



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 13, 2017 – 06:34 pm GMT

PDB ID : 5HNI
Title : CRYSTAL STRUCTURE OF CMET WT with compound 3
Authors : Vallee, F.; Houtmann, J.
Deposited on : 2016-01-18
Resolution : 1.71 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7.2 (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

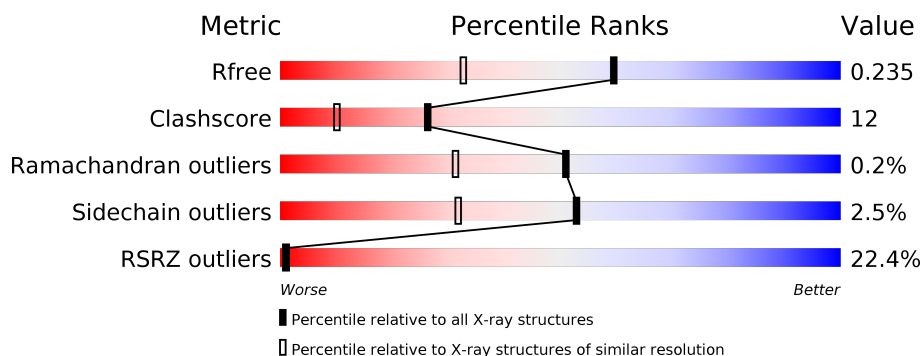
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.71 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	4385 (1.74-1.70)
Clashscore	112137	4841 (1.74-1.70)
Ramachandran outliers	110173	4771 (1.74-1.70)
Sidechain outliers	110143	4771 (1.74-1.70)
RSRZ outliers	101464	4426 (1.74-1.70)

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

Mol	Chain	Length	Quality of chain
1	X	312	
1	Y	312	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 4345 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.

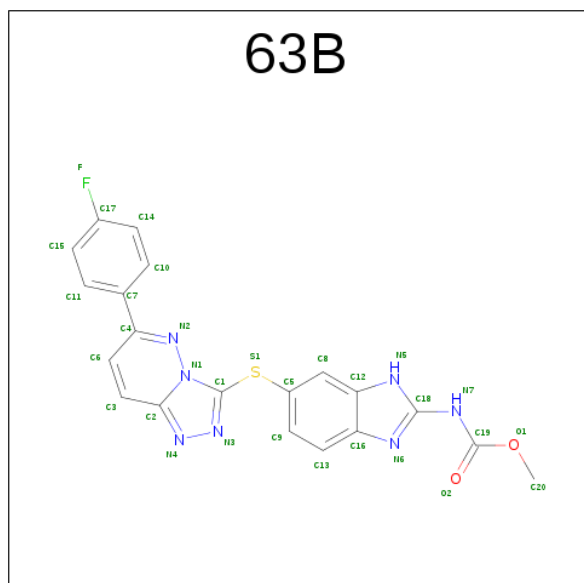
- Molecule 1 is a protein called Hepatocyte growth factor receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	X	245	Total	C	N	O	S	0	0	0
			1952	1265	332	340	15			
1	Y	245	Total	C	N	O	S	0	0	0
			1952	1265	332	340	15			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	1194	PHE	TYR	conflict	UNP P08581
X	1234	PHE	TYR	conflict	UNP P08581
X	1235	ASP	TYR	conflict	UNP P08581
Y	1194	PHE	TYR	conflict	UNP P08581
Y	1234	PHE	TYR	conflict	UNP P08581
Y	1235	ASP	TYR	conflict	UNP P08581

- Molecule 2 is methyl (6-{[6-(4-fluorophenyl)[1,2,4]triazolo[4,3-b]pyridazin-3-yl]sulfanyl}-1H-benzimidazol-2-yl)carbamate (three-letter code: 63B) (formula: C₂₀H₁₄FN₇O₂S).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	X	1	Total	C	F	N	O	S	0	0
			31	20	1	7	2	1		
2	Y	1	Total	C	F	N	O	S	0	0
			31	20	1	7	2	1		

