WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Oct 6, 2024 – 11:20 AM EDT

PDB ID	:	1Y2H
Title	:	Catalytic Domain Of Human Phosphodiesterase 4B In Complex With 1-(2-chloro-phenyl)-3,5-dimethyl-1H-pyrazole-4-carboxylic acid ethyl ester
Authors	:	Card, G.L.; Blasdel, L.; England, B.P.; Zhang, C.; Suzuki, Y.; Gillette, S.; Fong, D.; Ibrahim, P.N.; Artis, D.R.; Bollag, G.; Milburn, M.V.; Kim, S.-H.; Schlessinger, J.; Zhang, K.Y.J.
Deposited on	:	2004-11-22
Resolution	:	2.40 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 ①) were used in the production of this report:

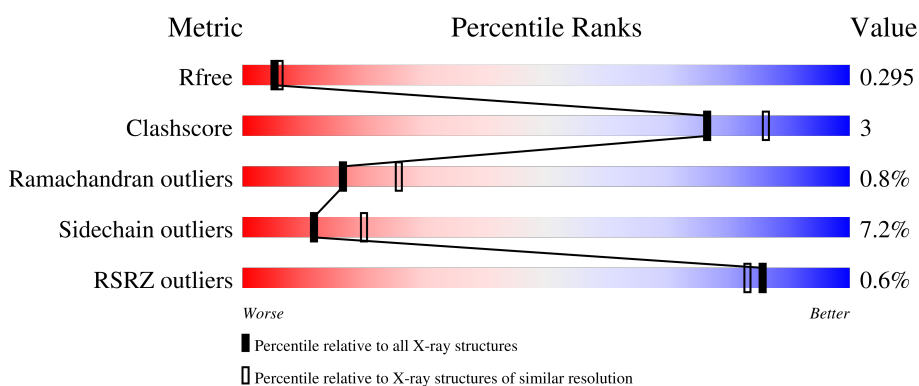|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.40 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.295
Clashscore		3
Ramachandran outliers		0.8%
Sidechain outliers		7.2%
RSRZ outliers		0.6%

Worse — *Better*

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	4642 (2.40-2.40)
Clashscore	180529	5218 (2.40-2.40)
Ramachandran outliers	177936	5158 (2.40-2.40)
Sidechain outliers	177891	5159 (2.40-2.40)
RSRZ outliers	164620	4642 (2.40-2.40)

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	398	69%　　　　12%　•　19%
1	B	398	%　66%　　　　14%　•　19%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 5320 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 cAMP-specific 3',5'-cyclic phosphodiesterase 4B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	323	Total 2617	C 1653	N 441	O 503	S 20	0	0	0
1	B	323	Total 2617	C 1653	N 441	O 503	S 20	0	0	0

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	131	MET	-	initiating methionine	UNP Q07343
A	132	GLY	-	cloning artifact	UNP Q07343
A	133	SER	-	cloning artifact	UNP Q07343
A	134	SER	-	cloning artifact	UNP Q07343
A	135	HIS	-	expression tag	UNP Q07343
A	136	HIS	-	expression tag	UNP Q07343
A	137	HIS	-	expression tag	UNP Q07343
A	138	HIS	-	expression tag	UNP Q07343
A	139	HIS	-	expression tag	UNP Q07343
A	140	HIS	-	expression tag	UNP Q07343
A	141	SER	-	cloning artifact	UNP Q07343
A	142	SER	-	cloning artifact	UNP Q07343
A	143	GLY	-	cloning artifact	UNP Q07343
A	144	LEU	-	cloning artifact	UNP Q07343
A	145	VAL	-	cloning artifact	UNP Q07343
A	146	PRO	-	cloning artifact	UNP Q07343
A	147	ARG	-	cloning artifact	UNP Q07343
A	148	GLY	-	cloning artifact	UNP Q07343
A	149	SER	-	cloning artifact	UNP Q07343
A	150	HIS	-	cloning artifact	UNP Q07343
A	151	MET	-	cloning artifact	UNP Q07343
B	131	MET	-	initiating methionine	UNP Q07343
B	132	GLY	-	cloning artifact	UNP Q07343
B	133	SER	-	cloning artifact	UNP Q07343
B	134	SER	-	cloning artifact	UNP Q07343

