Full wwPDB X-ray Structure Validation Report (i)

Feb 4, 2024 – 06:28 AM EST

PDB ID	:	1NRL
Title	:	Crystal Structure of the human PXR-LBD in complex with an SRC-1 coactivator peptide and SR12813
Authors	:	Watkins, R.E.; Davis-Searles, P.R.; Lambert, M.H.; Redinbo, M.R.
Deposited on	:	2003-01-25
Resolution	:	2.00 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 (i) 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 (i)) were used in the production of this report:

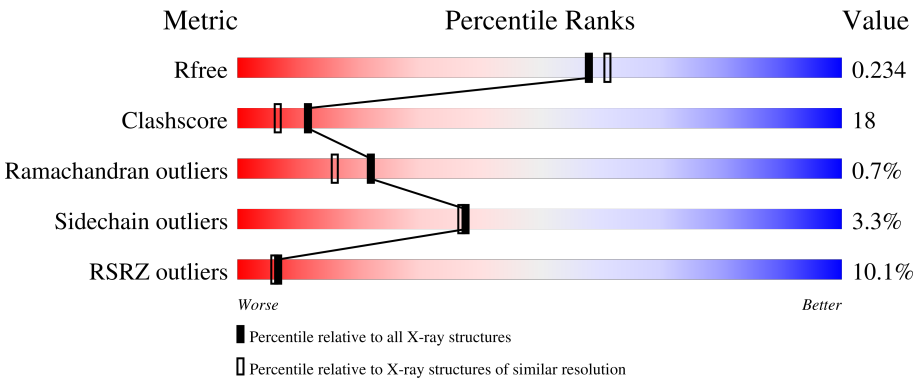
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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	316	7%, 65%, 20%, •, 12%
1	B	316	10%, 58%, 26%, •, 13%
2	C	25	16%, 52%, 8%, 40%
2	D	25	8%, 40%, 20%, 40%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 5346 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 Orphan nuclear receptor PXR.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	278	2274	1460	388	408	18	0	3	0
1	B	275	2248	1445	387	398	18	0	3	0

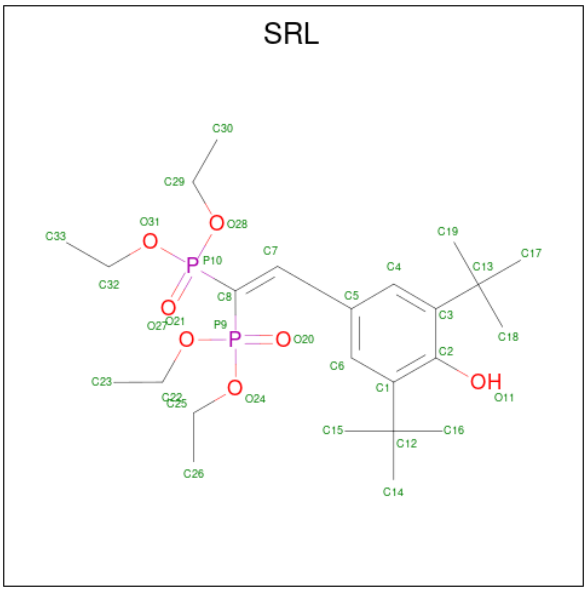
There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	119	MET	-	expression tag	UNP O75469
A	120	LYS	-	expression tag	UNP O75469
A	121	LYS	-	expression tag	UNP O75469
A	122	GLY	-	expression tag	UNP O75469
A	123	HIS	-	expression tag	UNP O75469
A	124	HIS	-	expression tag	UNP O75469
A	125	HIS	-	expression tag	UNP O75469
A	126	HIS	-	expression tag	UNP O75469
A	127	HIS	-	expression tag	UNP O75469
A	128	HIS	-	expression tag	UNP O75469
A	129	GLY	-	expression tag	UNP O75469
B	119	MET	-	expression tag	UNP O75469
B	120	LYS	-	expression tag	UNP O75469
B	121	LYS	-	expression tag	UNP O75469
B	122	GLY	-	expression tag	UNP O75469
B	123	HIS	-	expression tag	UNP O75469
B	124	HIS	-	expression tag	UNP O75469
B	125	HIS	-	expression tag	UNP O75469
B	126	HIS	-	expression tag	UNP O75469
B	127	HIS	-	expression tag	UNP O75469
B	128	HIS	-	expression tag	UNP O75469
B	129	GLY	-	expression tag	UNP O75469

- Molecule 2 is a protein called Nuclear Receptor Coactivator 1 isoform 3.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	C	15	127	80	26	21	0	0	0
2	D	15	131	82	27	22	0	0	0

- Molecule 3 is [2-(3,5-DI-TERT-BUTYL-4-HYDROXY-PHENYL)-1-(DIETHOXY-PHOSPHORYL)-VINYL]-PHOSPHONIC ACID DIETHLYL ESTER (three-letter code: SRL) (formula: $C_{24}H_{42}O_7P_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	O	P		
3	A	1	33	24	7	2	0	0
3	B	1	33	24	7	2	0	0

- Molecule 4 is water.

