



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 15, 2017 – 02:22 am GMT

PDB ID : 5K0B  
Title : Crystal Structure of COMT in complex with 2,4-dimethyl-5-[3-(1-phenylethyl)-1H-pyrazol-5-yl]-1,3-thiazole  
Authors : Ehler, A.; RODRIGUEZ-SARMIENTO, R.M.; Rudolph, M.G.  
Deposited on : 2016-05-17  
Resolution : 2.36 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](mailto: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.

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

MolProbity : 4.02b-467  
Mogul : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : trunk28620  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
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) : recalc28949

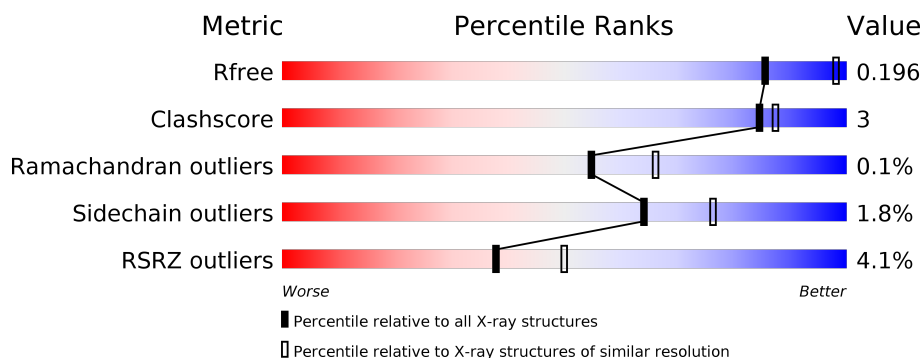
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.36 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))
$R_{free}$	100719	1522 (2.38-2.34)
Clashscore	112137	1626 (2.38-2.34)
Ramachandran outliers	110173	1605 (2.38-2.34)
Sidechain outliers	110143	1606 (2.38-2.34)
RSRZ outliers	101464	1528 (2.38-2.34)

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  $\geq 3$ , 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	218	<div> <div>91%</div> <div>6%</div> </div>
1	B	218	<div>3%</div> <div>92%</div> <div>6%</div>

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Mol	Chain	Length	Quality of chain
1	G	218	
1	H	218	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	PO4	B	304	-	-	-	X
3	PO4	H	305	-	-	-	X
5	CL	E	304	-	-	-	X
6	CXS	E	303	-	-	-	X

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 14551 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 Catechol O-methyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	214	Total	C	N	O	S	0	0	0
			1679	1066	278	323	12			
1	B	215	Total	C	N	O	S	0	0	0
			1683	1068	279	324	12			
1	C	216	Total	C	N	O	S	0	0	0
			1692	1074	280	326	12			
1	D	217	Total	C	N	O	S	0	0	0
			1698	1077	281	328	12			
1	E	216	Total	C	N	O	S	0	0	0
			1692	1074	280	326	12			
1	F	214	Total	C	N	O	S	0	0	0
			1679	1066	278	323	12			
1	G	214	Total	C	N	O	S	0	0	0
			1679	1066	278	323	12			
1	H	216	Total	C	N	O	S	0	0	0
			1692	1074	280	326	12			

There are 32 discrepancies between the modelled and reference sequences:

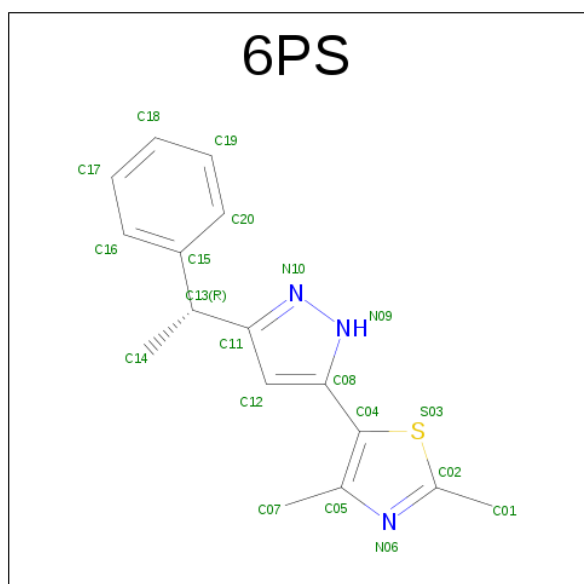
Chain	Residue	Modelled	Actual	Comment	Reference
A	91	ILE	MET	engineered mutation	UNP P22734
A	95	CYS	TYR	engineered mutation	UNP P22734
A	156	GLU	LYS	engineered mutation	UNP P22734
A	219	SER	-	expression tag	UNP P22734
B	91	ILE	MET	engineered mutation	UNP P22734
B	95	CYS	TYR	engineered mutation	UNP P22734
B	156	GLU	LYS	engineered mutation	UNP P22734
B	219	SER	-	expression tag	UNP P22734
C	91	ILE	MET	engineered mutation	UNP P22734
C	95	CYS	TYR	engineered mutation	UNP P22734
C	156	GLU	LYS	engineered mutation	UNP P22734
C	219	SER	-	expression tag	UNP P22734
D	91	ILE	MET	engineered mutation	UNP P22734

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Chain	Residue	Modelled	Actual	Comment	Reference
D	95	CYS	TYR	engineered mutation	UNP P22734
D	156	GLU	LYS	engineered mutation	UNP P22734
D	219	SER	-	expression tag	UNP P22734
E	91	ILE	MET	engineered mutation	UNP P22734
E	95	CYS	TYR	engineered mutation	UNP P22734
E	156	GLU	LYS	engineered mutation	UNP P22734
E	219	SER	-	expression tag	UNP P22734
F	91	ILE	MET	engineered mutation	UNP P22734
F	95	CYS	TYR	engineered mutation	UNP P22734
F	156	GLU	LYS	engineered mutation	UNP P22734
F	219	SER	-	expression tag	UNP P22734
G	91	ILE	MET	engineered mutation	UNP P22734
G	95	CYS	TYR	engineered mutation	UNP P22734
G	156	GLU	LYS	engineered mutation	UNP P22734
G	219	SER	-	expression tag	UNP P22734
H	91	ILE	MET	engineered mutation	UNP P22734
H	95	CYS	TYR	engineered mutation	UNP P22734
H	156	GLU	LYS	engineered mutation	UNP P22734
H	219	SER	-	expression tag	UNP P22734

- Molecule 2 is 2,4-dimethyl-5-{3-[(1R)-1-phenylethyl]-1H-pyrazol-5-yl}-1,3-thiazole (three-letter code: 6PS) (formula: C<sub>16</sub>H<sub>17</sub>N<sub>3</sub>S).