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Chain	Residue	Modelled	Actual	Comment	Reference
B	135	HIS	-	expression tag	UNP Q07343
B	136	HIS	-	expression tag	UNP Q07343
B	137	HIS	-	expression tag	UNP Q07343
B	138	HIS	-	expression tag	UNP Q07343
B	139	HIS	-	expression tag	UNP Q07343
B	140	HIS	-	expression tag	UNP Q07343
B	141	SER	-	cloning artifact	UNP Q07343
B	142	SER	-	cloning artifact	UNP Q07343
B	143	GLY	-	cloning artifact	UNP Q07343
B	144	LEU	-	cloning artifact	UNP Q07343
B	145	VAL	-	cloning artifact	UNP Q07343
B	146	PRO	-	cloning artifact	UNP Q07343
B	147	ARG	-	cloning artifact	UNP Q07343
B	148	GLY	-	cloning artifact	UNP Q07343
B	149	SER	-	cloning artifact	UNP Q07343
B	150	HIS	-	cloning artifact	UNP Q07343
B	151	MET	-	cloning artifact	UNP Q07343

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 1	Zn 1	0	0
2	B	1	Total 1	Zn 1	0	0

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 4 is 1-(2-CHLOROPHENYL)-3,5-DIMETHYL-1H-PYRAZOLE-4-CARBOXYLIC ACID ETHYL ESTER (three-letter code: 6DE) (formula: $C_{14}H_{15}ClN_2O_2$).
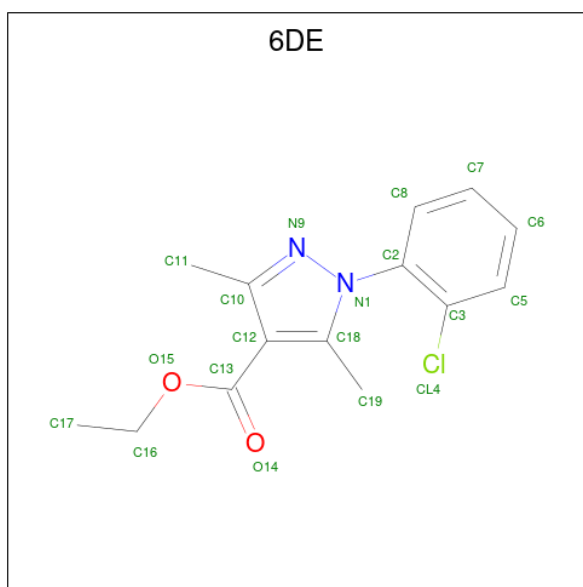
```
                                      6DE


                                                    C7

                                         C8

                               N9                          C6
                    C11
                               N            C2
                                            N1
                         C10
                                                    C5
                    C12             C18          C3
              O15
                    C13                          Cl
        C17                                      CL4
                                    C19
              C16
                    O14
```

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	Cl	N	O	0	0
			19	14	1	2	2		
4	B	1	Total	C	Cl	N	O	0	0
			19	14	1	2	2		

• Molecule 5 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	19	Total	O	0	0
			19	19		
5	B	25	Total	O	0	0
			25	25		

3 Residue-property plots ⓘ

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

• Molecule 1: cAMP-specific 3',5'-cyclic phosphodiesterase 4B

Chain A:
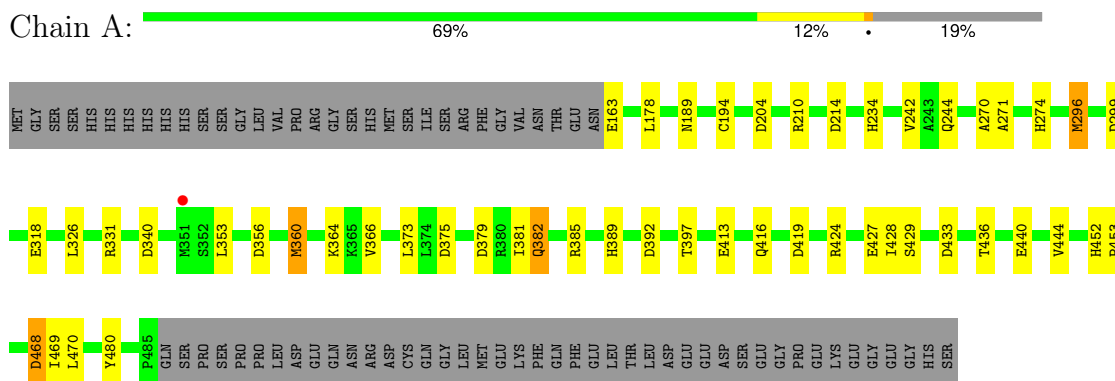
• Molecule 1: cAMP-specific 3',5'-cyclic phosphodiesterase 4B