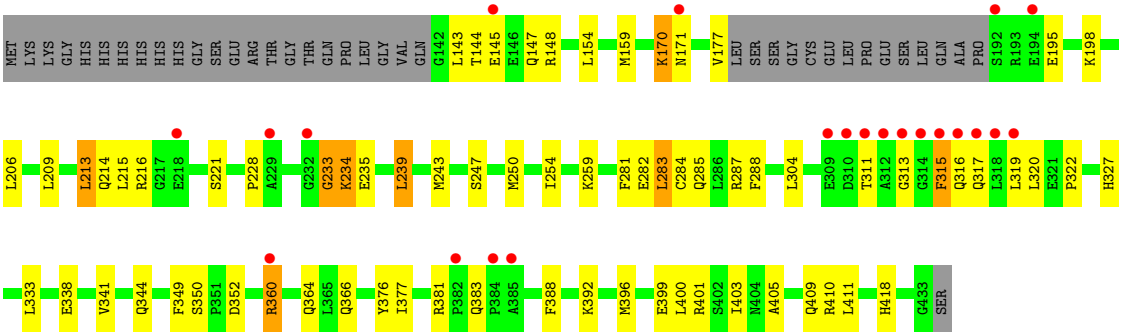
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	A	263	263	263	0	0
4	B	211	211	211	0	0
4	C	7	7	7	0	0
4	D	19	19	19	0	0

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 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.

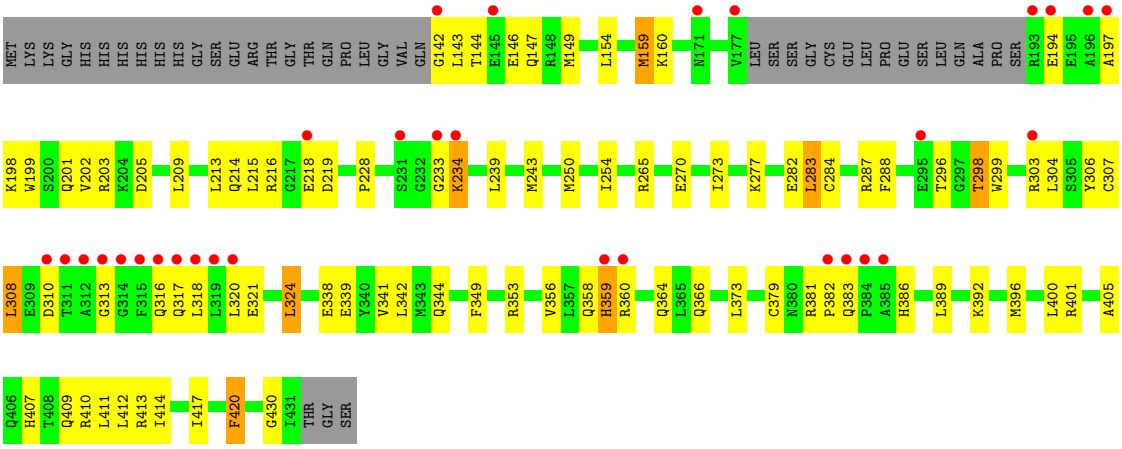
• Molecule 1: Orphan nuclear receptor PXR

Chain A:



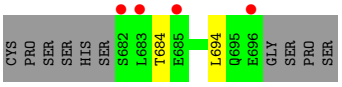
• Molecule 1: Orphan nuclear receptor PXR

Chain B:



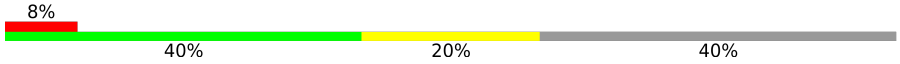
• Molecule 2: Nuclear Receptor Coactivator 1 isoform 3

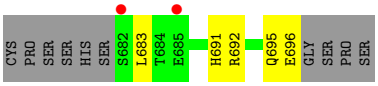
Chain C:



• Molecule 2: Nuclear Receptor Coactivator 1 isoform 3

Chain D:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	85.10Å 89.48Å 106.67Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.88 – 2.00 19.88 – 2.00	Depositor EDS
% Data completeness (in resolution range)	94.6 (19.88-2.00) 94.7 (19.88-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.99 (at 2.01Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.216 , 0.240 0.209 , 0.234	Depositor DCC
R_{free} test set	2661 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	29.1	Xtriage
Anisotropy	0.057	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 58.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.017 for k,h,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	5346	wwPDB-VP
Average B, all atoms (Å^2)	36.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.75% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: SRL

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	0/2325	0.53	0/3132
1	B	0.34	0/2299	0.51	0/3098
2	C	0.22	0/128	0.45	0/170
2	D	0.27	0/132	0.52	0/175
All	All	0.35	0/4884	0.52	0/6575

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	2274	0	2269	73	0
1	B	2248	0	2238	88	0
2	C	127	0	133	2	0
2	D	131	0	139	3	0
3	A	33	0	41	12	0
3	B	33	0	41	11	0
4	A	263	0	0	9	0
4	B	211	0	0	12	0
4	C	7	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	19	0	0	0	0
All	All	5346	0	4861	170	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 18.

