Full wwPDB X-ray Structure Validation Report ⓘ

Nov 13, 2024 – 09:19 AM EST

PDB ID	:	4JTC
Title	:	Crystal structure of Kv1.2-2.1 paddle chimera channel in complex with Charybdotoxin in Cs+
Authors	:	Banerjee, A.; Lee, A.; Campbell, E.; MacKinnon, R.
Deposited on	:	2013-03-23
Resolution	:	2.56 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:

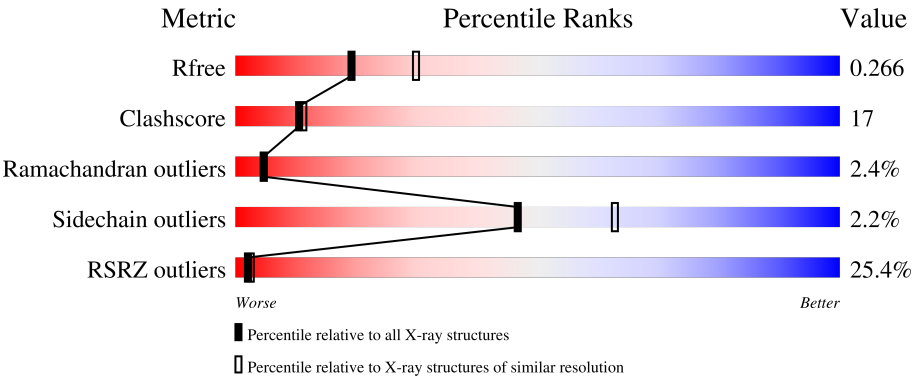
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.56 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}	164625	1685 (2.58-2.54)
Clashscore	180529	1779 (2.58-2.54)
Ramachandran outliers	177936	1766 (2.58-2.54)
Sidechain outliers	177891	1766 (2.58-2.54)
RSRZ outliers	164620	1685 (2.58-2.54)

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	333	3% 79% 17%
1	G	333	5% 78% 19%
2	B	514	17% 48% 25% 25%
2	H	514	42% 37% 31% 29%
3	Y	37	97% 59% 38%

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
6	PGW	B	504	-	-	-	X
6	PGW	B	506	-	-	-	X
6	PGW	B	508	-	-	-	X
6	PGW	B	512	-	-	-	X
6	PGW	B	517	-	-	-	X
6	PGW	B	519	-	-	-	X
6	PGW	H	504	-	-	-	X

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 11770 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 Voltage-gated potassium channel subunit beta-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	326	Total	C	N	O	S	0	0	0
			2556	1627	443	470	16			
1	G	326	Total	C	N	O	S	0	0	0
			2556	1627	443	470	16			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	35	MET	-	expression tag	UNP P62483
G	35	MET	-	expression tag	UNP P62483

- Molecule 2 is a protein called Potassium voltage-gated channel subfamily A member 2, Potassium voltage-gated channel subfamily B member 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	386	Total	C	N	O	S	0	0	0
			3088	2022	504	548	14			
2	H	363	Total	C	N	O	S	0	0	0
			2959	1950	478	518	13			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-18	MET	-	expression tag	UNP P63142
B	-17	ALA	-	expression tag	UNP P63142
B	-16	HIS	-	expression tag	UNP P63142
B	-15	HIS	-	expression tag	UNP P63142
B	-14	HIS	-	expression tag	UNP P63142
B	-13	HIS	-	expression tag	UNP P63142
B	-12	HIS	-	expression tag	UNP P63142
B	-11	HIS	-	expression tag	UNP P63142
B	-10	HIS	-	expression tag	UNP P63142

Continued on next page...

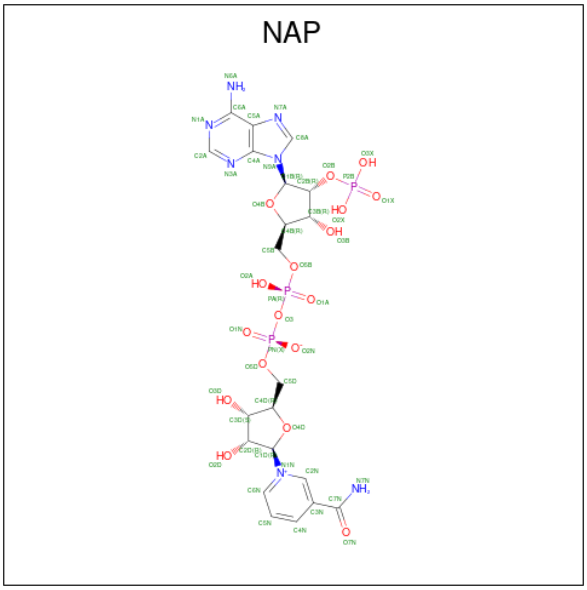
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-9	HIS	-	expression tag	UNP P63142
B	-8	HIS	-	expression tag	UNP P63142
B	-7	HIS	-	expression tag	UNP P63142
B	-6	GLY	-	expression tag	UNP P63142
B	-5	LEU	-	expression tag	UNP P63142
B	-4	VAL	-	expression tag	UNP P63142
B	-3	PRO	-	expression tag	UNP P63142
B	-2	ARG	-	expression tag	UNP P63142
B	-1	GLY	-	expression tag	UNP P63142
B	0	SER	-	expression tag	UNP P63142
B	31	SER	CYS	engineered mutation	UNP P63142
B	32	SER	CYS	engineered mutation	UNP P63142
B	207	GLN	ASN	engineered mutation	UNP P63142
B	431	SER	CYS	engineered mutation	UNP P63142
B	478	SER	CYS	engineered mutation	UNP P63142
H	-18	MET	-	expression tag	UNP P63142
H	-17	ALA	-	expression tag	UNP P63142
H	-16	HIS	-	expression tag	UNP P63142
H	-15	HIS	-	expression tag	UNP P63142
H	-14	HIS	-	expression tag	UNP P63142
H	-13	HIS	-	expression tag	UNP P63142
H	-12	HIS	-	expression tag	UNP P63142
H	-11	HIS	-	expression tag	UNP P63142
H	-10	HIS	-	expression tag	UNP P63142
H	-9	HIS	-	expression tag	UNP P63142
H	-8	HIS	-	expression tag	UNP P63142
H	-7	HIS	-	expression tag	UNP P63142
H	-6	GLY	-	expression tag	UNP P63142
H	-5	LEU	-	expression tag	UNP P63142
H	-4	VAL	-	expression tag	UNP P63142
H	-3	PRO	-	expression tag	UNP P63142
H	-2	ARG	-	expression tag	UNP P63142
H	-1	GLY	-	expression tag	UNP P63142
H	0	SER	-	expression tag	UNP P63142
H	31	SER	CYS	engineered mutation	UNP P63142
H	32	SER	CYS	engineered mutation	UNP P63142
H	207	GLN	ASN	engineered mutation	UNP P63142
H	431	SER	CYS	engineered mutation	UNP P63142
H	478	SER	CYS	engineered mutation	UNP P63142

- Molecule 3 is a protein called Potassium channel toxin alpha-KTx 1.1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	Y	37	Total	C	N	O	S	0	0	0
			295	176	57	55	7			

- Molecule 4 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: $C_{21}H_{28}N_7O_{17}P_3$).

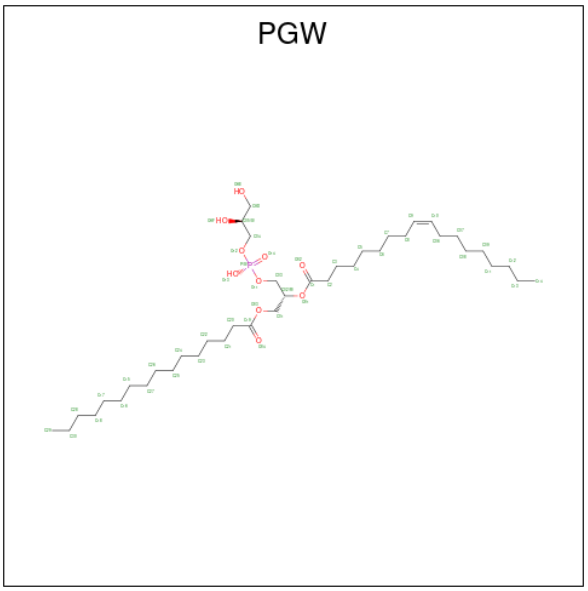


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			48	21	7	17	3		
4	G	1	Total	C	N	O	P	0	0
			48	21	7	17	3		

- Molecule 5 is CESIUM ION (three-letter code: CS) (formula: Cs).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	4	Total	Cs	0	0
			4	4		
5	H	4	Total	Cs	0	0
			4	4		

- Molecule 6 is (1R)-2-{[(S)-{[(2S)-2,3-dihydroxypropyl]oxy}(hydroxy)phosphoryl]oxy}-1-[(hexadecanoyloxy)methyl]ethyl (9Z)-octadec-9-enoate (three-letter code: PGW) (formula: $C_{40}H_{77}O_{10}P$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total C O 22 17 5	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 7 7	0	0
6	B	1	Total C 9 9	0	0
6	B	1	Total C 8 8	0	0
6	B	1	Total C O P 23 14 8 1	0	0
6	B	1	Total C 8 8	0	0
6	B	1	Total C O P 36 25 10 1	0	0
6	B	1	Total C 7 7	0	0

Continued on next page...

Continued from previous page...

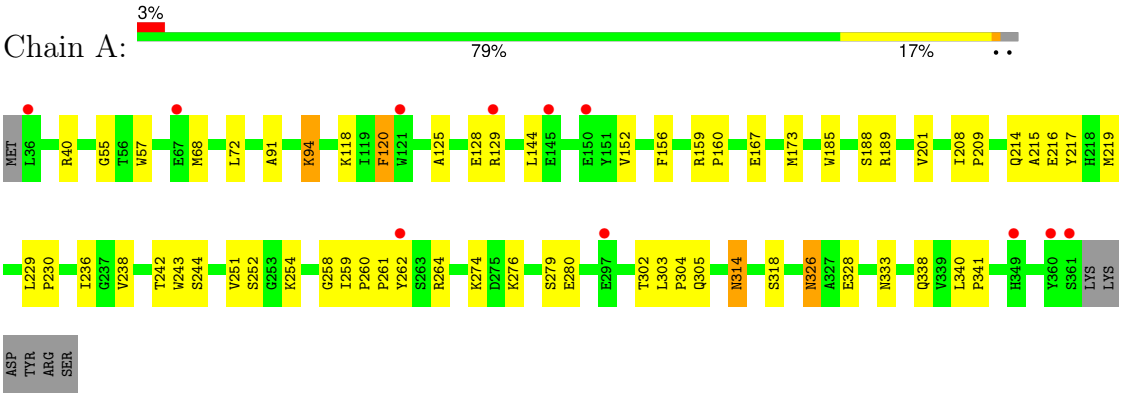
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total C 8 8	0	0
6	B	1	Total C 8 8	0	0
6	H	1	Total C O 22 17 5	0	0

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.

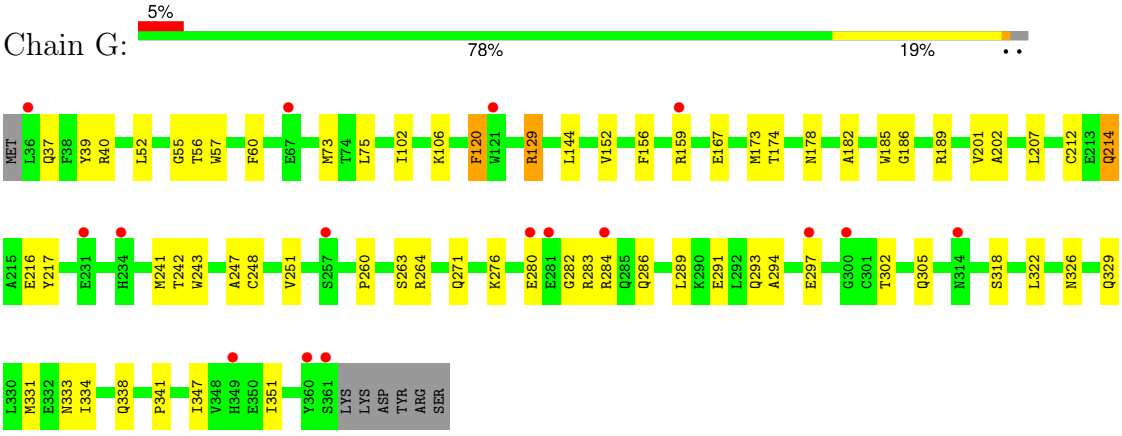
• Molecule 1: Voltage-gated potassium channel subunit beta-2

Chain A:



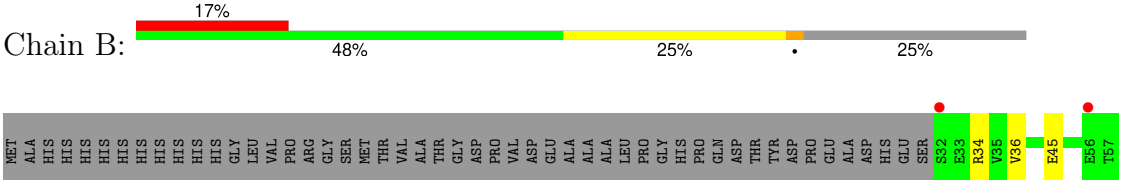
• Molecule 1: Voltage-gated potassium channel subunit beta-2

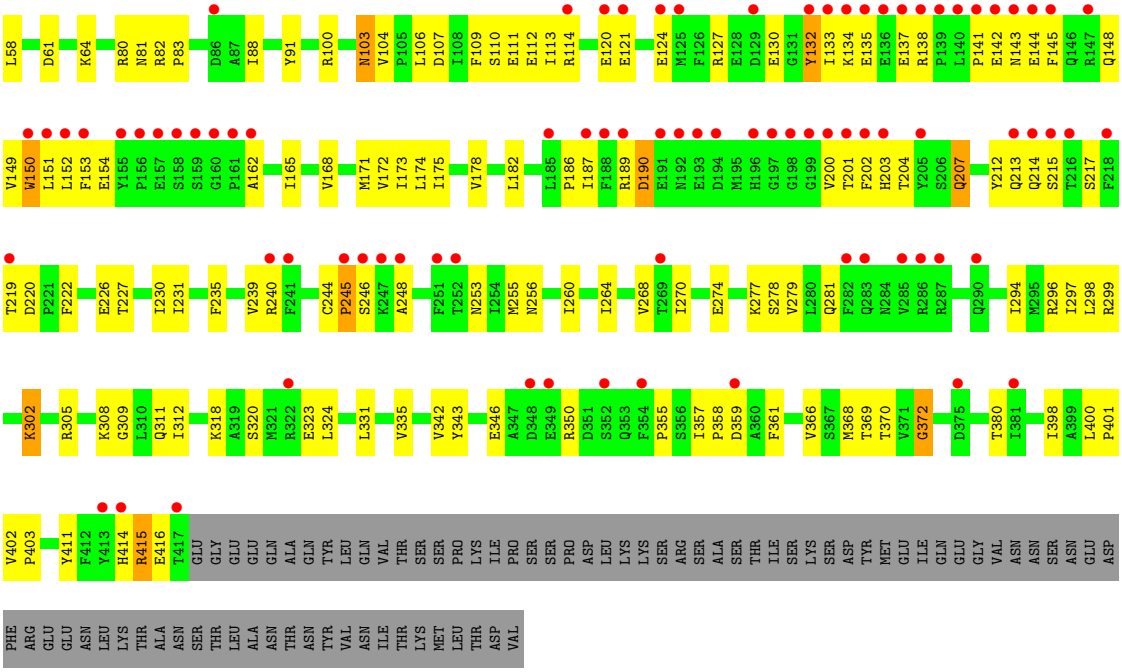
Chain G:



• Molecule 2: Potassium voltage-gated channel subfamily A member 2, Potassium voltage-gated channel subfamily B member 1

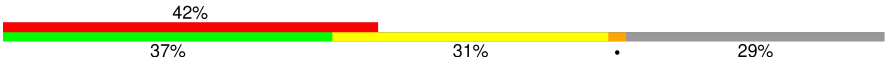
Chain B:

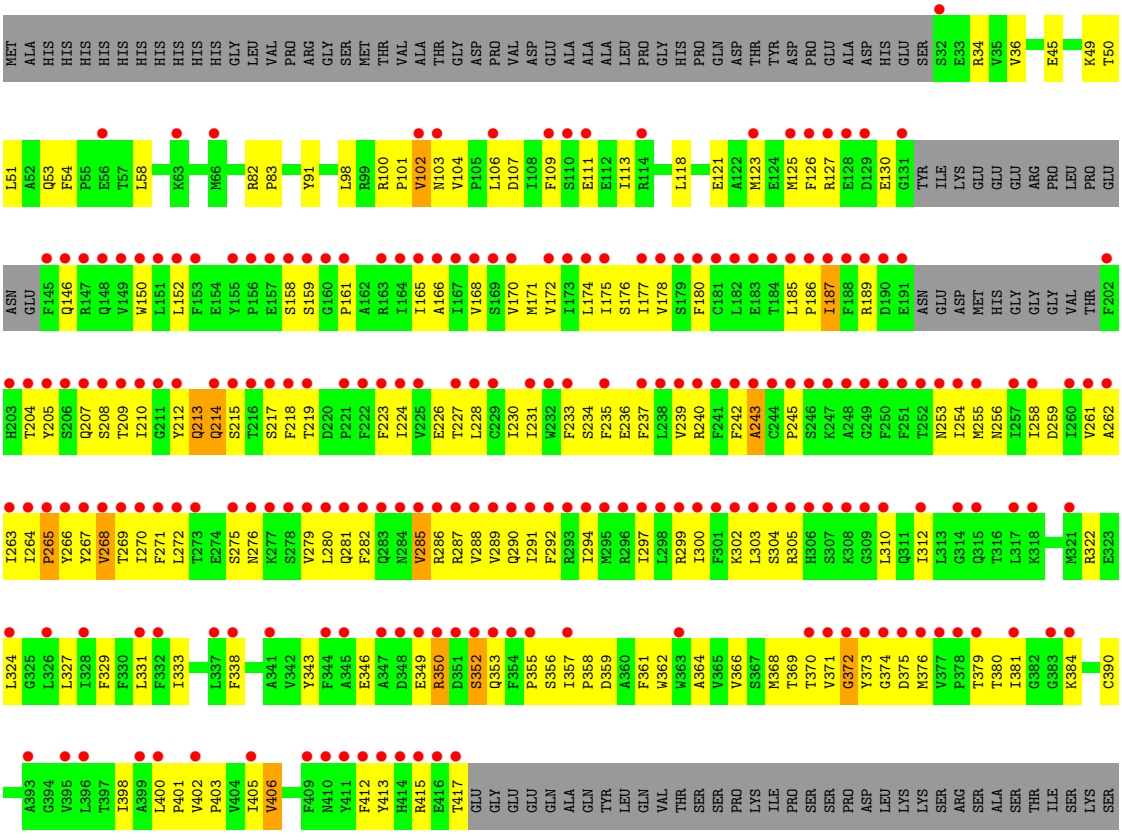




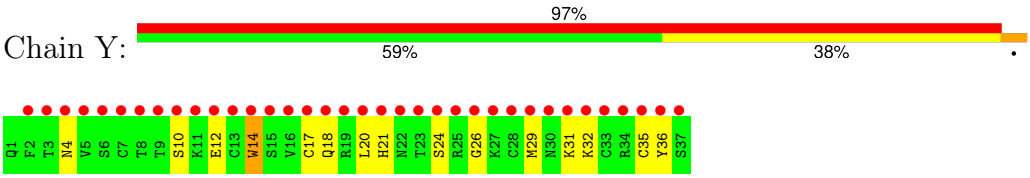
• Molecule 2: Potassium voltage-gated channel subfamily A member 2, Potassium voltage-gated channel subfamily B member 1

Chain H:





• Molecule 3: Potassium channel toxin alpha-KTx 1.1



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 4 21 2	Depositor
Cell constants a, b, c, α, β, γ	145.43Å 145.43Å 285.59Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.56 50.00 – 2.56	Depositor EDS
% Data completeness (in resolution range)	91.9 (50.00-2.56) 91.9 (50.00-2.56)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.00 (at 2.54Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.237 , 0.262 0.238 , 0.266	Depositor DCC
R_{free} test set	4652 reflections (4.71%)	wwPDB-VP
Wilson B-factor (Å^2)	42.3	Xtriage
Anisotropy	0.231	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 56.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	11770	wwPDB-VP
Average B, all atoms (Å^2)	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.66% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PCA, PGW, NAP, CS

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	0.42	0/2608	0.61	0/3524
1	G	0.39	0/2608	0.60	0/3524
2	B	0.37	0/3169	0.55	0/4292
2	H	0.33	0/3036	0.50	0/4114
3	Y	0.26	0/292	0.46	0/389
All	All	0.38	0/11713	0.56	0/15843

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

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	2556	0	2582	44	0
1	G	2556	0	2582	46	0
2	B	3088	0	3034	118	0
2	H	2959	0	2956	161	0
3	Y	295	0	282	10	0
4	A	48	0	25	11	0
4	G	48	0	25	12	0
5	B	4	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	H	4	0	0	0	0
6	B	190	0	251	18	0
6	H	22	0	25	7	0
All	All	11770	0	11762	391	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 17.

All (391) 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)
2:B:400:LEU:HB2	2:B:401:PRO:HD3	1.43	1.00
1:G:55:GLY:HA3	4:G:1001:NAP:O3D	1.68	0.93
2:H:213:GLN:HE21	2:H:215:SER:HB3	1.31	0.91
2:H:146:GLN:HB3	2:H:243:ALA:HA	1.51	0.90
1:A:55:GLY:HA3	4:A:1001:NAP:O3D	1.73	0.89
1:A:314:ASN:H	1:A:314:ASN:ND2	1.69	0.88
2:H:350:ARG:HH11	2:H:350:ARG:HB3	1.40	0.87
1:G:333:ASN:HD21	4:G:1001:NAP:H61A	1.22	0.87
2:H:358:PRO:HB3	6:H:504:PGW:H20A	1.61	0.83
1:G:40:ARG:HD2	1:G:318:SER:O	1.77	0.82
1:A:314:ASN:H	1:A:314:ASN:HD22	1.26	0.81
3:Y:4:ASN:HA	3:Y:32:LYS:HD3	1.62	0.81
2:H:185:LEU:HD12	2:H:186:PRO:HD2	1.63	0.80
1:A:333:ASN:HD21	4:A:1001:NAP:H61A	1.31	0.78
1:G:189:ARG:HH21	4:G:1001:NAP:H71N	1.32	0.78
2:H:358:PRO:HB3	6:H:504:PGW:C20	2.14	0.78
2:H:349:GLU:HB2	2:H:352:SER:HB2	1.66	0.76
2:B:311:GLN:HG2	6:B:516:PGW:H3	1.67	0.75
3:Y:26:GLY:HA3	3:Y:35:CYS:HA	1.69	0.74
2:H:213:GLN:HE21	2:H:215:SER:CB	2.01	0.73
1:G:293:GLN:O	1:G:297:GLU:HG3	1.89	0.72
2:H:412:PHE:HD1	2:H:415:ARG:HH21	1.34	0.72
2:B:400:LEU:O	2:B:403:PRO:HD2	1.88	0.72
2:B:227:THR:O	2:B:231:ILE:HG12	1.88	0.72
1:G:129:ARG:HB3	1:G:129:ARG:HH11	1.53	0.72
2:H:113:ILE:HG23	2:H:118:LEU:HD12	1.72	0.71
2:B:253:ASN:ND2	2:B:255:MET:HB2	2.04	0.71
2:H:177:ILE:HD11	2:H:300:ILE:HA	1.71	0.71
2:H:270:ILE:HD12	2:H:270:ILE:H	1.55	0.71
2:H:366:VAL:HG12	2:H:372:GLY:HA2	1.73	0.71

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:103:ASN:H	2:B:103:ASN:HD22	1.39	0.70
2:H:400:LEU:HB2	2:H:401:PRO:HD3	1.72	0.70
2:H:375:ASP:O	2:H:376:MET:HG3	1.92	0.70
2:B:120:GLU:O	2:B:124:GLU:HG3	1.92	0.69
1:A:258:GLY:O	1:A:260:PRO:HD3	1.92	0.69
1:A:118:LYS:HG3	1:A:156:PHE:HB2	1.72	0.69
2:H:364:ALA:O	2:H:368:MET:HG3	1.93	0.67
2:B:100:ARG:NH1	2:B:106:LEU:HB2	2.10	0.67
2:B:226:GLU:O	2:B:230:ILE:HD13	1.94	0.67
2:H:109:PHE:CE2	2:H:113:ILE:HD11	2.28	0.66
2:B:350:ARG:HB3	2:B:350:ARG:NH1	2.11	0.66
1:A:314:ASN:HD22	1:A:314:ASN:N	1.92	0.65
2:H:230:ILE:HG12	2:H:266:TYR:HB2	1.78	0.65
4:G:1001:NAP:H52A	4:G:1001:NAP:H8A	1.77	0.65
1:G:338:GLN:O	1:G:341:PRO:HD2	1.96	0.65
2:H:350:ARG:HH11	2:H:350:ARG:CB	2.09	0.65
4:A:1001:NAP:H8A	4:A:1001:NAP:H52A	1.79	0.65
2:B:61:ASP:HB3	2:B:64:LYS:HB2	1.79	0.65
2:B:366:VAL:HG12	2:B:372:GLY:HA2	1.80	0.64
2:B:416:GLU:HA	6:B:516:PGW:HADA	1.78	0.64
2:H:276:ASN:HB3	2:H:282:PHE:HB2	1.80	0.63
2:H:276:ASN:OD1	2:H:281:GLN:HG2	1.99	0.63
2:B:253:ASN:HD21	2:B:255:MET:HB2	1.63	0.62
2:H:213:GLN:NE2	2:H:215:SER:HB3	2.09	0.62
2:H:402:VAL:O	2:H:406:VAL:HG23	1.99	0.62
2:H:207:GLN:HE21	2:H:213:GLN:HA	1.64	0.62
2:B:58:LEU:HD12	2:B:64:LYS:HB3	1.80	0.62
2:H:270:ILE:HD12	2:H:270:ILE:N	2.15	0.62
2:H:305:ARG:HH11	2:H:305:ARG:HG2	1.65	0.62
2:H:210:ILE:HD11	2:H:214:GLN:N	2.15	0.62
2:B:400:LEU:CB	2:B:401:PRO:HD3	2.25	0.61
2:H:331:LEU:HD11	2:H:398:ILE:HG12	1.82	0.61
2:B:253:ASN:HB3	2:B:256:ASN:ND2	2.15	0.61
2:H:212:TYR:O	2:H:213:GLN:HB2	2.01	0.61
2:H:362:TRP:HB2	6:H:504:PGW:H2A	1.82	0.61
2:H:302:LYS:HA	2:H:302:LYS:HE2	1.82	0.61
2:H:230:ILE:HD12	2:H:230:ILE:N	2.16	0.61
2:B:187:ILE:HG21	6:B:512:PGW:H2A	1.82	0.61
2:H:294:ILE:O	2:H:297:ILE:HG22	2.01	0.61
2:B:100:ARG:HH11	2:B:106:LEU:HB2	1.65	0.60
2:H:381:ILE:HD12	2:H:381:ILE:H	1.65	0.60

