	4, 13, 37, 65	3 (0%)

All (97) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	148	VAL	5.3
1	F	603	ASP	4.5
1	J	603	ASP	4.5
1	C	260	ASN	4.2
1	L	603	ASP	4.2
1	D	85	ALA	4.1
1	L	121	CYS	4.1
1	J	85	ALA	4.0
1	B	136	GLY	3.9
1	F	153	VAL	3.9
1	B	196	ALA	3.8

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Mol	Chain	Res	Type	RSRZ
1	F	139	ASN	3.8
1	F	121	CYS	3.8
1	G	195	VAL	3.7
1	G	136	GLY	3.7
1	L	119	GLY	3.7
1	F	141	PRO	3.6
1	D	603	ASP	3.5
1	F	120	GLY	3.4
1	F	134	ASN	3.3
1	F	138	GLU	3.3
1	F	146	SER	3.3
1	F	274	ALA	3.2
1	A	136	GLY	3.2
1	L	134	ASN	3.2
1	D	197	ASP	3.2
1	F	119	GLY	3.1
1	L	132	VAL	3.1
1	F	228	ILE	3.0
1	F	156	PHE	3.0
1	H	322	ASN	3.0
1	I	257	LYS	3.0
1	F	144	ILE	2.9
1	B	137	LYS	2.9
1	F	162	MET	2.9
1	F	195	VAL	2.8
1	F	363	GLY	2.8
1	F	303	ASN	2.8
1	F	271	ILE	2.8
1	K	364	ASP	2.7
1	F	269	VAL	2.7
1	B	178	PHE	2.7
1	I	256	ASP	2.7
1	I	117	ILE	2.6
1	F	364	ASP	2.6
1	L	120	GLY	2.6
1	B	183	ASN	2.6
1	B	363	GLY	2.5
1	L	216	ASP	2.5
1	F	135	PRO	2.5
1	H	181	ASN	2.5
1	H	183	ASN	2.5
1	B	123	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	F	129	ILE	2.5
1	F	186	ALA	2.5
1	A	603	ASP	2.4
1	F	157	LEU	2.4
1	F	170	GLY	2.4
1	H	178	PHE	2.4
1	F	276	THR	2.4
1	C	259	VAL	2.4
1	B	138	GLU	2.4
1	J	136	GLY	2.4
1	F	86	SER	2.4
1	F	194	SER	2.4
1	G	603	ASP	2.3
1	F	167	VAL	2.3
1	H	217	ASN	2.3
1	E	364	ASP	2.3
1	L	118	LYS	2.3
1	D	136	GLY	2.3
1	C	261	MET	2.3
1	I	255	THR	2.3
1	L	276	THR	2.3
1	K	363	GLY	2.3
1	H	137	LYS	2.3
1	H	196	ALA	2.3
1	L	273	ASN	2.3
1	B	195	VAL	2.2
1	G	85	ALA	2.2
1	A	195	VAL	2.2
1	L	160	GLU	2.2
1	G	197	ASP	2.2
1	H	125	GLU	2.2
1	H	165	PHE	2.2
1	B	119	GLY	2.2
1	B	182	LYS	2.1
1	B	156	PHE	2.1
1	F	177	MET	2.1
1	H	180	ASP	2.1
1	B	181	ASN	2.1
1	F	176	TYR	2.1
1	F	114	VAL	2.1
1	J	197	ASP	2.1
1	F	229	ASN	2.0