All (170) 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:356:VAL:HB	1:B:359[B]:HIS:CE1	1.79	1.17
1:B:214:GLN:HE21	1:B:216:ARG:HH11	1.16	0.93
1:B:356:VAL:HB	1:B:359[B]:HIS:HE1	1.36	0.90
1:A:213:LEU:HD21	1:A:215:LEU:HD23	1.63	0.78
1:B:407:HIS:HA	4:B:2006:HOH:O	1.83	0.76
1:B:239:LEU:O	1:B:243:MET:HG2	1.87	0.75
1:B:254:ILE:HD11	1:B:287:ARG:HD2	1.68	0.75
1:B:360:ARG:O	1:B:364:GLN:HG2	1.89	0.73
1:B:142:GLY:N	1:B:379:CYS:HG	1.86	0.72
1:B:159:MET:HE1	1:B:160:LYS:HA	1.70	0.72
1:A:322:PRO:HB2	4:A:1861:HOH:O	1.87	0.72
3:B:2:SRL:P10	3:B:2:SRL:HC6	2.29	0.72
3:B:2:SRL:H162	3:B:2:SRL:H291	1.73	0.71
1:B:382:PRO:HG2	1:B:383:GLN:NE2	2.06	0.71
1:A:403:ILE:HG23	4:A:1861:HOH:O	1.92	0.70
1:A:214:GLN:HE21	1:A:216:ARG:HH11	1.39	0.69
1:B:144:THR:OG1	1:B:147:GLN:HG3	1.92	0.69
1:A:250:MET:HG3	1:A:288:PHE:CZ	2.29	0.68
1:A:311:THR:OG1	1:A:317:GLN:HG2	1.93	0.68
1:A:316:GLN:HA	1:A:319:LEU:HD12	1.75	0.68
1:A:282:GLU:HG2	1:A:400:LEU:HG	1.76	0.68
1:A:333:LEU:HD11	1:A:396:MET:CE	2.25	0.67
1:A:213:LEU:HD21	1:A:215:LEU:CD2	2.25	0.66
1:A:360:ARG:HA	1:A:360:ARG:HE	1.59	0.66
1:B:359[A]:HIS:HD2	4:B:2151:HOH:O	1.78	0.66
1:B:360:ARG:HB3	4:B:1825:HOH:O	1.95	0.66
1:A:352:ASP:CG	1:A:401:ARG:HH12	1.97	0.66
1:A:411:LEU:HD22	3:A:1:SRL:H261	1.76	0.66
1:B:201:GLN:HG3	1:B:413:ARG:HD3	1.78	0.66
1:B:296:THR:OG1	1:B:298:THR:HG23	1.95	0.66
1:B:405:ALA:O	1:B:409[B]:GLN:HG3	1.95	0.66
3:B:2:SRL:P10	3:B:2:SRL:C6	2.84	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:2:SRL:C6	3:B:2:SRL:O28	2.45	0.65
1:A:315:PHE:O	1:A:319:LEU:HG	1.97	0.65
1:A:333:LEU:HD11	1:A:396:MET:HE3	1.77	0.65
1:B:233:GLY:O	1:B:234:LYS:HB2	1.97	0.65
1:B:356:VAL:HB	1:B:359[B]:HIS:ND1	2.12	0.65
1:A:284:CYS:SG	1:A:288:PHE:CE1	2.90	0.65
1:B:411:LEU:HD22	3:B:2:SRL:H261	1.77	0.65
1:B:282:GLU:HG2	1:B:400:LEU:HG	1.80	0.64
3:A:1:SRL:O27	3:A:1:SRL:HC6	1.99	0.63
1:B:410:ARG:NE	4:B:2006:HOH:O	2.30	0.63
1:A:233:GLY:HA2	4:A:2155:HOH:O	1.99	0.63
3:A:1:SRL:O27	3:A:1:SRL:H153	1.99	0.62
1:B:214:GLN:HE21	1:B:216:ARG:NH1	1.92	0.62
1:A:259:LYS:HD2	2:C:694:LEU:HA	1.80	0.62
1:A:383:GLN:CD	1:A:383:GLN:H	2.03	0.62
1:A:145:GLU:HA	1:A:148:ARG:HE	1.64	0.62
1:B:353:ARG:HD3	1:B:401[A]:ARG:HH12	1.65	0.61
1:B:146:GLU:O	1:B:149:MET:HG3	2.01	0.61
1:B:383:GLN:H	1:B:383:GLN:CD	2.04	0.61
1:B:359[A]:HIS:CD2	4:B:2151:HOH:O	2.50	0.61
1:B:218:GLU:HB2	1:B:303:ARG:NH2	2.17	0.60
1:A:243:MET:HB2	3:A:1:SRL:H231	1.83	0.60
1:A:285:GLN:NE2	1:A:327:HIS:HE2	2.00	0.60
1:A:283:LEU:HD13	1:A:344:GLN:HB3	1.84	0.60
3:A:1:SRL:P10	3:A:1:SRL:C6	2.90	0.59
1:A:239:LEU:O	1:A:243:MET:HG2	2.02	0.59
1:B:409[B]:GLN:NE2	4:B:1957:HOH:O	2.35	0.59
3:A:1:SRL:HC6	3:A:1:SRL:P10	2.42	0.59
1:A:144:THR:OG1	1:A:147:GLN:HG3	2.03	0.58
1:A:254:ILE:HD11	1:A:287:ARG:HD2	1.83	0.58
1:B:313:GLY:HA3	1:B:317:GLN:HB2	1.84	0.58
1:B:201:GLN:CG	1:B:413:ARG:HD3	2.34	0.58
2:D:692:ARG:O	2:D:696:GLU:HG2	2.04	0.57
1:A:213:LEU:CD2	1:A:215:LEU:HD23	2.34	0.57
1:A:177:VAL:HG21	1:B:215:LEU:HD13	1.87	0.57
1:A:221:SER:HB3	1:B:228:PRO:HD3	1.86	0.56
1:B:356:VAL:CB	1:B:359[B]:HIS:CE1	2.72	0.56
1:B:215:LEU:HG	1:B:304:LEU:HD23	1.87	0.56
1:A:281:PHE:HZ	4:A:1815:HOH:O	1.88	0.56
1:B:205:ASP:HB3	1:B:410:ARG:HD3	1.87	0.56
1:B:199:TRP:O	1:B:203:ARG:HG3	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:352:ASP:OD2	1:A:401:ARG:NH1	2.40	0.55
1:B:214:GLN:NE2	1:B:216:ARG:HH11	1.97	0.55
1:A:285:GLN:HE21	1:A:327:HIS:HE2	1.54	0.55
1:A:215:LEU:CD2	1:A:304:LEU:HD23	2.38	0.54
1:A:243:MET:CB	3:A:1:SRL:H231	2.38	0.54
1:A:377:ILE:O	1:A:381:ARG:HG2	2.08	0.53
1:A:411:LEU:HD22	3:A:1:SRL:C26	2.38	0.53
1:A:214:GLN:HE21	1:A:216:ARG:NH1	2.06	0.53
1:B:254:ILE:HD12	1:B:283:LEU:HB3	1.90	0.53
1:B:306:TYR:CG	3:B:2:SRL:H181	2.44	0.53
1:A:388:PHE:O	1:A:392:LYS:HG3	2.09	0.52
1:B:209:LEU:HD13	3:B:2:SRL:C29	2.39	0.52
1:A:313:GLY:HA3	1:A:317:GLN:HB2	1.92	0.52
1:A:352:ASP:O	1:A:401:ARG:NH2	2.43	0.52
1:B:356:VAL:O	1:B:359[B]:HIS:CE1	2.63	0.52
