



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 03:07 PM UTC

PDB ID : 3KLT / pdb_00003klt
Title : Crystal structure of a vimentin fragment
Authors : Nicolet, S.; Strelkov, S.V.
Deposited on : 2009-11-09
Resolution : 2.70 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

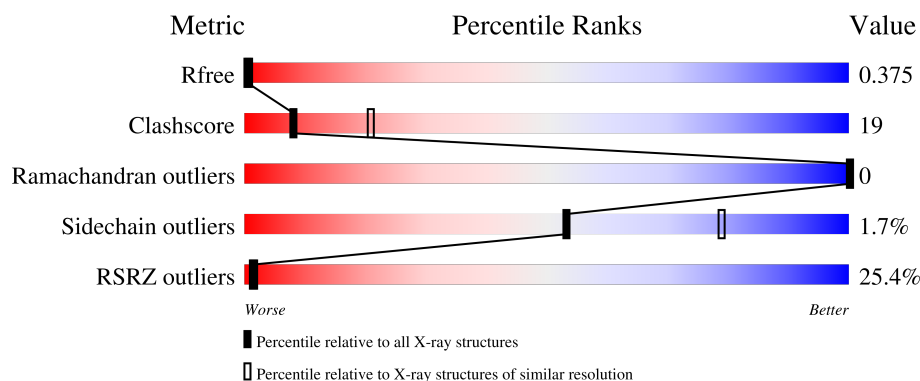
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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}	180053	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	72	36% 68% 29% ..
1	B	72	18% 78% 21% .
1	C	72	24% 68% 31% .
1	D	72	22% 78% 18% ..

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
6	PG4	C	2	-	-	X	-

2 Entry composition [i](#)

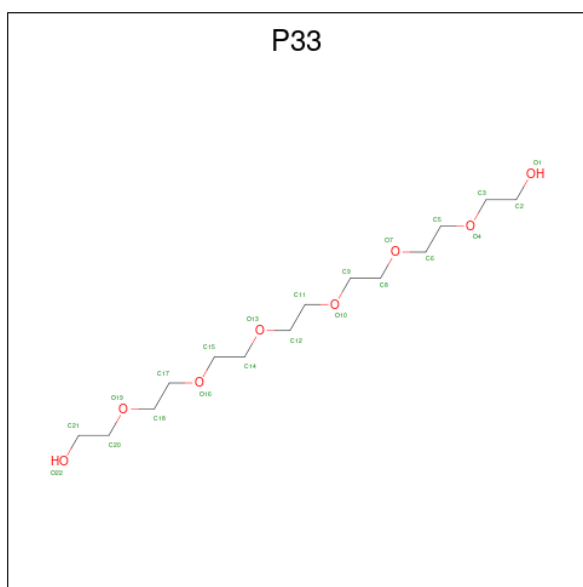
There are 9 unique types of molecules in this entry. The entry contains 2399 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Vimentin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	71	Total	C	N	O	S	0	0	0
			575	349	106	119	1			
1	B	71	Total	C	N	O	S	0	0	0
			575	349	106	119	1			
1	C	71	Total	C	N	O	S	0	0	0
			573	348	105	119	1			
1	D	70	Total	C	N	O	S	0	0	0
			567	345	105	116	1			

- Molecule 2 is 3,6,9,12,15,18-HEXAOSAICOSANE-1,20-DIOL (CCD ID: P33) (formula: $C_{14}H_{30}O_8$).

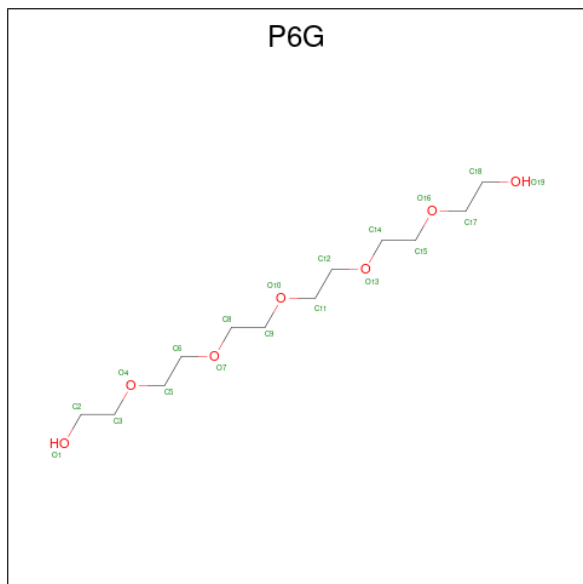


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			22	14	8		

- Molecule 3 is SAMARIUM (III) ION (CCD ID: SM) (formula: Sm).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Sm	0	0
			1	1		
3	B	1	Total	Sm	0	0
			1	1		
3	D	1	Total	Sm	0	0
			1	1		