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:331:LEU:O	2:B:335:VAL:HG23	2.01	0.60
1:A:91:ALA:O	1:A:94:LYS:HB2	2.01	0.60
2:B:255:MET:CE	2:B:305:ARG:HA	2.32	0.59
1:G:302:THR:OG1	1:G:305:GLN:HG3	2.02	0.59
2:B:186:PRO:O	2:B:190:ASP:HB2	2.02	0.59
2:H:36:VAL:HG22	2:H:45:GLU:HG3	1.83	0.59
2:B:323:GLU:CD	2:B:323:GLU:H	2.06	0.59
2:H:357:ILE:HB	2:H:358:PRO:HD3	1.83	0.59
2:B:414:HIS:C	2:B:416:GLU:H	2.04	0.58
2:H:398:ILE:HG22	2:H:398:ILE:O	2.03	0.58
3:Y:14:TRP:HA	3:Y:14:TRP:HE3	1.68	0.58
1:G:55:GLY:HA3	4:G:1001:NAP:HO3N	1.69	0.58
2:H:264:ILE:HB	2:H:265:PRO:HD3	1.86	0.58
2:H:381:ILE:HD12	2:H:381:ILE:N	2.18	0.58
6:B:516:PGW:O02	6:B:516:PGW:H03A	2.04	0.58
2:H:161:PRO:O	2:H:165:ILE:HG13	2.04	0.58
3:Y:14:TRP:HA	3:Y:14:TRP:CE3	2.38	0.58
2:B:171:MET:O	2:B:175:ILE:HG13	2.03	0.58
1:G:120:PHE:CD1	1:G:159:ARG:HG3	2.39	0.57
2:H:402:VAL:HB	2:H:403:PRO:HD3	1.86	0.57
2:H:207:GLN:NE2	2:H:213:GLN:HG3	2.18	0.57
2:H:231:ILE:O	2:H:235:PHE:HB2	2.04	0.57
2:B:142:GLU:O	2:B:144:GLU:N	2.34	0.57
2:H:415:ARG:HG2	2:H:415:ARG:HH11	1.69	0.57
1:A:259:ILE:HG13	1:A:274:LYS:HE3	1.86	0.57
2:B:149:VAL:C	2:B:151:LEU:H	2.07	0.57
2:B:201:THR:HB	2:B:204:THR:OG1	2.05	0.57
2:B:222:PHE:CE1	6:B:513:PGW:H15A	2.39	0.57
2:B:153:PHE:CD2	2:B:239:VAL:HG11	2.40	0.56
2:B:213:GLN:HE22	2:B:219:THR:HB	1.70	0.56
1:G:280:GLU:HG2	1:G:284:ARG:NH1	2.19	0.56
1:A:251:VAL:O	1:A:251:VAL:HG12	2.05	0.56
2:B:152:LEU:N	2:B:152:LEU:HD12	2.21	0.56
1:A:125:ALA:HB3	1:A:128:GLU:HG3	1.85	0.56
2:H:152:LEU:HD22	2:H:161:PRO:HG2	1.87	0.56
2:H:400:LEU:O	2:H:403:PRO:HD2	2.06	0.56
2:B:152:LEU:HA	2:B:162:ALA:HB1	1.87	0.56
2:H:346:GLU:HG2	2:H:380:THR:CG2	2.35	0.56
1:A:216:GLU:HB2	1:A:243:TRP:CZ2	2.40	0.56
2:H:58:LEU:C	2:H:58:LEU:HD23	2.25	0.55
2:B:278:SER:OG	2:B:281:GLN:HG3	2.06	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:400:LEU:HB2	2:B:401:PRO:CD	2.27	0.55
1:G:214:GLN:HA	1:G:241:MET:O	2.06	0.55
2:H:91:TYR:CE2	2:H:118:LEU:HD22	2.42	0.55
2:H:101:PRO:HB2	2:H:104:VAL:HG23	1.89	0.55
2:H:82:ARG:HB2	2:H:83:PRO:HD3	1.87	0.55
1:A:159:ARG:HA	1:A:188:SER:O	2.06	0.55
2:H:180:PHE:CE2	2:H:297:ILE:HD13	2.42	0.55
2:H:355:PRO:HB2	2:H:359:ASP:OD2	2.07	0.55
2:B:277:LYS:HG3	2:B:277:LYS:O	2.07	0.55
2:B:103:ASN:HD22	2:B:103:ASN:N	2.05	0.54
1:G:286:GLN:HA	1:G:289:LEU:HD12	1.88	0.54
6:B:514:PGW:O11	6:B:514:PGW:O02	2.26	0.54
1:G:144:LEU:HD21	1:G:152:VAL:HG13	1.89	0.54
2:H:121:GLU:O	2:H:125:MET:HB2	2.08	0.54
2:H:327:LEU:O	2:H:331:LEU:HD13	2.08	0.54
2:H:230:ILE:HG12	2:H:266:TYR:CB	2.38	0.54
1:A:159:ARG:HB2	1:A:160:PRO:HD2	1.89	0.54
2:H:152:LEU:O	2:H:165:ILE:HD12	2.08	0.54
2:H:285:VAL:HG22	2:H:285:VAL:O	2.08	0.54
2:H:107:ASP:O	2:H:111:GLU:HG3	2.07	0.54
1:G:216:GLU:HB2	1:G:243:TRP:CH2	2.43	0.54
1:G:264:ARG:NH2	4:G:1001:NAP:H4B	2.22	0.54
1:A:276:LYS:O	1:A:279:SER:HB3	2.08	0.54
2:H:253:ASN:HB3	2:H:256:ASN:OD1	2.08	0.54
2:B:255:MET:HE1	2:B:305:ARG:HA	1.88	0.53
2:B:355:PRO:HB2	2:B:359:ASP:OD2	2.08	0.53
1:G:251:VAL:HG12	1:G:251:VAL:O	2.08	0.53
2:H:236:GLU:HA	2:H:239:VAL:CG2	2.38	0.53
2:H:324:LEU:HD13	2:H:405:ILE:HD13	1.91	0.53
2:B:201:THR:HG22	2:B:202:PHE:N	2.23	0.53
1:G:280:GLU:HG2	1:G:284:ARG:HH12	1.73	0.53
2:B:127:ARG:HG2	2:B:132:TYR:HB2	1.90	0.53
2:B:294:ILE:O	2:B:297:ILE:HG22	2.09	0.53
2:B:36:VAL:HG22	2:B:45:GLU:HG2	1.92	0.52
2:B:88:ILE:O	2:B:91:TYR:HB3	2.10	0.52
2:H:224:ILE:O	2:H:228:LEU:HG	2.09	0.52
2:H:287:ARG:HG2	2:H:290:GLN:OE1	2.10	0.52
2:H:303:LEU:O	2:H:310:LEU:HD23	2.10	0.52
2:H:361:PHE:HB3	6:H:504:PGW:H4	1.91	0.52
1:G:247:ALA:O	1:G:248:CYS:HB2	2.10	0.52
1:G:120:PHE:O	1:G:129:ARG:HA	2.10	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:210:ILE:HG21	2:H:269:THR:HG23	1.91	0.52
2:B:110:SER:O	2:B:114:ARG:HG3	2.10	0.51
2:H:230:ILE:HD12	2:H:230:ILE:H	1.73	0.51
2:B:153:PHE:CE1	2:B:165:ILE:HD13	2.45	0.51
1:G:291:GLU:O	1:G:294:ALA:HB3	2.10	0.51
2:H:268:VAL:HG12	2:H:268:VAL:O	2.10	0.51
6:H:504:PGW:H01	6:H:504:PGW:O02	2.09	0.51
3:Y:29:MET:C	3:Y:31:LYS:H	2.13	0.51
1:A:302:THR:OG1	1:A:305:GLN:HG3	2.10	0.51
2:B:178:VAL:O	2:B:182:LEU:HG	2.10	0.51
1:G:37:GLN:NE2	1:G:37:GLN:HA	2.25	0.51
1:G:331:MET:HE2	1:G:334:ILE:HD12	1.93	0.51
2:H:279:VAL:HG12	2:H:279:VAL:O	2.11	0.51
2:H:381:ILE:H	2:H:381:ILE:CD1	2.24	0.51
6:B:510:PGW:H2	6:B:515:PGW:H16	1.93	0.51
2:H:168:VAL:O	2:H:172:VAL:HG23	2.11	0.51
2:H:210:ILE:HD12	2:H:212:TYR:CE1	2.46	0.50
1:A:303:LEU:HB3	1:A:304:PRO:HD3	1.94	0.50
2:B:203:HIS:HE1	2:B:277:LYS:NZ	2.09	0.50
2:B:414:HIS:O	2:B:416:GLU:N	2.39	0.50
1:G:217:TYR:HB3	1:G:242:THR:HB	1.93	0.50
2:B:107:ASP:O	2:B:111:GLU:HG3	2.12	0.50
2:H:205:TYR:CE2	2:H:279:VAL:HG13	2.47	0.50
1:A:216:GLU:HB2	1:A:243:TRP:CH2	2.45	0.50
6:B:504:PGW:H01	6:B:504:PGW:O02	2.12	0.50
1:G:189:ARG:NH2	4:G:1001:NAP:H71N	2.04	0.50
2:H:213:GLN:HG2	2:H:215:SER:HB3	1.94	0.50
2:H:368:MET:C	2:H:370:THR:H	2.15	0.50
2:B:253:ASN:HB3	2:B:256:ASN:HD22	1.76	0.50
2:H:152:LEU:HD22	2:H:161:PRO:CG	2.42	0.50
2:H:353:GLN:O	2:H:355:PRO:HD3	2.10	0.50
2:H:150:TRP:HB2	2:H:243:ALA:HB1	1.93	0.49
1:A:144:LEU:HD21	1:A:152:VAL:HG13	1.93	0.49
1:A:217:TYR:HB3	1:A:242:THR:HB	1.95	0.49
2:B:402:VAL:HB	2:B:403:PRO:HD3	1.94	0.49
2:H:322:ARG:HG3	2:H:322:ARG:HH11	1.77	0.49
1:A:120:PHE:O	1:A:129:ARG:HA	2.13	0.49
6:B:510:PGW:C2	6:B:515:PGW:H16	2.42	0.49
1:G:55:GLY:CA	4:G:1001:NAP:O3D	2.50	0.49
1:A:55:GLY:CA	4:A:1001:NAP:O3D	2.52	0.49
2:B:152:LEU:HA	2:B:162:ALA:CB	2.42	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:106:LEU:HD11	2:H:130:GLU:HG2	1.92	0.49
2:H:176:SER:HB2	2:H:299:ARG:NH1	2.27	0.49
2:H:177:ILE:O	2:H:180:PHE:HB3	2.12	0.49
3:Y:20:LEU:N	3:Y:20:LEU:HD12	2.28	0.49
2:B:145:PHE:O	2:B:148:GLN:HB3	2.13	0.49
2:H:146:GLN:HG3	2:H:242:PHE:O	2.12	0.49
2:H:212:TYR:CE2	2:H:226:GLU:HG2	2.46	0.49
2:B:213:GLN:HB3	2:B:220:ASP:HB2	1.93	0.49
2:B:299:ARG:O	2:B:302:LYS:HB2	2.12	0.49
2:B:320:SER:O	2:B:324:LEU:HB2	2.12	0.49
2:B:369:THR:HA	2:B:398:ILE:HD11	1.94	0.49
2:B:150:TRP:CE2	2:B:154:GLU:HG2	2.48	0.49
2:B:361:PHE:HB2	6:B:504:PGW:H2	1.94	0.49
1:A:57:TRP:HB3	4:A:1001:NAP:H3D	1.93	0.49
2:B:109:PHE:CE2	2:B:113:ILE:HD11	2.48	0.49
6:H:504:PGW:O02	6:H:504:PGW:H03A	2.12	0.49
2:H:187:ILE:HG22	2:H:187:ILE:O	2.13	0.48
2:H:267:TYR:C	2:H:269:THR:H	2.16	0.48
2:H:224:ILE:HD12	2:H:224:ILE:N	2.27	0.48
1:A:326:ASN:HD22	1:A:328:GLU:H	1.61	0.48
2:H:127:ARG:HH11	2:H:127:ARG:HG2	1.78	0.48
2:B:246:SER:C	2:B:248:ALA:H	2.17	0.48
2:B:260:ILE:O	2:B:264:ILE:HG13	2.14	0.48
2:H:287:ARG:HH11	2:H:287:ARG:HB3	1.79	0.48
2:B:318:LYS:HD2	6:B:516:PGW:H22	1.95	0.48
6:B:510:PGW:C1	6:B:515:PGW:H16	2.43	0.48
1:G:52:LEU:HD13	1:G:322:LEU:HD11	1.95	0.48
1:G:333:ASN:ND2	4:G:1001:NAP:H61A	2.01	0.48
2:H:171:MET:HB3	2:H:175:ILE:HD12	1.96	0.48
2:B:235:PHE:O	2:B:239:VAL:HG23	2.13	0.48
2:H:123:MET:O	2:H:127:ARG:HG3	2.13	0.48
2:B:153:PHE:CE2	2:B:239:VAL:HG11	2.48	0.48
1:G:156:PHE:HA	1:G:186:GLY:O	2.13	0.48
2:H:234:SER:HA	2:H:237:PHE:HB2	1.96	0.48
2:H:152:LEU:HA	2:H:158:SER:OG	2.14	0.48
2:H:210:ILE:HD11	2:H:213:GLN:C	2.35	0.48
3:Y:17:CYS:O	3:Y:21:HIS:HB2	2.14	0.48
2:H:204:THR:HG23	2:H:208:SER:OG	2.13	0.47
2:H:253:ASN:HD21	2:H:255:MET:HE3	1.78	0.47
2:B:127:ARG:CG	2:B:132:TYR:HB2	2.43	0.47
1:A:229:LEU:N	1:A:230:PRO:CD	2.77	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:240:ARG:NH2	2:B:305:ARG:HD3	2.29	0.47
2:H:231:ILE:O	2:H:231:ILE:HG22	2.13	0.47
2:H:280:LEU:HD12	2:H:280:LEU:N	2.30	0.47
2:H:358:PRO:HB3	6:H:504:PGW:H20	1.94	0.47
2:H:374:GLY:C	2:H:376:MET:H	2.18	0.47
2:B:309:GLY:HA2	2:B:312:ILE:HD12	1.94	0.47
2:H:180:PHE:HE2	2:H:297:ILE:HD13	1.77	0.47
2:B:311:GLN:HA	6:B:516:PGW:H5	1.96	0.47
4:A:1001:NAP:H52N	4:A:1001:NAP:H6N	1.97	0.47
2:B:368:MET:C	2:B:370:THR:H	2.18	0.47
1:G:329:GLN:OE1	4:G:1001:NAP:H2B	2.14	0.47
2:H:127:ARG:HG2	2:H:127:ARG:NH1	2.30	0.47
2:H:327:LEU:HD11	2:H:398:ILE:HG23	1.97	0.47
2:B:264:ILE:O	2:B:268:VAL:HG23	2.15	0.47
2:B:366:VAL:CG1	2:B:372:GLY:HA2	2.44	0.47
2:B:174:LEU:O	2:B:178:VAL:HG23	2.15	0.46
2:H:175:ILE:HG22	2:H:175:ILE:O	2.14	0.46
2:H:366:VAL:O	2:H:372:GLY:N	2.45	0.46
2:H:369:THR:OG1	2:H:371:VAL:HG23	2.15	0.46
2:B:240:ARG:HH21	2:B:305:ARG:HD3	1.81	0.46
2:B:414:HIS:C	2:B:416:GLU:N	2.69	0.46
1:A:215:ALA:O	1:A:242:THR:HA	2.15	0.46
2:B:173:ILE:HD13	2:B:302:LYS:HB3	1.98	0.46
2:B:200:VAL:HG23	2:B:200:VAL:O	2.15	0.46
2:B:350:ARG:NH1	2:B:350:ARG:CB	2.79	0.46
1:G:37:GLN:HA	1:G:37:GLN:HE21	1.80	0.46
2:B:80:ARG:NH1	2:B:112:GLU:OE1	2.48	0.46
1:G:167:GLU:HA	1:G:201:VAL:HG11	1.97	0.46
2:H:53:GLN:HB3	2:H:54:PHE:CD1	2.51	0.46
1:A:188:SER:O	1:A:189:ARG:HB2	2.16	0.46
2:B:202:PHE:HB2	2:B:279:VAL:HG22	1.98	0.46
2:B:320:SER:HA	2:B:323:GLU:OE2	2.16	0.46
1:G:37:GLN:HG3	1:G:39:TYR:O	2.16	0.46
2:H:240:ARG:HH12	2:H:305:ARG:CD	2.29	0.46
2:H:312:ILE:HD13	2:H:413:TYR:HA	1.98	0.46
1:A:326:ASN:ND2	1:A:328:GLU:HB2	2.31	0.46
2:H:98:LEU:HD21	2:H:113:ILE:HD13	1.97	0.46
1:A:120:PHE:CD1	1:A:159:ARG:HG3	2.52	0.45
1:A:254:LYS:HE3	4:A:1001:NAP:N3A	2.32	0.45
2:B:207:GLN:O	2:B:207:GLN:HG2	2.17	0.45
2:B:212:TYR:CE2	2:B:226:GLU:HG2	2.51	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:173:MET:HG3	1:G:185:TRP:CE3	2.52	0.45
2:H:262:ALA:HB1	2:H:302:LYS:HD2	1.98	0.45
2:H:286:ARG:HH11	2:H:286:ARG:HG2	1.81	0.45
2:H:291:ILE:HG22	2:H:291:ILE:O	2.16	0.45
1:A:189:ARG:HH21	4:A:1001:NAP:H71N	1.64	0.45
2:B:168:VAL:O	2:B:172:VAL:HG23	2.17	0.45
1:A:252:SER:OG	1:A:254:LYS:HG2	2.16	0.45
1:G:260:PRO:HG2	1:G:263:SER:HB3	1.98	0.45
2:H:204:THR:HG22	2:H:204:THR:O	2.17	0.45
2:H:415:ARG:C	2:H:417:THR:H	2.20	0.45
2:B:189:ARG:HG3	2:B:189:ARG:HH11	1.82	0.45
1:G:251:VAL:O	1:G:251:VAL:CG1	2.65	0.45
2:H:276:ASN:HD21	2:H:285:VAL:HG11	1.81	0.45
2:H:230:ILE:HG23	2:H:263:ILE:HG22	1.99	0.45
2:H:288:VAL:HG12	2:H:288:VAL:O	2.17	0.45
2:H:302:LYS:C	2:H:304:SER:H	2.20	0.45
3:Y:26:GLY:HA2	3:Y:36:TYR:HD1	1.82	0.45
2:B:149:VAL:O	2:B:151:LEU:N	2.50	0.44
2:H:219:THR:HG22	2:H:219:THR:O	2.16	0.44
2:H:270:ILE:H	2:H:270:ILE:CD1	2.27	0.44
1:A:340:LEU:HB3	1:A:341:PRO:HD3	1.98	0.44
2:H:305:ARG:HG2	2:H:305:ARG:NH1	2.30	0.44
2:H:346:GLU:HG2	2:H:380:THR:HG23	2.00	0.44
2:B:270:ILE:O	2:B:274:GLU:HG2	2.17	0.44
2:B:350:ARG:CB	2:B:350:ARG:HH11	2.29	0.44
1:G:57:TRP:HB3	4:G:1001:NAP:H3D	1.99	0.44
2:H:276:ASN:ND2	2:H:285:VAL:HG11	2.33	0.44
1:A:40:ARG:HD2	1:A:318:SER:O	2.17	0.44
1:G:189:ARG:NE	4:G:1001:NAP:N7N	2.66	0.44
2:H:285:VAL:HG23	2:H:288:VAL:HG21	1.99	0.44
2:H:227:THR:HG23	2:H:231:ILE:HG13	1.99	0.44
2:B:357:ILE:HB	2:B:358:PRO:HD3	2.00	0.44
2:B:411:TYR:CE1	2:B:415:ARG:HD3	2.53	0.44
1:G:56:THR:HB	1:G:60:PHE:HB2	1.98	0.44
2:H:106:LEU:CD1	2:H:130:GLU:HG2	2.48	0.44
2:H:287:ARG:HB3	2:H:287:ARG:NH1	2.32	0.44
1:G:202:ALA:HA	1:G:207:LEU:HB2	1.99	0.44
2:H:102:VAL:HG23	2:H:102:VAL:O	2.17	0.44
2:H:258:ILE:HG22	2:H:258:ILE:O	2.18	0.44
2:H:343:TYR:HE1	2:H:355:PRO:O	2.01	0.44
3:Y:10:SER:C	3:Y:12:GLU:H	2.20	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:264:ARG:NH2	4:A:1001:NAP:H4B	2.33	0.43
2:B:296:ARG:HE	2:B:299:ARG:NH2	2.16	0.43
2:H:152:LEU:HB3	2:H:159:SER:OG	2.17	0.43
2:H:174:LEU:O	2:H:178:VAL:HG23	2.18	0.43
2:H:343:TYR:CE1	2:H:356:SER:HA	2.53	0.43
2:B:297:ILE:C	2:B:299:ARG:H	2.20	0.43
1:G:152:VAL:O	1:G:182:ALA:HA	2.18	0.43
2:H:368:MET:C	2:H:370:THR:N	2.71	0.43
2:B:214:GLN:O	2:B:215:SER:HB2	2.18	0.43
2:H:189:ARG:HG3	2:H:189:ARG:HH11	1.84	0.43
2:H:259:ASP:CG	2:H:305:ARG:HH21	2.21	0.43
2:H:322:ARG:HG3	2:H:322:ARG:NH1	2.33	0.43
1:A:125:ALA:HB3	1:A:128:GLU:CG	2.48	0.43
2:B:81:ASN:OD1	2:B:83:PRO:HD2	2.19	0.43
2:B:152:LEU:HB3	2:B:165:ILE:HD12	2.01	0.43
2:B:106:LEU:CD1	2:B:130:GLU:HG2	2.49	0.43
2:B:149:VAL:HA	2:B:152:LEU:HD13	2.00	0.43
2:H:172:VAL:HG12	2:H:233:PHE:CZ	2.54	0.43
2:B:215:SER:C	2:B:217:SER:H	2.22	0.42
2:B:308:LYS:O	2:B:312:ILE:HG13	2.19	0.42
2:H:271:PHE:O	2:H:271:PHE:CG	2.72	0.42
2:B:415:ARG:O	6:B:516:PGW:HADA	2.19	0.42
2:H:212:TYR:OH	2:H:269:THR:HG21	2.19	0.42
2:H:230:ILE:H	2:H:230:ILE:CD1	2.32	0.42
2:H:329:PHE:O	2:H:333:ILE:HG12	2.19	0.42
2:B:149:VAL:C	2:B:151:LEU:N	2.73	0.42
1:A:173:MET:HG3	1:A:185:TRP:CE3	2.54	0.42
2:H:379:THR:HA	2:H:384:LYS:HE3	2.01	0.42
1:A:244:SER:HA	4:A:1001:NAP:O3	2.19	0.42
2:B:246:SER:C	2:B:248:ALA:N	2.73	0.42
2:H:261:VAL:HA	2:H:264:ILE:CD1	2.50	0.42
2:H:338:PHE:CE2	2:H:390:CYS:HA	2.55	0.42
2:B:100:ARG:HG3	2:B:109:PHE:CG	2.55	0.42
2:B:106:LEU:HD13	2:B:130:GLU:HG2	2.01	0.42
2:B:80:ARG:NH1	2:B:112:GLU:OE2	2.52	0.42
2:B:350:ARG:HB3	2:B:350:ARG:CZ	2.50	0.42
6:B:504:PGW:O02	6:B:504:PGW:H03A	2.20	0.42
1:G:347:ILE:O	1:G:351:ILE:HG13	2.20	0.42
2:H:230:ILE:HG21	2:H:266:TYR:HB3	2.02	0.42
1:G:276:LYS:O	1:G:282:GLY:HA3	2.19	0.41
2:H:100:ARG:HB2	2:H:126:PHE:HE1	1.84	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:311:GLN:CG	6:B:516:PGW:H3	2.43	0.41
2:B:318:LYS:CD	6:B:516:PGW:H22	2.50	0.41
2:H:312:ILE:CD1	2:H:413:TYR:HD1	2.32	0.41
2:H:254:ILE:C	2:H:256:ASN:H	2.23	0.41
1:A:208:ILE:HA	1:A:209:PRO:HD3	1.83	0.41
2:H:49:LYS:HG3	2:H:50:THR:N	2.36	0.41
2:H:166:ALA:O	2:H:170:VAL:HG23	2.20	0.41
2:H:272:LEU:CD2	2:H:289:VAL:HG22	2.50	0.41
2:B:109:PHE:O	2:B:113:ILE:HG13	2.21	0.41
2:B:342:VAL:CG1	2:B:343:TYR:N	2.84	0.41
2:H:236:GLU:HA	2:H:239:VAL:HG23	2.02	0.41
1:A:333:ASN:ND2	4:A:1001:NAP:H61A	2.09	0.41
1:A:261:PRO:O	1:A:262:TYR:HB2	2.20	0.41
2:B:202:PHE:HB2	2:B:279:VAL:CG2	2.51	0.41
2:H:171:MET:HE2	2:H:174:LEU:HD12	2.03	0.41
2:H:264:ILE:O	2:H:268:VAL:HG23	2.21	0.41
2:B:83:PRO:HB2	2:B:104:VAL:HG22	2.03	0.41
2:B:150:TRP:O	2:B:150:TRP:CG	2.73	0.41
2:B:346:GLU:OE2	2:B:380:THR:HG23	2.21	0.41
1:G:174:THR:HG22	1:G:178:ASN:ND2	2.36	0.41
1:A:236:ILE:HG13	1:A:238:VAL:HG23	2.02	0.40
2:B:368:MET:C	2:B:370:THR:N	2.73	0.40
2:H:400:LEU:C	2:H:403:PRO:HD2	2.40	0.40
1:A:167:GLU:HA	1:A:201:VAL:HG11	2.03	0.40
2:B:187:ILE:HG21	6:B:512:PGW:C2	2.49	0.40
2:H:261:VAL:HA	2:H:264:ILE:HD12	2.02	0.40
1:G:102:ILE:O	1:G:106:LYS:HG2	2.22	0.40
1:G:326:ASN:OD1	1:G:329:GLN:HG3	2.21	0.40
2:H:51:LEU:C	2:H:53:GLN:H	2.25	0.40
1:A:68:MET:O	1:A:72:LEU:HG	2.20	0.40
2:B:244:CYS:HA	2:B:245:PRO:HD3	1.90	0.40
3:Y:26:GLY:HA2	3:Y:36:TYR:CD1	2.56	0.40
2:H:172:VAL:O	2:H:176:SER:HB3	2.21	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	324/333 (97%)	308 (95%)	14 (4%)	2 (1%)	22	29
1	G	324/333 (97%)	313 (97%)	10 (3%)	1 (0%)	37	45
2	B	384/514 (75%)	344 (90%)	27 (7%)	13 (3%)	3	2
2	H	357/514 (70%)	280 (78%)	60 (17%)	17 (5%)	2	1
3	Y	35/37 (95%)	17 (49%)	17 (49%)	1 (3%)	3	3
All	All	1424/1731 (82%)	1262 (89%)	128 (9%)	34 (2%)	5	5