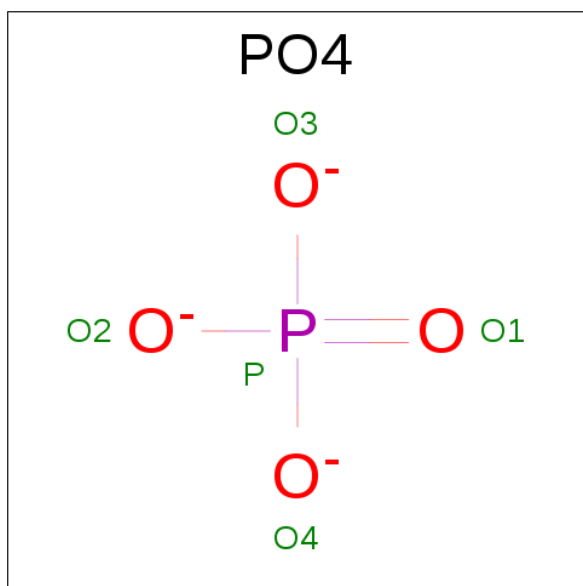
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	S	0	0
			20	16	3	1		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	S	0	0
			20	16	3	1		
2	C	1	Total	C	N	S	0	0
			20	16	3	1		
2	D	1	Total	C	N	S	0	0
			20	16	3	1		
2	E	1	Total	C	N	S	0	0
			20	16	3	1		
2	F	1	Total	C	N	S	0	0
			20	16	3	1		
2	G	1	Total	C	N	S	0	0
			20	16	3	1		
2	H	1	Total	C	N	S	0	0
			20	16	3	1		

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	P	0	0
			5	4	1		
3	A	1	Total	O	P	0	0
			5	4	1		
3	A	1	Total	O	P	0	0
			5	4	1		
3	B	1	Total	O	P	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total	O	P	0	0
			5	4	1		
3	B	1	Total	O	P	0	0
			5	4	1		
3	B	1	Total	O	P	0	0
			5	4	1		
3	C	1	Total	O	P	0	0
			5	4	1		
3	C	1	Total	O	P	0	0
			5	4	1		
3	D	1	Total	O	P	0	0
			5	4	1		
3	E	1	Total	O	P	0	0
			5	4	1		
3	F	1	Total	O	P	0	0
			5	4	1		
3	G	1	Total	O	P	0	0
			5	4	1		
3	G	1	Total	O	P	0	0
			5	4	1		
3	G	1	Total	O	P	0	0
			5	4	1		
3	H	1	Total	O	P	0	0
			5	4	1		
3	H	1	Total	O	P	0	0
			5	4	1		

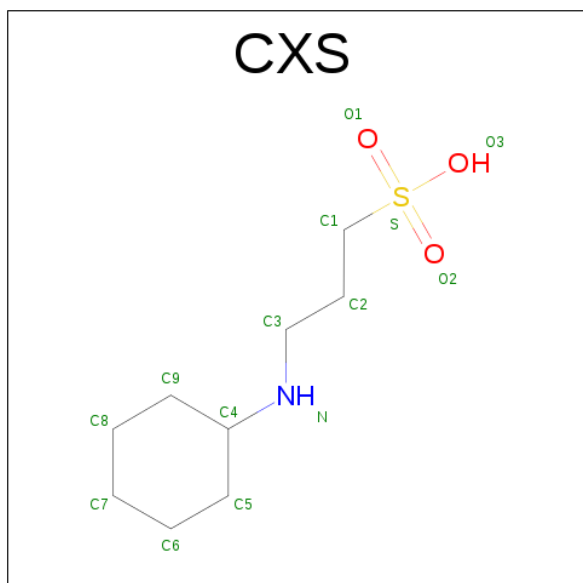
- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	D	1	Total	K	0	0
			1	1		
4	E	1	Total	K	0	0
			1	1		
4	H	1	Total	K	0	0
			1	1		
4	B	2	Total	K	0	0
			2	2		
4	C	1	Total	K	0	0
			1	1		
4	A	2	Total	K	0	0
			2	2		

- Molecule 5 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	H	1	Total	Cl	0	0
			1	1		
5	B	1	Total	Cl	0	0
			1	1		
5	C	1	Total	Cl	0	0
			1	1		
5	E	2	Total	Cl	0	0
			2	2		

- Molecule 6 is 3-CYCLOHEXYL-1-PROPYLSULFONIC ACID (three-letter code: CXS) (formula: C<sub>9</sub>H<sub>19</sub>NO<sub>3</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	C	1	Total	C	N	O	S	0	0
			14	9	1	3	1		
6	C	1	Total	C	N	O	S	0	0
			14	9	1	3	1		
6	D	1	Total	C	N	O	S	0	0
			14	9	1	3	1		
6	E	1	Total	C	N	O	S	0	0
			14	9	1	3	1		
6	E	1	Total	C	N	O	S	0	0
			14	9	1	3	1		
6	F	1	Total	C	N	O	S	0	0
			14	9	1	3	1		