- Molecule 4 is HEXAETHYLENE GLYCOL (CCD ID: P6G) (formula: $C_{12}H_{26}O_7$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			19	12	7		

- Molecule 5 is CALCIUM ION (CCD ID: CA) (formula: Ca).

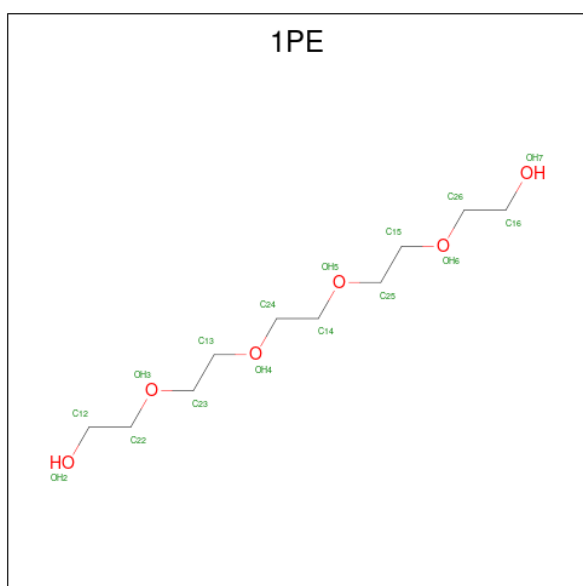
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	2	Total	Ca	0	0
			2	2		
5	C	1	Total	Ca	0	0
			1	1		
5	D	3	Total	Ca	0	0
			3	3		

- Molecule 6 is TETRAETHYLENE GLYCOL (CCD ID: PG4) (formula: $C_8H_{18}O_5$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	C	1	Total	C	O	0	0
			13	8	5		
6	C	1	Total	C	O	0	0
			13	8	5		

- Molecule 7 is PENTAETHYLENE GLYCOL (CCD ID: 1PE) (formula: $C_{10}H_{22}O_6$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	D	1	Total	C	O	0	0
			16	10	6		

- Molecule 8 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	D	1	Total	C	O	0	0
			10	6	4		

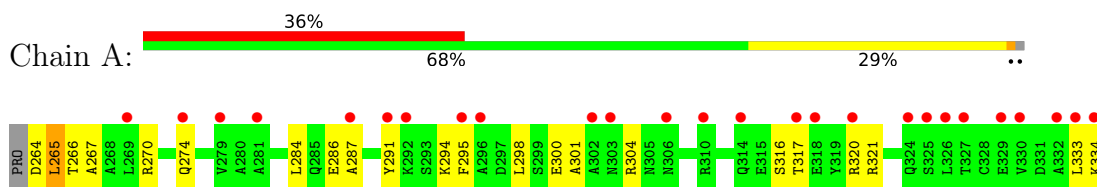
- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	B	2	Total	O	0	0
			2	2		
9	C	2	Total	O	0	0
			2	2		
9	D	3	Total	O	0	0
			3	3		

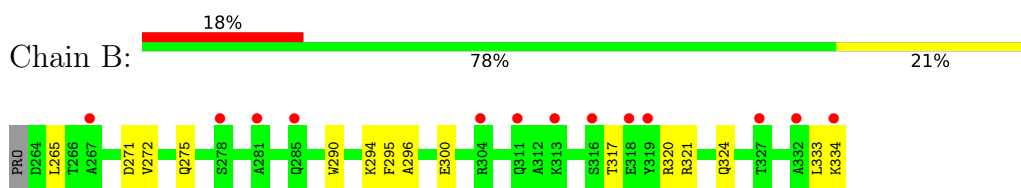
3 Residue-property plots [i](#)

