



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 3, 2024 – 11:14 PM EST

PDB ID : 1PQC
Title : HUMAN LXR BETA HORMONE RECEPTOR COMPLEXED WITH T0901317
Authors : Farnegardh, M.; Bonn, T.; Sun, S.; Ljunggren, J.; Ahola, H.; Wilhelmsson, A.; Gustafsson, J.-A.; Carlquist, M.
Deposited on : 2003-06-18
Resolution : 2.80 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 : 4.02b-467
Mogul : 1.8.5 (274361), 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

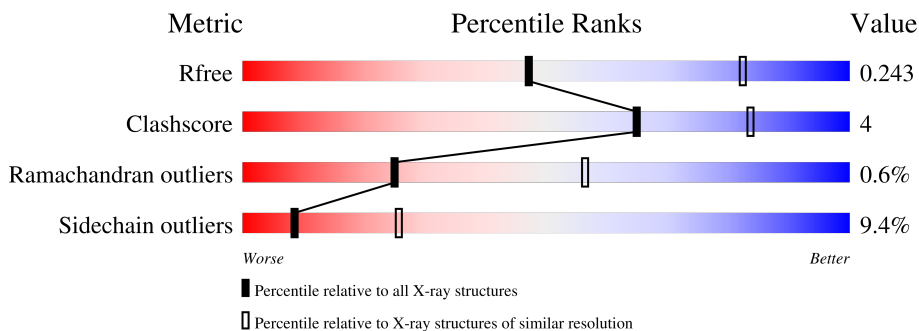
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	253	
1	B	253	
1	C	253	
1	D	253	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 7782 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.

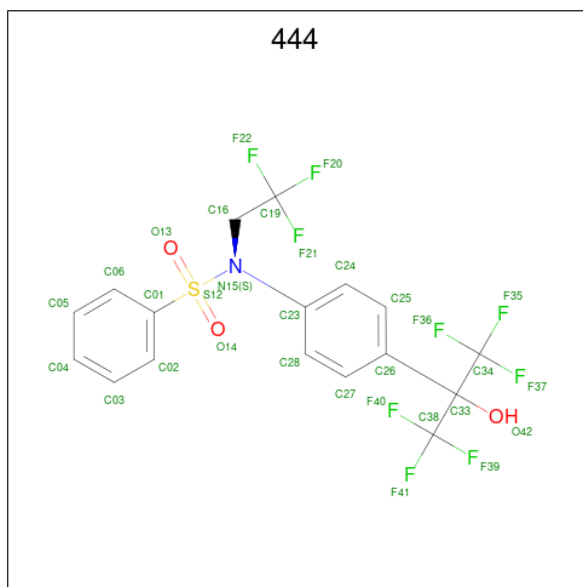
- Molecule 1 is a protein called Oxysterols receptor LXR-beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	232	Total 1891	C 1210	N 331	O 343	S 7	0	0	0
1	B	238	Total 1925	C 1230	N 337	O 351	S 7	0	0	0
1	C	231	Total 1887	C 1207	N 333	O 340	S 7	0	0	0
1	D	219	Total 1774	C 1133	N 313	O 321	S 7	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	209	GLY	-	insertion	UNP P55055
A	210	SER	-	insertion	UNP P55055
A	211	HIS	-	insertion	UNP P55055
A	212	MET	-	insertion	UNP P55055
B	209	GLY	-	insertion	UNP P55055
B	210	SER	-	insertion	UNP P55055
B	211	HIS	-	insertion	UNP P55055
B	212	MET	-	insertion	UNP P55055
C	209	GLY	-	insertion	UNP P55055
C	210	SER	-	insertion	UNP P55055
C	211	HIS	-	insertion	UNP P55055
C	212	MET	-	insertion	UNP P55055
D	209	GLY	-	insertion	UNP P55055
D	210	SER	-	insertion	UNP P55055
D	211	HIS	-	insertion	UNP P55055
D	212	MET	-	insertion	UNP P55055

- Molecule 2 is N-(2,2,2-TRIFLUOROETHYL)-N-{4-[2,2,2-TRIFLUORO-1-HYDROXY-1-(TRIFLUOROMETHYL)ETHYL]PHENYL}BENZENESULFONAMIDE (three-letter code: 444) (formula: C₁₇H₁₂F₉NO₃S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	F	N	O			S
2	A	1	Total	C	F	N	O	S	0	0
			31	17	9	1	3	1		
2	B	1	Total	C	F	N	O	S	0	0
			31	17	9	1	3	1		
2	C	1	Total	C	F	N	O	S	0	0
			31	17	9	1	3	1		
2	D	1	Total	C	F	N	O	S	0	0
			31	17	9	1	3	1		

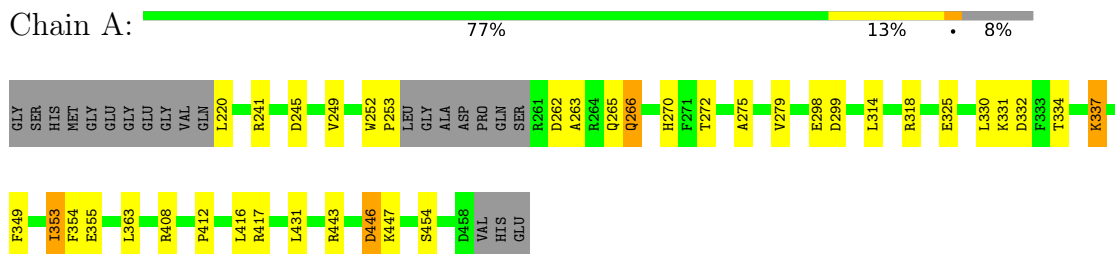
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	36	Total	O	0	0
			36	36		
3	B	72	Total	O	0	0
			72	72		
3	C	52	Total	O	0	0
			52	52		
3	D	21	Total	O	0	0
			21	21		

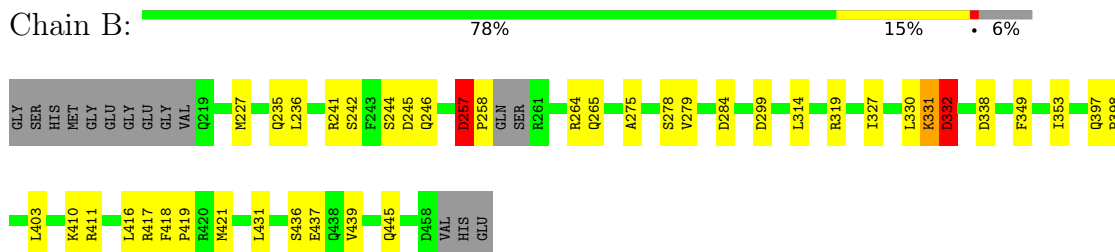
3 Residue-property plots [i](#)

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. 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. 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.

