Full wwPDB X-ray Structure Validation Report ⓘ

Jun 4, 2025 – 04:20 PM JST

PDB ID	:	9M12 / pdb_00009m12
Title	:	Vitamin D receptor complex with a bis(3-ethylphenyl)dimethylsilane derivative
Authors	:	Thilakarathne, N.M.H.N.; Hanazono, Y.; Ito, N.; Kagechika, H.; Fujii, S.
Deposited on	:	2025-02-25
Resolution	:	1.86 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:

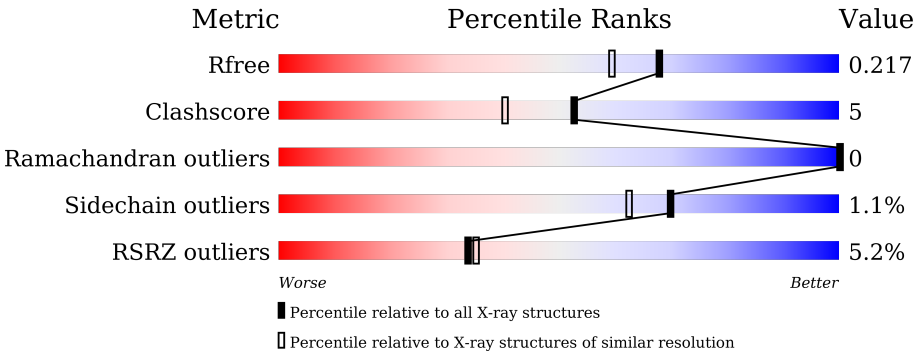
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.86 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}	164625	3097 (1.86-1.86)
Clashscore	180529	3359 (1.86-1.86)
Ramachandran outliers	177936	3335 (1.86-1.86)
Sidechain outliers	177891	3335 (1.86-1.86)
RSRZ outliers	164620	3097 (1.86-1.86)

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

Mol	Chain	Length	Quality of chain
1	A	271	6% 77% 10% • 11%
1	B	271	3% 80% 8% 11%
2	C	13	15% 69% 15% 15%
2	D	13	8% 69% 15% 15%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 4603 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 Vitamin D3 receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	240	Total	C	N	O	S	0	12	0
			2014	1272	350	380	12			
1	B	240	Total	C	N	O	S	0	12	0
			2006	1270	342	379	15			

There are 114 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	106	GLY	-	expression tag	UNP P13053
A	107	SER	-	expression tag	UNP P13053
A	108	HIS	-	expression tag	UNP P13053
A	109	MET	-	expression tag	UNP P13053
A	110	GLY	-	expression tag	UNP P13053
A	111	SER	-	expression tag	UNP P13053
A	112	PRO	-	expression tag	UNP P13053
A	113	ASN	-	expression tag	UNP P13053
A	114	SER	-	expression tag	UNP P13053
A	115	PRO	-	expression tag	UNP P13053
A	?	-	TYR	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	PRO	deletion	UNP P13053
A	?	-	ARG	deletion	UNP P13053
A	?	-	PRO	deletion	UNP P13053
A	?	-	THR	deletion	UNP P13053
A	?	-	LEU	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	PHE	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	GLY	deletion	UNP P13053
A	?	-	ASN	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	SER	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	ASP	deletion	UNP P13053
A	?	-	LEU	deletion	UNP P13053
A	?	-	TYR	deletion	UNP P13053
A	?	-	THR	deletion	UNP P13053
A	?	-	THR	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	LEU	deletion	UNP P13053
A	?	-	ASP	deletion	UNP P13053
A	?	-	MET	deletion	UNP P13053
A	?	-	MET	deletion	UNP P13053
A	?	-	GLU	deletion	UNP P13053
A	?	-	PRO	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	GLY	deletion	UNP P13053
A	?	-	PHE	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	ASN	deletion	UNP P13053
A	?	-	LEU	deletion	UNP P13053
A	?	-	ASP	deletion	UNP P13053
A	?	-	LEU	deletion	UNP P13053
A	?	-	ASN	deletion	UNP P13053
A	?	-	GLY	deletion	UNP P13053
A	?	-	GLU	deletion	UNP P13053
A	?	-	ASP	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
A	?	-	ASP	deletion	UNP P13053
A	?	-	ASP	deletion	UNP P13053
A	?	-	PRO	deletion	UNP P13053
A	?	-	SER	deletion	UNP P13053
B	106	GLY	-	expression tag	UNP P13053
B	107	SER	-	expression tag	UNP P13053
B	108	HIS	-	expression tag	UNP P13053
B	109	MET	-	expression tag	UNP P13053
B	110	GLY	-	expression tag	UNP P13053
B	111	SER	-	expression tag	UNP P13053
B	112	PRO	-	expression tag	UNP P13053
B	113	ASN	-	expression tag	UNP P13053
B	114	SER	-	expression tag	UNP P13053
B	115	PRO	-	expression tag	UNP P13053