Chain B:
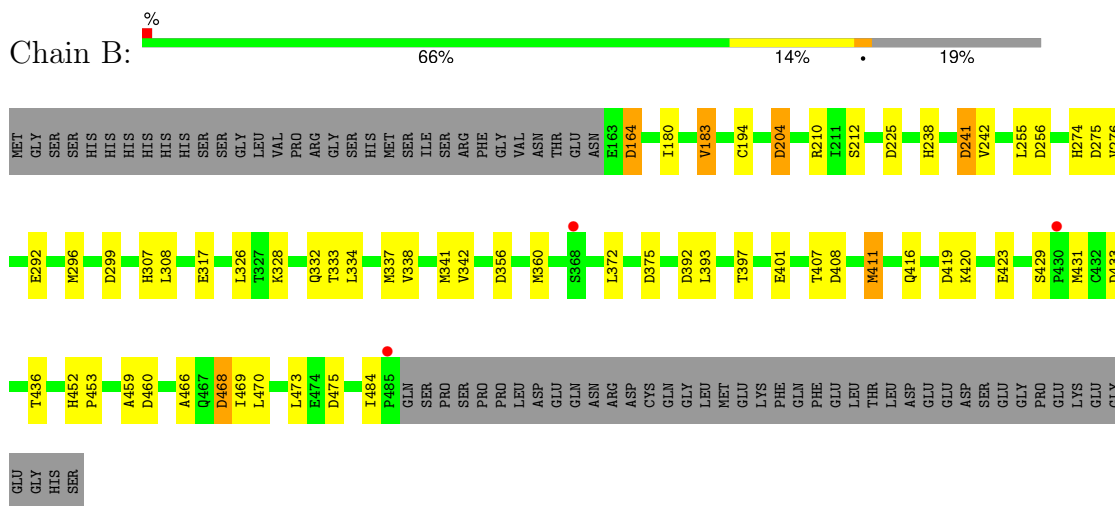
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	89.54Å 94.18Å 106.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	70.71 – 2.40 70.64 – 2.40	Depositor EDS
% Data completeness (in resolution range)	99.5 (70.71-2.40) 99.3 (70.64-2.40)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.03 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.1.25	Depositor
R, R_{free}	0.245 , 0.299 0.245 , 0.295	Depositor DCC
R_{free} test set	1779 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å^2)	53.6	Xtriage
Anisotropy	0.596	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 47.9	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.013 for k,h,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	5320	wwPDB-VP
Average B, all atoms (Å^2)	34.0	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 54.65 % 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 3.5432e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG, 6DE, CME

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	0.42	0/2661	0.78	8/3608 (0.2%)
1	B	0.46	0/2661	0.80	14/3608 (0.4%)
All	All	0.44	0/5322	0.79	22/7216 (0.3%)

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	392	ASP	CB-CG-OD2	7.50	125.05	118.30
1	B	392	ASP	CB-CG-OD2	6.71	124.34	118.30
1	B	225	ASP	CB-CG-OD2	6.50	124.15	118.30
1	A	468	ASP	CB-CG-OD2	6.15	123.84	118.30
1	B	164	ASP	CB-CG-OD2	5.99	123.69	118.30
1	B	468	ASP	CB-CG-OD2	5.95	123.65	118.30
1	A	299	ASP	CB-CG-OD2	5.72	123.44	118.30
1	A	379	ASP	CB-CG-OD2	5.63	123.36	118.30
1	B	408	ASP	CB-CG-OD2	5.54	123.29	118.30
1	A	419	ASP	CB-CG-OD2	5.46	123.21	118.30
1	B	204	ASP	CB-CG-OD2	5.39	123.16	118.30
1	B	356	ASP	CB-CG-OD2	5.39	123.15	118.30
1	B	419	ASP	CB-CG-OD2	5.30	123.07	118.30
1	A	214	ASP	CB-CG-OD2	5.18	122.96	118.30
1	B	299	ASP	CB-CG-OD2	5.17	122.95	118.30
1	A	356	ASP	CB-CG-OD2	5.14	122.92	118.30
1	B	475	ASP	CB-CG-OD2	5.13	122.92	118.30
1	A	433	ASP	CB-CG-OD2	5.12	122.91	118.30
1	B	460	ASP	CB-CG-OD2	5.07	122.87	118.30
1	B	256	ASP	CB-CG-OD2	5.03	122.83	118.30
1	B	433	ASP	CB-CG-OD2	5.00	122.80	118.30
1	B	241	ASP	CB-CG-OD2	5.00	122.80	118.30