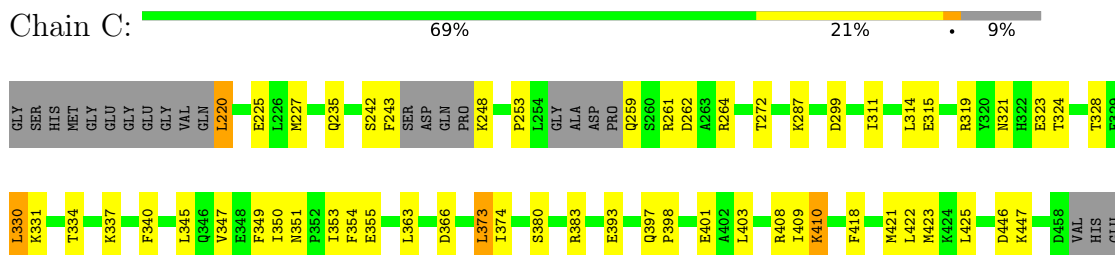
- Molecule 1: Oxysterols receptor LXR-beta



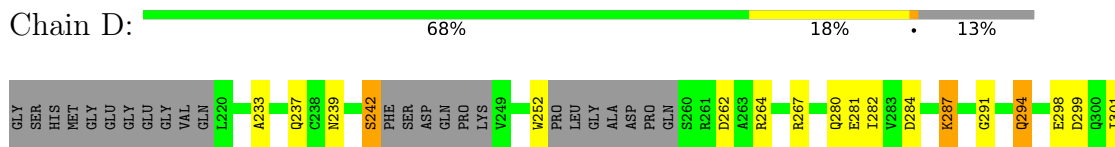
- Molecule 1: Oxysterols receptor LXR-beta

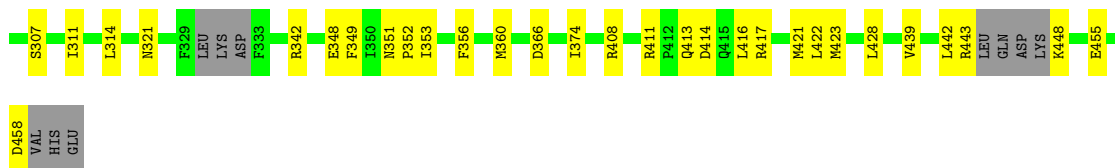


- Molecule 1: Oxysterols receptor LXR-beta



- Molecule 1: Oxysterols receptor LXR-beta





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	58.72Å 103.26Å 176.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	40.00 – 2.80 40.48 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.9 (40.00-2.80) 99.9 (40.48-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.74 (at 2.81Å)	Xtrriage
Refinement program	REFMAC 5.1.19	Depositor
R, R_{free}	0.195 , 0.262 0.243 , 0.243	Depositor DCC
R_{free} test set	1353 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	52.1	Xtrriage
Anisotropy	0.243	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 27.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	7782	wwPDB-VP
Average B, all atoms (Å ²)	25.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.78% 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:
444

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	0.66	0/1928	0.84	5/2607 (0.2%)
1	B	0.71	0/1963	0.87	4/2656 (0.2%)
1	C	0.71	0/1922	0.86	4/2595 (0.2%)
1	D	0.68	1/1804 (0.1%)	0.82	6/2436 (0.2%)
All	All	0.69	1/7617 (0.0%)	0.85	19/10294 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	287	LYS	CD-CE	5.13	1.64	1.51

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	284	ASP	CB-CG-OD2	7.14	124.73	118.30
1	C	299	ASP	CB-CG-OD2	6.63	124.27	118.30
1	B	332	ASP	CB-CG-OD2	6.44	124.10	118.30
1	C	262	ASP	CB-CG-OD2	6.24	123.92	118.30
1	B	338	ASP	CB-CG-OD2	6.18	123.86	118.30
1	D	458	ASP	CB-CG-OD2	5.98	123.68	118.30
1	A	262	ASP	CB-CG-OD2	5.96	123.66	118.30
1	D	414	ASP	CB-CG-OD2	5.80	123.53	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	262	ASP	CB-CG-OD2	5.79	123.51	118.30
1	A	245	ASP	CB-CG-OD2	5.71	123.43	118.30
1	D	366	ASP	CB-CG-OD2	5.62	123.36	118.30
1	C	366	ASP	CB-CG-OD2	5.48	123.23	118.30
1	A	332	ASP	CB-CG-OD2	5.48	123.23	118.30
1	B	299	ASP	CB-CG-OD2	5.37	123.14	118.30
1	D	299	ASP	CB-CG-OD2	5.36	123.12	118.30
1	A	446	ASP	CB-CG-OD2	5.30	123.07	118.30
1	C	446	ASP	CB-CG-OD2	5.22	123.00	118.30
1	D	284	ASP	CB-CG-OD2	5.12	122.90	118.30
1	A	299	ASP	CB-CG-OD2	5.06	122.86	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	248	LYS	Peptide

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	1891	0	1913	11	0
1	B	1925	0	1936	18	0
1	C	1887	0	1914	24	0
1	D	1774	0	1788	15	0
2	A	31	0	12	0	0
2	B	31	0	12	0	0
2	C	31	0	12	0	0
2	D	31	0	12	0	0
3	A	36	0	0	0	0
3	B	72	0	0	1	0
3	C	52	0	0	0	0
3	D	21	0	0	0	0
All	All	7782	0	7599	63	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 4.

