WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Dec 6, 2023 – 04:35 am GMT

PDB ID	:	2VV1
Title	:	hPPARgamma Ligand binding domain in complex with 4-HDHA
Authors	:	Itoh, T.; Fairall, L.; Schwabe, J.W.R.
Deposited on	:	2008-06-02
Resolution	:	2.20 Å(reported)

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

|		
MolProbity	:	4.02b-467
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 2.20 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.
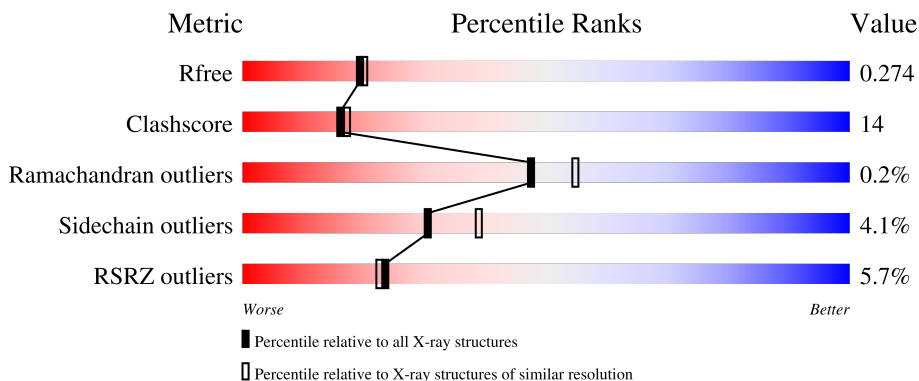
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	276	3% / 70% / 22% / · 7%
2	B	276	7% / 62% / 22% / · 13%

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
3	4HD	A	1476	-	-	X	-
3	4HD	B	1474	X	-	X	-

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 4111 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 RECEPTOR GAMMA.

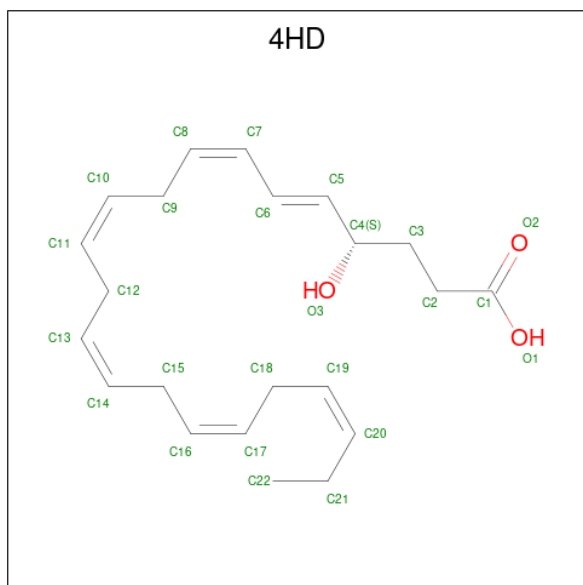| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	256	Total 2044	C 1318	N 332	O 384	S 10	0	0	0

- Molecule 2 is a protein called PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR GAMMA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	239	Total 1911	C 1239	N 312	O 351	S 9	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	209	SER	ALA	conflict	UNP P37231

- Molecule 3 is (4S,5E,7Z,10Z,13Z,16Z,19Z)-4-hydroxydocosa-5,7,10,13,16,19-hexaenoic acid (three-letter code: 4HD) (formula: $C_{22}H_{32}O_3$).

4HD

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 25	C 22	O 3	0	0
3	B	1	Total 25	C 22	O 3	0	0

• Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	53	Total 53	O 53	0	0
4	B	53	Total 53	O 53	0	0