1:B:412:LEU:HD12	4:B:2125:HOH:O	2.10	0.52
1:A:360:ARG:HG3	1:A:364:GLN:NE2	2.26	0.51
1:B:198:LYS:CB	1:B:417:ILE:HD11	2.41	0.51
1:B:250:MET:HG3	1:B:288:PHE:CZ	2.46	0.50
1:B:283:LEU:HD13	1:B:344:GLN:HB3	1.94	0.50
1:B:392:LYS:O	1:B:396:MET:HG3	2.12	0.50
1:B:205:ASP:OD2	1:B:413:ARG:HD2	2.12	0.49
1:B:254:ILE:CD1	1:B:287:ARG:HD2	2.41	0.49
3:A:1:SRL:H322	3:A:1:SRL:O24	2.12	0.49
1:A:352:ASP:CG	1:A:401:ARG:NH1	2.66	0.49
1:A:360:ARG:HB3	4:A:1867:HOH:O	2.12	0.49
1:A:215:LEU:HD22	1:A:304:LEU:HD23	1.94	0.49
1:A:418:HIS:HE1	4:A:1915:HOH:O	1.95	0.48
1:A:315:PHE:CE1	1:A:319:LEU:HD21	2.49	0.47
1:B:284:CYS:SG	1:B:288:PHE:CE1	3.08	0.47
1:B:358:GLN:NE2	4:B:1825:HOH:O	2.48	0.47
1:A:213:LEU:C	1:A:213:LEU:HD23	2.35	0.47
1:B:159:MET:O	1:B:159:MET:HE2	2.14	0.47
1:B:198:LYS:HB3	1:B:417:ILE:HD11	1.96	0.47
1:B:339:GLU:OE2	1:B:381:ARG:HD2	2.14	0.47
1:B:316:GLN:O	1:B:320:LEU:HG	2.16	0.46
1:B:321:GLU:HB3	1:B:324:LEU:HB2	1.98	0.46
1:A:235:GLU:HB3	1:B:219:ASP:HB2	1.98	0.46
1:A:349:PHE:O	1:A:366:GLN:HB2	2.16	0.46
1:A:170:LYS:O	1:A:171:ASN:HB2	2.17	0.45
1:A:333:LEU:CD1	1:A:396:MET:CE	2.95	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:352:ASP:C	1:A:401:ARG:HH22	2.18	0.45
1:A:411:LEU:HB2	3:A:1:SRL:H331	1.97	0.45
1:B:213:LEU:HD23	1:B:213:LEU:C	2.37	0.45
1:B:342:LEU:HD13	1:B:373:LEU:HA	1.98	0.45
1:A:195:GLU:OE1	1:A:198:LYS:HD2	2.17	0.45
1:B:143:LEU:N	1:B:143:LEU:HD12	2.31	0.45
1:B:417:ILE:HG23	4:B:2185:HOH:O	2.17	0.45
1:A:216:ARG:HH11	1:A:216:ARG:HG3	1.81	0.45
1:A:350[B]:SER:OG	1:A:401:ARG:NH1	2.50	0.45
1:B:144:THR:HG23	1:B:147:GLN:OE1	2.17	0.45
1:B:202:VAL:HG13	1:B:414:ILE:HG12	1.99	0.45
1:A:228:PRO:HG3	1:A:235:GLU:HB2	1.99	0.44
2:C:684:THR:HG23	4:C:2060:HOH:O	2.17	0.44
1:A:315:PHE:HE1	1:A:319:LEU:HD21	1.82	0.44
1:A:283:LEU:CD1	1:A:344:GLN:HB3	2.47	0.44
1:B:353:ARG:NH1	1:B:401[A]:ARG:NH1	2.66	0.44
1:B:273:ILE:O	1:B:277:LYS:HG3	2.17	0.44
1:A:320:LEU:O	1:A:322:PRO:HD3	2.18	0.44
1:B:233:GLY:O	1:B:234:LYS:CB	2.66	0.43
1:A:247:SER:OG	3:A:1:SRL:H221	2.18	0.43
1:B:209:LEU:HD21	1:B:321:GLU:HG2	1.99	0.43
1:B:407:HIS:CA	4:B:2006:HOH:O	2.56	0.43
1:B:420:PHE:HE1	3:B:2:SRL:H233	1.82	0.43
1:B:420:PHE:CE1	3:B:2:SRL:H233	2.53	0.43
1:A:405:ALA:O	1:A:409:GLN:HG3	2.19	0.43
1:B:209:LEU:HD13	3:B:2:SRL:H292	2.00	0.43
1:B:299:TRP:HZ3	1:B:308:LEU:HD13	1.83	0.43
1:B:430:GLY:HA2	4:B:2082:HOH:O	2.19	0.43
1:A:209:LEU:HD11	1:A:410:ARG:NH1	2.34	0.42
1:A:243:MET:C	3:A:1:SRL:H231	2.40	0.42
1:A:259:LYS:HG2	4:A:2174:HOH:O	2.18	0.42
1:B:381:ARG:HB3	1:B:386:HIS:ND1	2.34	0.42
1:B:411:LEU:HD22	3:B:2:SRL:C26	2.48	0.42
1:A:239:LEU:O	1:A:243:MET:CG	2.66	0.42
1:B:194:GLU:O	1:B:197:ALA:HB3	2.19	0.42
1:B:213:LEU:HD23	1:B:214:GLN:N	2.34	0.42
1:B:270:GLU:HB3	2:D:683:LEU:HD12	2.03	0.41
1:A:215:LEU:HD21	1:A:304:LEU:CD2	2.51	0.41
1:B:198:LYS:HB2	1:B:417:ILE:HD11	2.02	0.41
1:B:265:ARG:HB3	1:B:265:ARG:HH11	1.86	0.41
1:B:324:LEU:HD12	1:B:324:LEU:HA	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:403:ILE:HG22	4:A:1815:HOH:O	2.21	0.41
1:A:234:LYS:HB3	4:B:2123:HOH:O	2.20	0.41
1:A:403:ILE:CG2	4:A:1815:HOH:O	2.69	0.41
1:B:310:ASP:OD1	1:B:318:LEU:HD11	2.20	0.41
1:B:338:GLU:O	1:B:341:VAL:HG12	2.20	0.41
1:A:143:LEU:HD21	1:A:376:TYR:HA	2.02	0.41
1:B:321:GLU:OE2	1:B:410:ARG:NH2	2.44	0.41
1:A:338:GLU:O	1:A:341:VAL:HG12	2.21	0.41
1:A:284:CYS:SG	1:A:288:PHE:HE1	2.41	0.40
1:B:214:GLN:NE2	1:B:216:ARG:NH1	2.65	0.40
1:B:298:THR:HB	1:B:307:CYS:HA	2.02	0.40
1:B:349:PHE:O	1:B:366:GLN:HB2	2.20	0.40
1:B:381:ARG:HD3	1:B:389:LEU:CD2	2.51	0.40
1:B:381:ARG:HD3	1:B:389:LEU:HD23	2.04	0.40
2:D:691:HIS:O	2:D:695:GLN:HG3	2.22	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	277/316 (88%)	265 (96%)	10 (4%)	2 (1%)	22 16
1	B	274/316 (87%)	265 (97%)	7 (3%)	2 (1%)	22 16
2	C	13/25 (52%)	12 (92%)	1 (8%)	0	100 100
2	D	13/25 (52%)	12 (92%)	1 (8%)	0	100 100
All	All	577/682 (85%)	554 (96%)	19 (3%)	4 (1%)	22 16

