W O R L D W I D E
wwPDB
P R O T E I N   D A T A   B A N K

Full wwPDB X-ray Structure Validation Report ⓘ

Dec 4, 2023 – 04:04 am GMT

PDB ID	:	2VST
Title	:	hPPARgamma Ligand binding domain in complex with 13-(S)-HODE
Authors	:	Itoh, T.; Fairall, L.; Schwabe, J.W.R.
Deposited on	:	2008-04-29
Resolution	:	2.35 Å(reported)

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

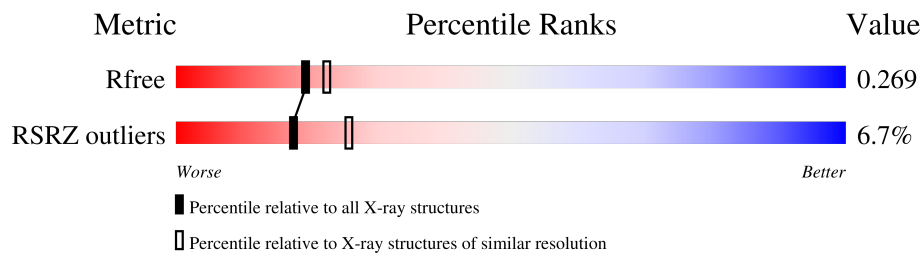|		
MolProbity	:	FAILED
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.35 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		0.269
RSRZ outliers		6.7%

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}	130704	1164 (2.36-2.36)
RSRZ outliers	127900	1150 (2.36-2.36)

MolProbity failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 4199 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 PEROXISOME PROLIFERATOR-ACTIVATED RECEP-TOR GAMMA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	260	Total	C	N	O	S	0	0	0
			2075	1337	339	389	10			
1	B	248	Total	C	N	O	S	0	0	0
			1987	1286	327	365	9			

- Molecule 2 is (9Z,11E,13S)-13-hydroxyoctadeca-9,11-dienoic acid (three-letter code: 243) (formula: $C_{18}H_{32}O_3$).
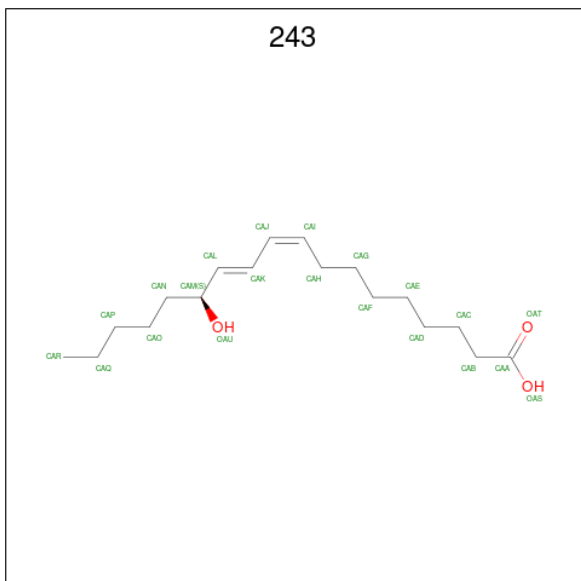
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			21	18	3		
2	B	1	Total	C	O	0	0
			21	18	3		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	57	Total O 57 57	0	0
3	B	38	Total O 38 38	0	0

MolProbity failed to run properly - this section is therefore empty.

3 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	93.20Å 61.37Å 118.55Å 90.00° 102.73° 90.00°	Depositor
Resolution (Å)	48.83 – 2.35 50.86 – 2.35	Depositor EDS
% Data completeness (in resolution range)	99.0 (48.83-2.35) 99.1 (50.86-2.35)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.32 (at 2.34Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.234 , 0.274 0.229 , 0.269	Depositor DCC
R_{free} test set	1359 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	41.8	Xtriage
Anisotropy	0.710	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 52.2	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	4199	wwPDB-VP
Average B, all atoms (Å^2)	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.53% of the height of the origin peak. No significant pseudotranslation is detected.*

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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.