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

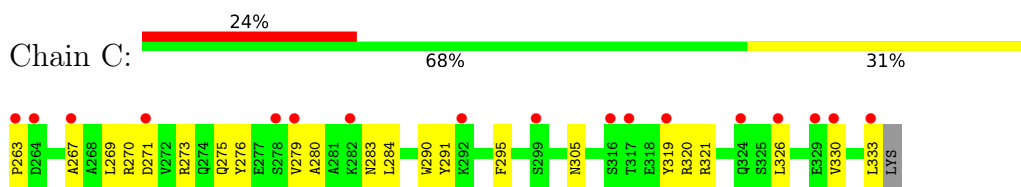
- Molecule 1: Vimentin



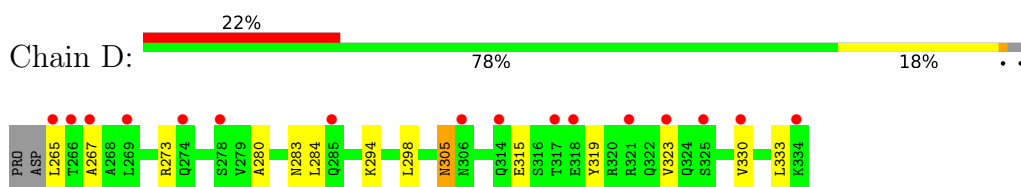
- Molecule 1: Vimentin



- Molecule 1: Vimentin



- Molecule 1: Vimentin



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	63.20Å 30.10Å 82.98Å 90.00° 102.71° 90.00°	Depositor
Resolution (Å)	40.47 – 2.70 40.47 – 2.70	Depositor EDS
% Data completeness (in resolution range)	94.5 (40.47-2.70) 99.6 (40.47-2.70)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	0.04	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.69 (at 2.34Å)	Xtriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, R_{free}	0.291 , 0.331 0.391 , 0.375	Depositor DCC
R_{free} test set	761 reflections (5.35%)	wwPDB-VP
Wilson B-factor (Å ²)	57.4	Xtriage
Anisotropy	0.432	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 31.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.52$, $\langle L^2 \rangle = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.83	EDS
Total number of atoms	2399	wwPDB-VP
Average B, all atoms (Å ²)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.15% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: CA, P33, 1PE, PG4, SM, PGE, P6G

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	0.26	0/580	0.63	0/780
1	B	0.27	0/580	0.58	0/780
1	C	0.27	0/579	0.64	0/780
1	D	0.27	0/572	0.62	0/769
All	All	0.27	0/2311	0.62	0/3109

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	575	0	555	54	0
1	B	575	0	555	45	0
1	C	573	0	550	26	0
1	D	567	0	551	14	0
2	A	22	0	30	5	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	D	1	0	0	0	0
4	B	19	0	26	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	2	0	0	0	0
5	C	1	0	0	0	0
5	D	3	0	0	0	0
6	C	26	0	36	10	0
7	D	16	0	22	0	0
8	D	10	0	14	0	0
9	B	2	0	0	0	0
9	C	2	0	0	0	0
9	D	3	0	0	0	0
All	All	2399	0	2339	92	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 19.