All (63) 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:257:ASP:HB3	1:B:258:PRO:HD2	1.67	0.77
1:B:257:ASP:CB	1:B:258:PRO:HD2	2.18	0.73
1:C:351:ASN:O	1:C:355:GLU:HG3	1.98	0.64
1:C:409:ILE:O	1:C:410:LYS:C	2.35	0.63
1:B:257:ASP:HB3	1:B:258:PRO:CD	2.30	0.61
1:B:257:ASP:CB	1:B:258:PRO:CD	2.78	0.60
1:D:233:ALA:O	1:D:237:GLN:HG3	2.00	0.60
1:B:437:GLU:OE2	3:B:50:HOH:O	2.16	0.59
1:A:349:PHE:CE1	1:A:353:ILE:HD11	2.38	0.58
1:D:252:TRP:CZ2	1:D:267:ARG:HD3	2.41	0.55
1:B:418:PHE:HB3	1:B:419:PRO:HD3	1.89	0.55
1:B:403:LEU:HD21	1:B:421:MET:HE2	1.90	0.53
1:C:373:LEU:HD22	1:C:425:LEU:HD21	1.90	0.53
1:B:241:ARG:NH1	1:B:245:ASP:OD2	2.41	0.53
1:C:321:ASN:HD22	1:C:324:THR:H	1.56	0.53
1:D:242:SER:OG	1:D:281:GLU:OE2	2.19	0.53
1:C:418:PHE:CZ	1:C:422:LEU:HD11	2.44	0.52
1:B:246:GLN:HE22	1:B:332:ASP:HB2	1.75	0.52
1:C:315:GLU:OE1	1:C:319:ARG:NH1	2.42	0.52
1:A:253:PRO:HG2	1:A:263:ALA:HB1	1.91	0.52
1:C:349:PHE:CZ	1:C:353:ILE:HD11	2.46	0.51
1:D:291:GLY:O	1:D:294:GLN:HG2	2.11	0.51
1:C:311:ILE:HG12	1:C:374:ILE:HG23	1.92	0.51
1:D:252:TRP:CE2	1:D:267:ARG:HD3	2.46	0.50
1:A:416:LEU:CD1	1:B:397:GLN:HE21	2.25	0.50
1:C:401:GLU:HG2	1:D:416:LEU:HD21	1.93	0.49
1:C:397:GLN:HB3	1:C:398:PRO:HD3	1.93	0.49
1:D:356:PHE:CE1	1:D:360:MET:HE1	2.48	0.49
1:B:397:GLN:HB3	1:B:398:PRO:HD3	1.94	0.49
1:A:263:ALA:HA	1:A:266:GLN:HB2	1.95	0.48
1:D:311:ILE:HG12	1:D:374:ILE:HG23	1.96	0.48
1:A:416:LEU:HD13	1:B:397:GLN:HE21	1.79	0.48
1:B:410:LYS:HG2	1:B:411:ARG:HG2	1.96	0.48
1:C:345:LEU:N	1:C:345:LEU:HD23	2.29	0.48
1:C:409:ILE:HG22	1:C:410:LYS:N	2.30	0.47
1:C:220:LEU:HD13	1:C:225:GLU:CG	2.43	0.47
1:C:328:THR:HG23	1:C:334:THR:HG22	1.96	0.47
1:C:330:LEU:O	1:C:331:LYS:C	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:403:LEU:HD11	1:C:421:MET:HE1	1.97	0.46
1:B:246:GLN:NE2	1:B:330:LEU:O	2.49	0.45
1:C:220:LEU:HD13	1:C:225:GLU:HG3	1.98	0.45
1:C:337:LYS:HG2	1:C:354:PHE:CD1	2.52	0.45
1:A:252:TRP:HE3	1:A:270:HIS:CD2	2.35	0.45
1:C:321:ASN:HD21	1:C:323:GLU:HB3	1.83	0.44
1:C:401:GLU:CG	1:D:416:LEU:HD21	2.48	0.44
1:D:417:ARG:O	1:D:421:MET:HG3	2.18	0.44
1:A:337:LYS:HG3	1:A:354:PHE:CD1	2.53	0.43
1:D:349:PHE:CE1	1:D:353:ILE:HD11	2.53	0.43
1:C:423:MET:HE1	1:D:422:LEU:HD22	2.01	0.43
1:C:380:SER:O	1:C:383:ARG:HG2	2.19	0.43
1:D:314:LEU:HD13	1:D:428:LEU:HD11	2.01	0.42
1:C:340:PHE:HB3	1:C:350:ILE:HG12	2.01	0.42
1:D:351:ASN:HB2	1:D:352:PRO:HD3	2.01	0.42
1:C:363:LEU:HD23	1:C:363:LEU:HA	1.93	0.41
1:D:282:ILE:HG12	1:D:311:ILE:HG21	2.01	0.41
1:A:252:TRP:CE3	1:A:270:HIS:CD2	3.09	0.41
1:A:275:ALA:O	1:A:279:VAL:HG23	2.20	0.41
1:B:275:ALA:O	1:B:279:VAL:HG23	2.20	0.41
1:A:408:ARG:O	1:A:412:PRO:HA	2.21	0.41
1:B:349:PHE:CZ	1:B:353:ILE:HD11	2.55	0.41
1:A:363:LEU:HD23	1:A:363:LEU:HA	1.96	0.40
1:B:436:SER:HA	1:B:439:VAL:HG22	2.02	0.40
1:B:416:LEU:C	1:B:419:PRO:HD2	2.41	0.40

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	228/253 (90%)	221 (97%)	6 (3%)	1 (0%)	34 66

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	234/253 (92%)	227 (97%)	5 (2%)	2 (1%)	17	46
1	C	225/253 (89%)	216 (96%)	7 (3%)	2 (1%)	17	46
1	D	209/253 (83%)	202 (97%)	7 (3%)	0	100	100
All	All	896/1012 (88%)	866 (97%)	25 (3%)	5 (1%)	25	56

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	446	ASP
1	C	410	LYS
1	B	331	LYS
1	B	257	ASP
1	C	253	PRO

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	206/222 (93%)	185 (90%)	21 (10%)	7	22
1	B	208/222 (94%)	191 (92%)	17 (8%)	11	33
1	C	205/222 (92%)	188 (92%)	17 (8%)	11	32
1	D	191/222 (86%)	170 (89%)	21 (11%)	6	19
All	All	810/888 (91%)	734 (91%)	76 (9%)	8	26

