



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 07:40 PM GMT

PDB ID : 4PIV
Title : Human Fatty Acid Synthase Psi/KR Tri-Domain with NADPH and GSK2194069
Authors : Williams, S.P.; Wang, L.; Brown, K.K.; Parrish, C.A.; Hardwicke, M.A.
Deposited on : 2014-05-09
Resolution : 2.30 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
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

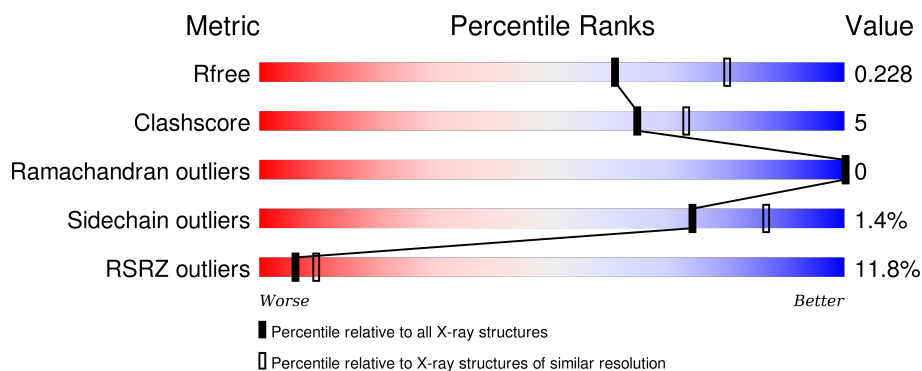
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	91344	3852 (2.30-2.30)
Clashscore	102246	4452 (2.30-2.30)
Ramachandran outliers	100387	4410 (2.30-2.30)
Sidechain outliers	100360	4409 (2.30-2.30)
RSRZ outliers	91569	3857 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	660	<div> <div>11%</div> <div>83%</div> <div>9%</div> <div>8%</div> </div>
1	B	660	<div> <div>11%</div> <div>80%</div> <div>12%</div> <div>8%</div> </div>

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 9351 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.

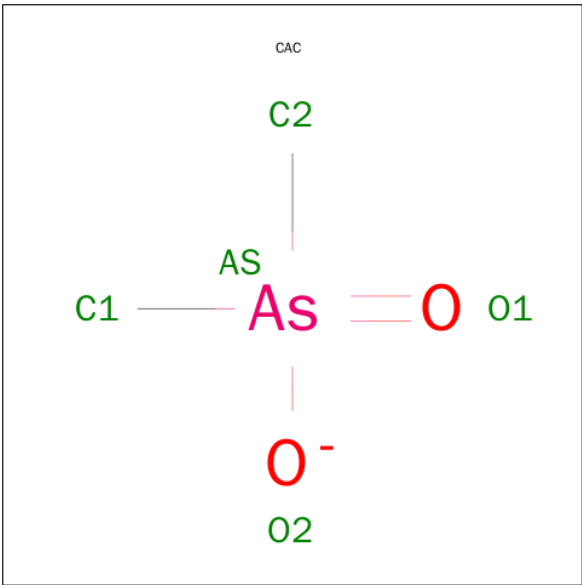
- Molecule 1 is a protein called Fatty acid synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	610	Total	C	N	O	S	0	1	0
			4462	2837	786	815	24			
1	B	610	Total	C	N	O	S	0	0	0
			4481	2847	783	827	24			

There are 16 discrepancies between the modelled and reference sequences:

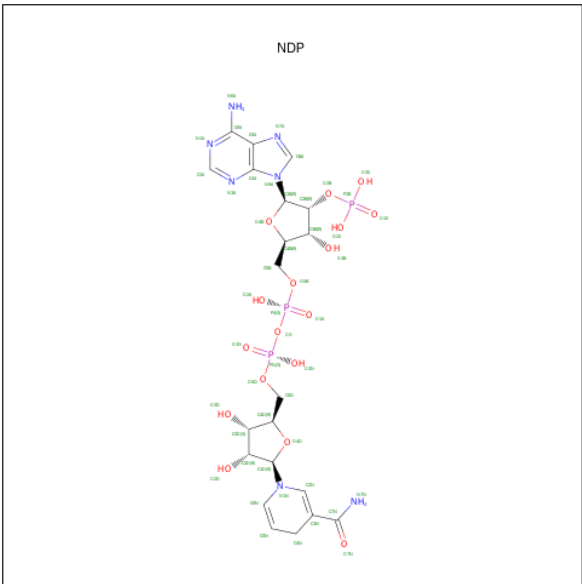
Chain	Residue	Modelled	Actual	Comment	Reference
A	1109	MET	-	initiating methionine	UNP P49327
A	1876	GLY	PRO	engineered mutation	UNP P49327
A	2115	HIS	-	expression tag	UNP P49327
A	2116	HIS	-	expression tag	UNP P49327
A	2117	HIS	-	expression tag	UNP P49327
A	2118	HIS	-	expression tag	UNP P49327
A	2119	HIS	-	expression tag	UNP P49327
A	2120	HIS	-	expression tag	UNP P49327
B	1109	MET	-	initiating methionine	UNP P49327
B	1876	GLY	PRO	engineered mutation	UNP P49327
B	2115	HIS	-	expression tag	UNP P49327
B	2116	HIS	-	expression tag	UNP P49327
B	2117	HIS	-	expression tag	UNP P49327
B	2118	HIS	-	expression tag	UNP P49327
B	2119	HIS	-	expression tag	UNP P49327
B	2120	HIS	-	expression tag	UNP P49327

- Molecule 2 is CACODYLATE ION (three-letter code: CAC) (formula: $C_2H_6AsO_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	As	C	O	0	0
			4	1	2	1		
2	B	1	Total	As	C	O	0	0
			4	1	2	1		

- Molecule 3 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: C₂₁H₃₀N₇O₁₇P₃).



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

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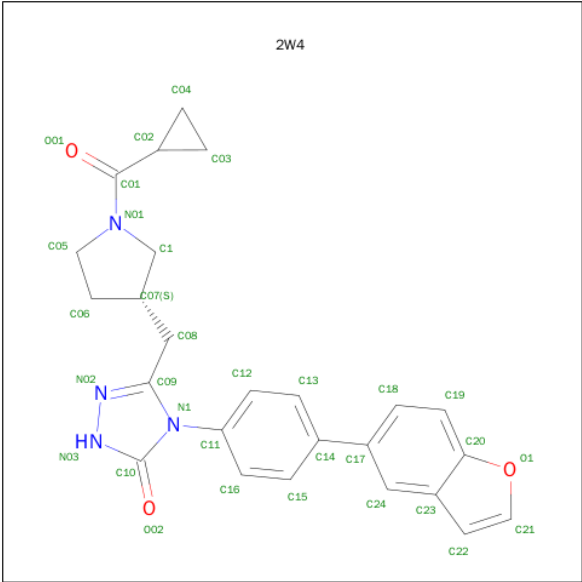
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total	C	N	O	P	0	0
			48	21	7	17	3		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	O	S	0	0
			5	4	1		
4	A	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		

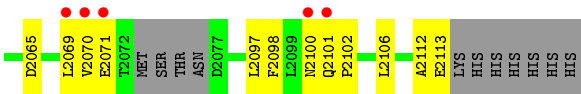
- Molecule 5 is 4-[4-(1-benzofuran-5-yl)phenyl]-5-[[[(3S)-1-(cyclopropylcarbonyl)pyrrolidin-3-yl]methyl]-2,4-dihydro-3H-1,2,4-triazol-3-one (three-letter code: 2W4) (formula: C₂₅H₂₄N₄O₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	N	O	0	0
			32	25	4	3		
5	B	1	Total	C	N	O	0	0
			32	25	4	3		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	102	Total	O	0	0
			102	102		
6	B	118	Total	O	0	0
			118	118		



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	48.22Å 85.76Å 86.00Å 65.49° 89.96° 87.22°	Depositor
Resolution (Å)	28.55 – 2.30 28.55 – 2.30	Depositor EDS
% Data completeness (in resolution range)	95.4 (28.55-2.30) 82.2 (28.55-2.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.21 (at 2.31Å)	Xtriage
Refinement program	REFMAC 5.6.0109	Depositor
R, R_{free}	0.214 , 0.246 0.199 , 0.228	Depositor DCC
R_{free} test set	3898 reflections (7.92%)	DCC
Wilson B-factor (Å ²)	38.5	Xtriage
Anisotropy	0.192	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 43.7	EDS
Estimated twinning fraction	0.003 for -h,l,k	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 53095 reflections	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	9351	wwPDB-VP
Average B, all atoms (Å ²)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.19% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: CAC, NDP, 2W4, SO4