All (34) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	132	TYR
2	B	133	ILE
2	B	134	LYS
2	B	135	GLU
2	B	137	GLU
2	H	275	SER
2	H	285	VAL
1	A	120	PHE
2	B	150	TRP
2	B	372	GLY
1	G	120	PHE
2	H	102	VAL
2	H	213	GLN
2	H	243	ALA
2	H	245	PRO
2	H	268	VAL
2	H	372	GLY
2	H	103	ASN
2	H	217	SER
1	A	219	MET
2	B	138	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	B	141	PRO
2	B	143	ASN
2	B	298	LEU
2	B	415	ARG
2	H	218	PHE
2	H	373	TYR
3	Y	24	SER
2	B	245	PRO
2	H	209	THR
2	H	352	SER
2	H	187	ILE
2	H	265	PRO
2	H	406	VAL

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	273/280 (98%)	267 (98%)	6 (2%)	47	63
1	G	273/280 (98%)	266 (97%)	7 (3%)	41	56
2	B	332/459 (72%)	325 (98%)	7 (2%)	48	64
2	H	324/459 (71%)	319 (98%)	5 (2%)	60	75
3	Y	35/35 (100%)	33 (94%)	2 (6%)	17	23
All	All	1237/1513 (82%)	1210 (98%)	27 (2%)	47	63

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	94	LYS
1	A	214	GLN
1	A	280	GLU
1	A	314	ASN
1	A	326	ASN
1	A	338	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	B	34	ARG
2	B	82	ARG
2	B	103	ASN
2	B	121	GLU
2	B	190	ASP
2	B	207	GLN
2	B	302	LYS
1	G	73	MET
1	G	75	LEU
1	G	129	ARG
1	G	212	CYS
1	G	214	GLN
1	G	271	GLN
1	G	283	ARG
2	H	34	ARG
2	H	214	GLN
2	H	223	PHE
2	H	292	PHE
2	H	350	ARG
3	Y	14	TRP
3	Y	18	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	71	HIS
1	A	204	GLN
1	A	286	GLN
1	A	314	ASN
1	A	326	ASN
1	A	333	ASN
1	A	338	GLN
2	B	53	GLN
2	B	103	ASN
2	B	203	HIS
2	B	207	GLN
2	B	213	GLN
2	B	253	ASN
2	B	256	ASN
1	G	37	GLN
1	G	148	GLN
1	G	178	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	G	333	ASN
2	H	53	GLN
2	H	207	GLN
2	H	213	GLN
2	H	284	ASN
3	Y	18	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is 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	PCA	Y	1	3	7,8,9	0.62	0	9,10,12	0.99	0

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	PCA	Y	1	3	-	0/0/11/13	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 27 ligands modelled in this entry, 8 are monoatomic - leaving 19 for Mogul analysis.

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	$\#\|Z\| > 2$
6	PGW	B	505	-	8,8,50	0.36	0	7,7,56	0.52	0
6	PGW	B	517	-	6,6,50	0.37	0	5,5,56	0.43	0
4	NAP	G	1001	-	46,52,52	2.70	9 (19%)	61,80,80	2.58	16 (26%)
6	PGW	B	512	-	8,8,50	0.36	0	7,7,56	0.52	0
6	PGW	B	504	-	21,21,50	0.61	0	23,23,56	1.24	3 (13%)
6	PGW	B	507	-	8,8,50	0.36	0	7,7,56	0.55	0
6	PGW	B	506	-	8,8,50	0.36	0	7,7,56	0.50	0
6	PGW	B	519	-	7,7,50	0.36	0	6,6,56	0.50	0
6	PGW	B	510	-	8,8,50	0.36	0	7,7,56	0.53	0
6	PGW	B	518	-	7,7,50	0.36	0	6,6,56	0.51	0
6	PGW	B	513	-	7,7,50	0.37	0	6,6,56	0.51	0
6	PGW	B	515	-	7,7,50	0.36	0	6,6,56	0.50	0
6	PGW	H	504	-	21,21,50	0.61	0	23,23,56	1.29	3 (13%)
4	NAP	A	1001	-	46,52,52	3.01	8 (17%)	61,80,80	2.57	16 (26%)
6	PGW	B	514	-	22,22,50	0.80	0	25,27,56	1.26	4 (16%)
6	PGW	B	516	-	35,35,50	0.66	0	38,41,56	0.91	2 (5%)
6	PGW	B	508	-	8,8,50	0.36	0	7,7,56	0.53	0
6	PGW	B	509	-	8,8,50	0.36	0	7,7,56	0.53	0
6	PGW	B	511	-	6,6,50	0.37	0	5,5,56	0.47	0

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
6	PGW	B	505	-	-	0/6/6/55	-
6	PGW	B	517	-	-	0/4/4/55	-
4	NAP	G	1001	-	-	4/31/67/67	0/5/5/5
6	PGW	B	512	-	-	0/6/6/55	-
6	PGW	B	504	-	-	1/23/23/55	-
6	PGW	B	507	-	-	0/6/6/55	-
6	PGW	B	506	-	-	0/6/6/55	-
6	PGW	B	519	-	-	0/5/5/55	-
6	PGW	B	510	-	-	0/6/6/55	-
6	PGW	B	518	-	-	0/5/5/55	-
6	PGW	B	513	-	-	0/5/5/55	-
6	PGW	B	515	-	-	0/5/5/55	-
6	PGW	H	504	-	-	1/23/23/55	-
4	NAP	A	1001	-	-	4/31/67/67	0/5/5/5
6	PGW	B	514	-	-	9/24/24/55	-
6	PGW	B	516	-	-	9/40/40/55	-
6	PGW	B	508	-	-	0/6/6/55	-
6	PGW	B	509	-	-	0/6/6/55	-
6	PGW	B	511	-	-	0/4/4/55	-

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1001	NAP	PN-O3	15.70	1.76	1.59
4	G	1001	NAP	PN-O3	13.80	1.74	1.59
4	A	1001	NAP	PA-O3	6.45	1.66	1.59
4	A	1001	NAP	O4B-C1B	6.40	1.49	1.40
4	G	1001	NAP	O4B-C1B	6.35	1.49	1.40
4	A	1001	NAP	O4D-C1D	4.96	1.47	1.40
4	G	1001	NAP	PA-O3	4.73	1.64	1.59
4	G	1001	NAP	O4D-C1D	4.11	1.46	1.40
4	A	1001	NAP	C2N-C3N	3.36	1.44	1.39
4	G	1001	NAP	C2N-C3N	2.65	1.43	1.39
4	G	1001	NAP	C4N-C3N	2.55	1.43	1.39
4	G	1001	NAP	C8A-N7A	-2.44	1.30	1.34
4	G	1001	NAP	P2B-O2B	2.33	1.63	1.59
4	G	1001	NAP	O3D-C3D	-2.21	1.37	1.43
4	A	1001	NAP	C4N-C3N	2.15	1.42	1.39
4	A	1001	NAP	C8A-N7A	-2.11	1.30	1.34
4	A	1001	NAP	C3N-C7N	-2.02	1.47	1.50