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	TYR	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	PRO	deletion	UNP P13053
B	?	-	ARG	deletion	UNP P13053
B	?	-	PRO	deletion	UNP P13053
B	?	-	THR	deletion	UNP P13053
B	?	-	LEU	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	PHE	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	GLY	deletion	UNP P13053
B	?	-	ASN	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	ASP	deletion	UNP P13053
B	?	-	LEU	deletion	UNP P13053
B	?	-	TYR	deletion	UNP P13053
B	?	-	THR	deletion	UNP P13053
B	?	-	THR	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	LEU	deletion	UNP P13053
B	?	-	ASP	deletion	UNP P13053
B	?	-	MET	deletion	UNP P13053
B	?	-	MET	deletion	UNP P13053
B	?	-	GLU	deletion	UNP P13053
B	?	-	PRO	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	GLY	deletion	UNP P13053
B	?	-	PHE	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053
B	?	-	ASN	deletion	UNP P13053
B	?	-	LEU	deletion	UNP P13053
B	?	-	ASP	deletion	UNP P13053
B	?	-	LEU	deletion	UNP P13053
B	?	-	ASN	deletion	UNP P13053
B	?	-	GLY	deletion	UNP P13053
B	?	-	GLU	deletion	UNP P13053
B	?	-	ASP	deletion	UNP P13053

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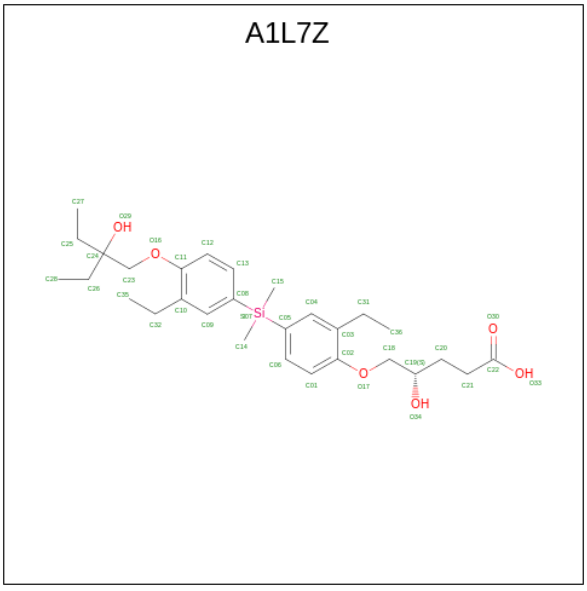
Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	SER	deletion	UNP P13053
B	?	-	ASP	deletion	UNP P13053
B	?	-	ASP	deletion	UNP P13053
B	?	-	PRO	deletion	UNP P13053
B	?	-	SER	deletion	UNP P13053

- Molecule 2 is a protein called Mediator of RNA polymerase II transcription subunit 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	11	Total	C	N	O	S	0	1	0
			99	64	18	14	3			
2	D	11	Total	C	N	O	S	0	0	0
			91	59	17	13	2			

- Molecule 3 is (4 {S})-5-[2-ethyl-4-[[3-ethyl-4-(2-ethyl-2-oxidanyl-butoxy)phenyl]-dimethyl-silyl]phenoxy]-4-oxidanyl-pentanoic acid (CCD ID: A1L7Z) (formula: $C_{29}H_{44}O_6Si$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	O	Si	0	0
			36	29	6	1		
3	B	1	Total	C	O	Si	0	0
			36	29	6	1		