All (92) 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:A:334:LYS:HE3	1:B:333:LEU:CD2	1.43	1.49
1:A:334:LYS:HE3	1:B:333:LEU:CG	1.46	1.42
1:A:334:LYS:CD	1:B:333:LEU:HD22	1.50	1.42
1:A:334:LYS:CE	1:B:333:LEU:HD22	1.48	1.40
1:A:334:LYS:HG3	1:B:333:LEU:CD2	1.55	1.36
1:A:334:LYS:HE2	1:B:333:LEU:CD1	1.62	1.28
1:A:334:LYS:CE	1:B:333:LEU:HD13	1.66	1.24
1:A:334:LYS:HE3	1:B:333:LEU:CB	1.69	1.22
1:A:334:LYS:CG	1:B:333:LEU:CD2	2.21	1.18
1:A:334:LYS:CE	1:B:333:LEU:CG	2.22	1.15
1:A:334:LYS:CG	1:B:333:LEU:HD21	1.79	1.09
1:A:334:LYS:CE	1:B:333:LEU:CD1	2.26	1.07
1:A:334:LYS:CE	1:B:333:LEU:HB2	1.85	1.07
1:A:334:LYS:CE	1:B:333:LEU:CD2	2.13	1.04
1:A:334:LYS:CD	1:B:333:LEU:CD2	2.37	1.00
1:A:334:LYS:CE	1:B:333:LEU:CB	2.40	0.99
1:A:334:LYS:CG	1:B:333:LEU:HD22	1.88	0.96
1:A:334:LYS:HE3	1:B:333:LEU:HB2	1.38	0.95
1:A:334:LYS:NZ	1:B:333:LEU:HB2	1.86	0.90
1:A:334:LYS:HG3	1:B:333:LEU:HD21	0.91	0.90
1:A:333:LEU:HD21	1:B:334:LYS:HG2	1.59	0.85
1:A:333:LEU:HD21	1:B:334:LYS:CG	2.09	0.83
1:A:287:ALA:HB2	2:A:1:P33:H201	1.61	0.82
1:A:334:LYS:HE3	1:B:333:LEU:HD22	1.12	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:265:LEU:HD23	1:D:267:ALA:H	1.53	0.73
1:A:334:LYS:HD2	1:B:333:LEU:HD22	1.62	0.73
1:A:333:LEU:HD22	1:B:334:LYS:CE	2.19	0.72
1:A:333:LEU:CD2	1:B:334:LYS:HG3	2.21	0.71
1:A:333:LEU:CD2	1:B:334:LYS:CG	2.69	0.70
1:A:333:LEU:HD22	1:B:334:LYS:HE3	1.75	0.69
1:A:334:LYS:HE2	1:B:333:LEU:HD13	0.77	0.68
1:A:304:ARG:HH21	1:C:263:PRO:HB2	1.58	0.68
1:C:273:ARG:HH21	6:C:5:PG4:H12	1.66	0.61
4:B:4:P6G:H21	4:B:4:P6G:H172	1.82	0.61
1:C:326:LEU:O	1:C:330:VAL:HG23	2.03	0.59
1:B:295:PHE:CZ	1:C:273:ARG:HD2	2.38	0.58
1:A:295:PHE:CE1	1:D:273:ARG:HB2	2.39	0.58
1:C:284:LEU:HD12	6:C:2:PG4:H22	1.86	0.57
1:C:330:VAL:HG22	1:D:330:VAL:HG22	1.88	0.56
1:D:315:GLU:O	1:D:319:TYR:HD1	1.90	0.55
1:C:280:ALA:O	1:C:284:LEU:HD13	2.07	0.54
1:A:316:SER:O	1:A:320:ARG:HB2	2.07	0.54
1:A:334:LYS:HZ2	1:B:333:LEU:HB2	1.70	0.54
1:A:298:LEU:HD22	1:C:269:LEU:HD23	1.89	0.53
1:A:333:LEU:HD22	1:B:334:LYS:HE2	1.90	0.53
1:C:273:ARG:HG3	6:C:5:PG4:H31	1.92	0.52
1:B:296:ALA:O	1:B:300:GLU:HG3	2.09	0.52
1:B:290:TRP:O	1:B:294:LYS:HG2	2.09	0.51
1:A:300:GLU:HG3	1:A:304:ARG:HH12	1.76	0.51
1:A:333:LEU:HD21	1:B:334:LYS:HG3	1.83	0.50
1:A:317:THR:O	1:A:321:ARG:HG3	2.12	0.50