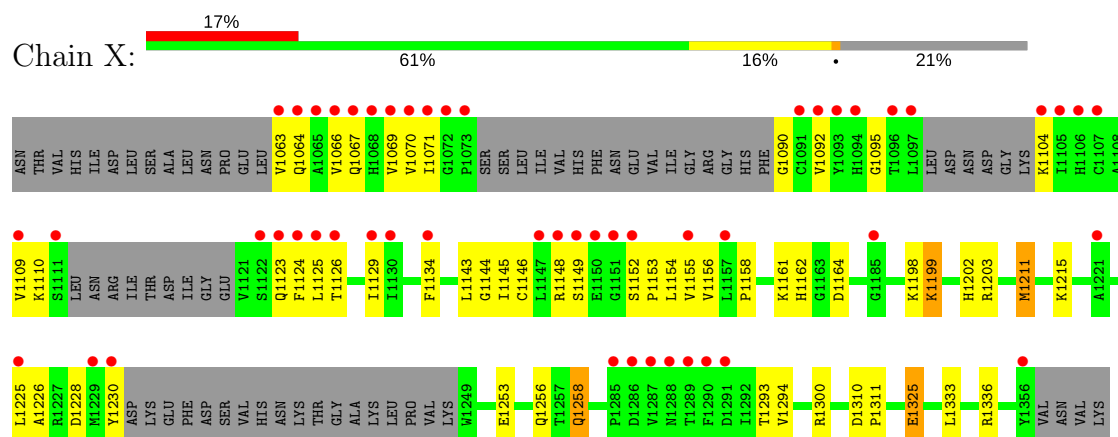
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	X	194	Total	O	0	0
			194	194		
3	Y	185	Total	O	0	0
			185	185		

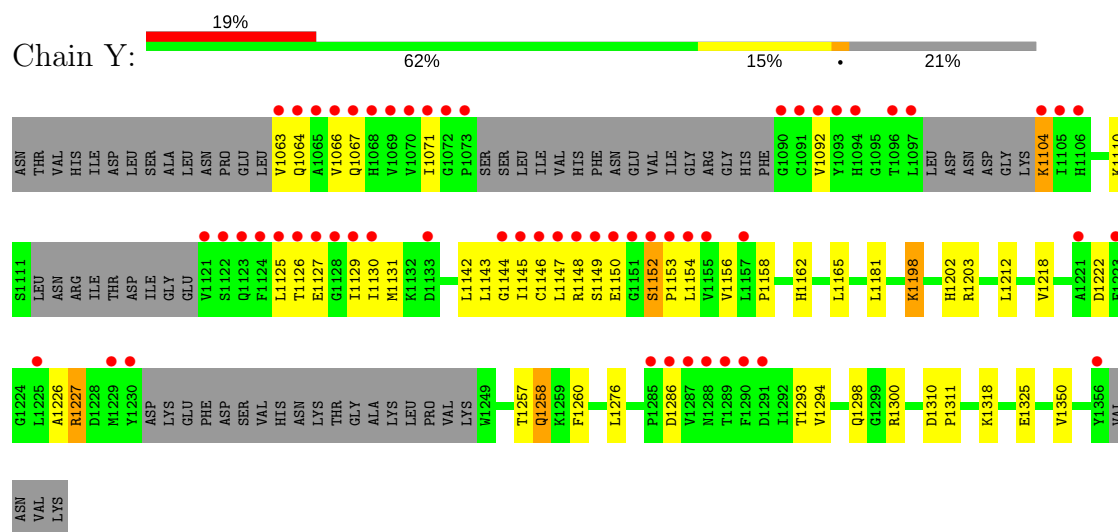
3 Residue-property plots [i](#)

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: Hepatocyte growth factor receptor



- Molecule 1: Hepatocyte growth factor receptor



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	42.85Å 47.06Å 81.98Å 76.96° 76.96° 90.00°	Depositor
Resolution (Å)	77.70 – 1.71 25.42 – 1.60	Depositor EDS
% Data completeness (in resolution range)	77.1 (77.70-1.71) 64.4 (25.42-1.60)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.61 (at 1.60Å)	Xtriage
Refinement program	CNX	Depositor
R, R_{free}	0.227 , 0.245 0.241 , 0.235	Depositor DCC
R_{free} test set	2509 reflections (5.26%)	DCC
Wilson B-factor (Å ²)	13.3	Xtriage
Anisotropy	0.319	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 64.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.147 for h,-k,h-l	Xtriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	4345	wwPDB-VP
Average B, all atoms (Å ²)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.14% 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: 63B

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	X	0.29	0/2000	0.46	0/2705
1	Y	0.29	0/2000	0.47	0/2705
All	All	0.29	0/4000	0.47	0/5410

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	X	1952	0	1962	44	0
1	Y	1952	0	1962	48	0
2	X	31	0	0	0	0
2	Y	31	0	0	1	0
3	X	194	0	0	7	0
3	Y	185	0	0	5	0
All	All	4345	0	3924	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 12.