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	234	LYS
1	A	234	LYS
1	B	420	PHE
1	A	233	GLY

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	248/279 (89%)	238 (96%)	10 (4%)	31	29
1	B	243/279 (87%)	235 (97%)	8 (3%)	38	37
2	C	14/24 (58%)	14 (100%)	0	100	100
2	D	15/24 (62%)	15 (100%)	0	100	100
All	All	520/606 (86%)	502 (96%)	18 (4%)	38	35

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

Mol	Chain	Res	Type
1	A	154	LEU
1	A	159	MET
1	A	170	LYS
1	A	206	LEU
1	A	213	LEU
1	A	239	LEU
1	A	283	LEU
1	A	315	PHE
1	A	360	ARG
1	A	399	GLU
1	B	154	LEU
1	B	159	MET
1	B	283	LEU
1	B	298	THR
1	B	308	LEU
1	B	324	LEU
1	B	359[A]	HIS
1	B	359[B]	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	171	ASN
1	A	214	GLN
1	A	224	ASN
1	A	272	GLN
1	A	285	GLN
1	A	364	GLN
1	B	214	GLN
1	B	224	ASN
1	B	272	GLN
1	B	317	GLN
1	B	358	GLN

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)

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	SRL	A	1	-	30,33,33	1.86	6 (20%)	47,50,50	2.66	18 (38%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	SRL	B	2	-	30,33,33	1.87	6 (20%)	47,50,50	2.67	18 (38%)

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	SRL	A	1	-	-	3/34/44/44	0/1/1/1
3	SRL	B	2	-	-	1/34/44/44	0/1/1/1

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1	SRL	P9-O20	4.77	1.52	1.46
3	B	2	SRL	P9-O20	4.77	1.52	1.46
3	A	1	SRL	C2-C3	3.95	1.46	1.41
3	B	2	SRL	C2-C3	3.86	1.46	1.41
3	A	1	SRL	C4-C3	3.73	1.45	1.39
3	B	2	SRL	C4-C3	3.70	1.45	1.39
3	B	2	SRL	C2-C1	3.61	1.46	1.41
3	A	1	SRL	C2-C1	3.48	1.45	1.41
3	B	2	SRL	C6-C1	2.21	1.42	1.39
3	B	2	SRL	O11-C2	-2.11	1.32	1.37
3	A	1	SRL	O11-C2	-2.10	1.32	1.37
3	A	1	SRL	C6-C1	2.04	1.42	1.39