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	2617	0	2546	12	0
1	B	2617	0	2546	18	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	19	0	15	0	0
4	B	19	0	15	1	0
5	A	19	0	0	0	0
5	B	25	0	0	0	0
All	All	5320	0	5122	29	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 (29) 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:397:THR:HB	1:B:469:ILE:HG23	1.73	0.71
1:A:397:THR:HB	1:A:469:ILE:HG23	1.73	0.70
1:A:360:MET:SD	1:A:382:GLN:HG2	2.41	0.60
1:B:275:ASP:HA	1:B:307:HIS:CE1	2.38	0.58
1:A:234:HIS:HD1	1:A:413:GLU:CD	2.06	0.58
1:B:255:LEU:HD23	1:B:372:LEU:HD12	1.86	0.57
1:B:180:ILE:HA	1:B:183:VAL:HG13	1.90	0.52
1:B:337:MET:O	1:B:341:MET:HG3	2.10	0.52
1:B:452:HIS:HB3	1:B:453:PRO:HD3	1.92	0.51
1:A:440:GLU:O	1:A:444:VAL:HG23	2.10	0.51
1:B:238:HIS:O	1:B:242:VAL:HG23	2.10	0.51
1:B:334:LEU:O	1:B:338:VAL:HG23	2.10	0.51
1:A:234:HIS:ND1	1:A:413:GLU:OE2	2.43	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:274:HIS:O	1:B:307:HIS:ND1	2.47	0.48
1:B:308:LEU:HG	1:B:342:VAL:HG11	1.96	0.47
1:A:242:VAL:HG12	1:A:271:ALA:HB1	1.96	0.47
1:A:381:ILE:O	1:A:385:ARG:HG3	2.15	0.47
1:B:393:LEU:CD2	4:B:102:6DE:CL4	3.00	0.47
1:B:333:THR:O	1:B:337:MET:HG3	2.16	0.46
1:B:397:THR:HG22	1:B:473:LEU:HD13	1.98	0.45
1:A:270:ALA:O	1:A:274:HIS:HB3	2.17	0.45
1:A:178:LEU:HD22	1:A:244:GLN:HG3	1.98	0.44
1:A:353:LEU:HD23	1:A:389:HIS:CD2	2.53	0.44
1:A:296:MET:SD	1:B:296:MET:SD	3.18	0.42
1:B:459:ALA:HA	1:B:466:ALA:HB3	2.02	0.42
1:A:452:HIS:HB3	1:A:453:PRO:HD3	2.01	0.41
1:B:407:THR:O	1:B:411:MET:HB2	2.19	0.41
1:B:276:VAL:O	1:B:307:HIS:CD2	2.73	0.41
1:B:180:ILE:HG21	1:B:241:ASP:HB2	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	320/398 (80%)	308 (96%)	10 (3%)	2 (1%)	22	33
1	B	320/398 (80%)	304 (95%)	13 (4%)	3 (1%)	14	22
All	All	640/796 (80%)	612 (96%)	23 (4%)	5 (1%)	16	26

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	210	ARG
1	B	317	GLU

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Mol	Chain	Res	Type
1	A	375	ASP
1	B	375	ASP
1	A	366	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	292/359 (81%)	270 (92%)	22 (8%)	11	18
1	B	292/359 (81%)	272 (93%)	20 (7%)	13	22
All	All	584/718 (81%)	542 (93%)	42 (7%)	12	20

All (42) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	163	GLU
1	A	189	ASN
1	A	204	ASP
1	A	210	ARG
1	A	296	MET
1	A	318	GLU
1	A	326	LEU
1	A	331	ARG
1	A	340	ASP
1	A	360	MET
1	A	364	LYS
1	A	373	LEU
1	A	382	GLN
1	A	416	GLN
1	A	424	ARG
1	A	427	GLU
1	A	428	ILE
1	A	429	SER
1	A	436	THR
1	A	468	ASP