2:A:1:P33:H151	1:C:283:ASN:HB3	1.91	0.50
1:A:286:GLU:HB2	2:A:1:P33:O22	2.12	0.50
1:C:279:VAL:HG11	6:C:2:PG4:H72	1.94	0.49
1:B:271:ASP:O	1:B:275:GLN:HG3	2.12	0.49
1:C:267:ALA:HA	1:C:270:ARG:HG2	1.94	0.49
2:A:1:P33:H171	6:C:2:PG4:O2	2.12	0.49
1:A:304:ARG:NH2	1:C:263:PRO:HB2	2.25	0.48
1:B:320:ARG:O	1:B:324:GLN:HG3	2.14	0.48
1:A:333:LEU:O	1:B:333:LEU:HD21	2.13	0.48
1:C:284:LEU:CD1	6:C:2:PG4:H22	2.44	0.48
1:D:280:ALA:O	1:D:284:LEU:HD13	2.13	0.47
1:A:287:ALA:HA	6:C:2:PG4:H82	1.97	0.47
1:C:276:TYR:CE1	6:C:2:PG4:H52	2.50	0.47
1:C:333:LEU:HD23	1:D:333:LEU:HD23	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:271:ASP:CG	1:B:275:GLN:HE21	2.24	0.45
1:C:291:TYR:O	1:C:295:PHE:HD2	1.99	0.45
1:A:333:LEU:CD2	1:B:334:LYS:CE	2.94	0.45
2:A:1:P33:H92	1:C:290:TRP:CG	2.52	0.45
4:B:4:P6G:H31	1:D:283:ASN:HB3	2.00	0.44
1:C:271:ASP:O	1:C:275:GLN:HG3	2.18	0.44
1:B:295:PHE:CE2	1:C:273:ARG:HD2	2.52	0.44
1:C:319:TYR:HB3	1:D:319:TYR:HB3	2.01	0.43
1:A:284:LEU:HD11	1:D:284:LEU:HD21	1.99	0.43
1:A:295:PHE:CE2	1:D:273:ARG:HD2	2.53	0.43
1:C:279:VAL:CG1	6:C:2:PG4:H72	2.47	0.43
1:D:294:LYS:HD3	1:D:294:LYS:HA	1.76	0.43
1:A:300:GLU:CG	1:A:304:ARG:HH12	2.32	0.43
1:D:265:LEU:CD2	1:D:267:ALA:H	2.28	0.43
1:A:291:TYR:OH	6:C:2:PG4:H51	2.19	0.42
1:B:265:LEU:HD21	1:D:305:ASN:HB2	2.02	0.42
1:B:317:THR:O	1:B:321:ARG:HG3	2.19	0.42
1:C:267:ALA:O	1:C:271:ASP:HB2	2.19	0.42
1:A:265:LEU:HB2	1:C:305:ASN:ND2	2.35	0.42
1:A:270:ARG:HG2	1:A:274:GLN:NE2	2.35	0.41
1:B:272:VAL:HG21	1:D:298:LEU:HD21	2.02	0.41
1:A:294:LYS:HA	1:A:294:LYS:HD2	1.86	0.41
1:A:333:LEU:CD2	1:B:334:LYS:HE3	2.47	0.41
1:A:301:ALA:HA	1:A:304:ARG:NH2	2.36	0.41
1:C:270:ARG:HG3	1:C:271:ASP:N	2.36	0.40
1:C:320:ARG:NH2	1:C:321:ARG:HH12	2.19	0.40
1:A:264:ASP:HB3	1:A:267:ALA:HB3	2.02	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	69/72 (96%)	69 (100%)	0	0	100	100
1	B	69/72 (96%)	68 (99%)	1 (1%)	0	100	100
1	C	69/72 (96%)	69 (100%)	0	0	100	100
1	D	68/72 (94%)	67 (98%)	1 (2%)	0	100	100
All	All	275/288 (96%)	273 (99%)	2 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	60/61 (98%)	58 (97%)	2 (3%)	33	63
1	B	60/61 (98%)	60 (100%)	0	100	100
1	C	60/61 (98%)	60 (100%)	0	100	100
1	D	59/61 (97%)	57 (97%)	2 (3%)	32	62
All	All	239/244 (98%)	235 (98%)	4 (2%)	53	79