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Mol	Chain	Res	Type	RSRZ
1	F	181	ASN	2.0
1	K	137	LYS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
6	2PE	B	13	24/28	0.33	0.67	27.30	98,109,127,128	0
2	ZN	D	1001	1/1	0.97	0.15	18.23	71,71,71,71	0
2	ZN	H	1001	1/1	0.98	0.21	8.83	73,73,73,73	0
5	1PE	B	40	11/16	0.85	0.22	8.74	35,39,53,54	0
5	1PE	I	27	9/16	0.89	0.20	8.21	29,41,47,49	0
4	SO4	E	11	5/5	0.68	0.35	8.09	72,78,89,93	0
5	1PE	A	24	9/16	0.91	0.20	8.02	30,38,42,44	0
6	2PE	F	63	6/28	0.85	0.23	7.00	37,39,45,46	0
4	SO4	C	16	5/5	0.87	0.27	6.66	52,59,75,85	0
2	ZN	C	1001	1/1	0.98	0.16	6.40	59,59,59,59	0
5	1PE	C	41	8/16	0.87	0.21	5.69	33,41,44,46	0
5	1PE	D	23	11/16	0.89	0.22	5.57	29,42,58,65	0
4	SO4	G	23	5/5	0.94	0.24	5.41	49,50,60,67	0
3	CO3	B	1002	4/4	0.98	0.14	5.34	13,15,17,20	0
5	1PE	K	36	11/16	0.87	0.19	5.26	32,40,51,54	0
5	1PE	J	15	12/16	0.86	0.21	4.87	26,35,42,44	0
2	ZN	E	1001	1/1	0.99	0.14	4.84	67,67,67,67	0
5	1PE	E	28	11/16	0.91	0.15	4.02	26,40,43,43	0
5	1PE	H	51	6/16	0.94	0.17	3.62	32,39,43,50	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
5	1PE	J	2	11/16	0.93	0.16	3.58	12,33,44,49	0
5	1PE	D	44	11/16	0.85	0.22	3.56	26,33,44,54	0
4	SO4	D	10	5/5	0.94	0.16	3.48	60,66,69,70	0
5	1PE	K	55	8/16	0.91	0.14	3.46	19,44,50,53	0
5	1PE	L	59	12/16	0.89	0.17	3.39	31,41,46,47	0
5	1PE	K	5	12/16	0.96	0.15	3.38	18,25,40,41	0
5	1PE	J	45	11/16	0.88	0.21	3.37	24,33,44,53	0
2	ZN	L	1001	1/1	0.96	0.15	3.33	65,65,65,65	0
5	1PE	H	54	11/16	0.87	0.19	3.22	24,41,47,49	0
5	1PE	E	8	12/16	0.96	0.14	3.20	20,23,50,51	0
4	SO4	C	6	5/5	0.93	0.18	3.12	23,25,33,36	0
5	1PE	G	58	15/16	0.87	0.16	3.07	20,34,50,51	0
2	ZN	G	1001	1/1	0.99	0.13	2.89	74,74,74,74	0
5	1PE	G	12	9/16	0.92	0.14	2.76	10,16,31,32	0
5	1PE	E	46	9/16	0.89	0.17	2.70	18,37,43,46	0
4	SO4	B	12	5/5	0.89	0.27	2.66	67,72,76,81	0
5	1PE	L	29	10/16	0.91	0.13	2.65	37,42,50,55	0
3	CO3	G	1002	4/4	0.96	0.12	2.53	14,18,22,25	0
5	1PE	G	16	10/16	0.89	0.17	2.42	37,41,45,49	0
5	1PE	E	35	10/16	0.93	0.11	2.30	24,39,42,49	0
2	ZN	I	1001	1/1	0.97	0.11	2.28	64,64,64,64	0
5	1PE	D	62	5/16	0.94	0.14	2.27	31,31,34,49	0
4	SO4	A	2	5/5	0.94	0.15	2.20	35,37,52,57	0
5	1PE	G	30	7/16	0.94	0.20	2.13	34,41,45,49	0
2	ZN	K	1001	1/1	0.98	0.11	2.06	60,60,60,60	0
5	1PE	E	43	8/16	0.96	0.15	2.05	24,31,34,38	0
5	1PE	K	50	6/16	0.93	0.12	2.02	29,33,39,39	0
3	CO3	I	1002	4/4	0.98	0.12	2.01	11,12,13,18	0
4	SO4	C	15	5/5	0.88	0.21	1.99	90,90,94,94	0