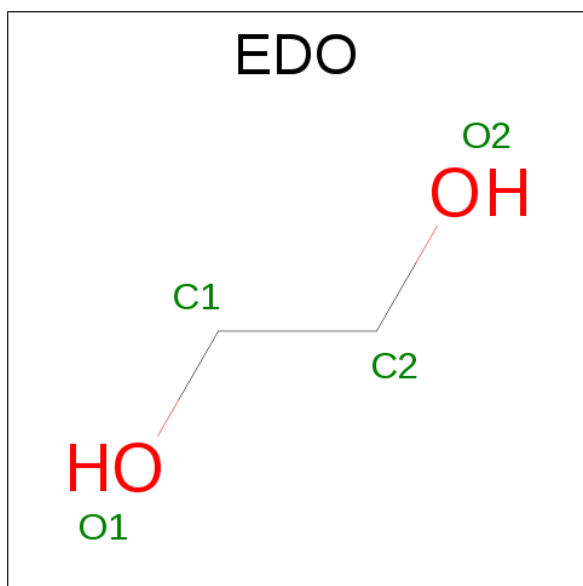
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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	H	1	Total	C	N	O	S	0	0
			14	9	1	3	1		

- Molecule 7 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula:  $C_2H_6O_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	C	1	Total	C	O	0	0
			4	2	2		
7	D	1	Total	C	O	0	0
			4	2	2		
7	D	1	Total	C	O	0	0
			4	2	2		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	101	Total	O	0	0
			101	101		
8	B	133	Total	O	0	0
			133	133		
8	C	102	Total	O	0	0
			102	102		
8	D	55	Total	O	0	0
			55	55		
8	E	39	Total	O	0	0
			39	39		

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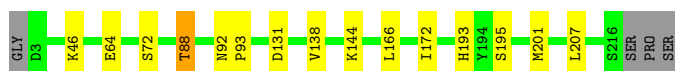
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	F	116	Total 116	O 116	0	0
8	G	82	Total 82	O 82	0	0
8	H	61	Total 61	O 61	0	0

### 3 Residue-property plots [i](#)

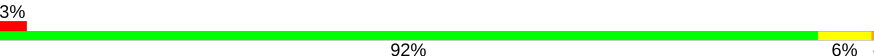
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

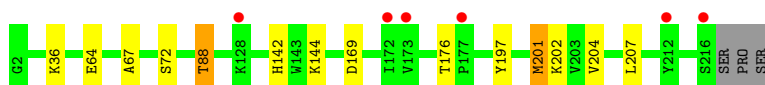
- Molecule 1: Catechol O-methyltransferase

Chain A: 



- Molecule 1: Catechol O-methyltransferase

Chain B: 



- Molecule 1: Catechol O-methyltransferase

Chain C: 




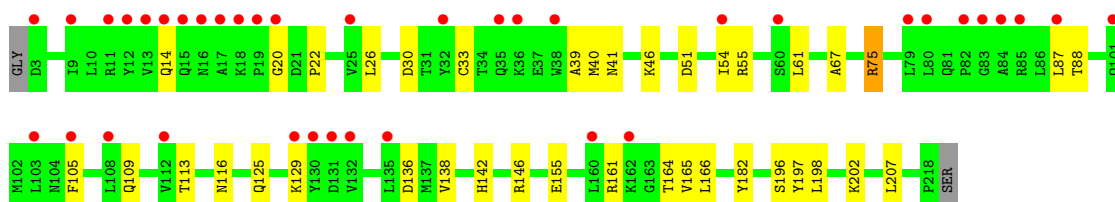
- Molecule 1: Catechol O-methyltransferase

Chain D: 

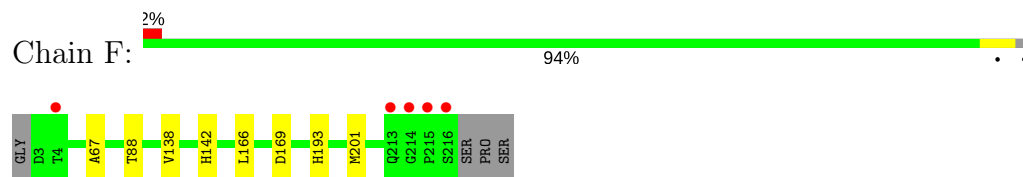


- Molecule 1: Catechol O-methyltransferase

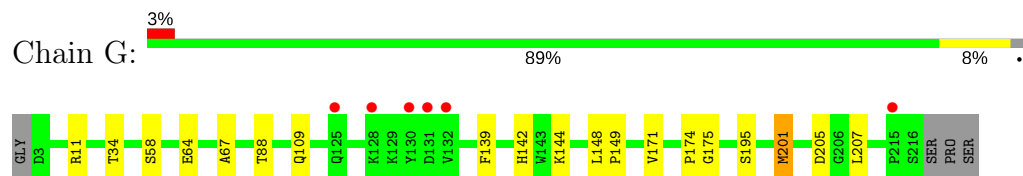
Chain E: 



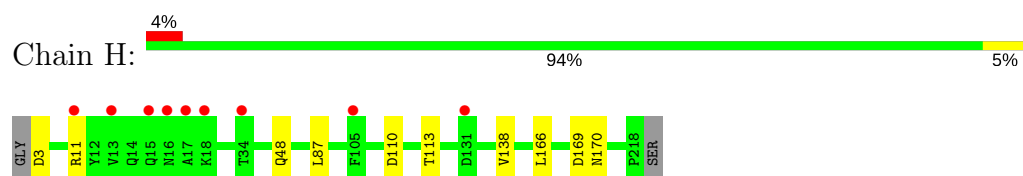
## ● Molecule 1: Catechol O-methyltransferase



## ● Molecule 1: Catechol O-methyltransferase



## ● Molecule 1: Catechol O-methyltransferase



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 61	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	222.09Å 222.09Å 123.08Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	48.09 – 2.36 48.08 – 2.36	Depositor EDS
% Data completeness (in resolution range)	99.8 (48.09-2.36) 91.2 (48.08-2.36)	Depositor EDS
$R_{merge}$	0.19	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.29 (at 2.37Å)	Xtriage
Refinement program	PHENIX	Depositor
R, $R_{free}$	0.155 , 0.195 0.154 , 0.196	Depositor DCC
$R_{free}$ test set	7082 reflections (5.01%)	DCC
Wilson B-factor (Å <sup>2</sup> )	40.0	Xtriage
Anisotropy	0.401	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 48.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.024 for h,-h-k,-l	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	14551	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.92% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CXS, 6PS, CL, PO4, EDO, K