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	G	1001	NAP	O3-PA-O1A	-11.38	76.46	110.70
4	A	1001	NAP	O3-PA-O1A	-10.93	77.84	110.70
4	A	1001	NAP	O4B-C1B-N9A	8.00	119.35	108.75
4	G	1001	NAP	O4B-C1B-N9A	7.86	119.17	108.75
4	A	1001	NAP	O2A-PA-O3	-6.58	89.48	107.27
4	G	1001	NAP	O2A-PA-O3	-6.24	90.39	107.27
4	A	1001	NAP	C2B-C1B-N9A	-5.26	100.87	112.56
4	G	1001	NAP	N3A-C2A-N1A	-5.04	121.83	128.67
4	A	1001	NAP	N3A-C2A-N1A	-4.84	122.10	128.67
4	G	1001	NAP	C2B-C1B-N9A	-4.48	102.61	112.56
4	A	1001	NAP	C2B-C3B-C4B	3.88	110.34	101.99
4	G	1001	NAP	C2B-C3B-C4B	3.86	110.28	101.99
4	A	1001	NAP	O2B-C2B-C3B	3.78	125.22	111.68
4	G	1001	NAP	C4B-O4B-C1B	3.71	113.33	109.92
6	H	504	PGW	O01-C1-C2	3.55	119.17	111.48
4	G	1001	NAP	PN-O5D-C5D	-3.55	101.00	121.35
4	A	1001	NAP	PN-O5D-C5D	-3.37	102.06	121.35
6	B	504	PGW	O01-C1-C2	3.34	118.70	111.48
4	G	1001	NAP	O2B-C2B-C3B	3.30	123.51	111.68
4	A	1001	NAP	C4B-O4B-C1B	3.26	112.91	109.92
4	A	1001	NAP	O4B-C4B-C5B	-2.96	99.86	109.33
4	G	1001	NAP	O4B-C4B-C5B	-2.94	99.92	109.33
6	B	514	PGW	O01-C1-C2	2.78	117.50	111.48
6	B	514	PGW	C03-C02-C01	-2.71	105.47	111.78
6	H	504	PGW	O03-C19-C20	2.55	119.61	111.83
6	B	516	PGW	O01-C1-C2	2.46	116.81	111.48
6	B	504	PGW	O03-C19-C20	2.46	119.33	111.83
6	B	514	PGW	O03-C19-C20	2.45	119.31	111.83
6	B	514	PGW	O11-P-O14	2.32	112.72	106.44
4	G	1001	NAP	C5D-C4D-C3D	-2.26	107.08	115.21
4	A	1001	NAP	O2A-PA-O5B	2.26	117.80	107.57
4	G	1001	NAP	O5B-PA-O1A	2.23	117.76	108.94
4	A	1001	NAP	O7N-C7N-N7N	-2.21	119.43	122.62
4	A	1001	NAP	C5D-C4D-C3D	-2.20	107.30	115.21
4	A	1001	NAP	O5B-PA-O1A	2.12	117.33	108.94
4	G	1001	NAP	O7N-C7N-N7N	-2.11	119.56	122.62
4	G	1001	NAP	O2A-PA-O5B	2.11	117.12	107.57
6	H	504	PGW	C02-O01-C1	-2.10	112.76	117.80
6	B	516	PGW	O01-C02-C01	-2.10	100.81	108.34
6	B	504	PGW	C02-O01-C1	-2.06	112.87	117.80
4	A	1001	NAP	O4D-C4D-C3D	2.05	109.22	105.15
4	G	1001	NAP	O2A-PA-O1A	2.04	121.92	112.44

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	G	1001	NAP	O4D-C4D-C3D	2.02	109.16	105.15
4	A	1001	NAP	C4A-C5A-N7A	-2.01	107.21	109.34

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1001	NAP	C5B-O5B-PA-O1A
4	G	1001	NAP	C5B-O5B-PA-O1A
6	B	514	PGW	C02-C03-O11-P
4	G	1001	NAP	C1B-C2B-O2B-P2B
4	A	1001	NAP	C1B-C2B-O2B-P2B
4	A	1001	NAP	C3B-C2B-O2B-P2B
4	G	1001	NAP	C3B-C2B-O2B-P2B
6	B	514	PGW	C2-C1-O01-C02
6	B	516	PGW	C7-C8-C9-C10
6	B	514	PGW	O02-C1-O01-C02
6	B	514	PGW	C20-C19-O03-C01
6	B	514	PGW	O04-C19-O03-C01
6	B	504	PGW	C01-C02-O01-C1
6	B	516	PGW	C01-C02-O01-C1
6	H	504	PGW	C01-C02-O01-C1
6	B	516	PGW	O02-C1-O01-C02
6	B	514	PGW	O01-C1-C2-C3
6	B	516	PGW	C2-C1-O01-C02
6	B	516	PGW	O01-C1-C2-C3
6	B	516	PGW	O03-C19-C20-C21
6	B	514	PGW	C01-C02-O01-C1
6	B	516	PGW	C03-C02-O01-C1
4	A	1001	NAP	O4B-C4B-C5B-O5B
4	G	1001	NAP	O4B-C4B-C5B-O5B
6	B	514	PGW	O03-C19-C20-C21
6	B	514	PGW	O02-C1-C2-C3
6	B	516	PGW	O04-C19-C20-C21
6	B	516	PGW	O02-C1-C2-C3

There are no ring outliers.

10 monomers are involved in 48 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	G	1001	NAP	12	0

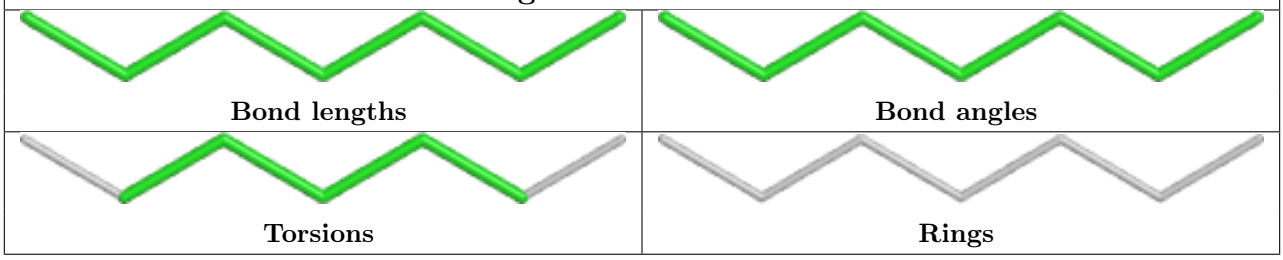
Continued on next page...

Continued from previous page...

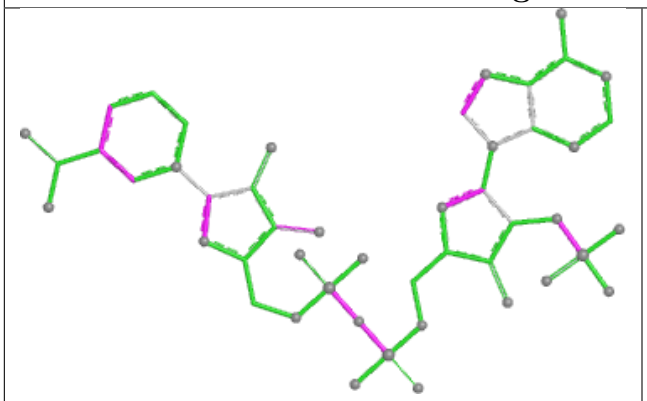
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	512	PGW	2	0
6	B	504	PGW	3	0
6	B	510	PGW	3	0
6	B	513	PGW	1	0
6	B	515	PGW	3	0
6	H	504	PGW	7	0
4	A	1001	NAP	11	0
6	B	514	PGW	1	0
6	B	516	PGW	8	0

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.