4 Model quality ⓘ

4.1 Standard geometry ⓘ

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts ⓘ

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4.3 Torsion angles ⓘ

4.3.1 Protein backbone ⓘ

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4.3.2 Protein sidechains ⓘ

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA ⓘ

MolProbity failed to run properly - this section is therefore empty.

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

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

4.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

4.6 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	243	A	1477	-	20,20,20	0.50	0	21,21,21	1.07	2 (9%)
2	243	B	1476	-	20,20,20	0.50	0	21,21,21	1.07	2 (9%)

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	243	A	1477	-	-	6/19/19/19	-
2	243	B	1476	-	-	6/19/19/19	-

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1476	243	CAM-CAL-CAK	-2.10	120.02	125.14
2	A	1477	243	CAM-CAL-CAK	-2.10	120.02	125.14
2	A	1477	243	CAO-CAN-CAM	-2.05	111.01	115.12
2	B	1476	243	CAO-CAN-CAM	-2.03	111.05	115.12

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1476	243	CAE-CAF-CAG-CAH
2	B	1476	243	CAB-CAC-CAD-CAE
2	A	1477	243	CAB-CAC-CAD-CAE
2	B	1476	243	CAN-CAO-CAP-CAQ
2	B	1476	243	CAF-CAG-CAH-CAI
2	B	1476	243	CAI-CAJ-CAK-CAL
2	A	1477	243	CAI-CAJ-CAK-CAL
2	A	1477	243	CAE-CAF-CAG-CAH
2	A	1477	243	CAO-CAP-CAQ-CAR
2	B	1476	243	CAG-CAH-CAI-CAJ
2	A	1477	243	OAT-CAA-CAB-CAC

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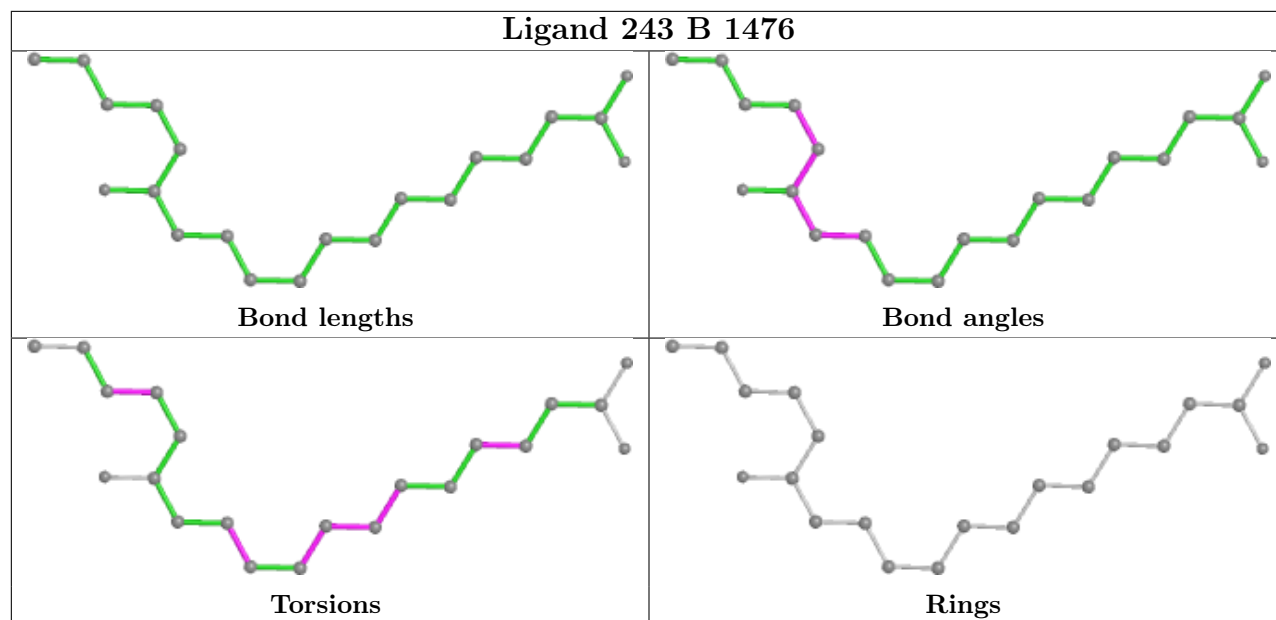| Mol	Chain	Res	Type	Atoms
2	A	1477	243	OAS-CAA-CAB-CAC

There are no ring outliers.