All (76) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	220	LEU
1	A	241	ARG
1	A	249	VAL
1	A	265	GLN
1	A	266	GLN
1	A	272	THR

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Mol	Chain	Res	Type
1	A	298	GLU
1	A	314	LEU
1	A	318	ARG
1	A	325	GLU
1	A	330	LEU
1	A	331	LYS
1	A	334	THR
1	A	337	LYS
1	A	353	ILE
1	A	355	GLU
1	A	417	ARG
1	A	431	LEU
1	A	443	ARG
1	A	447	LYS
1	A	454	SER
1	B	227	MET
1	B	235	GLN
1	B	236	LEU
1	B	242	SER
1	B	244	SER
1	B	257	ASP
1	B	264	ARG
1	B	265	GLN
1	B	278	SER
1	B	314	LEU
1	B	319	ARG
1	B	327	ILE
1	B	331	LYS
1	B	332	ASP
1	B	417	ARG
1	B	431	LEU
1	B	445	GLN
1	C	220	LEU
1	C	227	MET
1	C	235	GLN
1	C	242	SER
1	C	243	PHE
1	C	259	GLN
1	C	261	ARG
1	C	264	ARG
1	C	272	THR
1	C	287	LYS

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Mol	Chain	Res	Type
1	C	314	LEU
1	C	330	LEU
1	C	347	VAL
1	C	373	LEU
1	C	393	GLU
1	C	408	ARG
1	C	447	LYS
1	D	239	ASN
1	D	242	SER
1	D	264	ARG
1	D	280	GLN
1	D	287	LYS
1	D	294	GLN
1	D	298	GLU
1	D	301	ILE
1	D	307	SER
1	D	321	ASN
1	D	342	ARG
1	D	348	GLU
1	D	408	ARG
1	D	411	ARG
1	D	413	GLN
1	D	423	MET
1	D	439	VAL
1	D	442	LEU
1	D	443	ARG
1	D	448	LYS
1	D	455	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	237	GLN
1	A	266	GLN
1	A	396	GLN
1	B	239	ASN
1	B	246	GLN
1	B	397	GLN
1	C	259	GLN
1	C	321	ASN
1	C	346	GLN
1	D	235	GLN

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Mol	Chain	Res	Type
1	D	266	GLN
1	D	294	GLN
1	D	321	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

4 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	444	A	1500	-	31,32,32	2.58	8 (25%)	52,52,52	2.44	12 (23%)
2	444	B	2500	-	31,32,32	2.46	8 (25%)	52,52,52	2.25	10 (19%)
2	444	C	3500	-	31,32,32	2.32	7 (22%)	52,52,52	1.93	11 (21%)
2	444	D	4500	-	31,32,32	2.02	6 (19%)	52,52,52	1.90	10 (19%)

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	444	A	1500	-	-	1/45/45/45	0/2/2/2
2	444	B	2500	-	-	2/45/45/45	0/2/2/2
2	444	C	3500	-	-	0/45/45/45	0/2/2/2
2	444	D	4500	-	-	4/45/45/45	0/2/2/2

All (29) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1500	444	S12-N15	11.05	1.80	1.65
2	B	2500	444	S12-N15	10.54	1.80	1.65
2	C	3500	444	S12-N15	9.08	1.77	1.65
2	D	4500	444	S12-N15	7.04	1.75	1.65
2	A	1500	444	C23-N15	4.16	1.50	1.44
2	B	2500	444	C23-N15	3.79	1.50	1.44
2	C	3500	444	C02-C01	3.62	1.44	1.38
2	C	3500	444	C25-C26	3.51	1.44	1.39
2	A	1500	444	C02-C01	3.50	1.44	1.38
2	D	4500	444	C02-C01	3.48	1.44	1.38
2	D	4500	444	C25-C26	3.44	1.44	1.39
2	B	2500	444	C27-C26	3.13	1.44	1.39
2	C	3500	444	C23-N15	3.05	1.49	1.44
2	B	2500	444	C02-C01	2.84	1.43	1.38
2	D	4500	444	C27-C26	2.76	1.43	1.39
2	C	3500	444	C27-C26	2.71	1.43	1.39
2	C	3500	444	C28-C23	2.67	1.44	1.39
2	D	4500	444	O42-C33	2.59	1.47	1.41
2	A	1500	444	C25-C26	2.54	1.43	1.39
2	B	2500	444	C33-C26	2.52	1.57	1.53
2	A	1500	444	C27-C26	2.46	1.43	1.39
2	A	1500	444	C28-C23	2.41	1.44	1.39
2	D	4500	444	C28-C23	2.35	1.43	1.39
2	B	2500	444	C28-C23	2.32	1.43	1.39
2	B	2500	444	C25-C26	2.29	1.42	1.39
2	C	3500	444	C05-C04	2.16	1.43	1.38
2	B	2500	444	O14-S12	2.14	1.45	1.43
2	A	1500	444	C05-C04	2.08	1.43	1.38
2	A	1500	444	C33-C26	2.04	1.56	1.53

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1500	444	O13-S12-N15	9.10	117.47	106.71
2	B	2500	444	O14-S12-N15	8.46	116.72	106.71