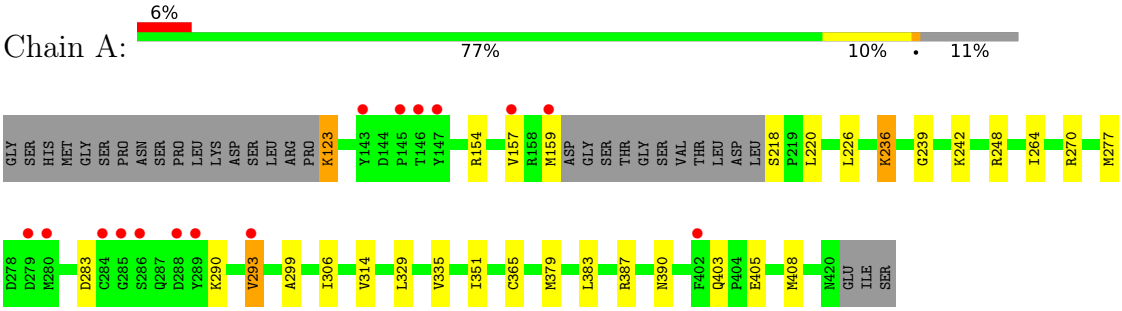
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	146	Total O 159 159	0	13
4	C	1	Total O 1 1	0	0
4	B	148	Total O 158 158	0	10
4	D	3	Total O 3 3	0	0

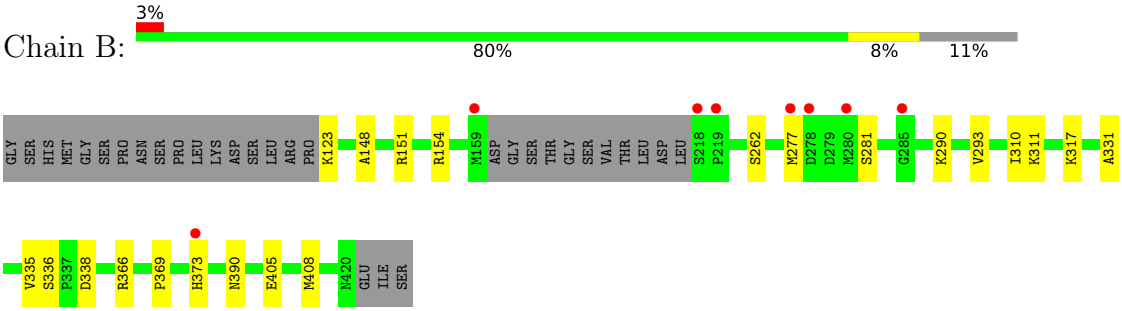
3 Residue-property plots (i)

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.

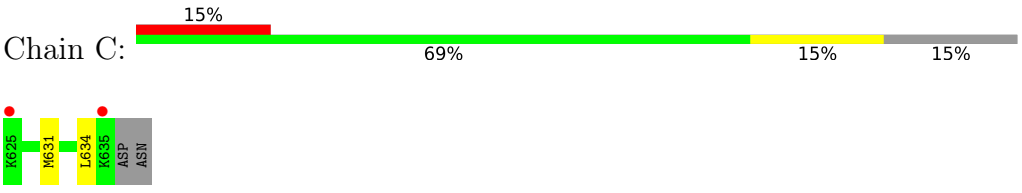
• Molecule 1: Vitamin D3 receptor



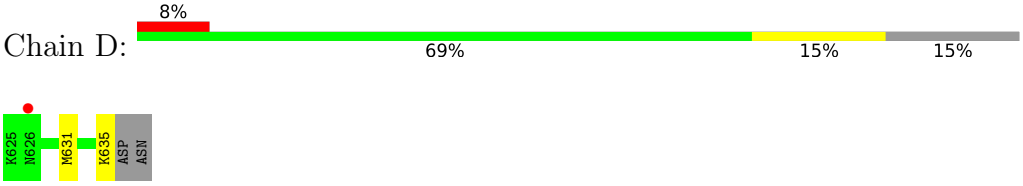
• Molecule 1: Vitamin D3 receptor



• Molecule 2: Mediator of RNA polymerase II transcription subunit 1



• Molecule 2: Mediator of RNA polymerase II transcription subunit 1



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	45.89Å 44.98Å 128.71Å 90.00° 94.82° 90.00°	Depositor
Resolution (Å)	45.73 – 1.86 45.73 – 1.86	Depositor EDS
% Data completeness (in resolution range)	99.7 (45.73-1.86) 99.6 (45.73-1.86)	Depositor EDS
R_{merge}	0.25	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.37 (at 1.86Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.190 , 0.217 0.190 , 0.217	Depositor DCC
R_{free} test set	42407 reflections (4.57%)	wwPDB-VP
Wilson B-factor (Å^2)	22.7	Xtriage
Anisotropy	0.374	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 50.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	4603	wwPDB-VP
Average B, all atoms (Å^2)	28.0	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 64.68 % 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 7.9720e-06. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: A1L7Z