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Mol	Chain	Res	Type
1	A	470	LEU
1	A	480	TYR
1	B	164	ASP
1	B	183	VAL
1	B	204	ASP
1	B	212	SER
1	B	292	GLU
1	B	326	LEU
1	B	328	LYS
1	B	332	GLN
1	B	360	MET
1	B	401	GLU
1	B	411	MET
1	B	416	GLN
1	B	420	LYS
1	B	423	GLU
1	B	429	SER
1	B	431	MET
1	B	436	THR
1	B	468	ASP
1	B	470	LEU
1	B	484	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
1	CME	A	194	1	8,9,10	1.84	2 (25%)	6,9,11	3.00	3 (50%)
1	CME	B	194	1	8,9,10	1.83	2 (25%)	6,9,11	2.64	3 (50%)

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
1	CME	A	194	1	-	3/5/8/10	-
1	CME	B	194	1	-	1/5/8/10	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	194	CME	OH-CZ	-3.54	1.24	1.42
1	A	194	CME	OH-CZ	-3.53	1.24	1.42
1	B	194	CME	CA-N	-2.71	1.40	1.48
1	A	194	CME	CA-N	-2.56	1.40	1.48

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	194	CME	CB-SG-SD	5.25	117.44	103.86
1	B	194	CME	CB-SG-SD	4.09	114.45	103.86
1	B	194	CME	CE-SD-SG	3.28	117.85	103.46
1	A	194	CME	CE-SD-SG	3.17	117.39	103.46
1	A	194	CME	CA-CB-SG	-2.86	102.73	114.45
1	B	194	CME	CA-CB-SG	-2.63	103.69	114.45

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	194	CME	CE-SD-SG-CB
1	B	194	CME	SD-CE-CZ-OH
1	A	194	CME	N-CA-CB-SG
1	A	194	CME	SD-CE-CZ-OH

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 4 are monoatomic - leaving 2 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	6DE	B	102	-	16,20,20	1.08	0	17,28,28	0.77	1 (5%)
4	6DE	A	101	-	16,20,20	1.13	1 (6%)	17,28,28	0.97	1 (5%)

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	6DE	B	102	-	-	1/7/11/11	0/2/2/2
4	6DE	A	101	-	-	0/7/11/11	0/2/2/2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	101	6DE	C3-C2	-2.45	1.38	1.42

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	102	6DE	O15-C13-C12	2.61	118.17	112.35
4	A	101	6DE	O15-C13-C12	2.30	117.46	112.35