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	4500	444	C19-C16-N15	-6.61	105.72	112.14
2	A	1500	444	O14-S12-O13	-6.53	108.94	119.52
2	C	3500	444	O14-S12-N15	6.43	114.31	106.71
2	A	1500	444	O14-S12-N15	5.99	113.80	106.71
2	B	2500	444	C16-N15-C23	-5.71	109.96	117.59
2	B	2500	444	O13-S12-N15	5.59	113.32	106.71
2	D	4500	444	O13-S12-N15	5.18	112.84	106.71
2	C	3500	444	C16-N15-C23	-5.12	110.76	117.59
2	D	4500	444	O13-S12-C01	-4.97	101.76	108.05
2	A	1500	444	C16-N15-C23	-4.94	110.99	117.59
2	C	3500	444	O13-S12-N15	4.68	112.24	106.71
2	A	1500	444	O13-S12-C01	-4.67	102.14	108.05
2	B	2500	444	O13-S12-C01	-4.43	102.44	108.05
2	C	3500	444	O14-S12-O13	-4.16	112.79	119.52
2	B	2500	444	C38-C33-C34	-4.06	105.20	110.28
2	B	2500	444	O14-S12-O13	-4.05	112.96	119.52
2	D	4500	444	C38-C33-C34	-3.91	105.38	110.28
2	C	3500	444	C01-S12-N15	-3.58	102.04	106.92
2	B	2500	444	C28-C23-N15	3.50	125.38	120.16
2	A	1500	444	F22-C19-C16	-3.15	106.97	112.13
2	A	1500	444	F41-C38-C33	3.13	117.82	111.85
2	A	1500	444	C28-C23-N15	3.08	124.76	120.16
2	C	3500	444	C38-C33-C34	-3.02	106.49	110.28
2	A	1500	444	C38-C33-C34	-3.01	106.51	110.28
2	C	3500	444	C28-C23-N15	2.98	124.61	120.16
2	B	2500	444	C01-S12-N15	-2.94	102.91	106.92
2	D	4500	444	C16-N15-C23	-2.88	113.74	117.59
2	C	3500	444	F41-C38-C33	2.88	117.34	111.85
2	D	4500	444	C23-N15-S12	-2.84	112.03	117.73
2	A	1500	444	C27-C26-C33	2.79	126.53	120.30
2	B	2500	444	C27-C26-C33	2.68	126.27	120.30
2	C	3500	444	C27-C26-C33	2.67	126.25	120.30
2	A	1500	444	C16-N15-S12	-2.52	113.48	117.00
2	D	4500	444	F22-C19-C16	-2.50	108.02	112.13
2	A	1500	444	C38-C33-C26	-2.40	106.25	110.34
2	D	4500	444	C24-C23-N15	-2.31	116.72	120.16
2	C	3500	444	C24-C23-N15	-2.25	116.81	120.16
2	B	2500	444	C24-C23-N15	-2.21	116.87	120.16
2	D	4500	444	F39-C38-C33	2.17	116.00	111.85
2	D	4500	444	C34-C33-C26	2.13	113.96	110.34
2	C	3500	444	C34-C33-C26	2.04	113.81	110.34

There are no chirality outliers.

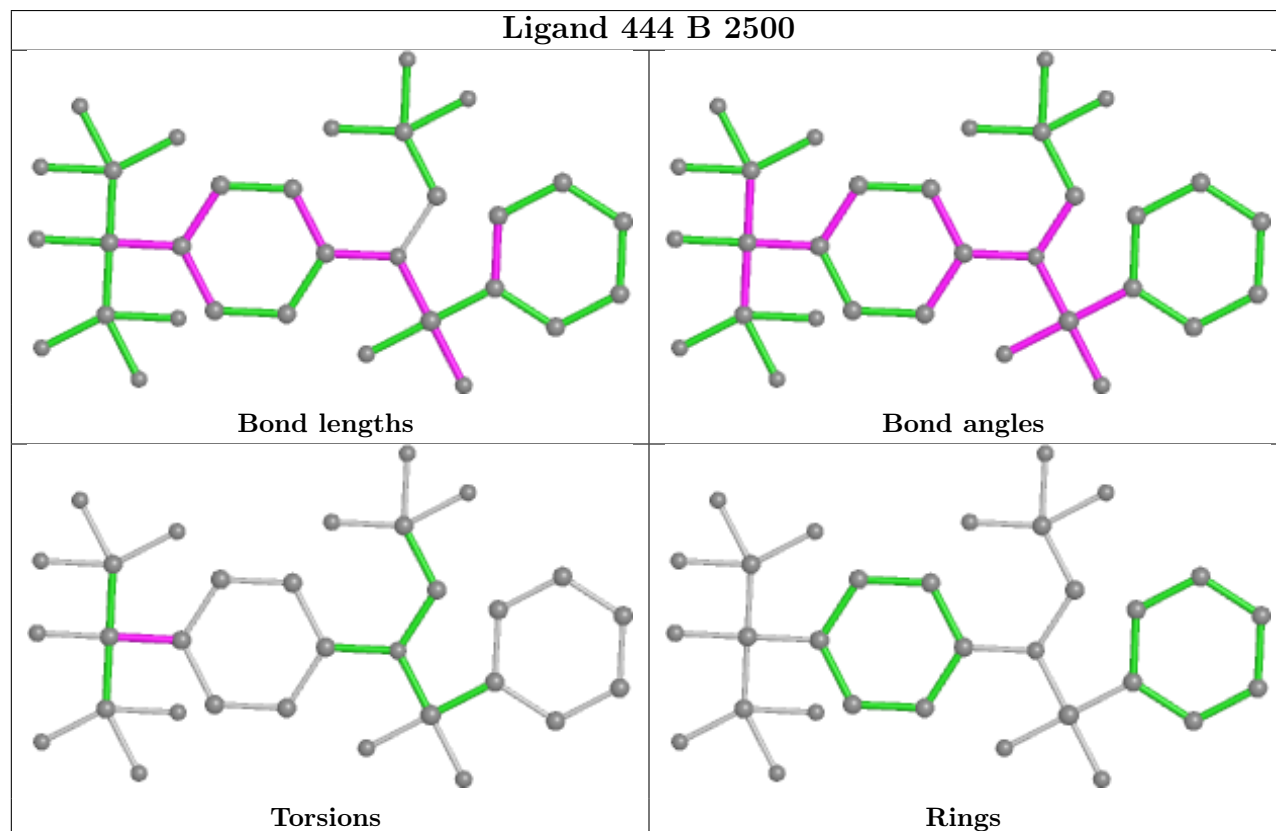
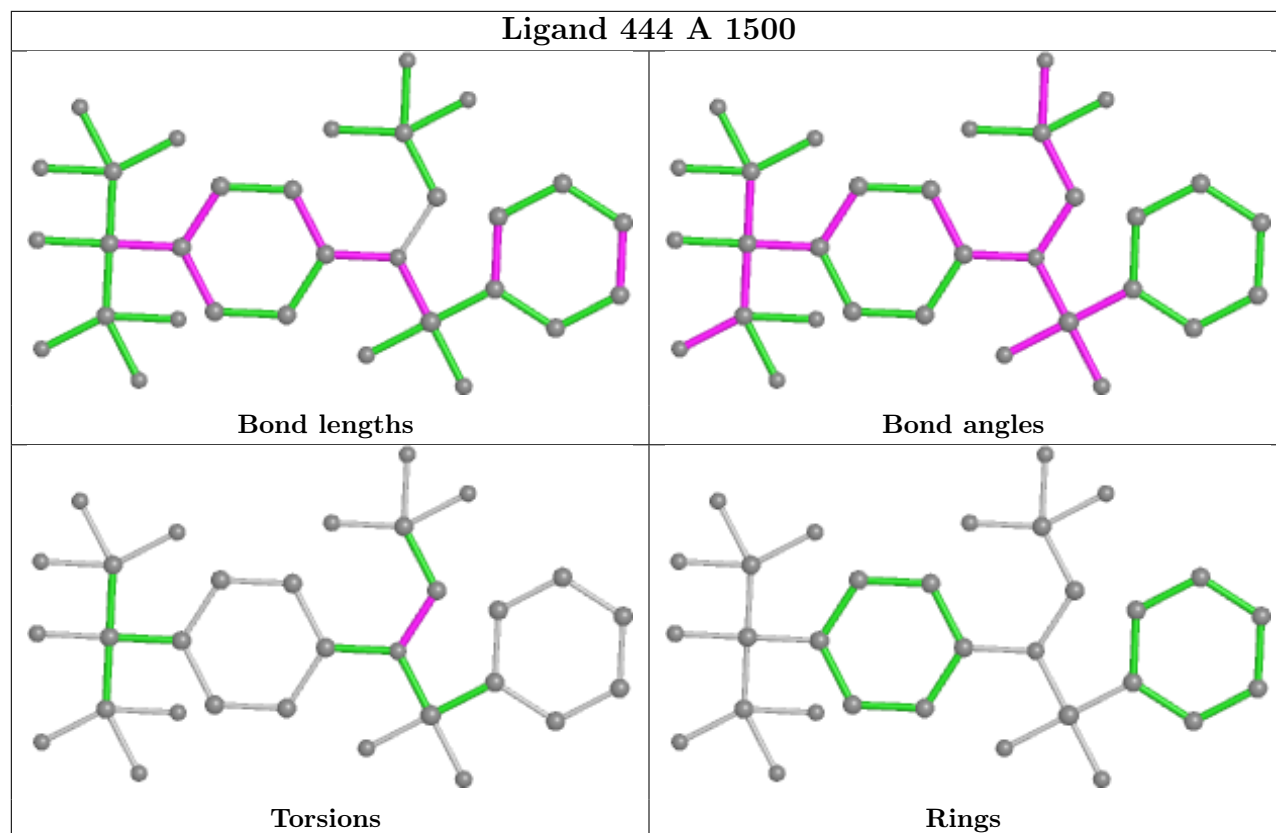
All (7) torsion outliers are listed below:

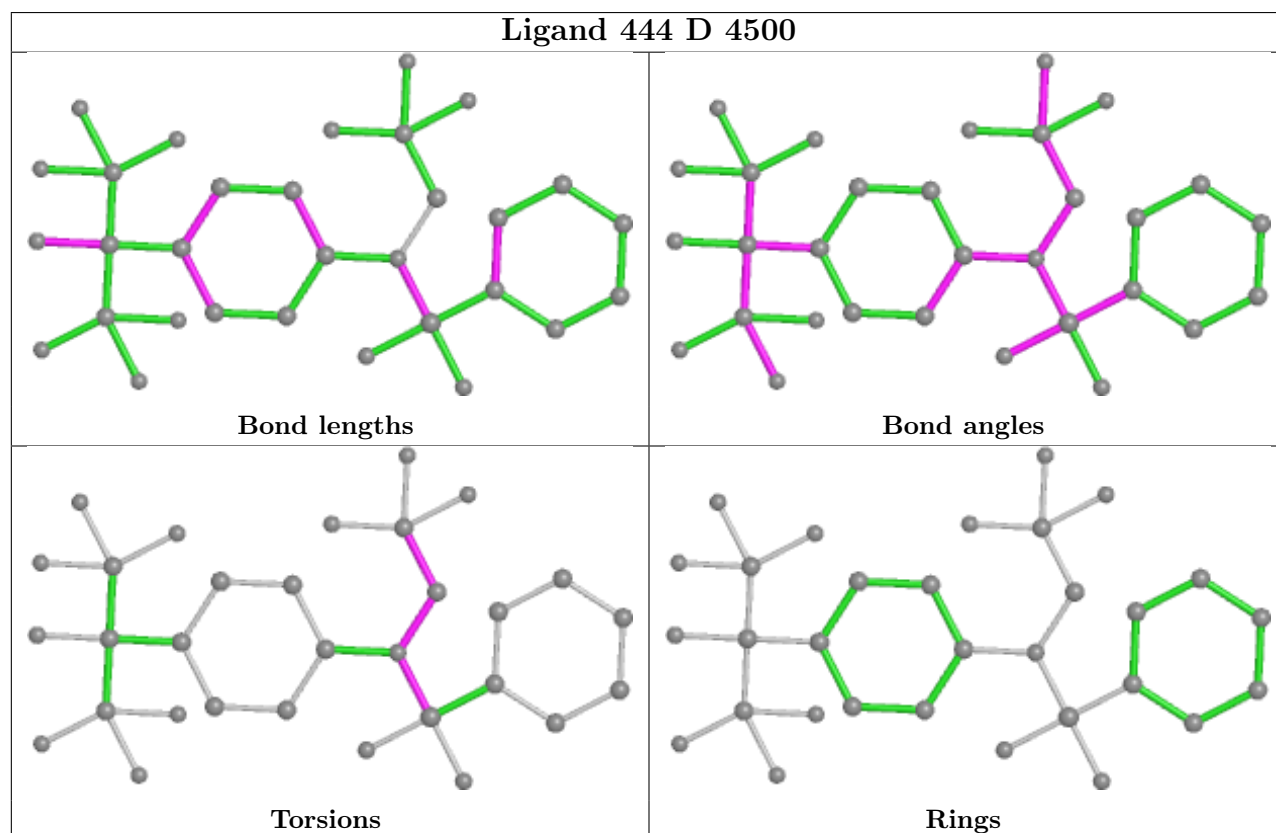
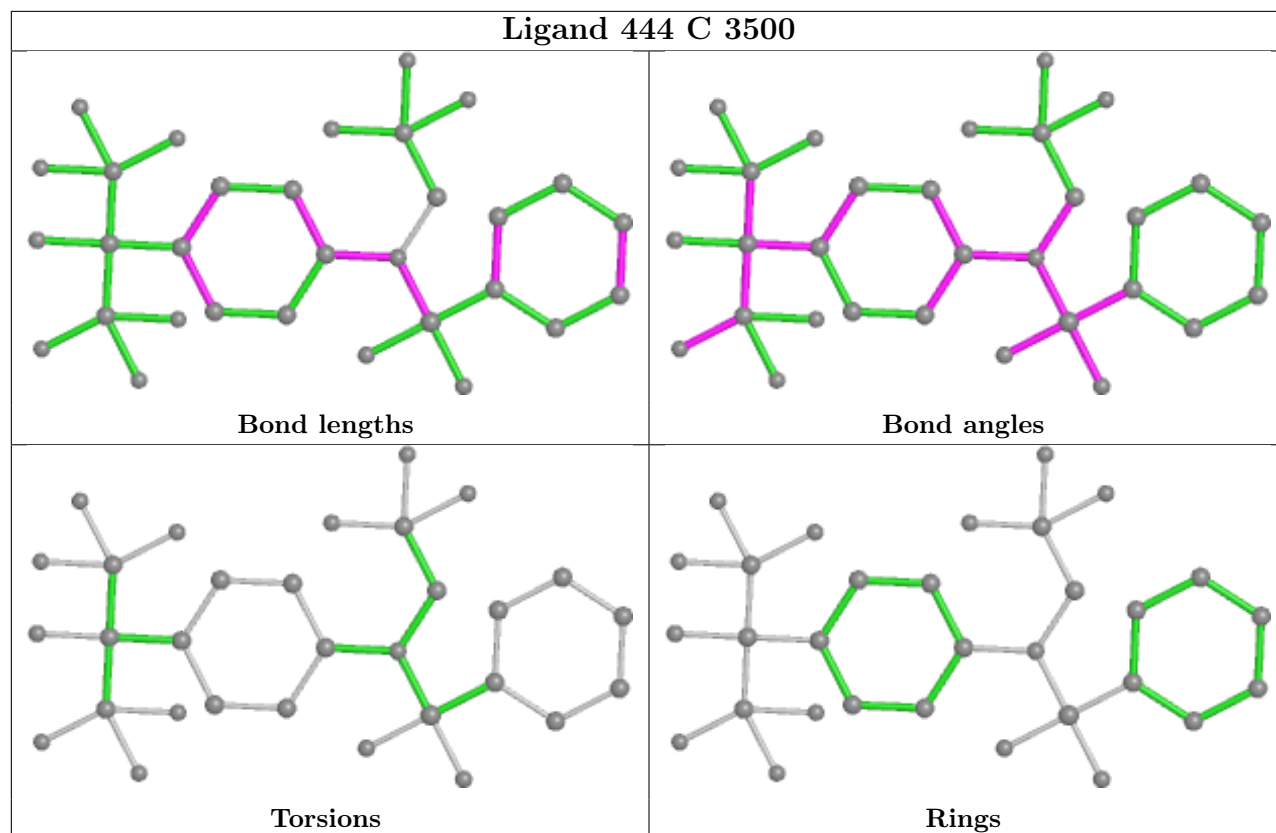
Mol	Chain	Res	Type	Atoms
2	A	1500	444	C19-C16-N15-S12
2	D	4500	444	C19-C16-N15-S12
2	D	4500	444	C16-N15-S12-O14
2	D	4500	444	C16-N15-S12-C01
2	D	4500	444	N15-C16-C19-F20
2	B	2500	444	C25-C26-C33-C34
2	B	2500	444	C27-C26-C33-C34