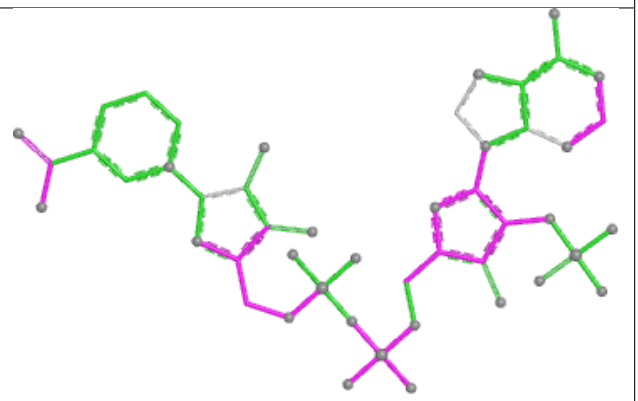
Ligand PGW B 517



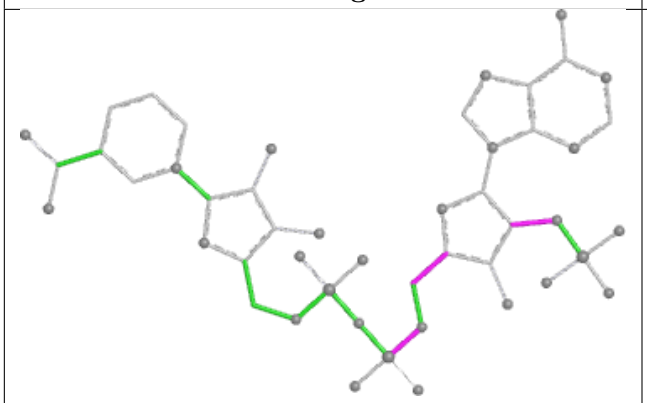
Ligand NAP G 1001



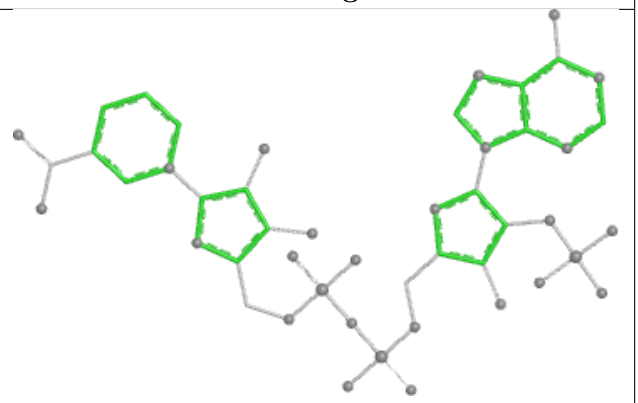
Bond lengths



Bond angles

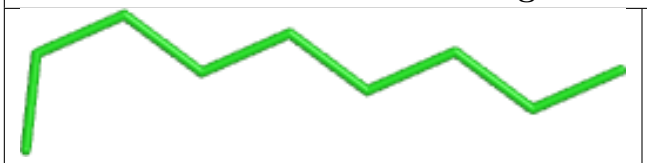


Torsions



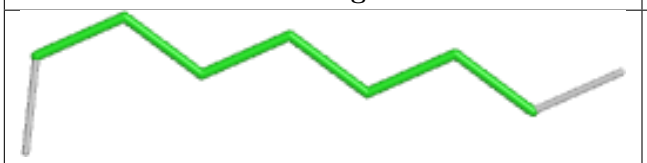
Rings

Ligand PGW B 512

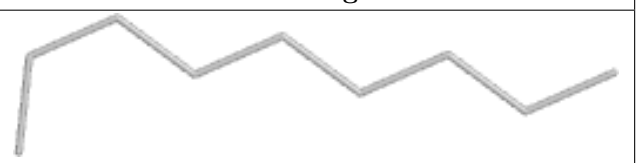


Bond lengths

Bond angles

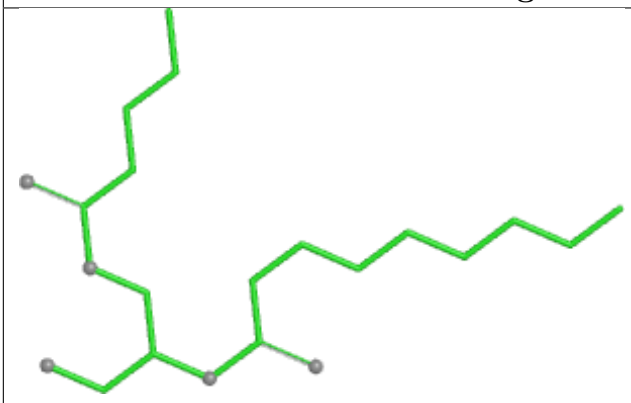


Torsions

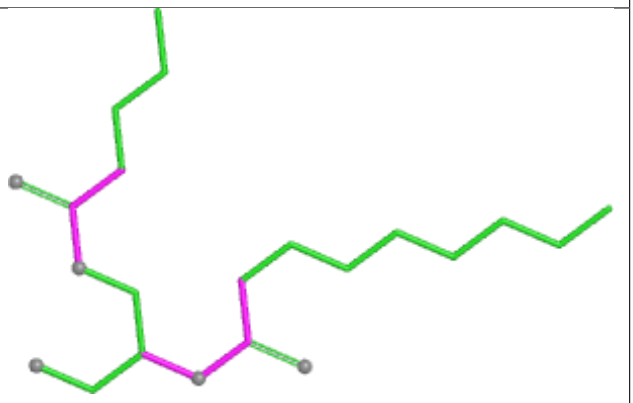


Rings

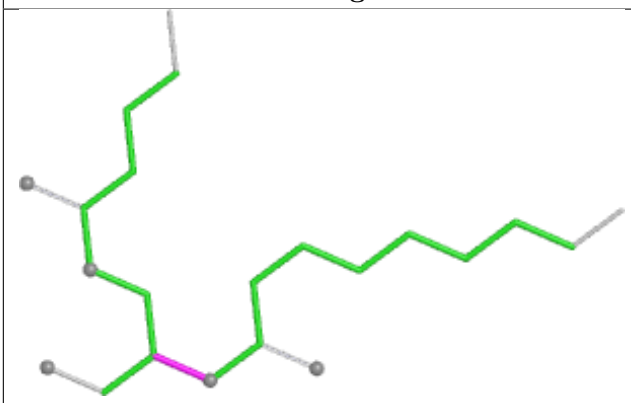
Ligand PGW B 504



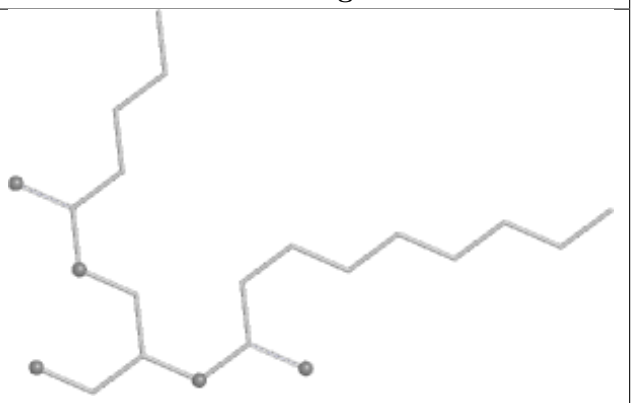
Bond lengths



Bond angles

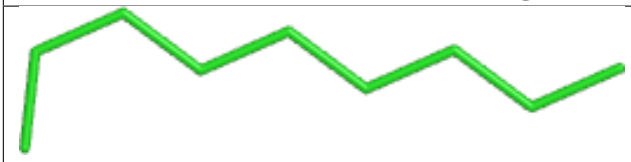


Torsions

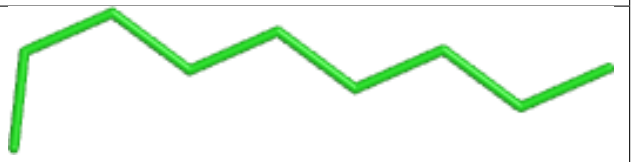


Rings

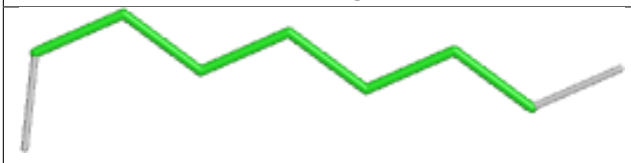
Ligand PGW B 506



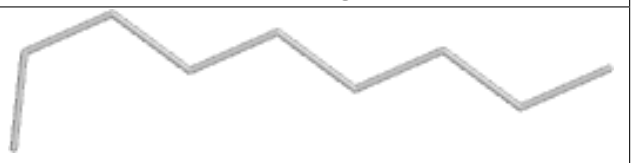
Bond lengths



Bond angles



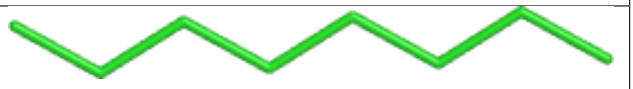
Torsions



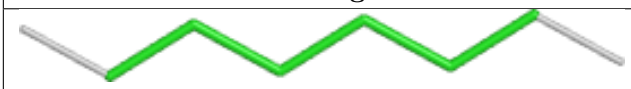
Rings

Ligand PGW B 519

Bond lengths



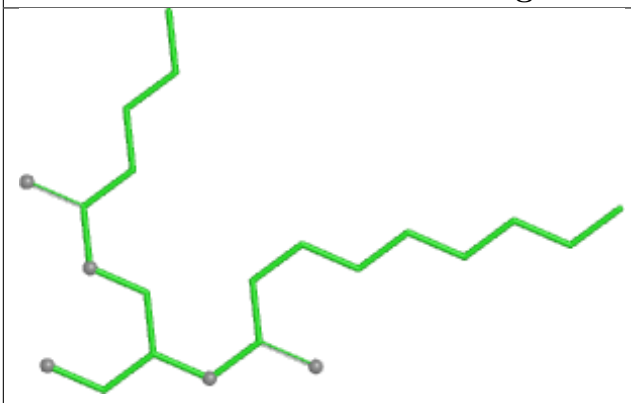
Bond angles



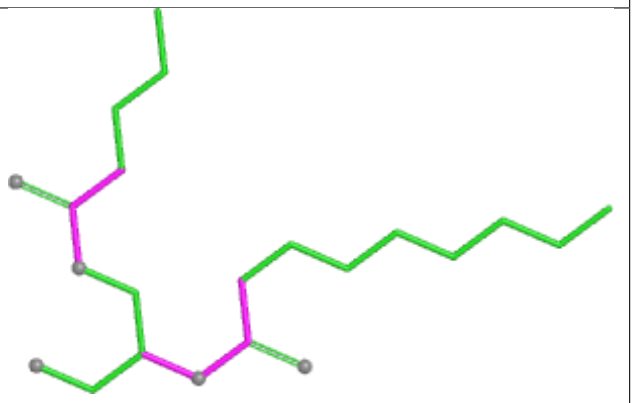
Torsions

Rings

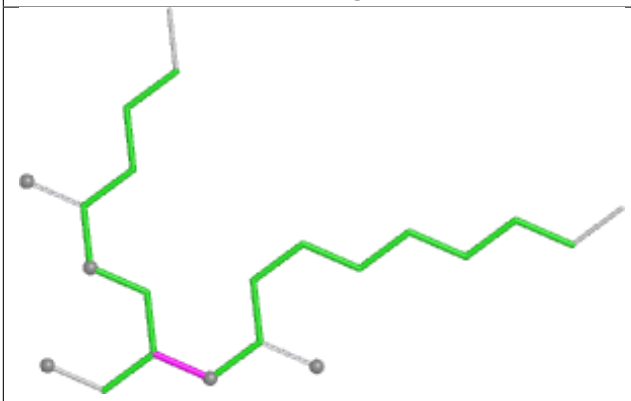
Ligand PGW H 504



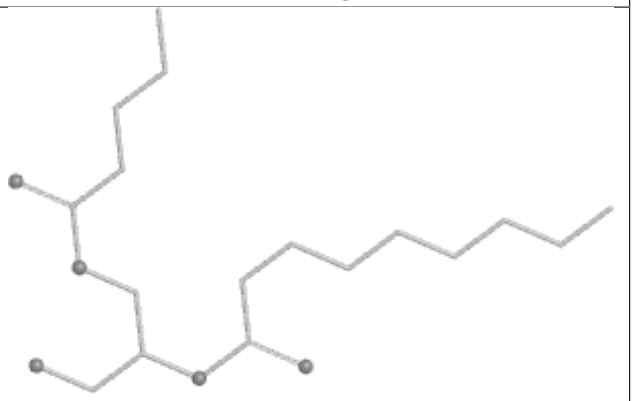
Bond lengths



Bond angles

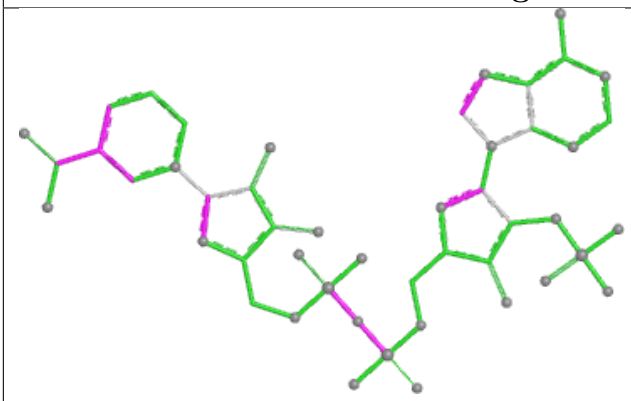


Torsions

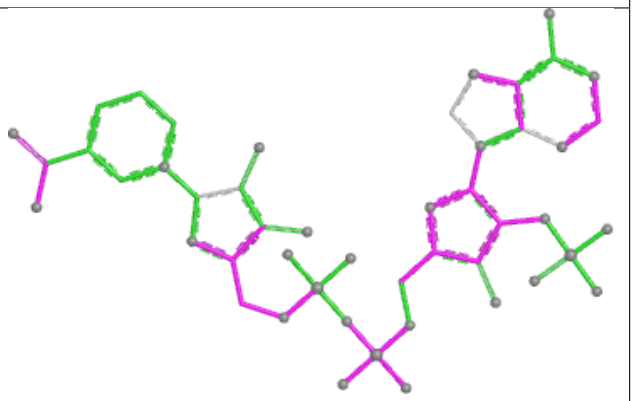


Rings

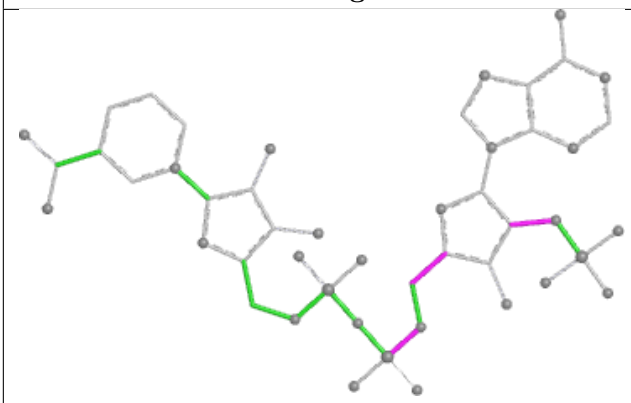
Ligand NAP A 1001



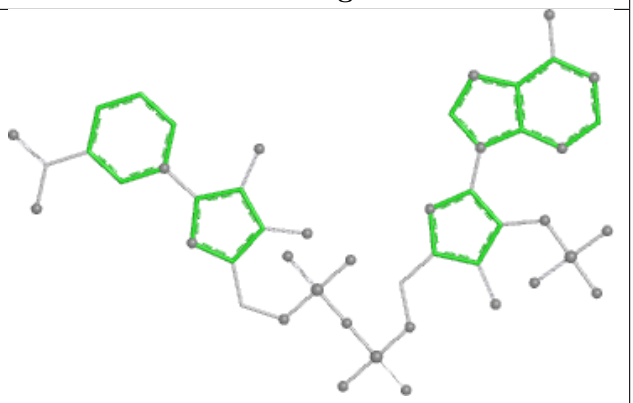
Bond lengths



Bond angles

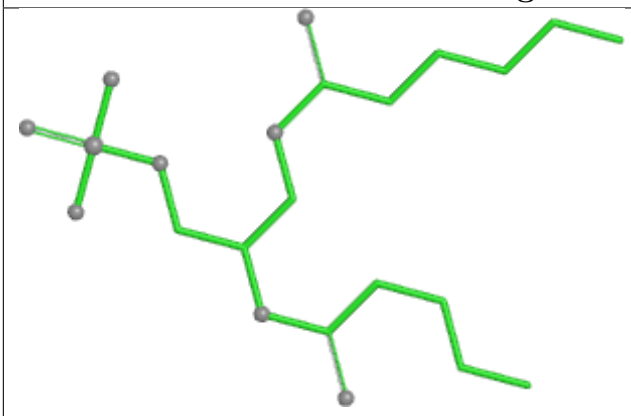


Torsions

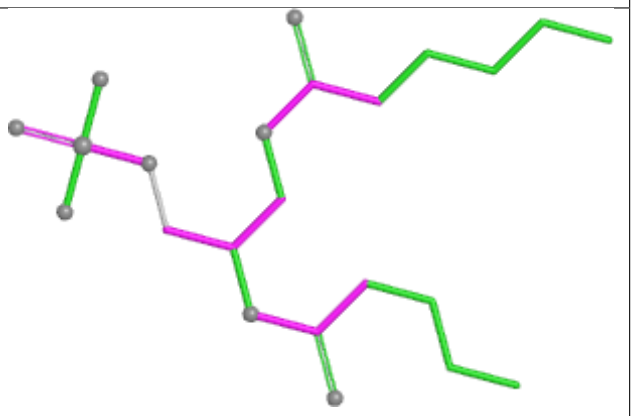


Rings

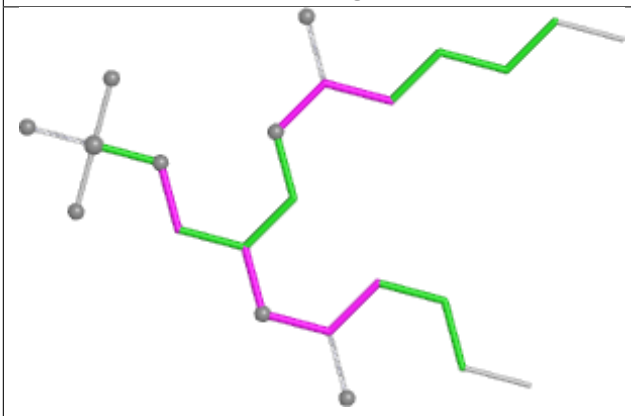
Ligand PGW B 514



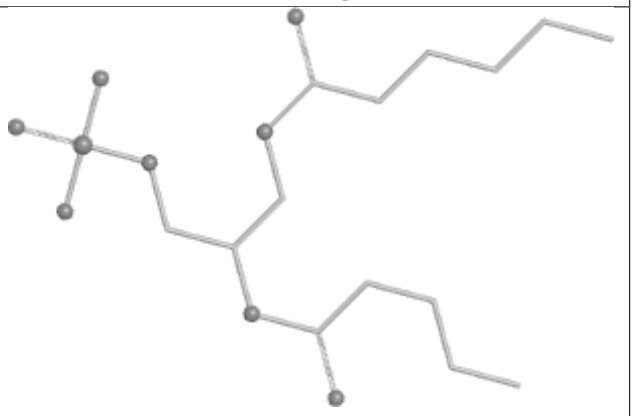
Bond lengths



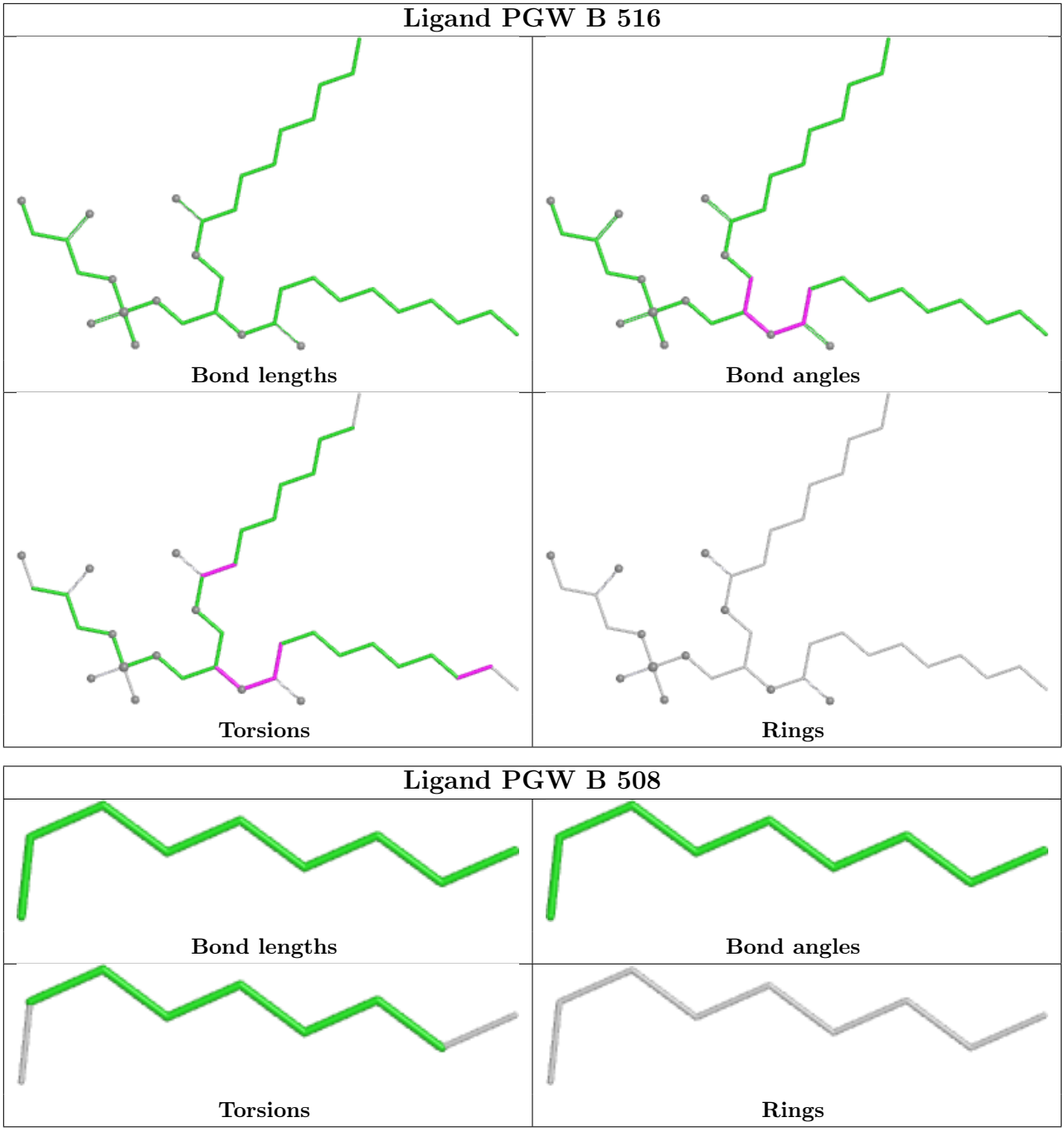
Bond angles



Torsions



Rings



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

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, 95^{th} 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	326/333 (97%)	-0.14	11 (3%) 48 53	17, 33, 60, 83	0
1	G	326/333 (97%)	0.04	16 (4%) 36 40	21, 39, 72, 96	0
2	B	386/514 (75%)	1.14	85 (22%) 3 4	25, 66, 110, 125	0
2	H	363/514 (70%)	2.74	217 (59%) 0 0	38, 115, 185, 204	0
3	Y	36/37 (97%)	11.96	36 (100%) 0 0	25, 27, 31, 31	36 (100%)
All	All	1437/1731 (83%)	1.28	365 (25%) 2 2	17, 53, 176, 204	36 (2%)