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	265	LEU
1	A	266	THR
1	D	305	ASN
1	D	323	VAL

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

Mol	Chain	Res	Type
1	C	283	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 15 ligands modelled in this entry, 9 are monoatomic - leaving 6 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	$\# Z > 2$
7	1PE	D	3	3	15,15,15	0.46	0	14,14,14	0.34	0
6	PG4	C	2	-	12,12,12	0.45	0	11,11,11	0.32	0
6	PG4	C	5	-	12,12,12	0.46	0	11,11,11	0.30	0
8	PGE	D	6	-	9,9,9	0.44	0	8,8,8	0.41	0
4	P6G	B	4	-	18,18,18	0.45	0	17,17,17	0.35	0
2	P33	A	1	-	21,21,21	0.45	0	20,20,20	0.37	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
7	1PE	D	3	3	-	3/13/13/13	-
6	PG4	C	2	-	-	6/10/10/10	-
6	PG4	C	5	-	-	3/10/10/10	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	PGE	D	6	-	-	5/7/7/7	-
4	P6G	B	4	-	-	10/16/16/16	-
2	P33	A	1	-	-	7/19/19/19	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	4	P6G	O10-C11-C12-O13
2	A	1	P33	O13-C14-C15-O16
4	B	4	P6G	O7-C8-C9-O10
4	B	4	P6G	O4-C5-C6-O7
6	C	2	PG4	O2-C3-C4-O3
2	A	1	P33	O10-C11-C12-O13
6	C	2	PG4	O4-C7-C8-O5
6	C	2	PG4	C6-C5-O3-C4
8	D	6	PGE	C4-C3-O2-C2
4	B	4	P6G	C9-C8-O7-C6
7	D	3	1PE	C15-C25-OH5-C14
4	B	4	P6G	C11-C12-O13-C14
7	D	3	1PE	C16-C26-OH6-C15
6	C	5	PG4	O1-C1-C2-O2
2	A	1	P33	O16-C17-C18-O19
2	A	1	P33	O1-C2-C3-O4
2	A	1	P33	C21-C20-O19-C18
8	D	6	PGE	O2-C3-C4-O3
2	A	1	P33	C11-C12-O13-C14
4	B	4	P6G	C8-C9-O10-C11
2	A	1	P33	C17-C18-O19-C20
8	D	6	PGE	O1-C1-C2-O2
8	D	6	PGE	C3-C4-O3-C5
4	B	4	P6G	O13-C14-C15-O16
6	C	2	PG4	C1-C2-O2-C3
7	D	3	1PE	OH5-C14-C24-OH4
4	B	4	P6G	C15-C14-O13-C12
6	C	5	PG4	O2-C3-C4-O3
4	B	4	P6G	C5-C6-O7-C8
4	B	4	P6G	C12-C11-O10-C9

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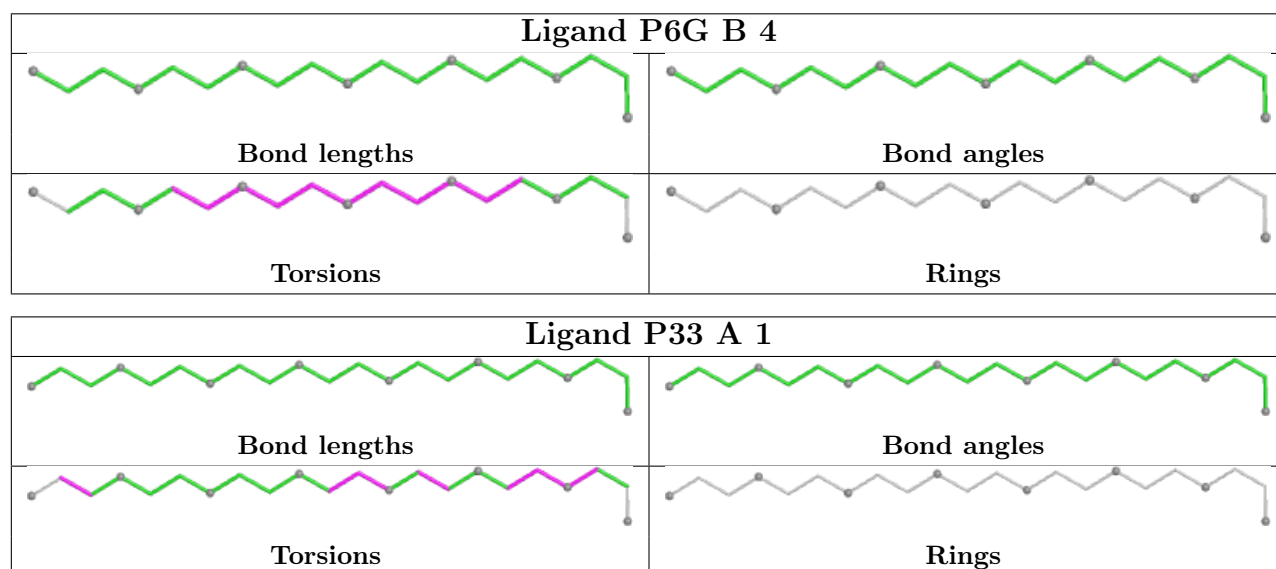
Mol	Chain	Res	Type	Atoms
6	C	2	PG4	C3-C4-O3-C5
6	C	5	PG4	O3-C5-C6-O4
8	D	6	PGE	O3-C5-C6-O4
6	C	2	PG4	C4-C3-O2-C2

There are no ring outliers.