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	0.31	0/2054	0.52	2/2776 (0.1%)
1	B	0.34	0/2046	0.43	0/2764
2	C	0.13	0/100	0.46	0/131
2	D	0.13	0/92	0.27	0/121
All	All	0.31	0/4292	0.47	2/5792 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	157	VAL	CA-C-N	-9.00	109.45	122.77
1	A	157	VAL	C-N-CA	-9.00	109.45	122.77

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2014	0	2014	23	0
1	B	2006	0	2012	17	0
2	C	99	0	110	2	0
2	D	91	0	102	1	0
3	A	36	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	36	0	0	0	0
4	A	159	0	0	4	0
4	B	158	0	0	2	0
4	C	1	0	0	0	0
4	D	3	0	0	0	0
All	All	4603	0	4238	42	0

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

All (42) 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:B:293:VAL:CG1	1:B:310:ILE:HD11	1.94	0.97
1:B:293:VAL:HG12	1:B:310:ILE:HD11	1.53	0.90
1:B:293:VAL:CG1	1:B:310:ILE:CD1	2.62	0.76
1:B:405:GLU:HA	1:B:408[A]:MET:HE3	1.73	0.69
1:A:123:LYS:N	1:A:365:CYS:HG	1.91	0.68
1:B:148:ALA:O	1:B:151:ARG:HG2	1.96	0.66
1:A:405:GLU:HA	1:A:408:MET:HE2	1.80	0.64
1:B:293:VAL:HG12	1:B:310:ILE:CD1	2.27	0.63
2:D:631:MET:O	2:D:635:LYS:HG3	2.03	0.57
1:B:277:MET:HE2	1:B:317:LYS:HB3	1.87	0.57
1:A:335[B]:VAL:HG11	1:A:351:ILE:HB	1.86	0.56
1:B:366:ARG:HD3	4:B:734[A]:HOH:O	2.07	0.54
1:A:248[A]:ARG:HH22	2:C:634:LEU:HD22	1.74	0.53
1:A:220:LEU:O	4:A:724[B]:HOH:O	2.19	0.53
1:A:277:MET:HE3	1:A:314:VAL:HG13	1.91	0.52
1:A:293:VAL:HG12	4:A:616:HOH:O	2.10	0.52
1:A:405:GLU:H	1:A:405:GLU:CD	2.19	0.50
1:A:159:MET:HE3	1:A:218[A]:SER:HB2	1.93	0.50
1:A:270:ARG:NH1	4:A:605:HOH:O	2.44	0.50
1:A:154:ARG:HG3	1:B:154:ARG:HG3	1.95	0.49
3:A:501:A1L7Z:O33	3:A:501:A1L7Z:O34	2.30	0.48
1:B:293:VAL:HG11	1:B:310:ILE:CD1	2.44	0.47
1:A:403:GLN:HB3	1:A:405:GLU:OE2	2.13	0.47
1:A:283:ASP:CB	1:A:290:LYS:HD2	2.45	0.47
1:B:390:ASN:C	1:B:390:ASN:HD22	2.22	0.47
1:A:329:LEU:HD13	1:A:379:MET:HE2	1.97	0.47
1:B:336[B]:SER:OG	1:B:338:ASP:OD2	2.32	0.46
1:B:281:SER:OG	1:B:290:LYS:NZ	2.36	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:293:VAL:HG23	1:A:306:ILE:HG21	1.98	0.46
2:C:631:MET:HA	2:C:631:MET:HE2	1.98	0.46
1:B:148:ALA:HB1	1:B:151:ARG:HH12	1.80	0.46
1:A:226:LEU:HD12	1:A:299:ALA:HB2	1.96	0.46
1:A:390:ASN:HD22	1:A:390:ASN:C	2.24	0.45
1:A:159:MET:HE2	1:A:159:MET:HB3	1.76	0.44
1:B:331:ALA:O	1:B:335[B]:VAL:HG22	2.17	0.44
1:A:239:GLY:HA2	1:A:242[B]:LYS:HD2	2.00	0.43
1:B:369:PRO:HB3	1:B:373:HIS:CE1	2.53	0.43
1:A:236:LYS:HA	1:A:236:LYS:HD2	1.83	0.43
1:A:264:ILE:HD11	3:A:501:A1L7Z:C32	2.49	0.42
1:A:123:LYS:N	4:A:613[A]:HOH:O	2.53	0.42
1:B:262:SER:HB3	4:B:610:HOH:O	2.20	0.42
1:A:383:LEU:O	1:A:387:ARG:HG2	2.19	0.41