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 than 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.





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

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

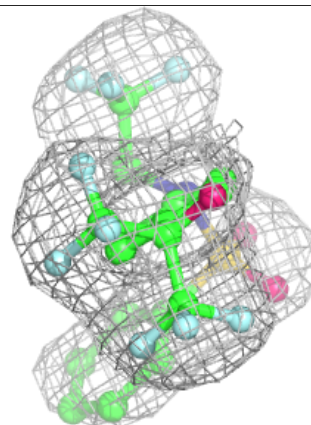
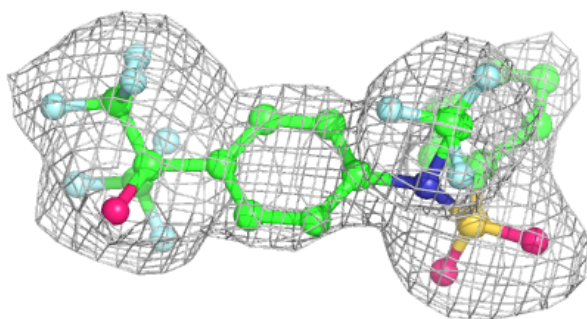
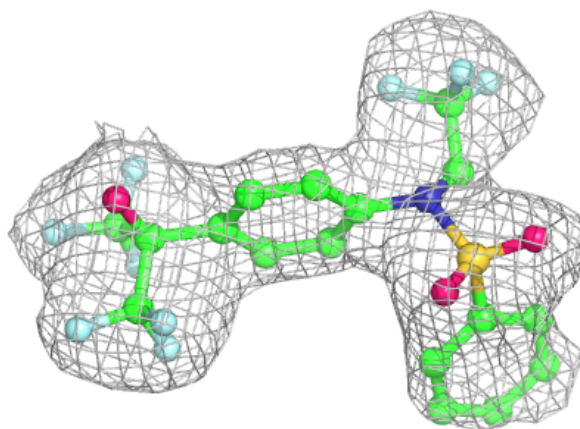
6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

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.