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	0.33	0/4552	0.55	0/6200
1	B	0.33	0/4568	0.55	0/6216
All	All	0.33	0/9120	0.55	0/12416

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	4462	0	4365	39	0
1	B	4481	0	4404	51	0
2	A	4	0	0	2	0
2	B	4	0	0	2	0
3	A	48	0	26	1	0
3	B	48	0	26	1	0
4	A	10	0	0	0	0
4	B	10	0	0	0	0
5	A	32	0	24	1	0
5	B	32	0	24	2	0
6	A	102	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	118	0	0	1	0
All	All	9351	0	8869	92	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 5.

All (92) 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:A:1110:GLN:HE22	1:A:2087:ARG:H	1.25	0.84
1:A:2062:ALA:HB1	1:A:2069:LEU:HD21	1.65	0.78
1:B:1338:GLU:HB3	1:B:1407:THR:HG22	1.66	0.75
1:B:2101:GLN:OE1	1:B:2101:GLN:HA	1.89	0.72
1:A:1110:GLN:NE2	1:A:2087:ARG:H	1.89	0.71
1:B:1478:SER:OG	1:B:1480:THR:HG22	1.91	0.70
1:A:1446:ILE:HG23	1:A:1474:LEU:HD12	1.76	0.68
1:B:1449:ALA:HB1	1:B:2047:LYS:HE3	1.77	0.67
1:A:1478:SER:OG	1:A:1480:THR:HG22	1.96	0.64
1:B:1209:LEU:HD22	1:B:1215:LEU:CD1	2.30	0.61
1:B:1456:LEU:HD12	1:B:2032:SER:HB2	1.82	0.61
1:A:1456:LEU:HD12	1:A:2032:SER:HB2	1.83	0.61
1:A:1486:VAL:O	1:A:1493:LEU:HD22	2.02	0.60
1:B:1446:ILE:HG23	1:B:1474:LEU:HD12	1.84	0.59
1:B:1209:LEU:HD22	1:B:1215:LEU:HD12	1.84	0.59
1:B:1215:LEU:HD23	1:B:1353:LEU:HD21	1.83	0.59
1:B:1349:ARG:HB2	1:B:1371:ILE:HG22	1.85	0.58
1:B:1304:PRO:HD2	1:B:1307:LEU:HD12	1.84	0.58
1:B:1486:VAL:O	1:B:1493:LEU:HD22	2.03	0.57
1:B:1462:ARG:NH2	6:B:2355:HOH:O	2.20	0.57
1:A:2062:ALA:HB1	1:A:2069:LEU:CD2	2.33	0.57
1:A:1215:LEU:HD23	1:A:1353:LEU:HD21	1.87	0.56
1:A:1446:ILE:HG23	1:A:1474:LEU:CD1	2.36	0.56
1:A:1488:PRO:HA	1:A:1493:LEU:HD23	1.87	0.55
1:B:1521:GLU:CB	1:B:2101:GLN:HE22	2.20	0.54
1:A:2049:ARG:NH2	1:A:2102:PRO:O	2.39	0.54
3:A:2202:NDP:H41N	5:A:2205:2W4:C01	2.38	0.54
1:A:2015:TYR:CE2	2:A:2201:CAC:C1	2.91	0.53
1:B:1317:CYS:SG	1:B:1344:LEU:HD11	2.49	0.53
1:B:2062:ALA:HB1	1:B:2069:LEU:CD2	2.39	0.52
1:B:2049:ARG:NH2	1:B:2102:PRO:O	2.40	0.52
1:B:1176:GLN:HA	1:B:1176:GLN:NE2	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1317:CYS:SG	1:A:1344:LEU:HD11	2.50	0.52
1:B:1463:GLU:HG2	1:B:1979:LEU:HD22	1.93	0.51