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1	SRL	C13-C3-C2	8.74	131.20	121.96
3	B	2	SRL	C13-C3-C2	8.73	131.18	121.96
3	A	1	SRL	C5-C7-C8	-5.69	120.17	130.93
3	B	2	SRL	C5-C7-C8	-5.67	120.20	130.93
3	A	1	SRL	O24-P9-O21	4.70	115.26	101.89
3	B	2	SRL	O24-P9-O21	4.67	115.16	101.89
3	A	1	SRL	C4-C3-C2	-4.53	112.59	116.85
3	B	2	SRL	C4-C3-C2	-4.49	112.62	116.85
3	B	2	SRL	O24-P9-O20	-4.32	103.59	115.03
3	B	2	SRL	C3-C2-C1	4.30	126.78	122.64
3	A	1	SRL	O24-P9-O20	-4.29	103.66	115.03
3	A	1	SRL	C3-C2-C1	4.27	126.75	122.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	2	SRL	C12-C1-C2	4.12	126.31	121.96
3	A	1	SRL	O21-P9-O20	-4.11	104.12	115.03
3	B	2	SRL	O21-P9-O20	-4.08	104.20	115.03
3	A	1	SRL	C12-C1-C2	4.06	126.25	121.96
3	B	2	SRL	O24-P9-C8	3.78	117.37	104.76
3	A	1	SRL	O24-P9-C8	3.77	117.32	104.76
3	B	2	SRL	C6-C1-C2	-3.60	113.46	116.85
3	A	1	SRL	C6-C1-C2	-3.48	113.58	116.85
3	A	1	SRL	O20-P9-C8	-3.43	106.39	113.03
3	B	2	SRL	P10-O28-C29	-3.41	110.66	121.87
3	B	2	SRL	O20-P9-C8	-3.41	106.43	113.03
3	A	1	SRL	P10-O28-C29	-3.39	110.74	121.87
3	A	1	SRL	O27-P10-C8	2.98	118.80	113.03
3	B	2	SRL	O27-P10-C8	2.98	118.80	113.03
3	B	2	SRL	C18-C13-C3	2.96	116.50	110.86
3	A	1	SRL	C18-C13-C3	2.95	116.48	110.86
3	B	2	SRL	P10-O31-C32	-2.95	112.16	121.87
3	A	1	SRL	P10-O31-C32	-2.94	112.19	121.87
3	B	2	SRL	P9-O21-C22	-2.41	113.94	121.87
3	A	1	SRL	P9-O21-C22	-2.37	114.07	121.87
3	A	1	SRL	O28-P10-O27	-2.28	108.97	115.03
3	B	2	SRL	O28-P10-O27	-2.28	109.00	115.03
3	A	1	SRL	C16-C12-C1	2.07	114.80	110.86
3	B	2	SRL	C16-C12-C1	2.06	114.78	110.86

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1	SRL	C7-C8-P10-O28
3	A	1	SRL	C22-O21-P9-C8
3	A	1	SRL	C7-C8-P10-O31
3	B	2	SRL	C7-C8-P10-O28

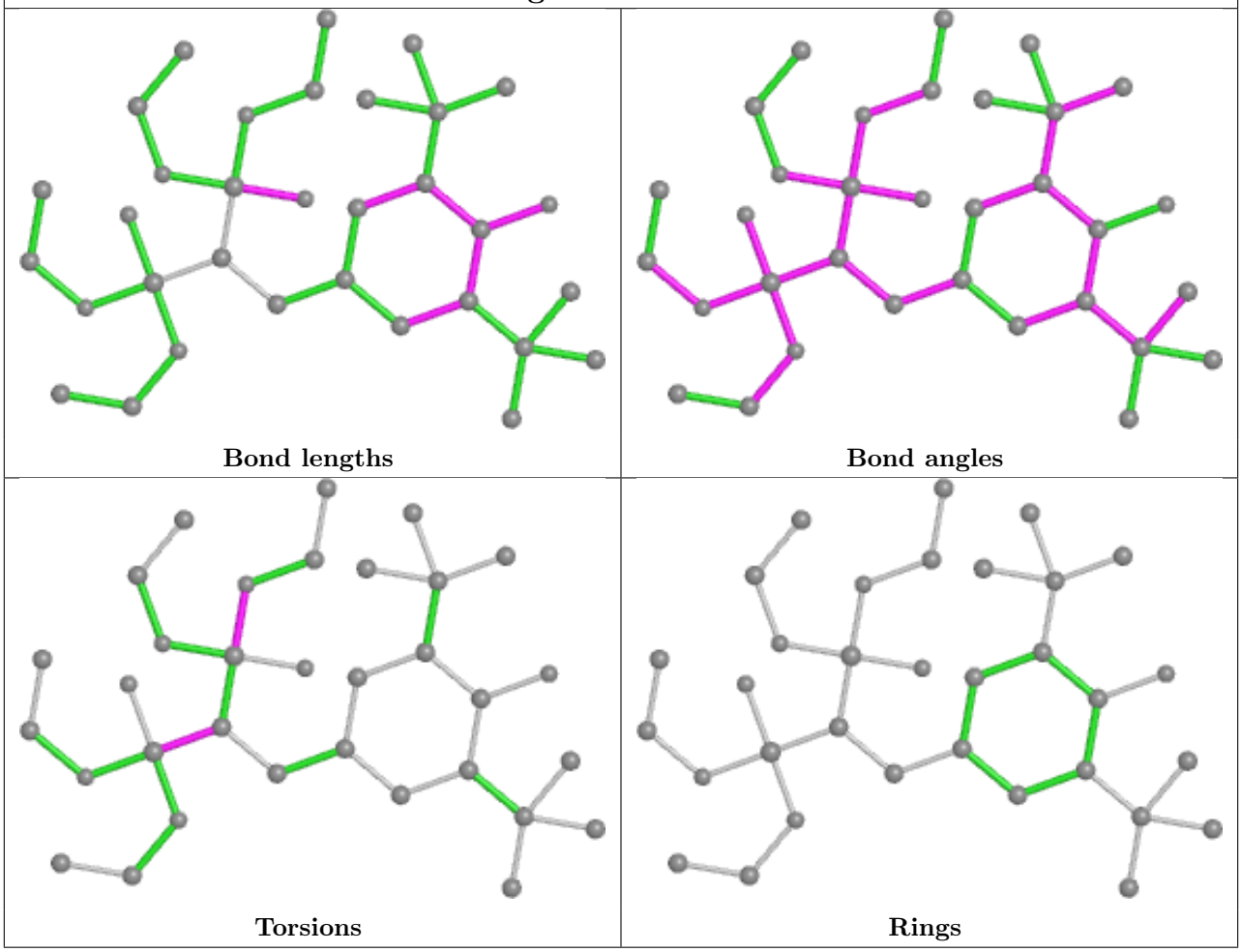
There are no ring outliers.