4 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	C	2	PG4	8	0
6	C	5	PG4	2	0
4	B	4	P6G	2	0
2	A	1	P33	5	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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	71/72 (98%)	1.74	26 (36%) 1 0	34, 62, 90, 105	0
1	B	71/72 (98%)	1.36	13 (18%) 3 3	24, 52, 84, 98	0
1	C	71/72 (98%)	1.63	17 (23%) 2 1	31, 54, 108, 122	0
1	D	70/72 (97%)	1.50	16 (22%) 2 2	25, 57, 79, 94	0
All	All	283/288 (98%)	1.56	72 (25%) 1 1	24, 57, 94, 122	0

All (72) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	333	LEU	5.1
1	D	318	GLU	4.8
1	D	285	GLN	4.8
1	D	278	SER	4.5
1	D	265	LEU	4.4
1	D	266	THR	4.2
1	D	317	THR	4.1
1	A	329	GLU	4.1
1	C	319	TYR	3.8
1	A	334	LYS	3.7
1	A	295	PHE	3.7
1	B	318	GLU	3.7
1	C	329	GLU	3.6
1	D	325	SER	3.6
1	A	274	GLN	3.5
1	C	317	THR	3.4
1	A	314	GLN	3.4
1	D	269	LEU	3.4
1	C	299	SER	3.3
1	B	313	LYS	3.3
1	A	332	ALA	3.3

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Mol	Chain	Res	Type	RSRZ
1	D	267	ALA	3.2
1	A	281	ALA	3.2
1	C	316	SER	3.2
1	C	278	SER	3.1
1	D	314	GLN	3.1
1	D	306	ASN	3.0
1	A	324	GLN	3.0
1	C	267	ALA	3.0
1	A	306	ASN	2.9
1	C	279	VAL	2.9
1	A	303	ASN	2.8
1	B	332	ALA	2.8
1	A	330	VAL	2.8
1	B	278	SER	2.8
1	D	274	GLN	2.8
1	A	291	TYR	2.7
1	D	321	ARG	2.6
1	A	333	LEU	2.6
1	A	287	ALA	2.6
1	A	320	ARG	2.5
1	A	317	THR	2.5
1	D	330	VAL	2.5
1	B	311	GLN	2.5
1	B	304	ARG	2.4
1	B	316	SER	2.4
1	B	334	LYS	2.4
1	A	327	THR	2.4
1	C	271	ASP	2.4
1	A	318	GLU	2.4
1	B	319	TYR	2.4
1	A	279	VAL	2.4
1	C	326	LEU	2.3
1	A	325	SER	2.3
1	C	264	ASP	2.3
1	A	269	LEU	2.3
1	D	334	LYS	2.3
1	C	263	PRO	2.2
1	A	326	LEU	2.2
1	C	292	LYS	2.2
1	D	323	VAL	2.2
1	C	282	LYS	2.1
1	A	296	ALA	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	302	ALA	2.1
1	A	310	ARG	2.1
1	B	285	GLN	2.1
1	A	292	LYS	2.1
1	B	267	ALA	2.0
1	B	281	ALA	2.0
1	B	327	THR	2.0
1	C	324	GLN	2.0
1	C	330	VAL	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 oligosaccharides 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. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	SM	A	3	1/1	-0.13	0.27	124,124,124,124	1
3	SM	D	2	1/1	0.22	0.31	144,144,144,144	0
5	CA	B	6	1/1	0.27	0.17	102,102,102,102	0
5	CA	B	7	1/1	0.34	0.14	74,74,74,74	0
5	CA	C	4	1/1	0.39	0.14	75,75,75,75	0
5	CA	D	5	1/1	0.45	0.17	84,84,84,84	0
5	CA	D	9	1/1	0.60	0.12	123,123,123,123	0
8	PGE	D	6	10/10	0.60	0.14	50,65,83,92	0
6	PG4	C	2	13/13	0.62	0.21	41,58,90,97	0
6	PG4	C	5	13/13	0.63	0.14	41,62,98,100	0
5	CA	D	8	1/1	0.63	0.17	80,80,80,80	0
2	P33	A	1	22/22	0.78	0.18	22,54,71,89	0
4	P6G	B	4	19/19	0.80	0.14	25,46,70,71	0
7	1PE	D	3	16/16	0.82	0.12	30,43,67,71	0