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	0.39	0/1710	0.55	0/2319
1	B	0.42	0/1714	0.56	0/2324
1	C	0.38	0/1724	0.51	0/2339
1	D	0.35	0/1730	0.49	0/2347
1	E	0.32	0/1724	0.49	0/2339
1	F	0.42	0/1710	0.57	0/2319
1	G	0.38	0/1710	0.53	0/2319
1	H	0.35	0/1724	0.51	0/2339
All	All	0.38	0/13746	0.53	0/18645

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1679	0	1677	9	0
1	B	1683	0	1680	10	0
1	C	1692	0	1690	11	0
1	D	1698	0	1695	9	0
1	E	1692	0	1690	22	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	1679	0	1677	5	0
1	G	1679	0	1677	10	0
1	H	1692	0	1690	7	0
2	A	20	0	0	0	0
2	B	20	0	0	0	0
2	C	20	0	0	0	0
2	D	20	0	0	0	0
2	E	20	0	0	0	0
2	F	20	0	0	0	0
2	G	20	0	0	0	0
2	H	20	0	0	0	0
3	A	15	0	0	2	0
3	B	20	0	0	0	0
3	C	10	0	0	0	0
3	D	5	0	0	1	0
3	E	5	0	0	0	0
3	F	5	0	0	0	0
3	G	15	0	0	0	0
3	H	10	0	0	0	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	H	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	E	2	0	0	0	0
5	H	1	0	0	0	0
6	C	28	0	38	3	0
6	D	14	0	19	0	0
6	E	28	0	38	2	0
6	F	14	0	19	0	0
6	H	14	0	19	0	0
7	C	4	0	6	0	0
7	D	8	0	12	0	0
8	A	101	0	0	1	0
8	B	133	0	0	0	0
8	C	102	0	0	1	0
8	D	55	0	0	1	0
8	E	39	0	0	0	0
8	F	116	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	G	82	0	0	0	0
8	H	61	0	0	0	0
All	All	14551	0	13627	73	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 3.

All (73) 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:E:39:ALA:O	1:E:41:ASN:N	2.30	0.64
1:B:169:ASP:HA	1:E:207:LEU:HD23	1.80	0.63
1:D:174:PRO:HD3	1:D:201:MET:HE3	1.80	0.62
1:A:144:LYS:N	3:A:304:PO4:O2	2.24	0.62
1:F:67:ALA:HB2	1:F:88:THR:HG21	1.83	0.61
1:E:30:ASP:OD1	1:E:41:ASN:ND2	2.36	0.58
1:D:174:PRO:HD3	1:D:201:MET:CE	2.34	0.57
1:A:207:LEU:HD23	1:C:169:ASP:HA	1.87	0.56
1:D:178:ASP:HB2	3:D:305:PO4:O2	2.05	0.56
1:C:55:ARG:NH2	8:C:402:HOH:O	2.38	0.56
1:D:207:LEU:HD23	1:F:169:ASP:HA	1.88	0.56
1:E:67:ALA:HB2	1:E:88:THR:HG21	1.88	0.55
1:G:144:LYS:HG3	1:G:174:PRO:HG2	1.88	0.54
1:G:67:ALA:HB2	1:G:88:THR:HG21	1.91	0.53
1:F:67:ALA:HB2	1:F:88:THR:CG2	2.38	0.53
1:H:87:LEU:HD23	1:H:113:THR:HB	1.91	0.52
1:C:178:ASP:HB2	6:C:303:CXS:O3	2.10	0.52
1:B:207:LEU:HD11	1:E:46:LYS:HG2	1.91	0.52
1:C:174:PRO:HD3	1:C:201:MET:HE3	1.92	0.52
1:E:67:ALA:HB2	1:E:88:THR:CG2	2.40	0.51
6:C:303:CXS:H82	1:D:146:ARG:CZ	2.41	0.51
3:A:303:PO4:O4	8:A:401:HOH:O	2.19	0.50
1:B:197:TYR:CD1	1:E:202:LYS:HD3	2.46	0.50
1:A:64:GLU:HB3	1:A:88:THR:HG23	1.93	0.50
1:E:155:GLU:OE2	1:E:182:TYR:OH	2.26	0.50
1:E:61:LEU:N	1:E:136:ASP:OD2	2.45	0.49
1:B:202:LYS:HB2	1:E:197:TYR:OH	2.13	0.48
1:E:39:ALA:HA	6:E:302:CXS:O1	2.14	0.48
1:A:138:VAL:HB	1:A:166:LEU:HD22	1.95	0.47
1:E:138:VAL:HB	1:E:166:LEU:HD22	1.95	0.47
1:A:193:HIS:HB3	1:F:193:HIS:HB3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:110:ASP:OD1	1:H:110:ASP:N	2.44	0.47
1:E:26:LEU:HD11	1:E:75:ARG:HA	1.96	0.47
1:C:174:PRO:HD3	1:C:201:MET:CE	2.45	0.46
1:B:64:GLU:HB3	1:B:88:THR:HG23	1.98	0.46
1:B:64:GLU:OE2	1:B:72:SER:HB2	2.16	0.46
1:G:207:LEU:HD23	1:H:169:ASP:HA	1.99	0.45
1:G:34:THR:HG22	1:G:201:MET:HE1	1.97	0.45
1:E:14:GLN:HA	1:E:105:PHE:CE2	2.52	0.45
1:G:64:GLU:HG3	1:G:139:PHE:HD2	1.81	0.45
1:E:125:GLN:HE21	1:E:129:LYS:HD2	1.82	0.45
1:A:46:LYS:NZ	1:C:205:ASP:OD2	2.41	0.45
1:E:109:GLN:H	1:E:109:GLN:CD	2.20	0.44
1:H:3:ASP:CG	1:H:11:ARG:HH12	2.20	0.44
1:G:148:LEU:HB3	1:G:149:PRO:HD3	1.99	0.44
1:A:172:ILE:HB	1:C:205:ASP:HA	2.00	0.44
1:B:204:VAL:HG11	6:E:303:CXS:H52	2.00	0.44
1:E:20:GLY:O	1:E:22:PRO:HD3	2.18	0.44
1:E:33:CYS:SG	1:E:39:ALA:HB3	2.58	0.44
1:H:3:ASP:OD1	1:H:11:ARG:NH1	2.42	0.44
1:C:178:ASP:HB2	6:C:303:CXS:S	2.58	0.43
1:B:201:MET:O	1:B:202:LYS:HG2	2.19	0.43
1:G:67:ALA:HB2	1:G:88:THR:CG2	2.48	0.43
1:E:161:ARG:HG2	1:E:164:THR:OG1	2.18	0.43
1:G:171:VAL:O	1:G:175:GLY:HA2	2.19	0.43
1:D:94:ASP:N	1:D:94:ASP:OD1	2.52	0.43
1:F:138:VAL:HB	1:F:166:LEU:HD22	2.01	0.42
1:H:138:VAL:HB	1:H:166:LEU:HD22	2.00	0.42
1:D:148:LEU:HB3	1:D:149:PRO:HD3	2.01	0.42
1:B:67:ALA:HB2	1:B:88:THR:HG21	2.01	0.42
1:A:64:GLU:OE2	1:A:72:SER:HB2	2.20	0.42
1:E:51:ASP:HB3	1:E:55:ARG:NH2	2.35	0.42
1:E:87:LEU:HD23	1:E:113:THR:HB	2.02	0.42
1:C:201:MET:HB3	1:C:201:MET:HE2	1.80	0.41
1:B:144:LYS:HB3	1:B:176:THR:HG22	2.01	0.41
1:G:34:THR:HA	1:G:201:MET:HE3	2.03	0.41
1:G:205:ASP:OD2	1:H:170:ASN:HA	2.21	0.41
1:D:111:LYS:NZ	8:D:404:HOH:O	2.51	0.41
1:D:201:MET:HE2	1:D:201:MET:HB3	1.64	0.40
1:A:92:ASN:HA	1:A:93:PRO:HD3	1.96	0.40
1:E:198:LEU:HA	1:E:198:LEU:HD12	1.83	0.40
1:C:126:LEU:HD23	1:C:126:LEU:HA	1.82	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:67:ALA:HB2	1:C:88:THR:CG2	2.52	0.40