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: PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR GAMMA
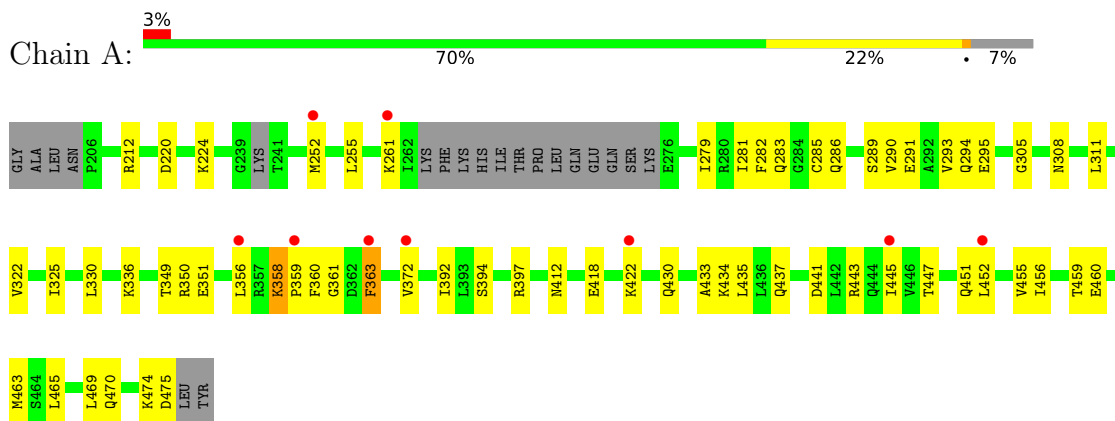
• Molecule 2: PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR GAMMA
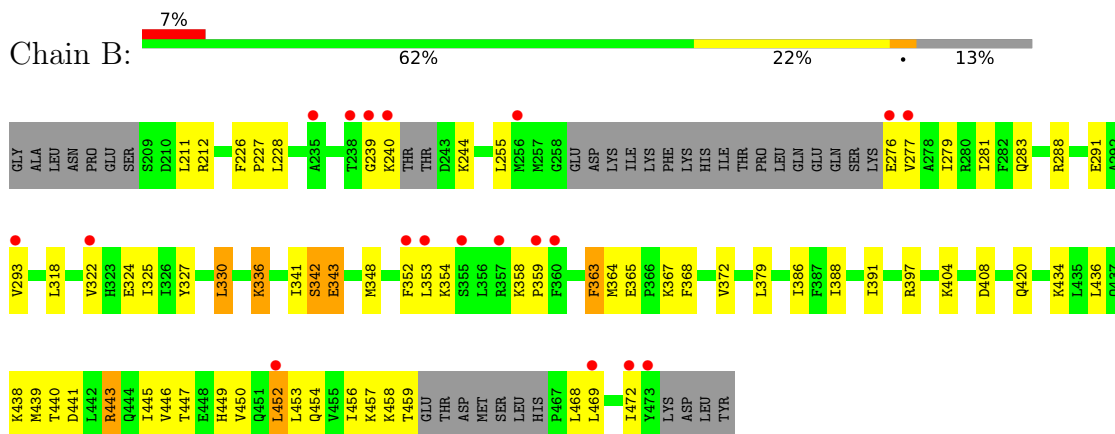
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	93.20Å 62.20Å 118.89Å 90.00° 102.75° 90.00°	Depositor
Resolution (Å)	49.27 – 2.20 49.27 – 2.20	Depositor EDS
% Data completeness (in resolution range)	78.9 (49.27-2.20) 92.9 (49.27-2.20)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.34 (at 2.20Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.239 , 0.277 0.240 , 0.274	Depositor DCC
R_{free} test set	2663 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å^2)	39.4	Xtriage
Anisotropy	0.671	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 53.7	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	0.94	EDS
Total number of atoms	4111	wwPDB-VP
Average B, all atoms (Å^2)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.47% 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.

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: 4HD

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	0.37	0/2077	0.56	0/2798
2	B	0.34	0/1941	0.56	0/2611
All	All	0.36	0/4018	0.56	0/5409

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	2044	0	2096	49	0
2	B	1911	0	1976	56	0
3	A	25	0	31	10	0
3	B	25	0	31	14	0
4	A	53	0	0	1	0
4	B	53	0	0	2	0
All	All	4111	0	4134	118	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 14.