No monomer is involved in short contacts.

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 243 A 1477

Bond lengths   Bond angles

Torsions   Rings

Ligand 243 B 1476

Bond lengths

Bond angles

Torsions

Rings
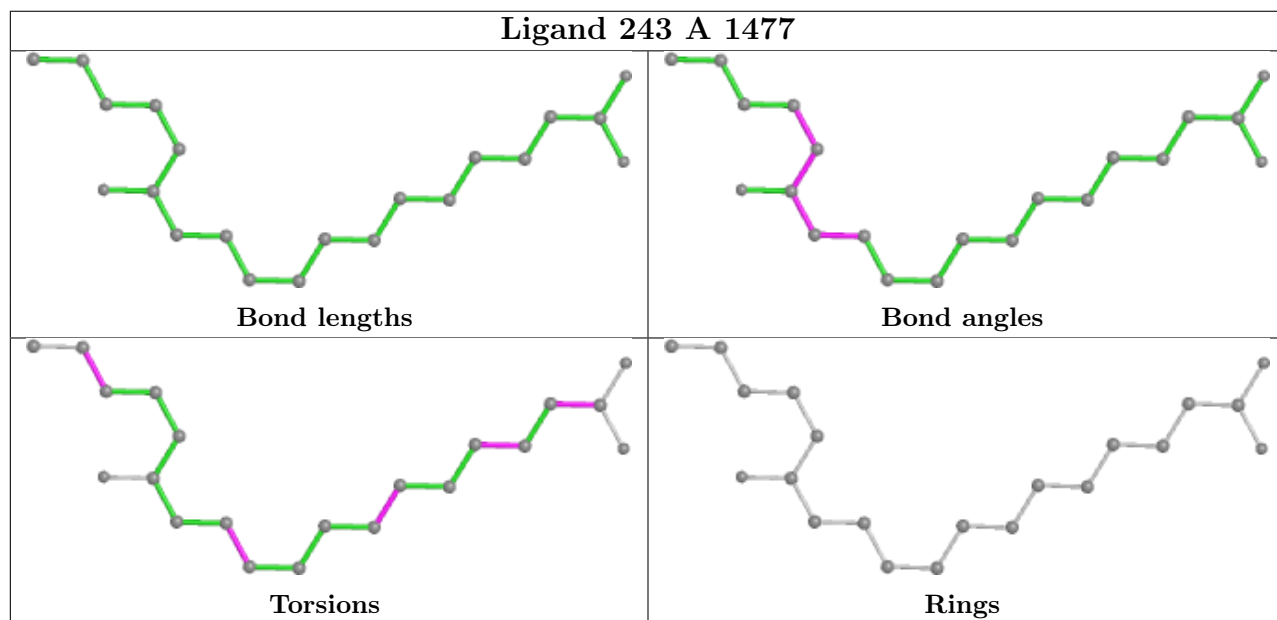
4.7 Other polymers ⓘ

There are no such residues in this entry.

4.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

5 Fit of model and data ⓘ

5.1 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	260/276 (94%)	0.54	10 (3%)	40	53	28, 50, 81, 93	0
1	B	248/276 (89%)	0.71	24 (9%)	7	12	29, 49, 86, 98	0
All	All	508/552 (92%)	0.62	34 (6%)	17	26	28, 49, 84, 98	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	256	MET	5.2
1	B	236	ILE	4.6
1	B	247	PHE	3.8
1	A	252	MET	3.8
1	B	277	VAL	3.8
1	A	261	LYS	3.7
1	B	244	LYS	3.6
1	B	360	PHE	3.3
1	B	254	SER	3.3
1	B	356	LEU	3.3
1	A	360	PHE	3.2
1	B	459	THR	3.2
1	B	352	PHE	3.0
1	B	470	GLN	2.9
1	A	204	LEU	2.9
1	B	287	PHE	2.8
1	B	261	LYS	2.8
1	A	253	ASN	2.7
1	A	363	PHE	2.6
1	B	260	ASP	2.5
1	B	238	THR	2.5
1	B	469	LEU	2.4
1	A	257	MET	2.4
1	B	473	TYR	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	279	ILE	2.2
1	B	439	MET	2.2
1	B	248	VAL	2.2
1	B	237	LEU	2.2
1	A	256	MET	2.2
1	B	456	ILE	2.1
1	A	282	PHE	2.1
1	B	255	LEU	2.0
1	A	241	THR	2.0
1	B	252	MET	2.0