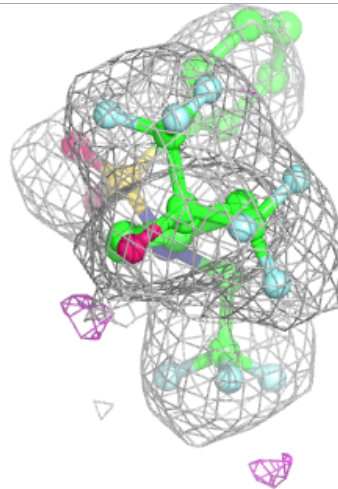
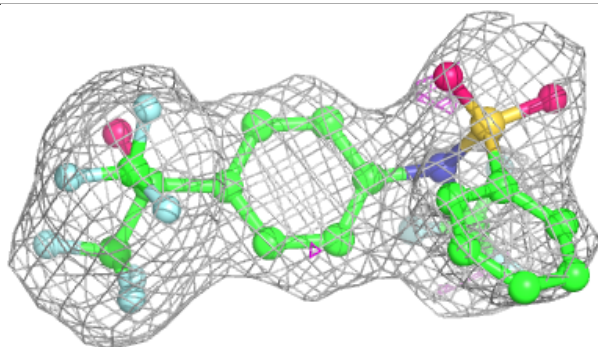
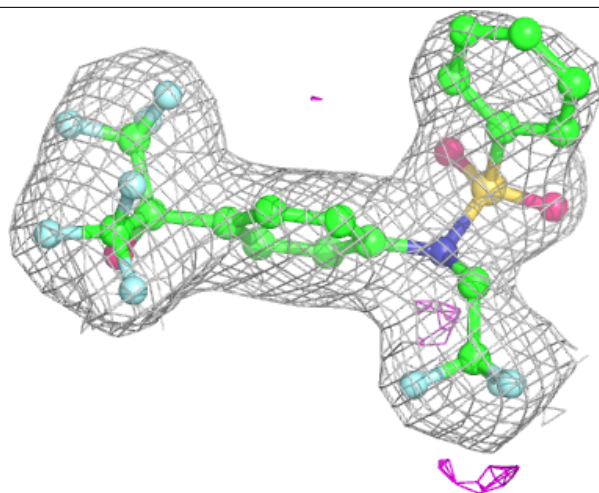
Electron density around 444 A 1500:

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



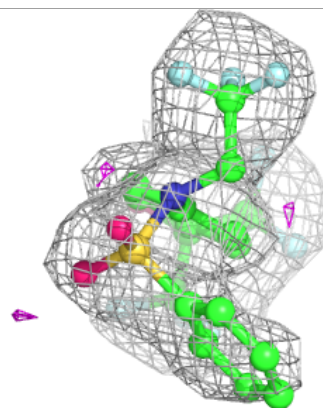
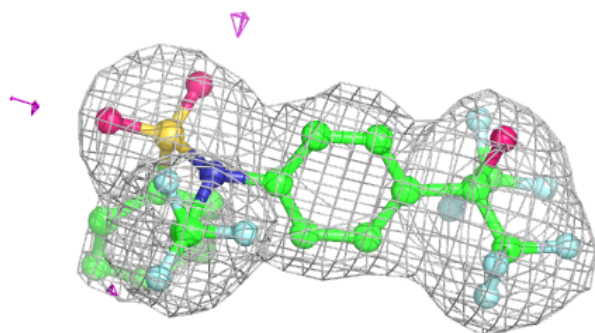
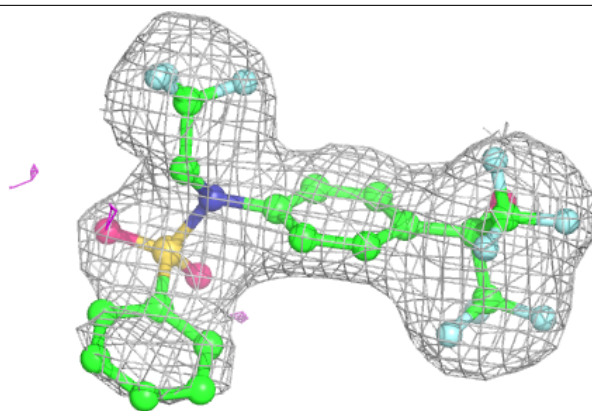
Electron density around 444 B 2500:

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

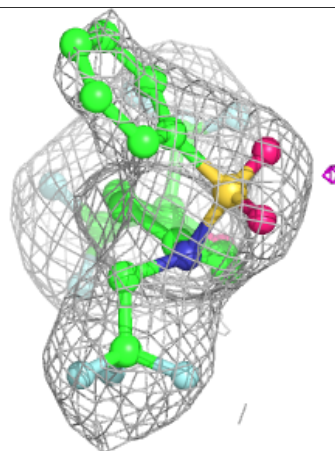
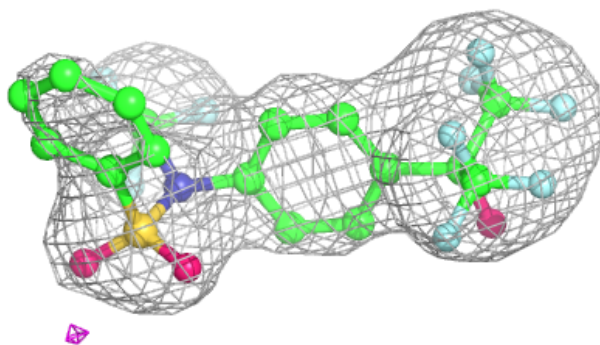
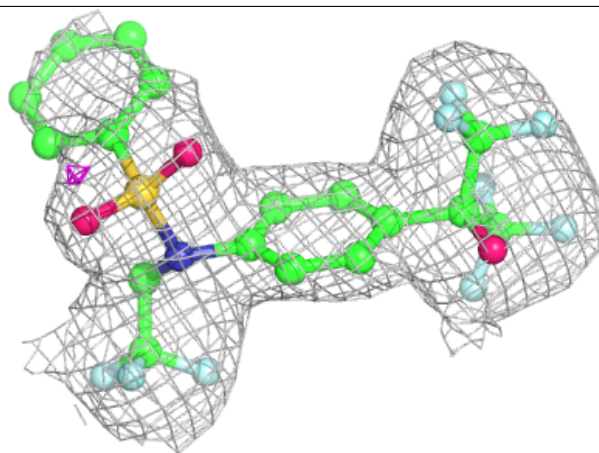


Electron density around 444 C 3500:

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

**Electron density around 444 D 4500:**

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



6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.