There are no chirality outliers.
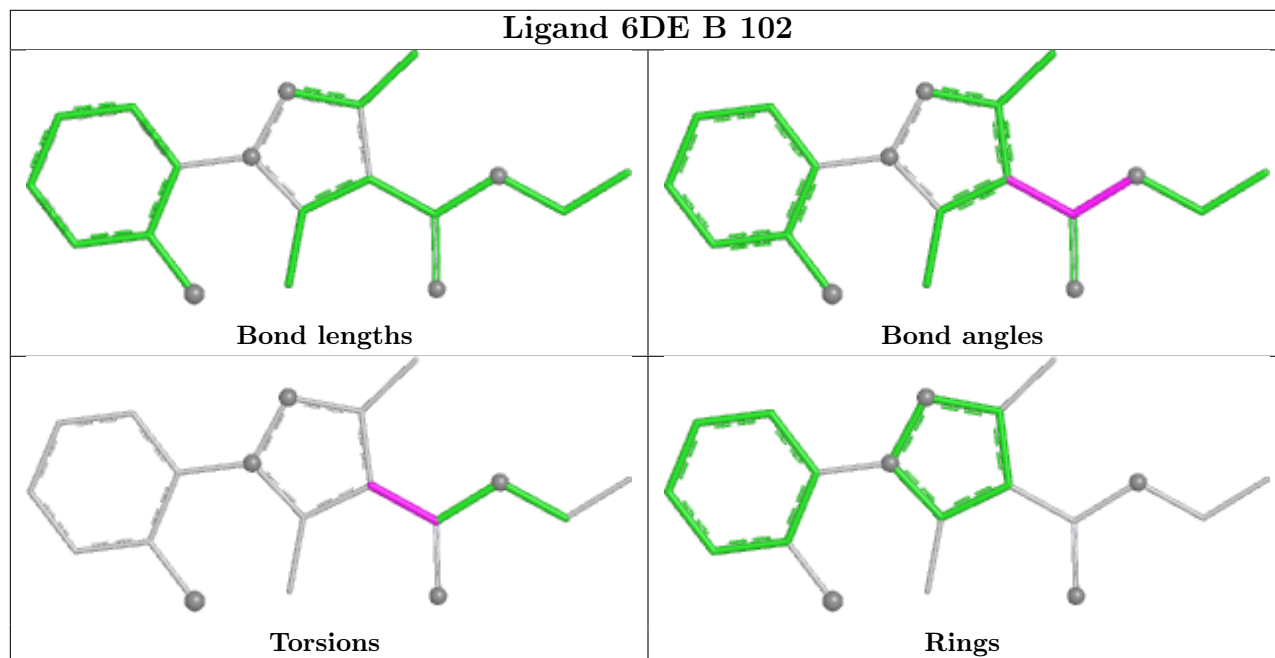
All (1) torsion outliers are listed below:
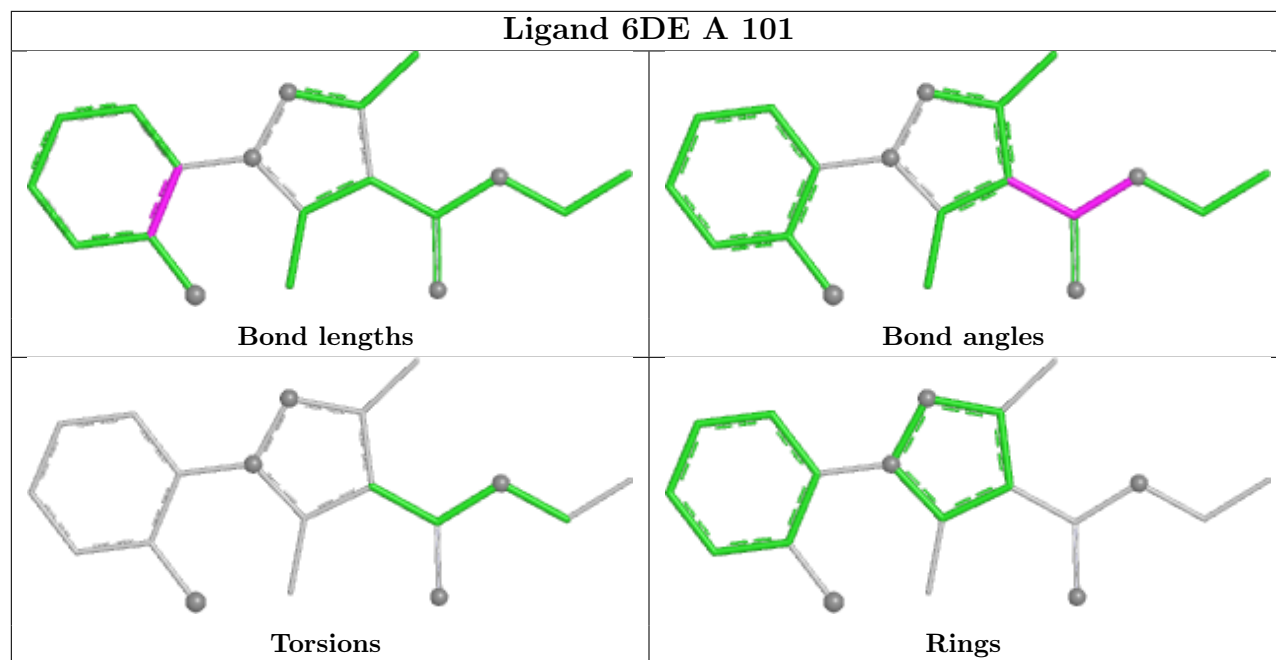
Mol	Chain	Res	Type	Atoms
4	B	102	6DE	C10-C12-C13-O15

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	102	6DE	1	0

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

Ligand 6DE B 102

Bond lengths

Bond angles

Torsions

Rings

Ligand 6DE A 101

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	322/398 (80%)	0.05	1 (0%)	90	88	24, 34, 42, 46	0
1	B	322/398 (80%)	0.06	3 (0%)	81	78	23, 34, 42, 46	0
All	All	644/796 (80%)	0.06	4 (0%)	85	83	23, 34, 42, 46	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	485	PRO	2.4
1	B	430	PRO	2.4
1	A	351	MET	2.3
1	B	368	SER	2.1

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

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(Å²)	Q<0.9
1	CME	A	194	10/11	0.86	0.14	46,48,73,74	0
1	CME	B	194	10/11	0.90	0.12	46,48,71,73	0