All (118) 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)
3:A:1476:4HD:C2	3:A:1476:4HD:H6	1.77	1.15
3:A:1476:4HD:H2C2	3:A:1476:4HD:C6	1.73	1.06
3:B:1474:4HD:H152	3:B:1474:4HD:H19	1.38	1.04
2:B:293:VAL:HG22	2:B:322:VAL:HG21	1.46	0.95
3:A:1476:4HD:C2	3:A:1476:4HD:C6	2.34	0.94
3:B:1474:4HD:H152	3:B:1474:4HD:C19	2.04	0.85
3:A:1476:4HD:H6	3:A:1476:4HD:H2C1	1.61	0.82
2:B:336:LYS:NZ	2:B:336:LYS:H	1.79	0.81
1:A:359:PRO:HB2	1:A:452:LEU:HD11	1.61	0.80
1:A:418:GLU:O	1:A:422:LYS:HG2	1.80	0.80
3:B:1474:4HD:H121	3:B:1474:4HD:H16	1.63	0.80
3:B:1474:4HD:C12	3:B:1474:4HD:C16	2.61	0.78
3:B:1474:4HD:H16	3:B:1474:4HD:C12	2.13	0.77
2:B:288:ARG:HG3	3:B:1474:4HD:C3	2.19	0.72
1:A:285:CYS:HB3	3:A:1476:4HD:H9C2	1.73	0.70
3:B:1474:4HD:H19	3:B:1474:4HD:C15	2.18	0.70
2:B:342:SER:H	3:B:1474:4HD:H182	1.57	0.70
3:A:1476:4HD:H151	3:A:1476:4HD:H9C1	1.75	0.68
2:B:255:LEU:HD21	2:B:281:ILE:HD11	1.75	0.68
3:B:1474:4HD:C19	3:B:1474:4HD:C15	2.69	0.68
2:B:336:LYS:H	2:B:336:LYS:HZ3	1.42	0.68
2:B:336:LYS:HZ2	2:B:336:LYS:HB3	1.61	0.65
2:B:239:GLY:O	2:B:240:LYS:HB2	1.96	0.64
2:B:342:SER:C	2:B:343:GLU:HG2	2.18	0.64
1:A:336:LYS:HD2	1:A:372:VAL:HG21	1.81	0.63
1:A:261:LYS:HB2	1:A:261:LYS:NZ	2.14	0.62
2:B:325:ILE:HD12	2:B:388:ILE:HB	1.80	0.62
1:A:363:PHE:CZ	1:A:452:LEU:HG	2.34	0.62
3:B:1474:4HD:C16	3:B:1474:4HD:H122	2.30	0.62
1:A:359:PRO:HB2	1:A:452:LEU:CD1	2.30	0.62
1:A:459:THR:HG23	1:A:460:GLU:HG2	1.80	0.62
2:B:354:LYS:HD3	2:B:365:GLU:CG	2.30	0.62
2:B:456:ILE:C	2:B:458:LYS:H	2.02	0.62
2:B:368:PHE:O	2:B:372:VAL:HG23	2.00	0.61
2:B:277:VAL:O	2:B:281:ILE:HG12	2.00	0.61
2:B:279:ILE:O	2:B:283:GLN:HG3	2.00	0.61
1:A:336:LYS:HD2	1:A:372:VAL:CG2	2.31	0.60
1:A:441:ASP:O	1:A:445:ILE:HG12	2.01	0.60
1:A:281:ILE:HD12	1:A:282:PHE:N	2.17	0.60
2:B:212:ARG:HD2	4:B:2048:HOH:O	2.02	0.59
2:B:469:LEU:HD22	2:B:472:ILE:HD12	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:349:THR:HG22	1:A:351:GLU:H	1.69	0.58
2:B:447:THR:O	2:B:450:VAL:HG22	2.04	0.57
1:A:252:MET:O	1:A:255:LEU:HB3	2.04	0.57
1:A:455:VAL:O	1:A:459:THR:HG22	2.04	0.57
1:A:336:LYS:NZ	1:A:350:ARG:HH12	2.03	0.57
2:B:354:LYS:HD3	2:B:365:GLU:HG3	1.85	0.57
2:B:255:LEU:HD22	2:B:352:PHE:HZ	1.71	0.56
1:A:305:GLY:HA2	1:A:308:ASN:HD22	1.71	0.56
2:B:255:LEU:HD22	2:B:352:PHE:CZ	2.41	0.55
1:A:281:ILE:HD12	1:A:281:ILE:C	2.27	0.55
2:B:441:ASP:O	2:B:445:ILE:HG12	2.07	0.55
2:B:359:PRO:HB2	2:B:452:LEU:HD11	1.87	0.55
1:A:358:LYS:HD3	1:A:358:LYS:H	1.72	0.54
1:A:291:GLU:O	1:A:295:GLU:HG3	2.08	0.54
2:B:288:ARG:HG3	3:B:1474:4HD:H3C1	1.90	0.53
2:B:336:LYS:HE2	4:B:2027:HOH:O	2.08	0.53
1:A:330:LEU:HD13	3:A:1476:4HD:H13	1.89	0.53
1:A:285:CYS:HB3	3:A:1476:4HD:C9	2.38	0.52
1:A:289:SER:O	1:A:293:VAL:HG23	2.09	0.52