The worst 5 of 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:Y:1127:GLU:HA	1:Y:1130:ILE:HB	1.48	0.93
1:Y:1152:SER:H	1:Y:1153:PRO:HA	1.33	0.92
1:X:1069:VAL:HG21	1:X:1129:ILE:HA	1.61	0.82
1:Y:1144:GLY:O	1:Y:1156:VAL:HG22	1.85	0.76
1:Y:1063:VAL:HG23	1:Y:1064:GLN:HG3	1.69	0.74

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	X	235/312 (75%)	225 (96%)	10 (4%)	0	100	100
1	Y	235/312 (75%)	226 (96%)	8 (3%)	1 (0%)	38	20
All	All	470/624 (75%)	451 (96%)	18 (4%)	1 (0%)	51	31

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	Y	1152	SER

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	X	216/277 (78%)	210 (97%)	6 (3%)	49	27
1	Y	216/277 (78%)	211 (98%)	5 (2%)	56	35
All	All	432/554 (78%)	421 (98%)	11 (2%)	53	32

5 of 11 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	X	1258	GLN
1	X	1325	GLU
1	Y	1227	ARG
1	X	1225	LEU
1	Y	1198	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
1	X	1258	GLN
1	X	1304	GLN
1	Y	1256	GLN
1	X	1256	GLN
1	Y	1167	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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

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	$\# Z > 2$
2	63B	X	1401	-	30,35,35	2.93	10 (33%)	33,50,50	3.01	9 (27%)
2	63B	Y	1401	-	30,35,35	2.95	10 (33%)	33,50,50	2.98	10 (30%)

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	63B	X	1401	-	-	2/10/14/14	0/5/5/5
2	63B	Y	1401	-	-	2/10/14/14	0/5/5/5

The worst 5 of 20 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	Y	1401	63B	N4-N3	-6.39	1.26	1.37
2	X	1401	63B	N4-N3	-6.31	1.26	1.37
2	X	1401	63B	C15-C17	2.23	1.41	1.37
2	X	1401	63B	C14-C10	2.38	1.43	1.38
2	Y	1401	63B	C14-C17	2.40	1.41	1.37

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	X	1401	63B	C18-N7-C19	-8.32	115.38	127.67
2	Y	1401	63B	C18-N7-C19	-8.11	115.68	127.67
2	X	1401	63B	O1-C19-O2	-5.96	116.43	124.60
2	Y	1401	63B	O1-C19-O2	-5.89	116.53	124.60
2	X	1401	63B	C6-C4-N2	-4.40	117.42	121.59

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	X	1401	63B	C20-O1-C19-O2
2	X	1401	63B	C20-O1-C19-N7
2	Y	1401	63B	C20-O1-C19-N7
2	Y	1401	63B	C20-O1-C19-O2

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	Y	1401	63B	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	X	245/312 (78%)	1.42	52 (21%) 1 1	4, 16, 66, 102	0
1	Y	245/312 (78%)	1.86	58 (23%) 1 1	5, 16, 72, 98	0
All	All	490/624 (78%)	1.64	110 (22%) 1 1	4, 16, 70, 102	0

The worst 5 of 110 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	Y	1065	ALA	30.3
1	Y	1072	GLY	25.0
1	Y	1126	THR	22.8
1	X	1065	ALA	20.3
1	X	1063	VAL	18.4

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
2	63B	Y	1401	31/31	0.67	0.24	1.18	22,33,36,37	0
2	63B	X	1401	31/31	0.72	0.21	0.83	22,30,36,38	0

6.5 Other polymers [i](#)

There are no such residues in this entry.