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

WORLDWIDE
wwPDB
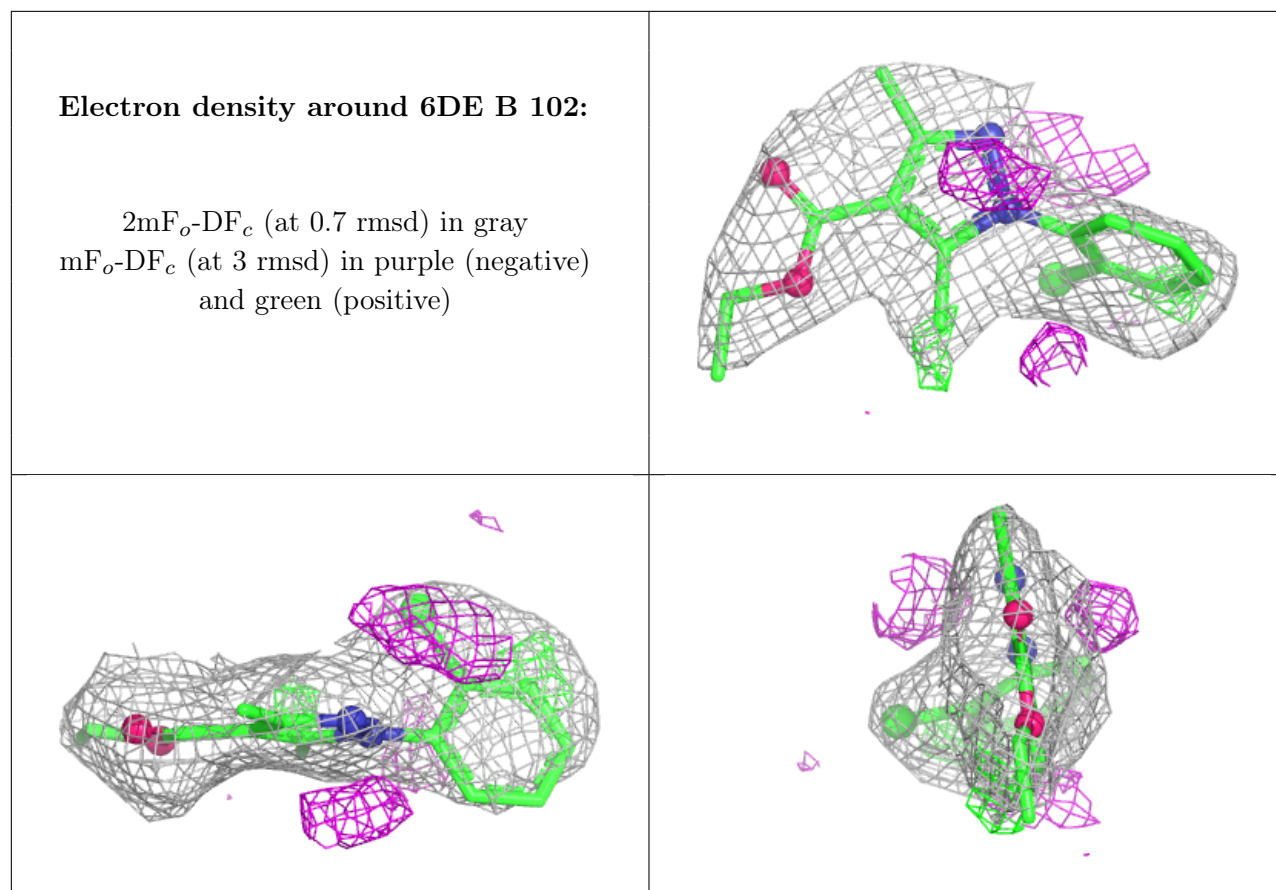PROTEIN DATA BANK

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
4	6DE	A	101	19/19	0.85	0.29	114,114,115,116	0
4	6DE	B	102	19/19	0.85	0.27	114,115,116,116	0
3	MG	A	1002	1/1	0.98	0.06	27,27,27,27	0
3	MG	B	1002	1/1	0.99	0.05	53,53,53,53	0
2	ZN	B	1001	1/1	0.99	0.02	45,45,45,45	0
2	ZN	A	1001	1/1	0.99	0.03	42,42,42,42	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 6DE A 101:

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

Electron density around 6DE B 102:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.