1:A:325:ILE:HD11	1:A:392:ILE:CG1	2.40	0.52
1:A:279:ILE:HD12	1:A:279:ILE:N	2.24	0.51
1:A:356:LEU:HB2	1:A:361:GLY:HA2	1.92	0.51
1:A:452:LEU:O	1:A:456:ILE:HD13	2.11	0.51
2:B:436:LEU:O	2:B:439:MET:HB2	2.10	0.51
2:B:456:ILE:O	2:B:459:THR:HG22	2.12	0.49
1:A:286:GLN:HG3	1:A:469:LEU:HD12	1.94	0.49
1:A:394:SER:O	1:A:397:ARG:HG2	2.12	0.49
1:A:286:GLN:HA	3:A:1476:4HD:H3C2	1.95	0.49
2:B:327:TYR:CE1	2:B:367:LYS:HD2	2.47	0.49
2:B:342:SER:H	3:B:1474:4HD:C18	2.24	0.49
1:A:311:LEU:C	1:A:311:LEU:HD23	2.34	0.48
2:B:386:ILE:CD1	2:B:420:GLN:HG3	2.43	0.48
2:B:456:ILE:C	2:B:458:LYS:N	2.67	0.47
4:A:2045:HOH:O	2:B:434:LYS:HE2	2.13	0.47
2:B:446:VAL:O	2:B:450:VAL:HG13	2.15	0.47
1:A:220:ASP:OD1	1:A:224:LYS:HE3	2.14	0.47
2:B:456:ILE:HA	2:B:459:THR:HG22	1.96	0.47
2:B:434:LYS:O	2:B:438:LYS:HD3	2.15	0.46
1:A:325:ILE:HD11	1:A:392:ILE:HG13	1.98	0.46
2:B:327:TYR:OH	2:B:449:HIS:CD2	2.68	0.46
1:A:430:GLN:O	1:A:434:LYS:HG3	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:443:ARG:HG3	2:B:440:THR:HG23	1.98	0.45
1:A:290:VAL:O	1:A:294:GLN:HG3	2.17	0.45
1:A:293:VAL:HG22	1:A:322:VAL:HG11	1.98	0.45
1:A:456:ILE:HA	1:A:459:THR:CG2	2.47	0.44
2:B:469:LEU:HD13	2:B:469:LEU:O	2.18	0.44
1:A:261:LYS:HB2	1:A:261:LYS:HZ2	1.81	0.43
1:A:433:ALA:O	1:A:437:GLN:HG3	2.19	0.43
2:B:330:LEU:HD11	2:B:364:MET:HE1	2.01	0.43
2:B:363:PHE:CE1	2:B:452:LEU:HB3	2.53	0.43
2:B:404:LYS:HE2	2:B:408:ASP:OD2	2.18	0.43
2:B:348:MET:SD	2:B:353:LEU:HD21	2.58	0.43
1:A:279:ILE:HG23	1:A:463:MET:SD	2.59	0.43
1:A:282:PHE:CE1	3:A:1476:4HD:H5	2.54	0.43
2:B:288:ARG:HH11	2:B:291:GLU:HB2	1.84	0.42
2:B:450:VAL:HA	2:B:453:LEU:HD12	2.01	0.42
2:B:211:LEU:HD12	2:B:211:LEU:N	2.34	0.42
2:B:324:GLU:OE2	2:B:443:ARG:NH1	2.52	0.42
2:B:336:LYS:H	2:B:336:LYS:HZ2	1.64	0.42
1:A:456:ILE:N	1:A:456:ILE:HD12	2.34	0.42
2:B:325:ILE:HD11	2:B:391:ILE:HB	2.02	0.42
2:B:226:PHE:HA	2:B:227:PRO:HD2	1.87	0.42
1:A:474:LYS:O	1:A:475:ASP:C	2.58	0.42
2:B:397:ARG:NH1	2:B:443:ARG:HH12	2.18	0.42
2:B:450:VAL:O	2:B:454:GLN:HG2	2.19	0.42
1:A:212:ARG:HA	1:A:212:ARG:HD2	1.87	0.41
1:A:360:PHE:HA	1:A:363:PHE:HD2	1.85	0.41
1:A:286:GLN:OE1	1:A:465:LEU:HA	2.20	0.41
2:B:443:ARG:HH11	2:B:443:ARG:HG3	1.85	0.41
1:A:435:LEU:O	1:A:435:LEU:HD12	2.20	0.41
2:B:363:PHE:CZ	2:B:452:LEU:HD12	2.56	0.41
3:B:1474:4HD:H121	3:B:1474:4HD:H9C2	1.88	0.41
1:A:447:THR:O	1:A:451:GLN:HG3	2.22	0.40
2:B:276:GLU:HB2	2:B:279:ILE:HG13	2.02	0.40
1:A:456:ILE:HA	1:A:459:THR:HG22	2.04	0.40
2:B:341:ILE:HB	3:B:1474:4HD:H182	2.03	0.40
2:B:386:ILE:HD12	2:B:420:GLN:HG3	2.03	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	250/276 (91%)	244 (98%)	6 (2%)	0	100	100
2	B	231/276 (84%)	220 (95%)	10 (4%)	1 (0%)	34	37
All	All	481/552 (87%)	464 (96%)	16 (3%)	1 (0%)	47	55