There are no symmetry-related clashes.

## 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	212/218 (97%)	203 (96%)	9 (4%)	0	100	100
1	B	213/218 (98%)	202 (95%)	11 (5%)	0	100	100
1	C	214/218 (98%)	208 (97%)	6 (3%)	0	100	100
1	D	215/218 (99%)	208 (97%)	7 (3%)	0	100	100
1	E	214/218 (98%)	206 (96%)	7 (3%)	1 (0%)	32	37
1	F	212/218 (97%)	204 (96%)	8 (4%)	0	100	100
1	G	212/218 (97%)	201 (95%)	11 (5%)	0	100	100
1	H	214/218 (98%)	205 (96%)	9 (4%)	0	100	100
All	All	1706/1744 (98%)	1637 (96%)	68 (4%)	1 (0%)	55	66

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	40	MET

### 5.3.2 Protein sidechains [i](#)

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	184/187 (98%)	180 (98%)	4 (2%)	57	70
1	B	184/187 (98%)	180 (98%)	4 (2%)	57	70
1	C	186/187 (100%)	186 (100%)	0	100	100
1	D	187/187 (100%)	185 (99%)	2 (1%)	78	87
1	E	186/187 (100%)	179 (96%)	7 (4%)	38	48
1	F	184/187 (98%)	182 (99%)	2 (1%)	78	87
1	G	184/187 (98%)	178 (97%)	6 (3%)	43	54
1	H	186/187 (100%)	185 (100%)	1 (0%)	91	95
All	All	1481/1496 (99%)	1455 (98%)	26 (2%)	64	76

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	88	THR
1	A	131	ASP
1	A	195	SER
1	A	201	MET
1	B	36	LYS
1	B	88	THR
1	B	142	HIS
1	B	201	MET
1	D	101	GLN
1	D	128	LYS
1	E	54	ILE
1	E	75	ARG
1	E	116	ASN
1	E	142	HIS
1	E	146	ARG
1	E	165	VAL
1	E	196	SER
1	F	142	HIS
1	F	201	MET
1	G	11	ARG
1	G	58	SER
1	G	109	GLN
1	G	142	HIS
1	G	195	SER
1	G	201	MET

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Mol	Chain	Res	Type
1	H	48	GLN