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	247/271 (91%)	244 (99%)	3 (1%)	0	100	100
1	B	248/271 (92%)	244 (98%)	4 (2%)	0	100	100
2	C	10/13 (77%)	10 (100%)	0	0	100	100
2	D	9/13 (69%)	9 (100%)	0	0	100	100
All	All	514/568 (90%)	507 (99%)	7 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	232/247 (94%)	229 (99%)	3 (1%)	65 55
1	B	232/247 (94%)	230 (99%)	2 (1%)	75 70
2	C	12/13 (92%)	12 (100%)	0	100 100
2	D	11/13 (85%)	11 (100%)	0	100 100
All	All	487/520 (94%)	482 (99%)	5 (1%)	70 67

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	123	LYS
1	A	236	LYS
1	A	293	VAL
1	B	123	LYS
1	B	311	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	352	GLN
1	A	360	GLN
1	A	373	HIS
1	A	381	GLN
1	A	390	ASN
1	A	406	ASN
1	B	255	GLN
1	B	272	ASN
1	B	343	GLN
1	B	373	HIS
1	B	374	GLN
1	B	390	ASN
1	B	420	ASN
2	D	626	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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	A1L7Z	A	501	-	36,37,37	1.14	3 (8%)	47,52,52	1.68	11 (23%)
3	A1L7Z	B	501	-	36,37,37	1.11	3 (8%)	47,52,52	1.55	10 (21%)

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
3	A1L7Z	A	501	-	-	4/38/38/38	0/2/2/2
3	A1L7Z	B	501	-	-	5/38/38/38	0/2/2/2

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	501	A1L7Z	O17-C02	2.83	1.43	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	501	A1L7Z	O17-C02	2.72	1.43	1.37
3	B	501	A1L7Z	O16-C11	2.72	1.42	1.37
3	A	501	A1L7Z	O16-C11	2.68	1.42	1.37
3	A	501	A1L7Z	O29-C24	-2.10	1.40	1.44
3	B	501	A1L7Z	O29-C24	-2.00	1.40	1.44

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	501	A1L7Z	C36-C31-C03	-5.13	96.54	114.95
3	A	501	A1L7Z	C04-C03-C02	3.89	122.35	118.26
3	B	501	A1L7Z	C36-C31-C03	-3.55	102.20	114.95
3	B	501	A1L7Z	C04-C03-C02	3.43	121.86	118.26
3	B	501	A1L7Z	C05-C04-C03	-3.02	118.81	122.14
3	A	501	A1L7Z	C05-C04-C03	-2.96	118.88	122.14
3	A	501	A1L7Z	O17-C18-C19	2.68	112.62	107.63
3	A	501	A1L7Z	SI07-C08-C09	-2.63	116.33	121.08
3	B	501	A1L7Z	C13-C08-C09	2.54	120.78	117.30
3	B	501	A1L7Z	C08-C09-C10	-2.53	119.35	122.14
3	A	501	A1L7Z	C09-C10-C11	2.52	120.91	118.26
3	A	501	A1L7Z	C21-C20-C19	-2.46	109.91	114.69
3	A	501	A1L7Z	C08-C09-C10	-2.36	119.53	122.14
3	A	501	A1L7Z	C13-C08-C09	2.33	120.50	117.30
3	A	501	A1L7Z	SI07-C05-C04	-2.32	116.88	121.08
3	B	501	A1L7Z	SI07-C08-C09	-2.32	116.89	121.08
3	B	501	A1L7Z	C09-C10-C11	2.28	120.65	118.26
3	B	501	A1L7Z	C21-C20-C19	-2.27	110.26	114.69
3	B	501	A1L7Z	O17-C02-C03	2.20	118.66	115.78
3	B	501	A1L7Z	C06-C05-C04	2.11	120.19	117.30
3	A	501	A1L7Z	C06-C05-C04	2.08	120.16	117.30