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	342	SER

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	229/247 (93%)	224 (98%)	5 (2%)	52	65
2	B	213/248 (86%)	200 (94%)	13 (6%)	18	21
All	All	442/495 (89%)	424 (96%)	18 (4%)	30	39

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	283	GLN
1	A	358	LYS
1	A	363	PHE
1	A	412	ASN
1	A	470	GLN

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Mol	Chain	Res	Type
2	B	228	LEU
2	B	244	LYS
2	B	318	LEU
2	B	330	LEU
2	B	336	LYS
2	B	343	GLU
2	B	358	LYS
2	B	363	PHE
2	B	379	LEU
2	B	443	ARG
2	B	452	LEU
2	B	457	LYS
2	B	468	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	294	GLN
1	A	308	ASN
1	A	410	GLN
1	A	430	GLN
1	A	449	HIS
1	A	470	GLN
2	B	420	GLN
2	B	437	GLN
2	B	449	HIS

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 monosaccharides 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	$\#|Z| > 2$
3	4HD	A	1476	-	24,24,24	0.45	0	22,25,25	0.83	1 (4%)
3	4HD	B	1474	-	24,24,24	0.46	0	22,25,25	0.83	1 (4%)

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	4HD	A	1476	-	-	10/23/23/23	-
3	4HD	B	1474	-	1/1/2/14	12/23/23/23	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	1474	4HD	C4-C5-C6	-2.11	119.99	125.14
3	A	1476	4HD	C4-C5-C6	-2.10	120.02	125.14

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	B	1474	4HD	C4

All (22) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1476	4HD	C1-C2-C3-C4
3	B	1474	4HD	C1-C2-C3-C4

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Mol	Chain	Res	Type	Atoms
3	B	1474	4HD	C2-C3-C4-O3
3	B	1474	4HD	C13-C14-C15-C16
3	B	1474	4HD	C16-C17-C18-C19
3	B	1474	4HD	C19-C20-C21-C22
3	A	1476	4HD	C3-C4-C5-C6
3	B	1474	4HD	C3-C4-C5-C6
3	A	1476	4HD	C11-C10-C9-C8
3	A	1476	4HD	C13-C14-C15-C16
3	A	1476	4HD	C17-C18-C19-C20
3	B	1474	4HD	C14-C15-C16-C17
3	A	1476	4HD	C2-C3-C4-C5
3	B	1474	4HD	C5-C6-C7-C8
3	B	1474	4HD	O3-C4-C5-C6
3	A	1476	4HD	C5-C6-C7-C8
3	A	1476	4HD	O1-C1-C2-C3
3	A	1476	4HD	O2-C1-C2-C3
3	A	1476	4HD	C16-C17-C18-C19
3	B	1474	4HD	C7-C8-C9-C10
3	B	1474	4HD	C10-C11-C12-C13
3	B	1474	4HD	C11-C12-C13-C14

There are no ring outliers.

2 monomers are involved in 24 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1476	4HD	10	0
3	B	1474	4HD	14	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 4HD A 1476