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

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

5.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.4 Ligands ⓘ

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
2	243	B	1476	21/21	0.78	0.26	59,66,68,68	0
2	243	A	1477	21/21	0.81	0.25	61,68,72,73	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 243 B 1476:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
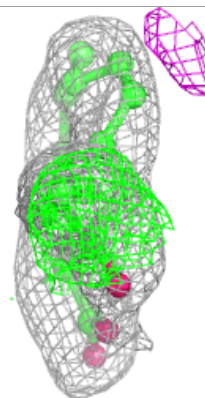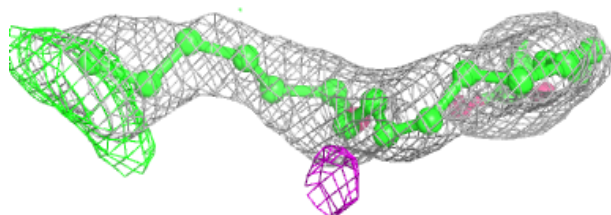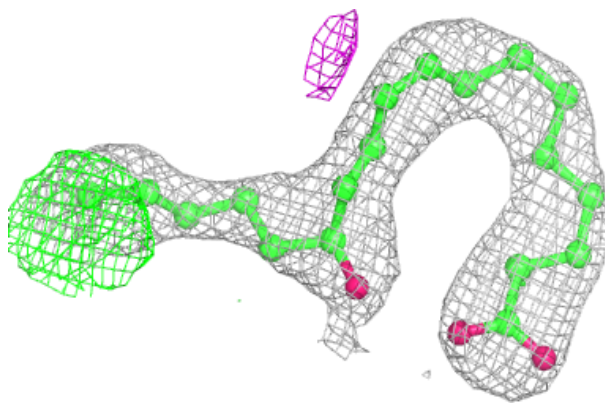
Electron density around 243 A 1477:

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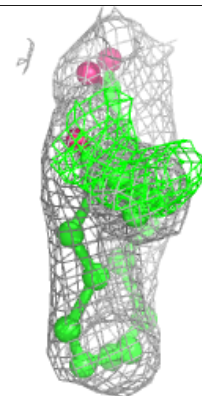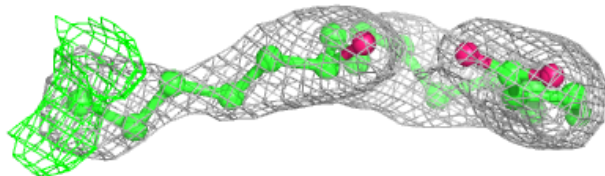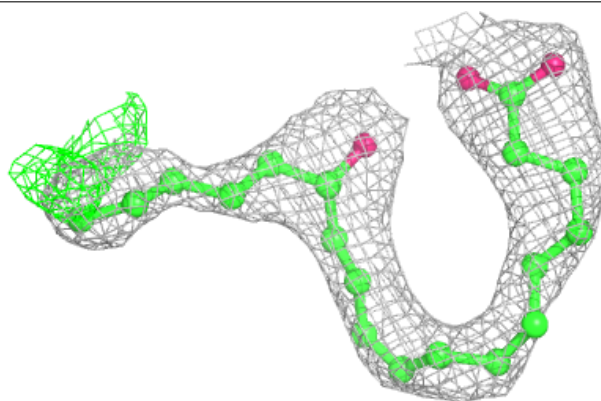
5.5 Other polymers (i)

There are no such residues in this entry.