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	501	A1L7Z	C20-C21-C22-O30
3	A	501	A1L7Z	C20-C21-C22-O33
3	B	501	A1L7Z	C20-C21-C22-O33
3	B	501	A1L7Z	C20-C21-C22-O30
3	A	501	A1L7Z	C06-C05-SI07-C08
3	B	501	A1L7Z	C06-C05-SI07-C08
3	B	501	A1L7Z	C02-C03-C31-C36

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Mol	Chain	Res	Type	Atoms
3	B	501	A1L7Z	C04-C03-C31-C36
3	A	501	A1L7Z	C04-C05-SI07-C08

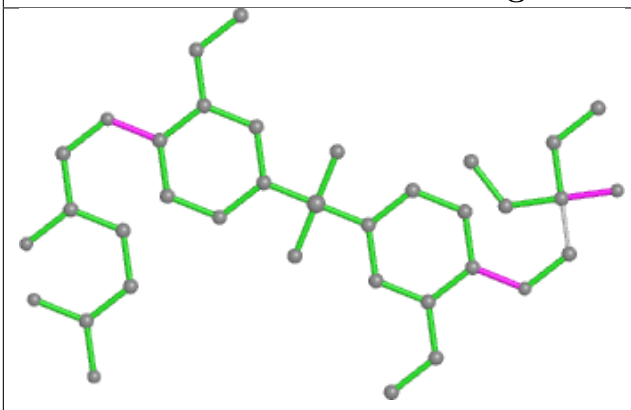
There are no ring outliers.

1 monomer is involved in 2 short contacts:

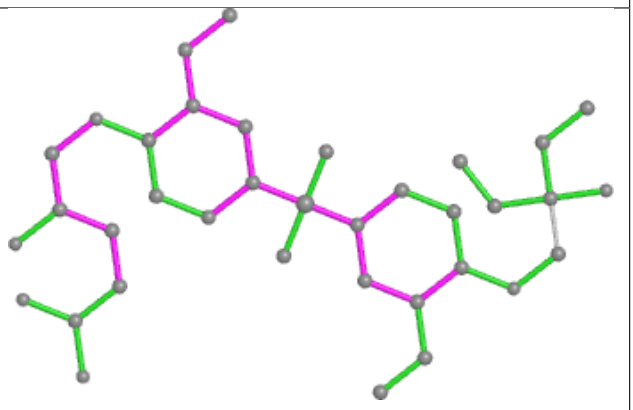
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	501	A1L7Z	2	0