Bond lengths

Bond angles

Torsions

Rings

Ligand 4HD B 1474

Bond lengths

Bond angles

Torsions

Rings
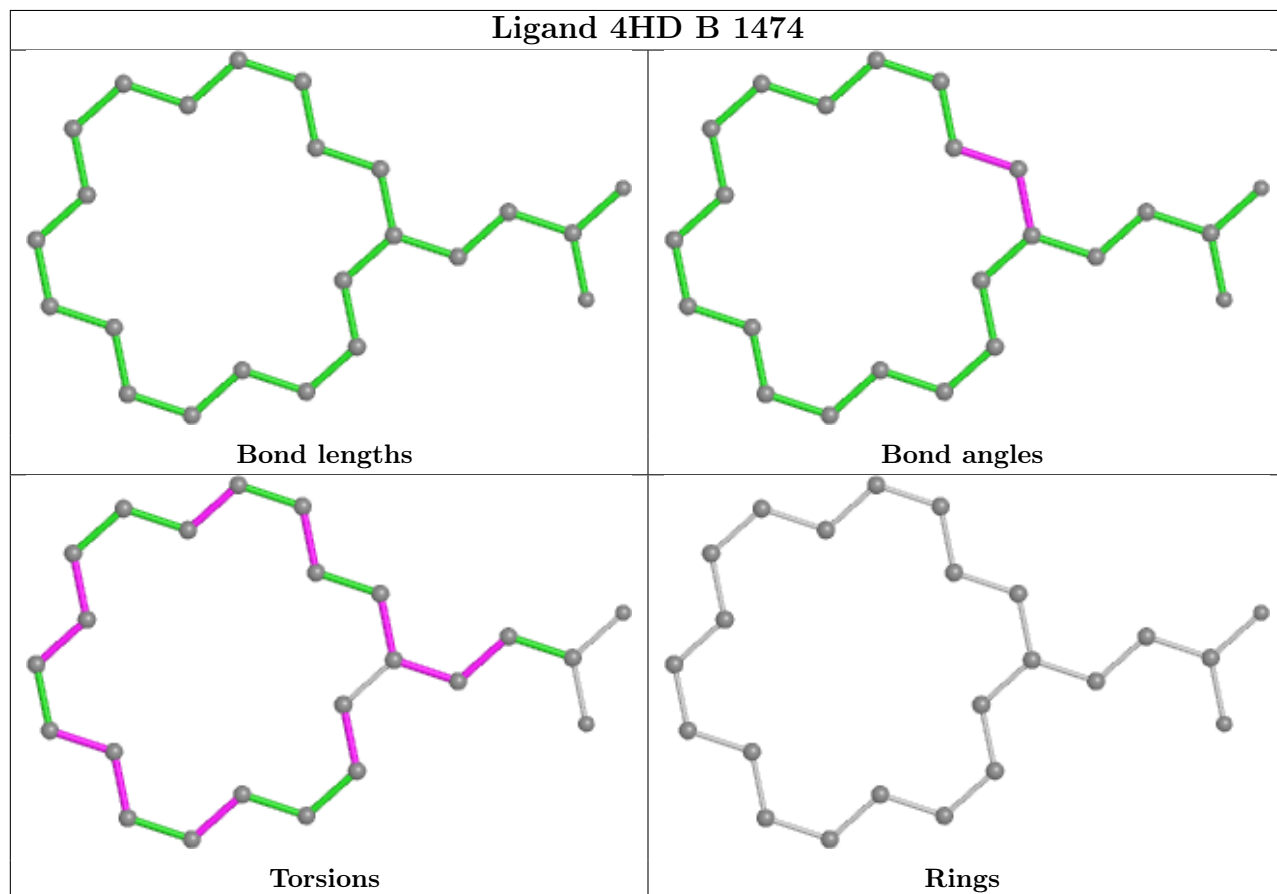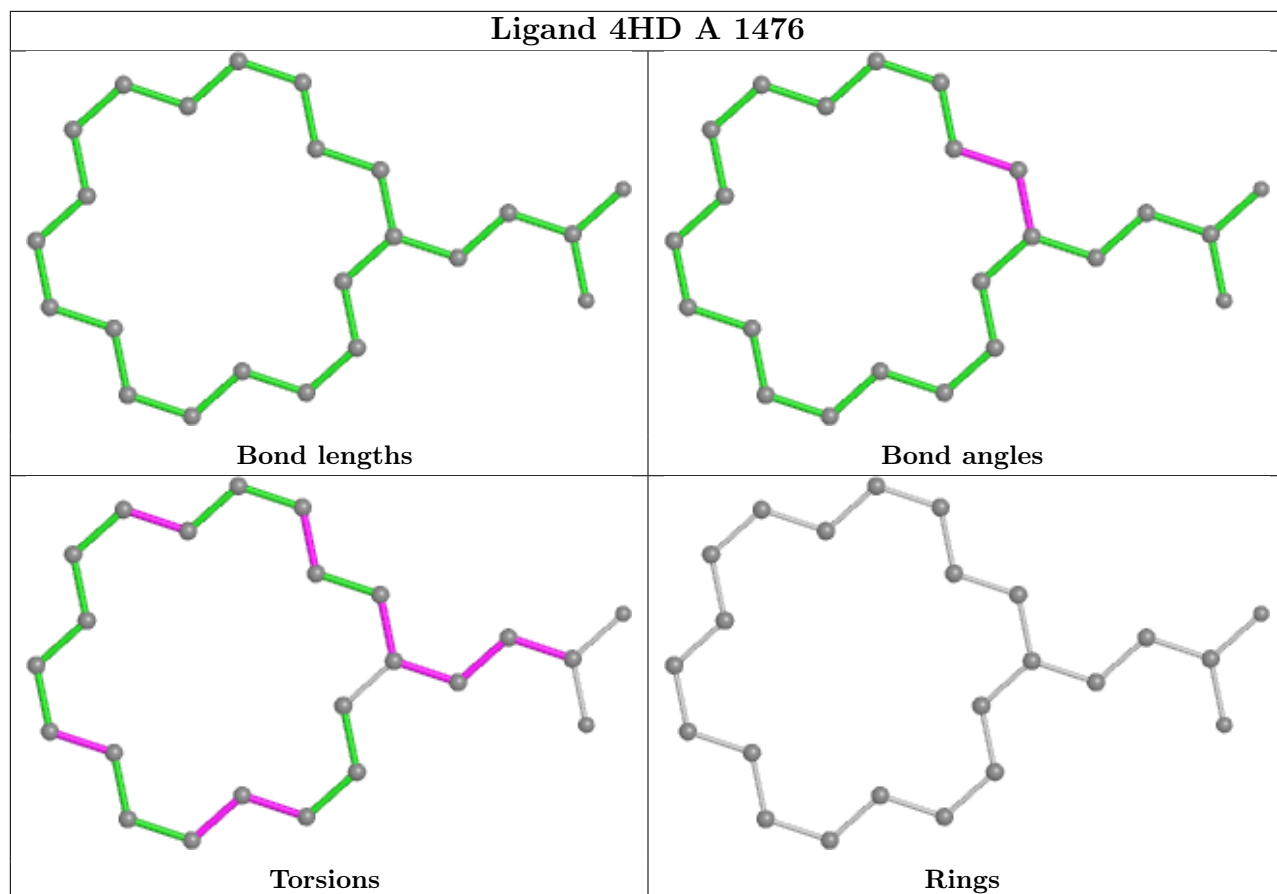
5.7 Other polymers ⓘ