2 monomers are involved in 23 short contacts:

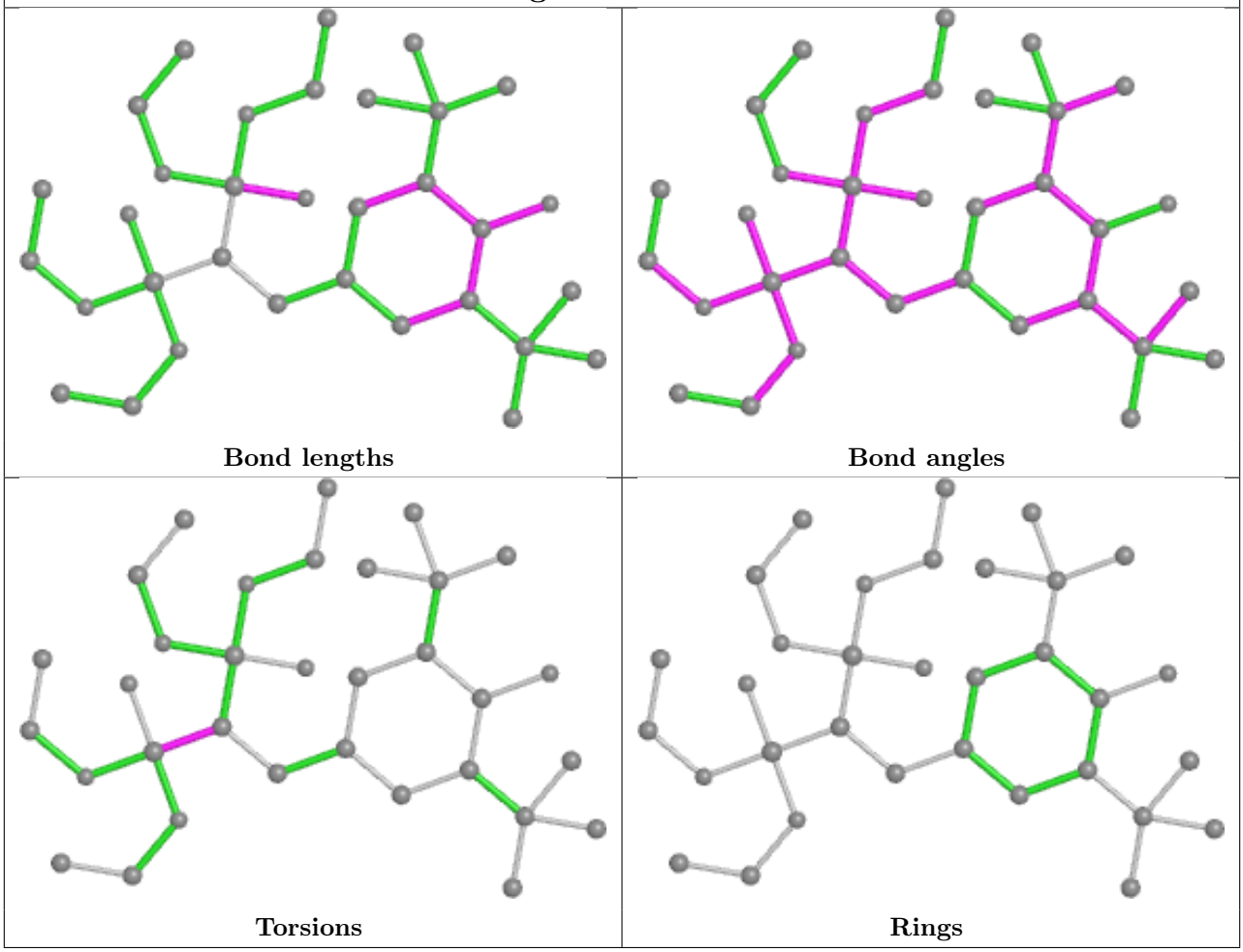
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1	SRL	12	0
3	B	2	SRL	11	0

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 SRL A 1



Ligand SRL B 2



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	A	278/316 (87%)	0.35	22 (7%)	12	11	16, 29, 61, 90	0
1	B	275/316 (87%)	0.49	31 (11%)	5	4	16, 32, 68, 86	0
2	C	15/25 (60%)	1.36	4 (26%)	0	0	27, 41, 62, 63	0
2	D	15/25 (60%)	0.39	2 (13%)	3	2	25, 34, 61, 63	0
All	All	583/682 (85%)	0.44	59 (10%)	7	6	16, 31, 63, 90	0

All (59) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	312	ALA	9.6
1	B	311	THR	9.2
1	A	311	THR	7.6
1	B	194	GLU	6.9
1	B	310	ASP	6.5
1	A	315	PHE	5.8
1	B	193	ARG	5.8
1	A	312	ALA	5.7
1	A	313	GLY	5.7
1	B	231	SER	5.5
1	B	315	PHE	5.3
1	A	310	ASP	5.1
1	B	313	GLY	4.8
1	B	384	PRO	4.7
1	B	233	GLY	4.6
2	C	682	SER	4.5
1	A	314	GLY	4.2
1	B	360	ARG	4.2
1	B	317	GLN	4.0
1	B	383	GLN	4.0
1	A	232	GLY	3.9