All (365) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	Y	15	SER	28.5
3	Y	20	LEU	26.0
3	Y	18	GLN	24.3
3	Y	4	ASN	18.8
3	Y	22	ASN	18.8
3	Y	23	THR	18.5
3	Y	11	LYS	18.2
3	Y	9	THR	16.9
3	Y	19	ARG	16.4
3	Y	8	THR	14.2
3	Y	37	SER	14.2
3	Y	14	TRP	14.1
3	Y	3	THR	13.2
3	Y	24	SER	12.9
3	Y	21	HIS	12.2
3	Y	5	VAL	11.8
2	H	280	LEU	11.2
2	H	272	LEU	10.8
3	Y	7	CYS	10.4
3	Y	25	ARG	10.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
3	Y	6	SER	10.0
2	H	187	ILE	9.8
3	Y	36	TYR	9.4
3	Y	17	CYS	9.3
3	Y	12	GLU	8.8
3	Y	30	ASN	8.7
2	H	288	VAL	8.6
2	B	193	GLU	8.5
3	Y	28	CYS	8.4
3	Y	26	GLY	8.1
3	Y	29	MET	8.1
3	Y	16	VAL	7.9
2	H	268	VAL	7.7
2	H	270	ILE	7.6
2	H	254	ILE	7.1
3	Y	13	CYS	6.8
2	H	242	PHE	6.8
2	H	131	GLY	6.6
2	H	291	ILE	6.6
2	H	248	ALA	6.6
3	Y	2	PHE	6.4
2	H	164	ILE	6.4
2	H	250	PHE	6.4
2	H	285	VAL	6.4
3	Y	27	LYS	6.2
2	H	241	PHE	6.2
2	H	287	ARG	6.2
2	B	161	PRO	6.2
3	Y	10	SER	6.2
2	H	156	PRO	6.1
2	H	289	VAL	6.1
3	Y	33	CYS	6.1
2	B	200	VAL	6.1
2	H	188	PHE	6.1
2	H	279	VAL	6.1
2	B	199	GLY	6.0
2	H	245	PRO	6.0
2	H	147	ARG	6.0
2	B	198	GLY	6.0
2	B	157	GLU	6.0
2	B	417	THR	5.9
2	H	252	THR	5.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	H	381	ILE	5.9
2	H	283	GLN	5.9
2	B	187	ILE	5.9
2	H	271	PHE	5.9
2	H	211	GLY	5.8
2	B	197	GLY	5.8
3	Y	32	LYS	5.8
2	H	257	ILE	5.7
2	H	145	PHE	5.7
2	H	238	LEU	5.7
2	H	237	PHE	5.6
2	H	417	THR	5.6
2	H	151	LEU	5.5
2	H	190	ASP	5.5
2	H	228	LEU	5.5
3	Y	35	CYS	5.5
2	H	353	GLN	5.5
2	H	149	VAL	5.4
2	H	218	PHE	5.4
1	G	36	LEU	5.3
2	H	416	GLU	5.3
2	H	284	ASN	5.3
2	H	278	SER	5.3
2	H	415	ARG	5.2
2	H	290	GLN	5.2
2	H	255	MET	5.2
2	H	214	GLN	5.2
2	H	292	PHE	5.2
2	H	216	THR	5.2
2	H	210	ILE	5.1
2	H	205	TYR	5.0
2	H	273	THR	5.0
2	H	219	THR	5.0
2	H	235	PHE	5.0
2	H	231	ILE	4.9
2	H	221	PRO	4.9
2	H	244	CYS	4.9
2	H	209	THR	4.8
2	H	350	ARG	4.8
2	H	222	PHE	4.8
2	H	372	GLY	4.8
2	H	277	LYS	4.8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	B	213	GLN	4.8
2	H	240	ARG	4.7
3	Y	34	ARG	4.7
2	H	155	TYR	4.7
2	H	183	GLU	4.7
2	H	264	ILE	4.7
3	Y	31	LYS	4.6
2	H	269	THR	4.6
2	B	132	TYR	4.5
2	H	224	ILE	4.5
2	H	282	PHE	4.5
2	H	246	SER	4.4
2	H	167	ILE	4.4
2	H	186	PRO	4.4
2	H	160	GLY	4.4
2	H	286	ARG	4.4
2	H	275	SER	4.4
2	H	225	VAL	4.4
2	H	267	TYR	4.4
2	H	153	PHE	4.3
2	H	32	SER	4.3
2	H	258	ILE	4.3
2	H	203	HIS	4.3
2	H	206	SER	4.2
2	H	345	ALA	4.2
2	H	363	TRP	4.2
1	A	360	TYR	4.2
2	H	370	THR	4.2
1	A	36	LEU	4.2
2	H	191	GLU	4.2
2	H	301	PHE	4.2
2	H	409	PHE	4.1
2	B	201	THR	4.1
2	H	373	TYR	4.1
2	B	192	ASN	4.1
2	H	260	ILE	4.0
2	H	374	GLY	4.0
2	H	414	HIS	4.0
2	H	251	PHE	4.0
1	G	314	ASN	4.0
2	H	175	ILE	4.0
2	H	202	PHE	4.0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	H	262	ALA	3.9
2	H	217	SER	3.9
2	H	300	ILE	3.9
2	H	189	ARG	3.9
2	H	239	VAL	3.9
2	H	308	LYS	3.8
2	H	378	PRO	3.8
2	H	376	MET	3.8
1	A	121	TRP	3.8
2	B	286	ARG	3.8
2	H	181	CYS	3.7
2	H	152	LEU	3.7
2	H	168	VAL	3.7
2	H	351	ASP	3.7
2	B	133	ILE	3.7
2	H	294	ILE	3.7
2	B	251	PHE	3.7
2	H	182	LEU	3.6
2	H	303	LEU	3.6
1	G	361	SER	3.6
2	B	215	SER	3.6
2	B	139	PRO	3.6
2	B	219	THR	3.6
2	H	253	ASN	3.6
2	B	191	GLU	3.6
2	H	318	LYS	3.5
2	B	140	LEU	3.5
2	H	174	LEU	3.5
2	H	337	LEU	3.5
2	H	265	PRO	3.5
1	A	150	GLU	3.5
2	B	120	GLU	3.5
2	B	147	ARG	3.5
2	B	205	TYR	3.5
2	B	194	ASP	3.5
2	H	298	LEU	3.5
2	H	247	LYS	3.5
2	B	252	THR	3.5
2	H	63	LYS	3.5
2	H	261	VAL	3.5
2	H	293	ARG	3.4
1	G	360	TYR	3.4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	H	157	GLU	3.4
1	A	361	SER	3.4
2	B	352	SER	3.4
2	H	352	SER	3.4
2	B	137	GLU	3.4
2	H	306	HIS	3.4
2	H	161	PRO	3.3
2	H	281	GLN	3.3
1	G	280	GLU	3.3
2	B	188	PHE	3.3
2	B	196	HIS	3.3
2	H	410	ASN	3.3
2	H	296	ARG	3.3
2	H	341	ALA	3.3
2	H	128	GLU	3.3
2	H	185	LEU	3.2
2	H	371	VAL	3.2
2	B	414	HIS	3.2
2	B	240	ARG	3.2
2	H	114	ARG	3.2
2	H	233	PHE	3.2
2	B	158	SER	3.2
2	H	332	PHE	3.2
2	H	309	GLY	3.1
2	H	354	PHE	3.1
2	B	125	MET	3.1
2	H	328	ILE	3.1
2	H	302	LYS	3.1
2	H	321	MET	3.1
2	H	150	TRP	3.1
2	H	347	ALA	3.0
2	H	204	THR	3.0
2	H	413	TYR	3.0
2	H	125	MET	3.0
2	H	344	PHE	3.0
2	H	412	PHE	3.0
2	H	229	CYS	3.0
2	H	357	ILE	3.0
2	H	295	MET	3.0
2	H	208	SER	2.9
2	H	399	ALA	2.9
2	H	297	ILE	2.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	B	203	HIS	2.9
2	H	111	GLU	2.9
2	H	249	GLY	2.9
2	B	155	TYR	2.9
2	B	359	ASP	2.9
2	B	282	PHE	2.8
2	H	170	VAL	2.8
2	B	152	LEU	2.8
2	B	145	PHE	2.8
2	B	159	SER	2.8
2	B	134	LYS	2.8
2	H	305	ARG	2.8
1	G	231	GLU	2.8
2	H	304	SER	2.8
2	H	266	TYR	2.8
2	H	177	ILE	2.8
2	B	135	GLU	2.8
2	H	400	LEU	2.7
2	B	381	ILE	2.7
2	B	32	SER	2.7
2	H	110	SER	2.7
2	H	184	THR	2.7
2	B	136	GLU	2.7
2	H	179	SER	2.7
2	B	151	LEU	2.6
2	H	396	LEU	2.6
2	H	166	ALA	2.6
1	A	297	GLU	2.6
1	G	300	GLY	2.6
2	H	383	GLY	2.6
2	H	411	TYR	2.6
2	H	165	ILE	2.6
2	H	127	ARG	2.6
2	H	379	THR	2.6
2	H	317	LEU	2.6
2	H	348	ASP	2.6
2	H	315	GLN	2.6
1	G	234	HIS	2.5
2	H	102	VAL	2.5
2	B	129	ASP	2.5
2	B	348	ASP	2.5
2	H	180	PHE	2.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	H	310	LEU	2.5
2	H	232	TRP	2.5
2	H	169	SER	2.5
2	B	156	PRO	2.5
2	H	349	GLU	2.5
2	H	375	ASP	2.5
2	H	123	MET	2.5
2	B	202	PHE	2.5
2	H	109	PHE	2.5
2	H	384	LYS	2.5
2	B	124	GLU	2.5
2	H	173	ILE	2.5
2	H	146	GLN	2.5
2	B	160	GLY	2.5
2	B	287	ARG	2.5
2	B	143	ASN	2.5
2	B	413	TYR	2.5
2	B	153	PHE	2.5
1	G	349	HIS	2.5
2	H	377	VAL	2.5
2	H	393	ALA	2.5
2	H	215	SER	2.5
1	G	297	GLU	2.5
2	B	269	THR	2.5
2	H	129	ASP	2.5
2	H	314	GLY	2.5
2	H	212	TYR	2.4
2	H	324	LEU	2.4
2	H	355	PRO	2.4
1	G	281	GLU	2.4
1	G	121	TRP	2.4
2	H	402	VAL	2.4
1	A	145	GLU	2.4
2	B	56	GLU	2.4
2	H	243	ALA	2.4
2	H	405	ILE	2.4
2	B	86	ASP	2.4
2	B	185	LEU	2.4
1	G	159	ARG	2.4
2	H	207	GLN	2.4
2	H	331	LEU	2.3
2	B	141	PRO	2.3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	H	163	ARG	2.3
2	H	172	VAL	2.3
2	H	299	ARG	2.3
2	B	322	ARG	2.3
2	B	121	GLU	2.3
2	B	349	GLU	2.3
2	H	307	SER	2.3
2	B	354	PHE	2.3
2	B	375	ASP	2.3
1	G	67	GLU	2.3
2	B	283	GLN	2.3
2	H	148	GLN	2.3
2	H	395	VAL	2.3
2	H	326	LEU	2.2
2	H	126	PHE	2.2
2	H	276	ASN	2.2
2	B	162	ALA	2.2
2	B	246	SER	2.2
2	B	114	ARG	2.2
1	A	262	TYR	2.2
2	H	158	SER	2.2
2	H	223	PHE	2.2
2	B	285	VAL	2.2
2	B	247	LYS	2.2
2	B	248	ALA	2.2
2	B	245	PRO	2.2
1	A	67	GLU	2.2
2	H	178	VAL	2.2
2	H	106	LEU	2.1
2	B	218	PHE	2.1
2	H	159	SER	2.1
2	H	312	ILE	2.1
2	B	150	TRP	2.1
1	A	129	ARG	2.1
2	B	189	ARG	2.1
2	B	216	THR	2.1
2	B	241	PHE	2.1
2	H	227	THR	2.1
2	B	142	GLU	2.1
2	B	144	GLU	2.1
2	B	290	GLN	2.1
2	H	56	GLU	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	H	263	ILE	2.1
2	H	66	MET	2.1
2	B	138	ARG	2.0
2	H	338	PHE	2.0
2	B	214	GLN	2.0
1	G	257	SER	2.0
1	A	349	HIS	2.0
2	H	103	ASN	2.0
1	G	284	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (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, 95^{th} 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	PCA	Y	1	8/9	0.66	0.36	125,126,126,126	8

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, 95^{th} 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
6	PGW	B	517	7/51	0.62	0.41	63,66,68,69	0
6	PGW	B	512	9/51	0.63	0.71	126,128,128,128	0
6	PGW	B	504	22/51	0.64	0.47	85,102,113,114	0
6	PGW	H	504	22/51	0.65	0.51	142,147,149,149	0
6	PGW	B	506	9/51	0.67	0.51	87,90,91,91	0
6	PGW	B	516	36/51	0.74	0.33	107,125,141,141	0
6	PGW	B	519	8/51	0.75	0.50	97,99,100,100	0
6	PGW	B	514	23/51	0.75	0.31	109,119,123,124	0

Continued on next page...

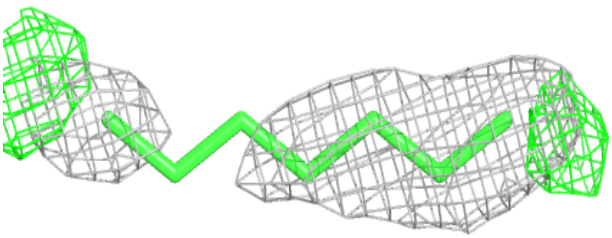
Continued from previous page...