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(Å^2)	Q<0.9
1	A	256/276 (92%)	0.33	9 (3%)	44	42	30, 47, 77, 88	0
2	B	239/276 (86%)	0.53	19 (7%)	12	11	29, 47, 78, 90	0
All	All	495/552 (89%)	0.42	28 (5%)	23	22	29, 47, 78, 90	0

All (28) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	240	LYS	4.7
2	B	469	LEU	4.3
2	B	277	VAL	4.2
1	A	261	LYS	4.0
1	A	252	MET	3.9
1	A	359	PRO	3.9
1	A	452	LEU	3.7
2	B	355	SER	3.7
1	A	356	LEU	3.6
2	B	256	MET	3.5
2	B	473	TYR	3.5
2	B	239	GLY	3.2
1	A	363	PHE	3.2
2	B	357	ARG	3.1
1	A	422	LYS	2.9
2	B	352	PHE	2.7
2	B	238	THR	2.6
2	B	276	GLU	2.5
2	B	452	LEU	2.5
2	B	235	ALA	2.4
2	B	472	ILE	2.4
1	A	445	ILE	2.4
2	B	293	VAL	2.4
1	A	372	VAL	2.3

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Mol	Chain	Res	Type	RSRZ
2	B	353	LEU	2.3
2	B	359	PRO	2.2
2	B	322	VAL	2.1
2	B	360	PHE	2.0

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

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

6.3 Carbohydrates ⓘ

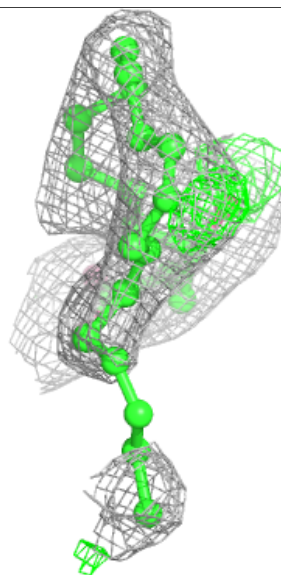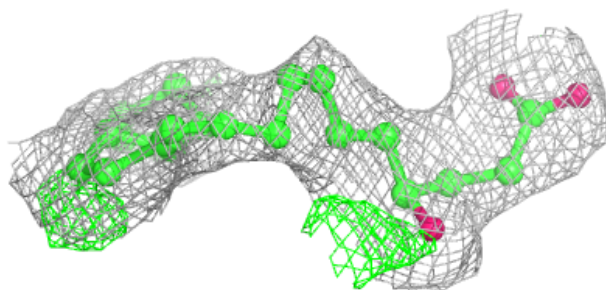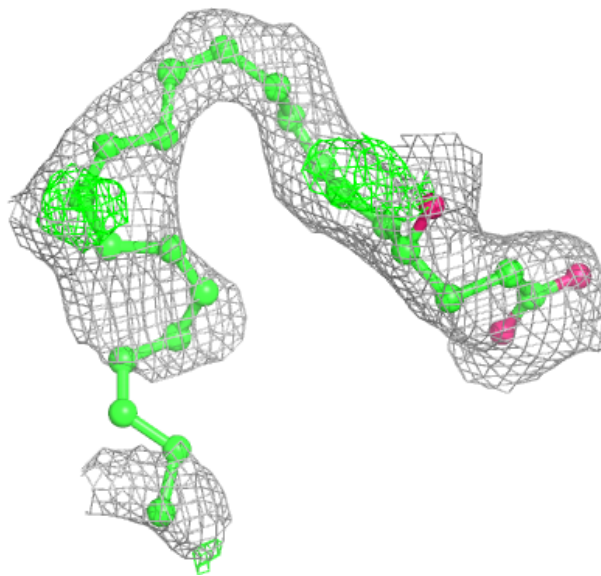There are no monosaccharides in this entry.