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Mol	Chain	Res	Type	RSRZ
1	A	382	PRO	3.6
1	A	194	GLU	3.5
1	B	197	ALA	3.4
1	A	192	SER	3.4
1	B	319	LEU	3.3
1	B	142	GLY	3.2
1	A	319	LEU	3.2
1	B	218	GLU	3.1
2	D	682	SER	3.1
1	B	359[A]	HIS	3.0
1	B	171	ASN	3.0
1	A	171	ASN	2.9
1	B	385	ALA	2.9
2	C	683	LEU	2.8
1	A	218	GLU	2.8
2	C	685	GLU	2.8
1	A	316	GLN	2.7
1	B	320	LEU	2.7
1	A	317	GLN	2.7
1	B	316	GLN	2.6
1	A	318	LEU	2.6
1	A	385	ALA	2.5
1	A	229	ALA	2.5
1	A	309	GLU	2.5
1	A	384	PRO	2.5
1	B	145	GLU	2.5
1	B	196	ALA	2.4
2	C	696	GLU	2.3
1	B	318	LEU	2.3
2	D	685	GLU	2.3
1	B	177	VAL	2.2
1	B	303	ARG	2.2
1	A	145	GLU	2.2
1	B	382	PRO	2.2
1	B	234	LYS	2.1
1	B	314	GLY	2.1
1	B	295	GLU	2.0
1	A	360	ARG	2.0

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 monosaccharides in this entry.

6.4 Ligands (i)

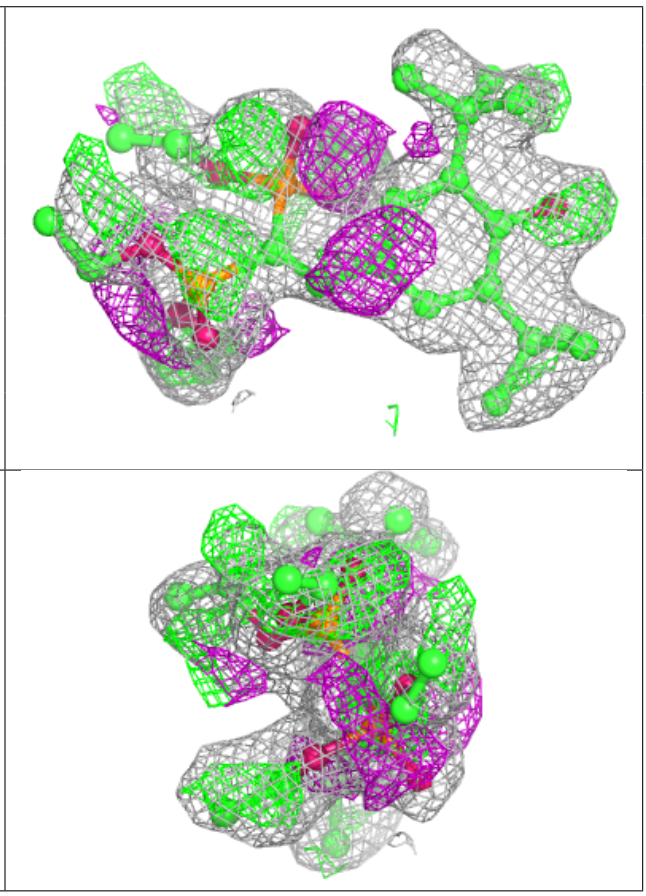
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	SRL	A	1	33/33	0.83	0.31	58,62,68,70	0
3	SRL	B	2	33/33	0.83	0.30	53,60,69,71	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.

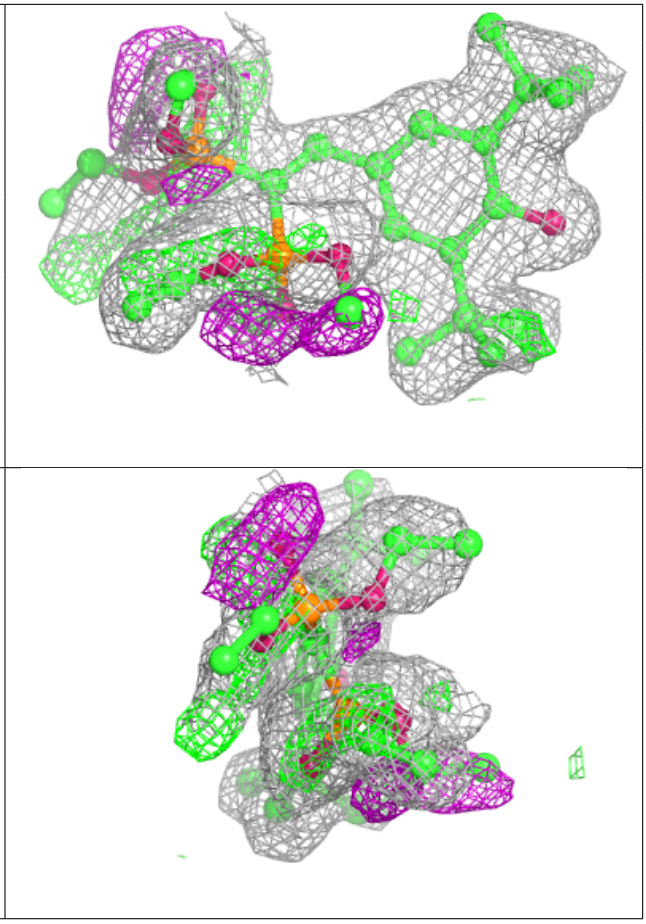
Electron density around SRL A 1:

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 SRL B 2:

$2mF_o$-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 (i)

There are no such residues in this entry.