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

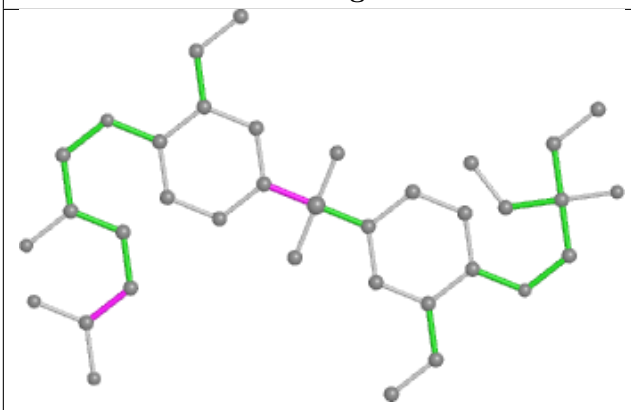
Ligand A1L7Z A 501



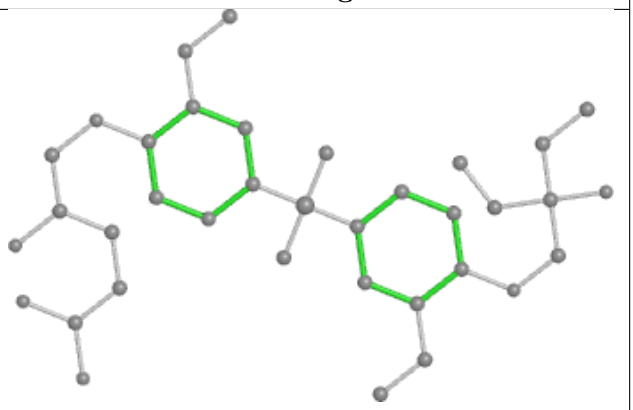
Bond lengths



Bond angles

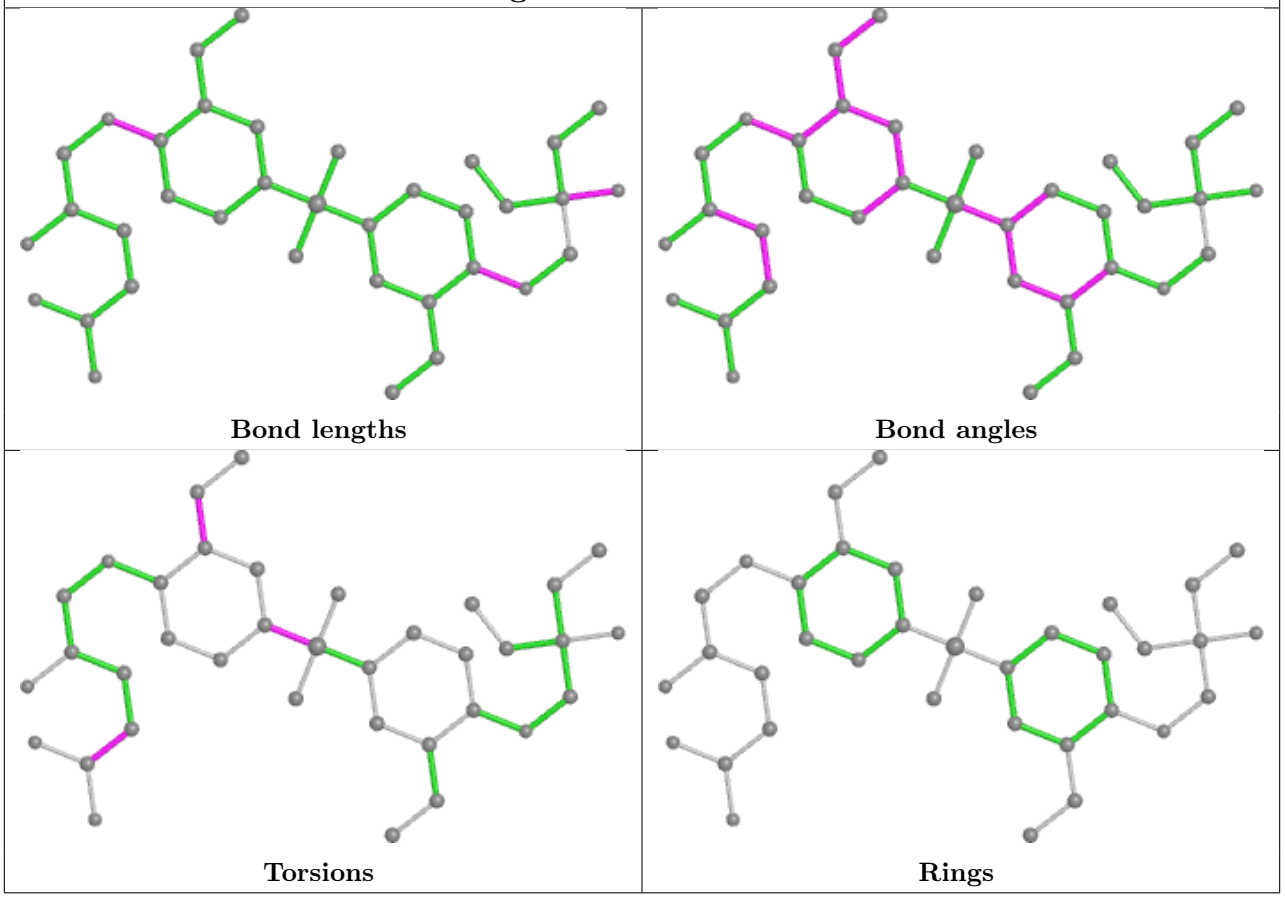


Torsions



Rings

Ligand A1L7Z B 501



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^{th} 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	240/271 (88%)	0.06	15 (6%) 27 29	7, 23, 58, 89	12 (5%)
1	B	240/271 (88%)	-0.06	8 (3%) 49 53	8, 23, 48, 88	12 (5%)
2	C	11/13 (84%)	0.93	2 (18%) 4 4	12, 26, 55, 91	1 (9%)
2	D	11/13 (84%)	0.47	1 (9%) 16 16	22, 26, 58, 70	0
All	All	502/568 (88%)	0.03	26 (5%) 34 35	7, 23, 55, 91	25 (4%)