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

Mol	Chain	Res	Type
1	E	125	GLN

### 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 carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 48 ligands modelled in this entry, 13 are monoatomic - leaving 35 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
2	6PS	A	301	-	17,22,22	1.28	1 (5%)	16,31,31	1.90	4 (25%)
3	PO4	A	302	-	4,4,4	0.65	0	6,6,6	0.40	0
3	PO4	A	303	-	4,4,4	0.84	0	6,6,6	0.47	0
3	PO4	A	304	-	4,4,4	0.92	0	6,6,6	0.29	0
2	6PS	B	301	-	17,22,22	1.38	2 (11%)	16,31,31	1.82	5 (31%)
3	PO4	B	302	-	4,4,4	0.85	0	6,6,6	0.44	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PO4	B	303	-	4,4,4	0.90	0	6,6,6	0.49	0
3	PO4	B	304	-	4,4,4	0.83	0	6,6,6	0.36	0
3	PO4	B	305	-	4,4,4	0.74	0	6,6,6	0.44	0
2	6PS	C	301	-	17,22,22	1.36	1 (5%)	16,31,31	1.73	3 (18%)
6	CXS	C	302	-	14,14,14	1.10	2 (14%)	16,18,18	2.21	4 (25%)
6	CXS	C	303	-	14,14,14	1.11	2 (14%)	16,18,18	2.44	4 (25%)
7	EDO	C	304	-	3,3,3	0.54	0	2,2,2	0.11	0
3	PO4	C	305	-	4,4,4	0.82	0	6,6,6	0.42	0
3	PO4	C	306	4	4,4,4	0.81	0	6,6,6	0.35	0
2	6PS	D	301	-	17,22,22	1.46	1 (5%)	16,31,31	1.54	3 (18%)
6	CXS	D	302	-	14,14,14	1.10	1 (7%)	16,18,18	2.07	4 (25%)
7	EDO	D	303	-	3,3,3	0.47	0	2,2,2	0.47	0
7	EDO	D	304	-	3,3,3	0.49	0	2,2,2	0.13	0
3	PO4	D	305	-	4,4,4	0.67	0	6,6,6	0.48	0
2	6PS	E	301	-	17,22,22	1.18	1 (5%)	16,31,31	1.87	4 (25%)
6	CXS	E	302	-	14,14,14	1.03	1 (7%)	16,18,18	2.29	3 (18%)
6	CXS	E	303	-	14,14,14	1.05	2 (14%)	16,18,18	2.39	4 (25%)
3	PO4	E	306	-	4,4,4	0.77	0	6,6,6	0.32	0
2	6PS	F	301	-	17,22,22	1.38	1 (5%)	16,31,31	1.78	3 (18%)
6	CXS	F	302	-	14,14,14	1.08	2 (14%)	16,18,18	2.44	4 (25%)
3	PO4	F	303	-	4,4,4	0.71	0	6,6,6	0.46	0
2	6PS	G	301	-	17,22,22	1.31	1 (5%)	16,31,31	1.61	4 (25%)
3	PO4	G	302	-	4,4,4	0.81	0	6,6,6	0.48	0
3	PO4	G	303	-	4,4,4	0.75	0	6,6,6	0.39	0
3	PO4	G	304	-	4,4,4	0.66	0	6,6,6	0.60	0
2	6PS	H	301	-	17,22,22	1.33	1 (5%)	16,31,31	1.83	4 (25%)
6	CXS	H	302	-	14,14,14	1.04	2 (14%)	16,18,18	2.29	4 (25%)
3	PO4	H	304	-	4,4,4	0.67	0	6,6,6	0.40	0
3	PO4	H	305	-	4,4,4	0.74	0	6,6,6	0.45	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
2	6PS	A	301	-	-	0/8/12/12	0/3/3/3
3	PO4	A	302	-	-	0/0/0/0	0/0/0/0
3	PO4	A	303	-	-	0/0/0/0	0/0/0/0
3	PO4	A	304	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	6PS	B	301	-	-	0/8/12/12	0/3/3/3
3	PO4	B	302	-	-	0/0/0/0	0/0/0/0
3	PO4	B	303	-	-	0/0/0/0	0/0/0/0
3	PO4	B	304	-	-	0/0/0/0	0/0/0/0
3	PO4	B	305	-	-	0/0/0/0	0/0/0/0
2	6PS	C	301	-	-	0/8/12/12	0/3/3/3
6	CXS	C	302	-	-	0/8/16/16	0/1/1/1
6	CXS	C	303	-	-	0/8/16/16	0/1/1/1
7	EDO	C	304	-	-	0/1/1/1	0/0/0/0
3	PO4	C	305	-	-	0/0/0/0	0/0/0/0
3	PO4	C	306	4	-	0/0/0/0	0/0/0/0
2	6PS	D	301	-	-	0/8/12/12	0/3/3/3
6	CXS	D	302	-	-	0/8/16/16	0/1/1/1
7	EDO	D	303	-	-	0/1/1/1	0/0/0/0
7	EDO	D	304	-	-	0/1/1/1	0/0/0/0
3	PO4	D	305	-	-	0/0/0/0	0/0/0/0
2	6PS	E	301	-	-	0/8/12/12	0/3/3/3
6	CXS	E	302	-	-	0/8/16/16	0/1/1/1
6	CXS	E	303	-	-	0/8/16/16	0/1/1/1
3	PO4	E	306	-	-	0/0/0/0	0/0/0/0
2	6PS	F	301	-	-	0/8/12/12	0/3/3/3
6	CXS	F	302	-	-	0/8/16/16	0/1/1/1
3	PO4	F	303	-	-	0/0/0/0	0/0/0/0
2	6PS	G	301	-	-	0/8/12/12	0/3/3/3
3	PO4	G	302	-	-	0/0/0/0	0/0/0/0
3	PO4	G	303	-	-	0/0/0/0	0/0/0/0
3	PO4	G	304	-	-	0/0/0/0	0/0/0/0
2	6PS	H	301	-	-	0/8/12/12	0/3/3/3
6	CXS	H	302	-	-	0/8/16/16	0/1/1/1
3	PO4	H	304	-	-	0/0/0/0	0/0/0/0
3	PO4	H	305	-	-	0/0/0/0	0/0/0/0

All (21) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	301	6PS	N09-N10	-4.46	1.29	1.37
2	F	301	6PS	N09-N10	-4.07	1.30	1.37
2	C	301	6PS	N09-N10	-3.96	1.30	1.37
2	A	301	6PS	N09-N10	-3.92	1.30	1.37
2	G	301	6PS	N09-N10	-3.89	1.30	1.37
2	H	301	6PS	N09-N10	-3.88	1.30	1.37
2	B	301	6PS	N09-N10	-3.68	1.30	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	301	6PS	N09-N10	-3.41	1.31	1.37
6	E	303	CXS	O1-S	2.01	1.51	1.45
6	F	302	CXS	O1-S	2.05	1.51	1.45
6	C	302	CXS	O1-S	2.12	1.51	1.45
2	B	301	6PS	C01-C02	2.14	1.52	1.49
6	H	302	CXS	O2-S	2.16	1.51	1.45
6	H	302	CXS	O1-S	2.21	1.51	1.45
6	C	303	CXS	O1-S	2.33	1.51	1.45
6	E	302	CXS	O2-S	2.37	1.52	1.45
6	E	303	CXS	O2-S	2.38	1.52	1.45
6	C	302	CXS	O2-S	2.43	1.52	1.45
6	F	302	CXS	O2-S	2.45	1.52	1.45
6	C	303	CXS	O2-S	2.48	1.52	1.45
6	D	302	CXS	O2-S	2.72	1.53	1.45