5	1PE	I	22	11/16	0.93	0.20	1.98	20,26,37,39	0
2	ZN	J	1001	1/1	0.82	0.10	1.89	92,92,92,92	0
5	1PE	F	31	10/16	0.93	0.12	1.58	20,33,41,42	0
5	1PE	K	42	11/16	0.92	0.14	1.44	29,37,42,45	0
5	1PE	C	18	9/16	0.94	0.15	1.33	16,24,32,40	0
5	1PE	L	25	12/16	0.93	0.11	1.12	20,33,39,44	0
5	1PE	F	33	10/16	0.87	0.13	1.03	19,31,46,47	0
4	SO4	J	20	5/5	0.92	0.14	1.01	62,70,75,78	0
3	CO3	D	1002	4/4	0.98	0.09	0.97	13,14,17,20	0
5	1PE	F	53	12/16	0.86	0.15	0.86	42,46,56,59	0
5	1PE	D	9	10/16	0.93	0.12	0.81	21,29,40,42	0
3	CO3	E	1002	4/4	0.97	0.10	0.68	16,20,22,22	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
5	1PE	J	60	9/16	0.94	0.11	0.62	30,35,41,45	0
5	1PE	L	56	11/16	0.89	0.15	0.62	39,45,52,59	0
3	CO3	C	1002	4/4	0.98	0.10	0.58	14,14,19,20	0
5	1PE	K	52	11/16	0.89	0.12	0.54	38,46,54,56	0
3	CO3	F	1002	4/4	0.98	0.10	0.34	21,22,23,28	0
5	1PE	A	19	9/16	0.94	0.10	0.23	22,28,31,33	0
2	ZN	F	1001	1/1	0.96	0.10	0.06	82,82,82,82	0
5	1PE	L	1	10/16	0.97	0.10	0.06	17,24,39,46	0
5	1PE	J	49	11/16	0.93	0.13	-0.01	27,35,43,45	0
6	2PE	B	14	26/28	0.92	0.12	-0.05	23,40,47,51	0
3	CO3	H	1002	4/4	0.98	0.09	-0.05	13,13,16,17	0
5	1PE	G	47	6/16	0.95	0.14	-0.13	20,27,30,51	0
5	1PE	J	3	10/16	0.91	0.14	-0.19	29,34,41,43	0
6	2PE	H	6	25/28	0.95	0.12	-0.20	20,37,50,52	0
3	CO3	J	1002	4/4	0.96	0.09	-0.26	9,13,15,17	0
5	1PE	I	61	5/16	0.96	0.11	-0.45	15,24,28,33	0
2	ZN	A	1001	1/1	0.96	0.09	-0.47	77,77,77,77	0
5	1PE	D	34	10/16	0.92	0.10	-0.49	33,39,46,47	0
5	1PE	D	612	9/16	0.92	0.10	-0.58	23,30,38,42	0
2	ZN	B	1001	1/1	0.98	0.09	-0.75	60,60,60,60	0
3	CO3	A	1002	4/4	0.97	0.09	-0.88	14,16,17,24	0
3	CO3	L	1002	4/4	0.98	0.10	-0.90	6,8,15,16	0
5	1PE	G	48	6/16	0.94	0.09	-0.91	27,32,36,37	0
4	SO4	I	17	5/5	0.99	0.09	-1.02	10,11,14,16	0
4	SO4	D	7	5/5	0.99	0.08	-1.06	12,15,17,18	0
4	SO4	K	18	5/5	1.00	0.07	-1.46	8,12,14,15	0
4	SO4	B	3	5/5	0.99	0.07	-1.84	11,12,12,13	0
3	CO3	K	1002	4/4	0.98	0.08	-1.92	10,12,17,17	0
4	SO4	K	19	5/5	0.96	0.32	-	34,54,58,61	0
5	1PE	K	4	12/16	0.92	0.10	-	14,29,42,46	0
4	SO4	D	5	5/5	0.92	0.30	-	43,55,68,70	0
4	SO4	A	1	5/5	0.97	0.26	-	39,51,58,63	0
5	1PE	A	20	12/16	0.84	0.15	-	19,39,49,50	0
5	1PE	I	21	15/16	0.90	0.22	-	24,33,58,58	0
5	1PE	F	32	10/16	0.85	0.13	-	37,43,46,48	0
5	1PE	C	17	13/16	0.91	0.17	-	18,36,44,45	0
5	1PE	A	57	6/16	0.92	0.14	-	28,32,42,50	0
5	1PE	E	7	12/16	0.90	0.13	-	24,31,38,40	0

6.5 Other polymers ⓘ

There are no such residues in this entry.