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	159	MET	4.8
2	C	625	LYS	4.2
1	A	143	TYR	3.4
1	A	157	VAL	3.3
1	B	218	SER	3.2
1	B	159	MET	3.2
1	A	284	CYS	3.2
1	A	286	SER	3.1
1	B	278	ASP	3.0
1	A	285	GLY	2.9
1	A	288	ASP	2.8
2	D	626	ASN	2.8
1	B	285	GLY	2.8
1	A	145	PRO	2.7
1	A	147	TYR	2.5
1	A	280	MET	2.5
1	B	280[A]	MET	2.5
1	A	279	ASP	2.3
1	A	293	VAL	2.3
1	A	146	THR	2.3
1	B	373	HIS	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	402	PHE	2.2
1	B	219	PRO	2.2
1	A	289	TYR	2.1
1	B	277	MET	2.1
2	C	635	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 monosaccharides in this entry.

6.4 Ligands (i)

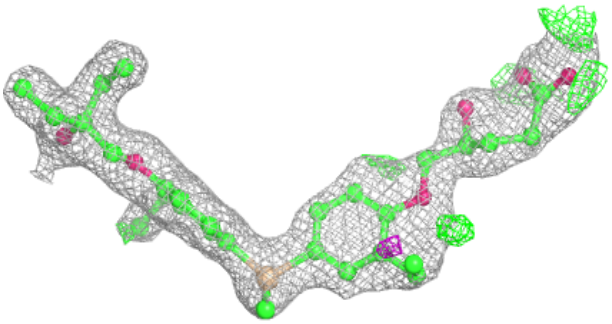
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

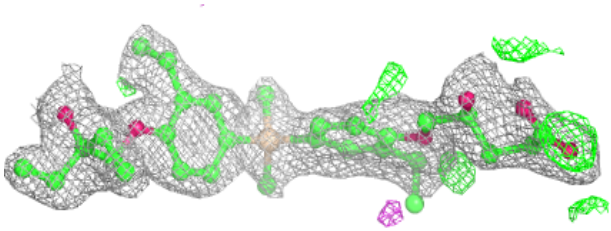
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	A1L7Z	A	501	36/36	0.91	0.11	18,32,58,63	0
3	A1L7Z	B	501	36/36	0.94	0.09	16,26,40,46	0

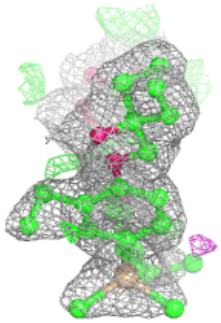
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1L7Z A 501:

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

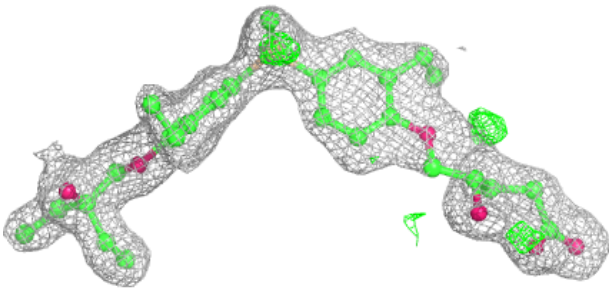


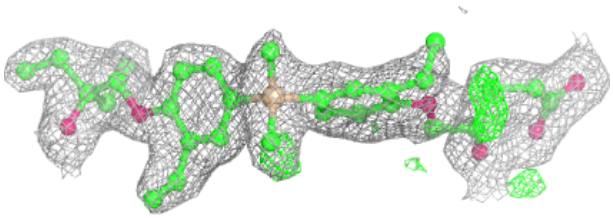


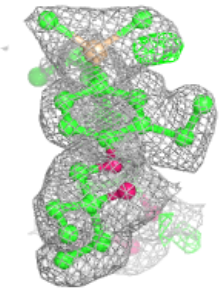


Electron density around A1L7Z B 501:

$2mF_o$-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.