All (57) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	F	302	CXS	O3-S-O1	-5.52	98.71	111.37
6	H	302	CXS	O3-S-O1	-4.52	101.00	111.37
6	C	303	CXS	O2-S-O1	-3.69	101.06	113.86
6	E	302	CXS	O2-S-O1	-3.64	101.23	113.86
2	F	301	6PS	C12-C11-N10	-3.54	105.46	110.26
2	E	301	6PS	C12-C08-C04	-3.53	124.14	129.30
6	E	303	CXS	O2-S-O1	-3.50	101.72	113.86
6	C	302	CXS	O3-S-O1	-3.01	104.47	111.37
2	H	301	6PS	C12-C11-N10	-3.00	106.20	110.26
2	C	301	6PS	C12-C11-N10	-2.98	106.23	110.26
6	D	302	CXS	O3-S-O2	-2.95	104.60	111.37
2	D	301	6PS	C12-C11-N10	-2.89	106.34	110.26
2	B	301	6PS	C12-C11-N10	-2.79	106.47	110.26
2	G	301	6PS	C12-C11-N10	-2.79	106.48	110.26
2	E	301	6PS	C12-C11-N10	-2.75	106.53	110.26
2	A	301	6PS	C12-C11-N10	-2.75	106.53	110.26
2	B	301	6PS	C12-C08-C04	-2.47	125.69	129.30
2	A	301	6PS	C12-C08-C04	-2.33	125.89	129.30
2	G	301	6PS	C12-C08-C04	-2.31	125.92	129.30
2	H	301	6PS	C12-C08-C04	-2.21	126.07	129.30
2	B	301	6PS	C20-C15-C16	2.15	121.00	118.30
2	D	301	6PS	C13-C11-N10	2.47	124.33	120.27
6	H	302	CXS	O1-S-C1	2.66	109.07	106.79
2	F	301	6PS	C13-C11-N10	2.66	124.65	120.27

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	301	6PS	C13-C11-N10	2.84	124.93	120.27
6	D	302	CXS	O1-S-C1	2.86	109.25	106.79
2	E	301	6PS	C13-C11-N10	2.89	125.02	120.27
6	C	303	CXS	O3-S-C1	2.90	109.63	106.06
2	A	301	6PS	C13-C11-N10	3.07	125.31	120.27
2	B	301	6PS	C13-C11-N10	3.07	125.32	120.27
2	C	301	6PS	C13-C11-N10	3.11	125.38	120.27
6	C	302	CXS	O1-S-C1	3.32	109.64	106.79
6	F	302	CXS	O2-S-C1	3.36	109.68	106.79
2	H	301	6PS	C13-C11-N10	3.45	125.94	120.27
2	D	301	6PS	C01-C02-S03	3.76	125.17	120.12
6	H	302	CXS	O3-S-C1	3.88	110.83	106.06
2	G	301	6PS	C01-C02-S03	4.10	125.63	120.12
6	E	303	CXS	O2-S-C1	4.19	110.39	106.79
2	B	301	6PS	C01-C02-S03	4.32	125.92	120.12
2	C	301	6PS	C01-C02-S03	4.40	126.03	120.12
6	E	303	CXS	O3-S-C1	4.44	111.52	106.06
6	F	302	CXS	O1-S-C1	4.51	110.67	106.79
2	F	301	6PS	C01-C02-S03	4.56	126.25	120.12
6	D	302	CXS	O3-S-C1	4.61	111.72	106.06
6	F	302	CXS	O3-S-C1	4.63	111.75	106.06
2	H	301	6PS	C01-C02-S03	4.64	126.35	120.12
6	C	302	CXS	O3-S-C1	4.78	111.94	106.06
6	D	302	CXS	O2-S-C1	4.82	110.94	106.79
2	E	301	6PS	C01-C02-S03	4.86	126.65	120.12
6	C	303	CXS	O2-S-C1	4.94	111.04	106.79
6	C	302	CXS	O2-S-C1	5.39	111.42	106.79
6	E	302	CXS	O2-S-C1	5.50	111.52	106.79
2	A	301	6PS	C01-C02-S03	5.78	127.89	120.12
6	E	303	CXS	O1-S-C1	5.88	111.84	106.79
6	H	302	CXS	O2-S-C1	6.05	111.99	106.79
6	E	302	CXS	O3-S-C1	6.12	113.58	106.06
6	C	303	CXS	O1-S-C1	6.20	112.12	106.79

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

6 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	303	PO4	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	304	PO4	1	0
6	C	303	CXS	3	0
3	D	305	PO4	1	0
6	E	302	CXS	1	0
6	E	303	CXS	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q < 0.9
1	A	214/218 (98%)	-0.25	0	100	100	27, 39, 64, 118	0
1	B	215/218 (98%)	-0.05	6 (2%)	53	64	26, 37, 61, 122	0
1	C	216/218 (99%)	-0.23	2 (0%)	84	91	27, 41, 68, 92	0
1	D	217/218 (99%)	0.02	4 (1%)	69	78	27, 56, 89, 115	0
1	E	216/218 (99%)	0.83	38 (17%)	2	2	31, 74, 111, 142	0
1	F	214/218 (98%)	-0.07	5 (2%)	61	71	25, 36, 71, 135	0
1	G	214/218 (98%)	0.05	6 (2%)	53	64	33, 48, 79, 122	0
1	H	216/218 (99%)	0.22	9 (4%)	37	49	32, 52, 81, 111	0
All	All	1722/1744 (98%)	0.07	70 (4%)	38	50	25, 46, 90, 142	0

All (70) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	38	TRP	5.4
1	E	13	VAL	4.6
1	E	35	GLN	4.5
1	E	87	LEU	4.5
1	G	131	ASP	4.1
1	E	135	LEU	4.0
1	D	219	SER	4.0
1	E	36	LYS	3.9
1	E	15	GLN	3.9
1	H	17	ALA	3.7
1	E	101	GLN	3.5
1	F	216	SER	3.5
1	E	85	ARG	3.4
1	E	19	PRO	3.4
1	E	11	ARG	3.4
1	G	215	PRO	3.3