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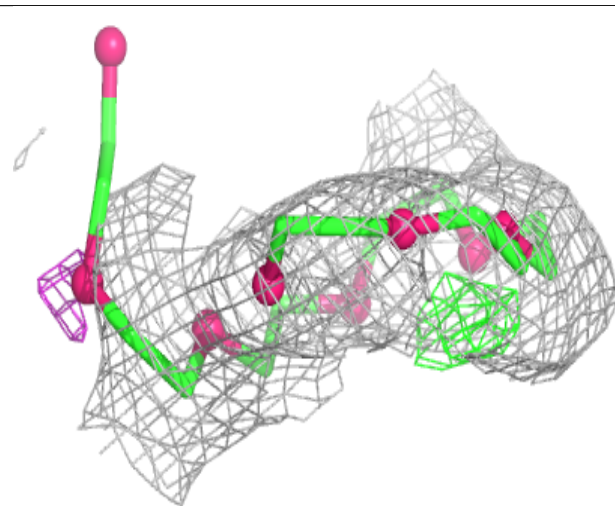
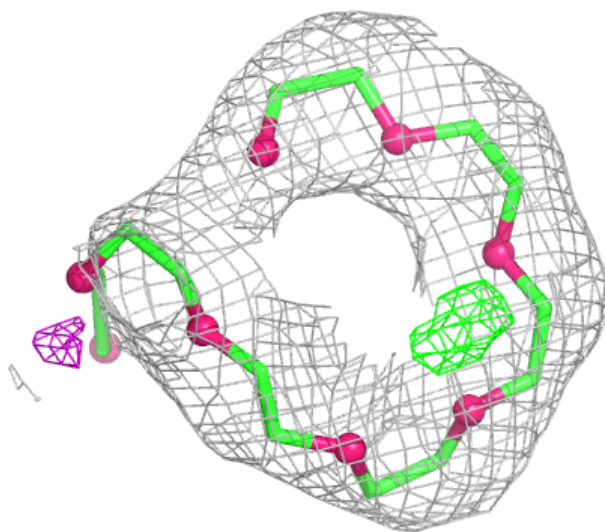
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	SM	B	1	1/1	0.82	0.26	69,69,69,69	0

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

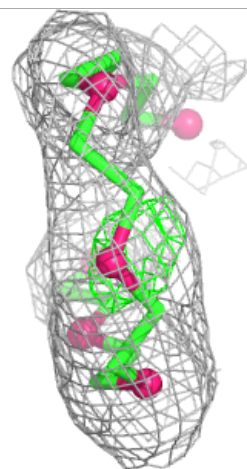
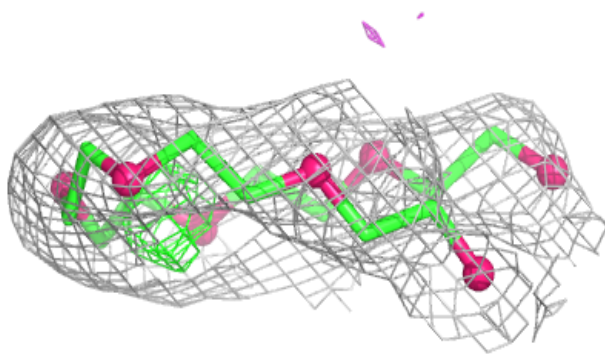
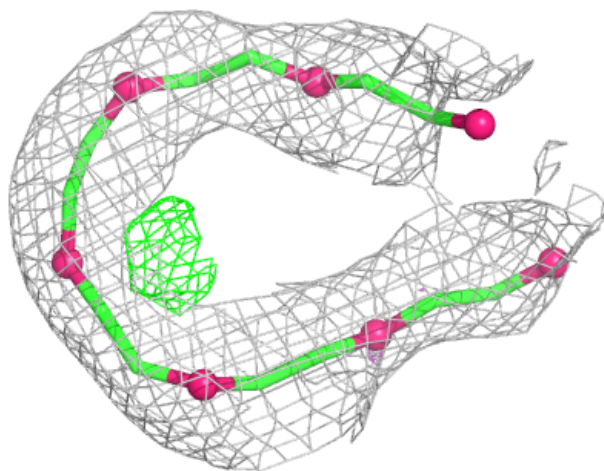
Electron density around P33 A 1:

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



Electron density around P6G B 4:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.