6.4 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.
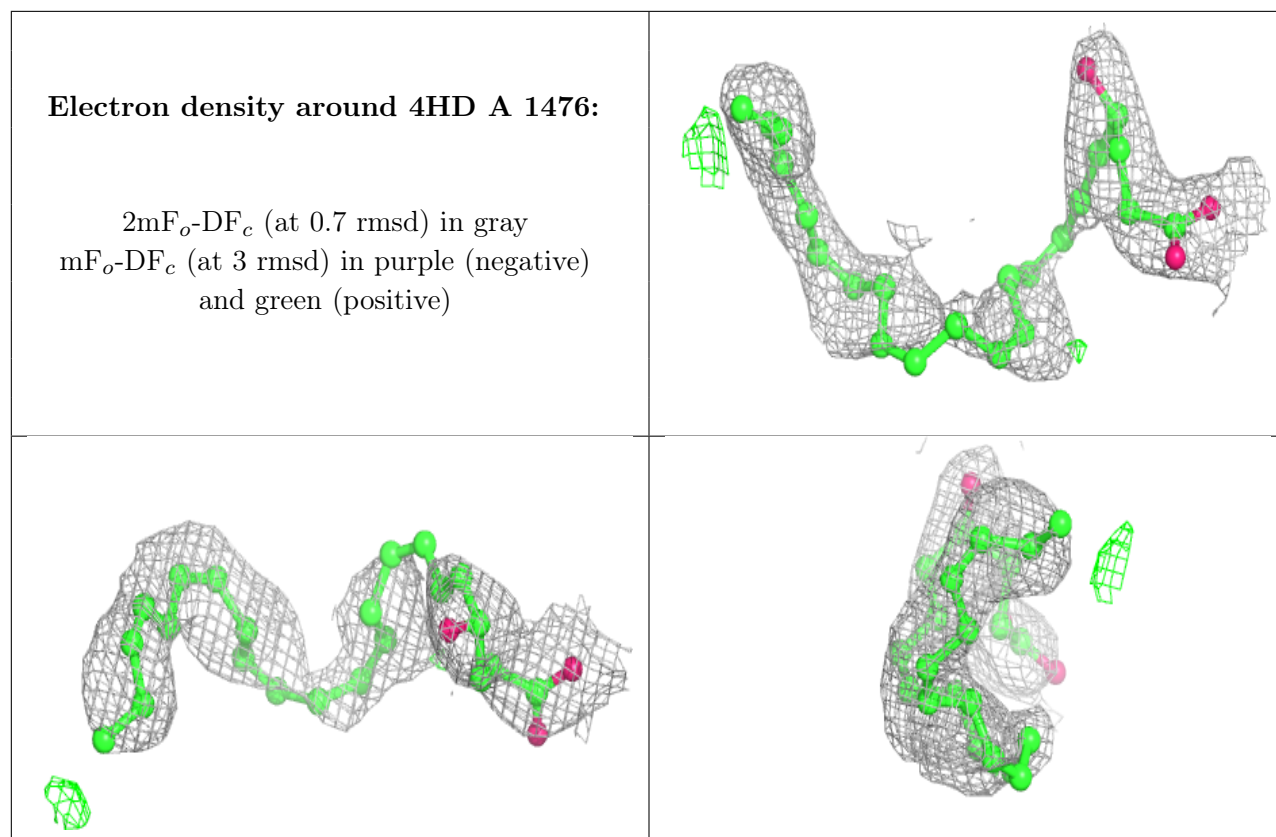
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	4HD	B	1474	25/25	0.60	0.31	76,81,88,89	0
3	4HD	A	1476	25/25	0.68	0.27	78,89,91,91	0

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.

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Electron density around 4HD B 1474:

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

Electron density around 4HD A 1476:

$2mF_o\text{-}DF_c$ (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.