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Mol	Chain	Res	Type	RSRZ
1	E	162	LYS	3.2
1	E	9	ILE	3.2
1	H	18	LYS	3.2
1	E	80	LEU	3.2
1	E	84	ALA	3.1
1	B	172	ILE	3.1
1	E	12	TYR	3.1
1	G	128	LYS	3.0
1	F	213	GLN	3.0
1	D	15	GLN	3.0
1	E	82	PRO	3.0
1	E	130	TYR	2.9
1	H	16	ASN	2.9
1	E	132	VAL	2.9
1	H	13	VAL	2.9
1	H	105	PHE	2.8
1	E	131	ASP	2.8
1	D	197	TYR	2.8
1	E	14	GLN	2.7
1	E	17	ALA	2.7
1	B	128	LYS	2.7
1	G	130	TYR	2.7
1	E	160	LEU	2.7
1	E	18	LYS	2.6
1	E	108	LEU	2.6
1	D	18	LYS	2.6
1	E	20	GLY	2.6
1	G	132	VAL	2.5
1	F	214	GLY	2.5
1	E	103	LEU	2.5
1	E	25	VAL	2.5
1	E	129	LYS	2.5
1	C	197	TYR	2.5
1	E	105	PHE	2.4
1	G	125	GLN	2.4
1	E	16	ASN	2.4
1	H	34	THR	2.4
1	H	15	GLN	2.4
1	C	35	GLN	2.3
1	E	3	ASP	2.3
1	F	215	PRO	2.3
1	B	216	SER	2.3

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Mol	Chain	Res	Type	RSRZ
1	H	11	ARG	2.2
1	E	83	GLY	2.2
1	E	32	TYR	2.2
1	F	4	THR	2.2
1	E	79	LEU	2.2
1	E	112	VAL	2.1
1	B	212	TYR	2.1
1	E	60	SER	2.1
1	H	131	ASP	2.1
1	B	173	VAL	2.1
1	B	177	PRO	2.1
1	E	54	ILE	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
6	CXS	E	303	14/14	0.86	0.27	8.51	61,75,106,109	0
3	PO4	B	304	5/5	0.90	0.30	6.76	95,99,108,110	0
5	CL	E	304	1/1	0.96	0.15	4.35	54,54,54,54	0
3	PO4	H	305	5/5	0.91	0.23	3.89	95,96,104,112	0
7	EDO	D	304	4/4	0.97	0.15	1.86	55,56,57,58	0
6	CXS	E	302	14/14	0.80	0.28	1.59	81,96,140,142	0
6	CXS	C	302	14/14	0.98	0.17	1.55	29,35,39,40	0
3	PO4	B	305	5/5	0.94	0.19	1.39	88,92,99,102	0
6	CXS	D	302	14/14	0.97	0.16	1.36	36,45,49,50	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
3	PO4	D	305	5/5	0.94	0.16	1.34	102,103,105,108	0
3	PO4	B	303	5/5	0.97	0.17	1.27	69,71,77,79	0
3	PO4	C	305	5/5	0.99	0.14	1.06	38,43,49,55	0
2	6PS	C	301	20/20	0.98	0.16	0.95	18,28,35,43	0
3	PO4	H	304	5/5	0.97	0.20	0.94	80,80,85,94	0
6	CXS	C	303	14/14	0.96	0.17	0.91	67,74,80,81	0
3	PO4	G	304	5/5	0.82	0.18	0.84	107,112,114,118	0
3	PO4	E	306	5/5	0.94	0.20	0.75	66,67,79,85	0
3	PO4	A	303	5/5	0.98	0.14	0.75	65,69,70,80	0
3	PO4	A	302	5/5	0.99	0.12	0.75	42,43,49,52	0
2	6PS	D	301	20/20	0.98	0.15	0.68	29,35,40,41	0
3	PO4	G	303	5/5	0.87	0.22	0.45	97,99,103,111	0
2	6PS	B	301	20/20	0.98	0.14	0.41	17,28,38,40	0
3	PO4	B	302	5/5	0.99	0.14	0.31	39,46,52,59	0
2	6PS	A	301	20/20	0.98	0.12	0.19	26,32,39,48	0
2	6PS	E	301	20/20	0.98	0.17	0.05	33,41,47,48	0
2	6PS	H	301	20/20	0.97	0.15	0.03	22,29,36,40	0
2	6PS	F	301	20/20	0.98	0.12	0.01	22,31,42,42	0
7	EDO	C	304	4/4	0.97	0.12	-0.21	42,44,45,47	0
6	CXS	H	302	14/14	0.99	0.12	-0.37	33,41,45,49	0
2	6PS	G	301	20/20	0.97	0.12	-0.39	34,46,50,50	0
4	K	H	306	1/1	0.99	0.09	-0.90	57,57,57,57	0
4	K	D	306	1/1	0.82	0.13	-1.16	115,115,115,115	0
4	K	E	307	1/1	0.97	0.07	-1.20	68,68,68,68	0
4	K	C	307	1/1	0.96	0.06	-1.52	55,55,55,55	0
4	K	A	305	1/1	0.96	0.09	-2.22	47,47,47,47	0
4	K	A	306	1/1	0.98	0.09	-2.23	53,53,53,53	0
4	K	B	308	1/1	0.98	0.06	-2.67	55,55,55,55	0
4	K	B	306	1/1	0.98	0.08	-3.22	50,50,50,50	0
6	CXS	F	302	14/14	0.86	0.19	-	74,79,95,102	0
3	PO4	G	302	5/5	0.90	0.18	-	94,94,95,100	0
3	PO4	F	303	5/5	0.86	0.23	-	116,119,121,124	0
5	CL	H	303	1/1	0.92	0.28	-	57,57,57,57	0
3	PO4	A	304	5/5	0.92	0.18	-	78,91,93,98	0
5	CL	C	308	1/1	0.90	0.31	-	55,55,55,55	0
5	CL	B	307	1/1	0.95	0.19	-	72,72,72,72	0
3	PO4	C	306	5/5	0.93	0.19	-	93,95,101,103	0
7	EDO	D	303	4/4	0.94	0.37	-	41,43,54,68	0
5	CL	E	305	1/1	0.77	0.57	-	66,66,66,66	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.