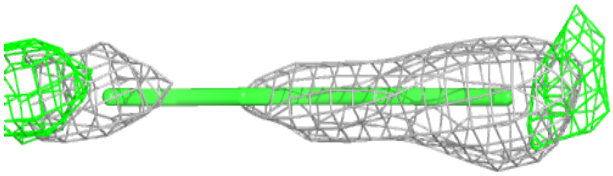
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	PGW	B	513	8/51	0.78	0.35	74,78,79,79	0
6	PGW	B	508	9/51	0.79	0.43	100,102,102,102	0
6	PGW	B	505	9/51	0.79	0.39	79,82,84,85	0
6	PGW	B	515	8/51	0.81	0.41	81,87,91,91	0
6	PGW	B	518	8/51	0.82	0.48	102,105,107,107	0
6	PGW	B	511	7/51	0.83	0.27	70,73,73,73	0
6	PGW	B	507	9/51	0.83	0.37	94,96,98,98	0
6	PGW	B	509	9/51	0.84	0.34	82,86,89,89	0
6	PGW	B	510	9/51	0.85	0.40	106,107,109,109	0
5	CS	B	502	1/1	0.86	0.08	43,43,43,43	1
5	CS	H	503	1/1	0.91	0.10	75,75,75,75	1
5	CS	B	503	1/1	0.92	0.32	101,101,101,101	1
4	NAP	G	1001	48/48	0.93	0.12	25,39,51,51	0
5	CS	B	501	1/1	0.93	0.08	45,45,45,45	1
4	NAP	A	1001	48/48	0.95	0.10	23,33,43,47	0
5	CS	H	505	1/1	0.96	0.17	126,126,126,126	1
5	CS	H	501	1/1	0.97	0.07	85,85,85,85	1
5	CS	H	502	1/1	0.98	0.07	74,74,74,74	1
5	CS	B	520	1/1	0.99	0.07	61,61,61,61	1

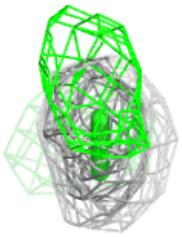
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around PGW B 517:

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

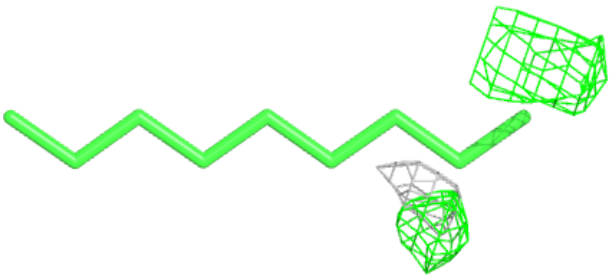


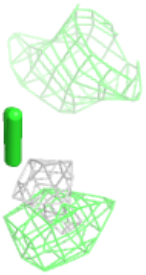




Electron density around PGW B 512:

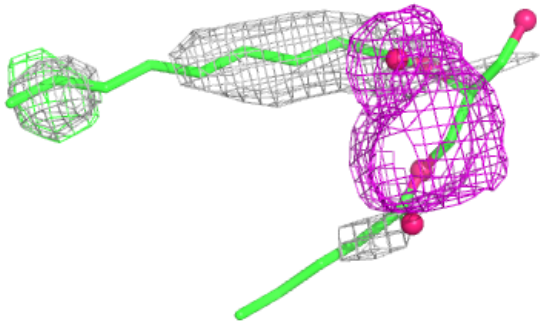
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

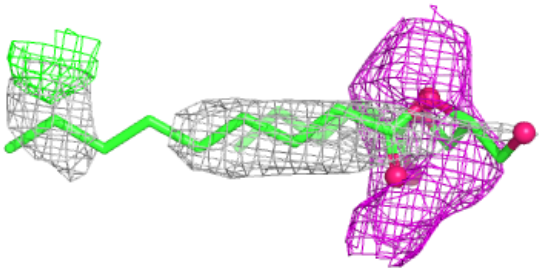


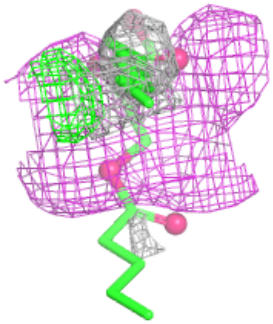


Electron density around PGW B 504:

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

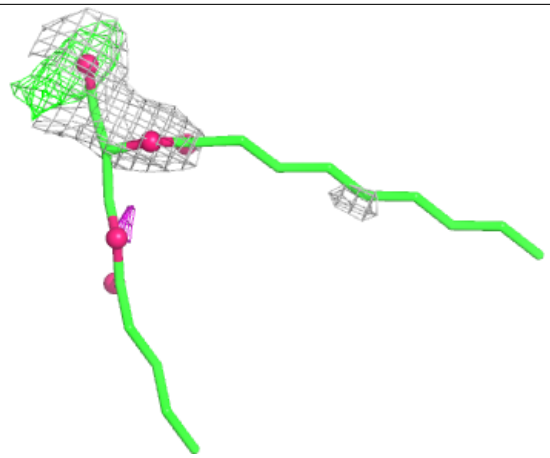


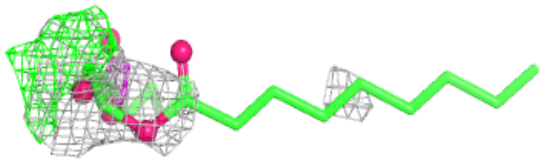




Electron density around PGW H 504:

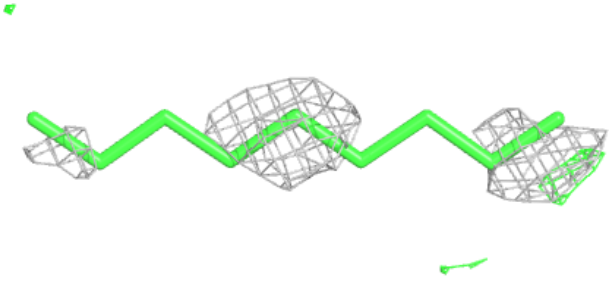
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

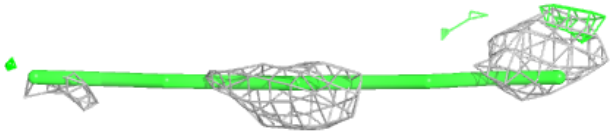


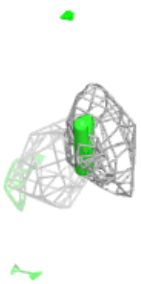


Electron density around PGW B 506:

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

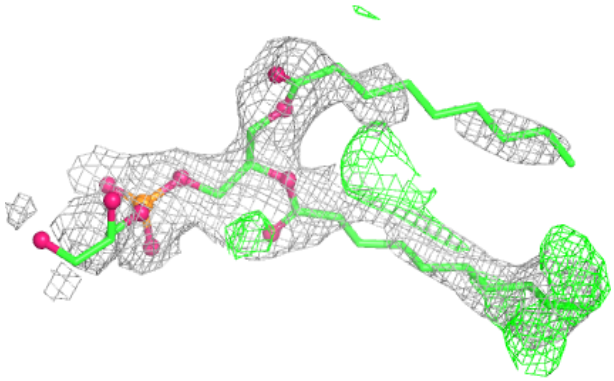


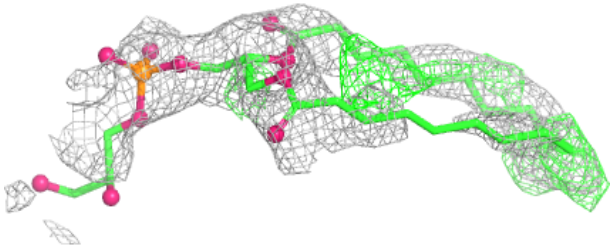


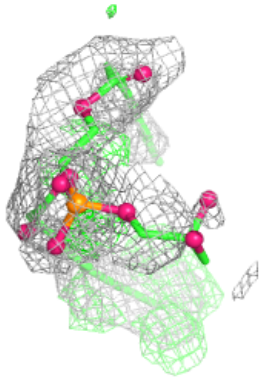


Electron density around PGW B 516:

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

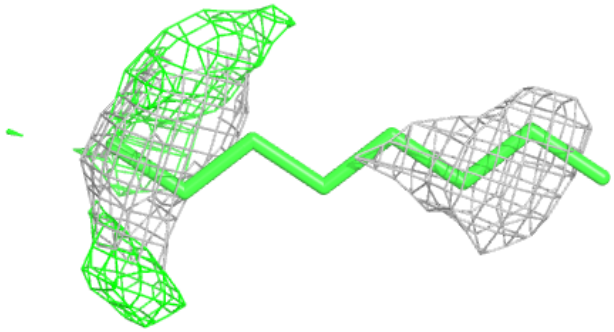


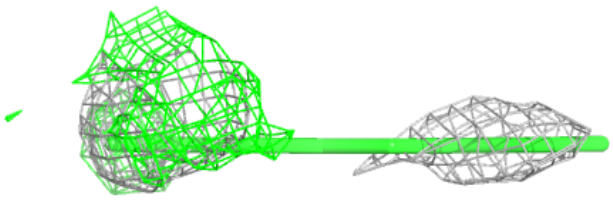


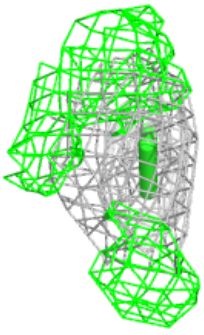


Electron density around PGW B 519:

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

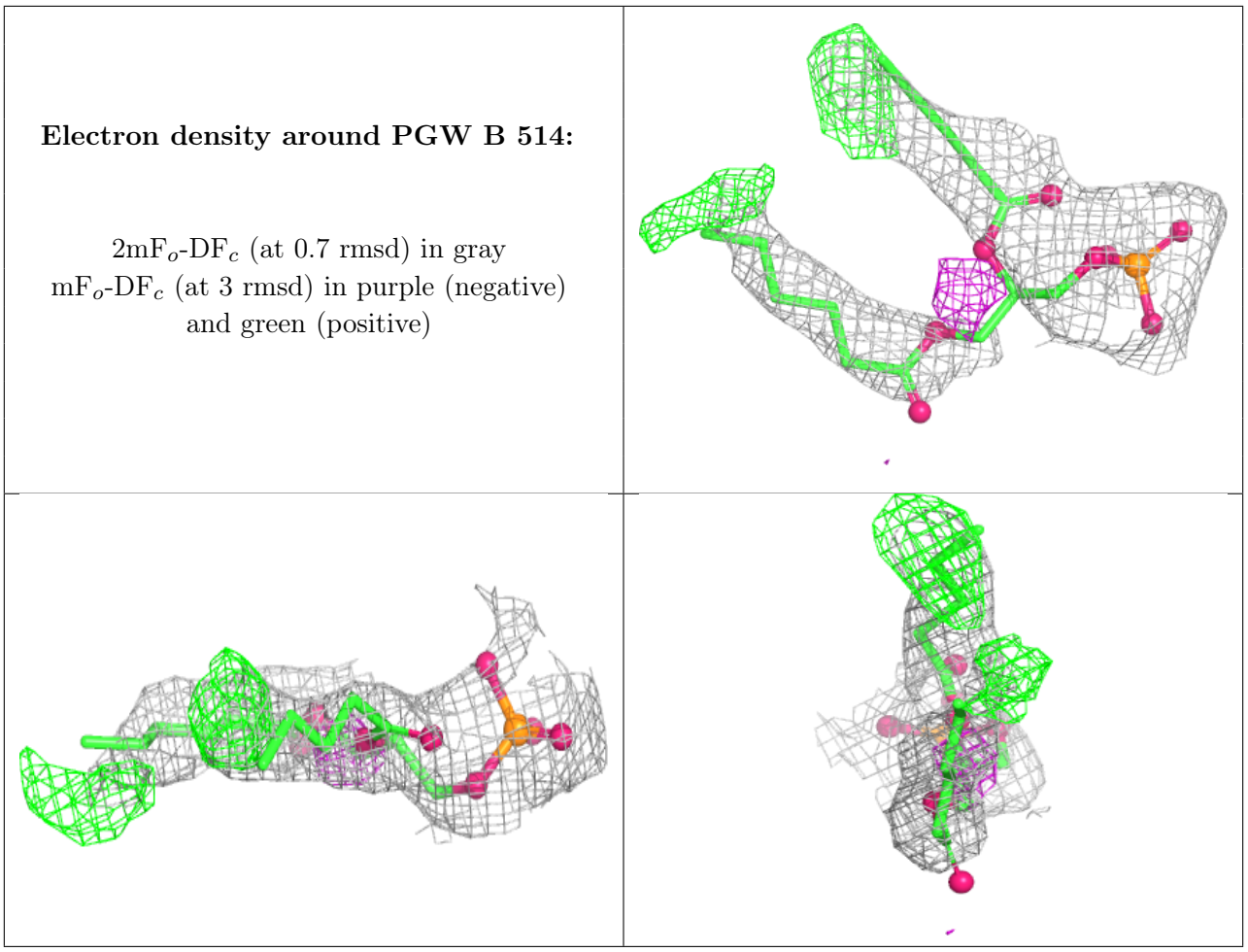






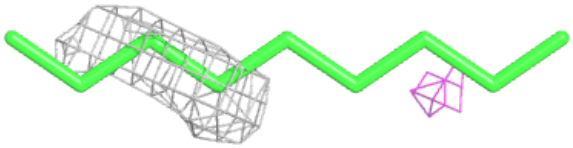
Electron density around PGW B 514:

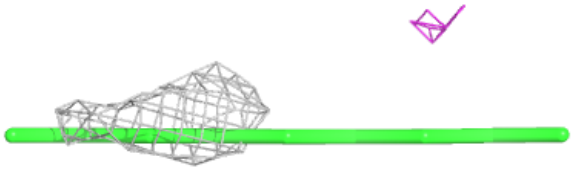
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

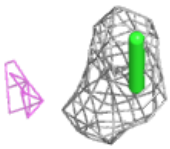


Electron density around PGW B 508:

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

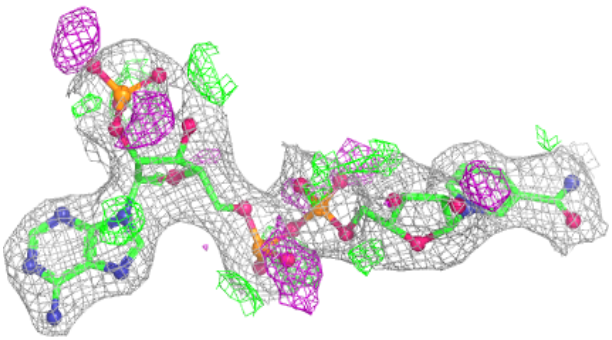


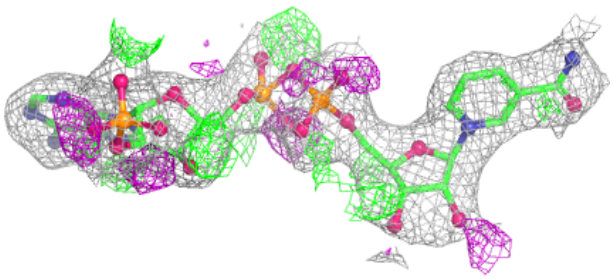


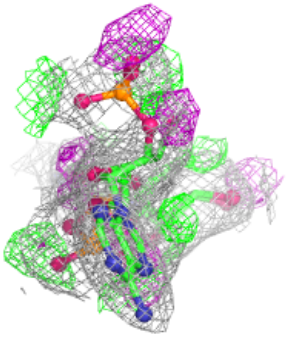


Electron density around NAP G 1001:

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

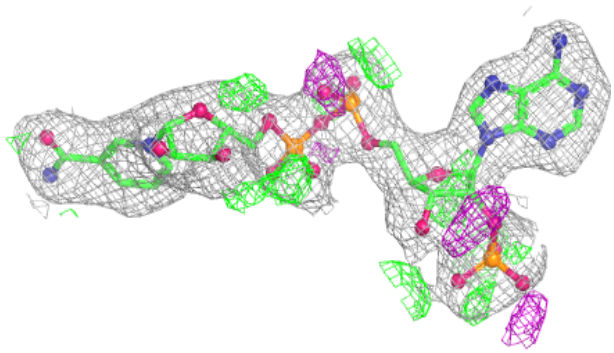


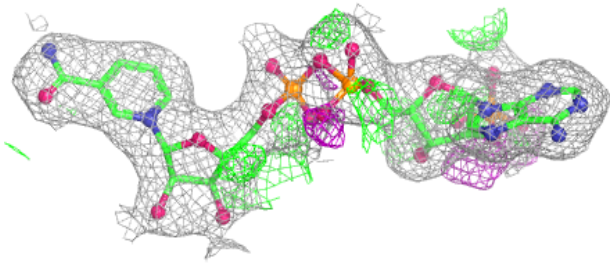


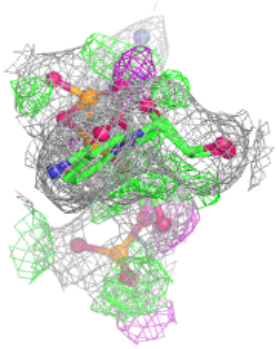


Electron density around NAP A 1001:

$2mF_o$-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

There are no such residues in this entry.