1:A:1457:VAL:HG21	1:A:1471:CYS:HB3	1.92	0.51
1:B:1971:LEU:HD22	1:B:2019:PHE:CG	2.45	0.51
1:B:1457:VAL:HG21	1:B:1471:CYS:HB3	1.92	0.50
1:A:1176:GLN:NE2	1:A:1176:GLN:HA	2.27	0.50
1:A:1463:GLU:HG2	1:A:1979:LEU:HD22	1.93	0.50
1:B:1971:LEU:HD22	1:B:2019:PHE:CD2	2.46	0.50
1:A:1176:GLN:O	1:A:1179:PRO:HD2	2.12	0.50
1:A:1145:VAL:HG21	1:A:1356:ILE:HG12	1.93	0.50
1:B:2062:ALA:HB1	1:B:2069:LEU:HD21	1.93	0.49
1:B:1176:GLN:O	1:B:1179:PRO:HD2	2.13	0.49
1:A:1110:GLN:HE22	1:A:2087:ARG:N	2.03	0.49
3:B:2202:NDP:H41N	5:B:2205:2W4:C01	2.43	0.48
1:B:1940:GLN:HG3	1:B:1962:LEU:HD11	1.95	0.48
1:A:1225:LYS:NZ	1:A:1229:ASP:OD2	2.46	0.48
1:B:2015:TYR:CE2	2:B:2201:CAC:C2	2.97	0.47
1:B:1488:PRO:HA	1:B:1493:LEU:HD23	1.96	0.47
1:B:1235:MET:SD	1:B:1311:ASP:HB3	2.55	0.47
1:B:1521:GLU:HB2	1:B:2101:GLN:HE22	1.78	0.47
1:A:1182:LEU:HD23	1:A:1360:LEU:HD13	1.97	0.47
1:B:1460:LEU:HB3	1:B:1469:LEU:HD13	1.96	0.47
1:B:1238:LEU:O	1:B:1266:LEU:HD12	2.15	0.46
1:B:1975:LEU:HD11	5:B:2205:2W4:H7	1.98	0.46
1:A:1890:ALA:HA	1:A:1915:THR:OG1	2.15	0.46
1:B:1890:ALA:HA	1:B:1915:THR:OG1	2.15	0.46
1:A:1235:MET:SD	1:A:1311:ASP:HB3	2.56	0.46
1:B:1882:PRO:HD2	2:B:2201:CAC:C2	2.45	0.46
1:B:2112:ALA:O	1:B:2113:GLU:C	2.54	0.46
1:A:1902:GLN:HE22	1:A:1931:ARG:HH22	1.64	0.45
1:A:2066:VAL:HG22	1:A:2088:MET:HE3	1.99	0.45
1:B:1228:LEU:HD11	1:B:1256:ILE:HG12	1.99	0.44
1:A:1261:SER:N	1:A:1262:PRO:CD	2.81	0.44
1:B:1247:ALA:HB3	1:B:1280:LEU:HD21	1.99	0.44
1:A:1209:LEU:HG	1:A:1215:LEU:CD1	2.48	0.44
1:B:1261:SER:N	1:B:1262:PRO:CD	2.81	0.44
1:A:1336:LEU:O	1:A:1405:ARG:NH2	2.51	0.43
1:B:2098:PHE:CD1	1:B:2106:LEU:HD13	2.53	0.43
1:B:1336:LEU:O	1:B:1405:ARG:NH1	2.51	0.43
1:A:1245:VAL:HG12	1:A:1246:LEU:HG	2.01	0.43
1:B:1287:LEU:HD22	1:B:1292:VAL:HG11	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1209:LEU:O	1:A:1215:LEU:HD12	2.18	0.43
1:B:1209:LEU:HD22	1:B:1215:LEU:HD11	1.98	0.43
1:B:2065:ASP:N	1:B:2070:VAL:HG21	2.34	0.43
1:B:2097:LEU:O	1:B:2101:GLN:HG2	2.19	0.43
1:B:2101:GLN:OE1	1:B:2101:GLN:CA	2.62	0.43
1:B:1287:LEU:HD22	1:B:1292:VAL:CG1	2.49	0.42
1:B:1446:ILE:HG23	1:B:1474:LEU:CD1	2.47	0.42
1:A:1882:PRO:HD2	2:A:2201:CAC:C1	2.50	0.42
1:A:1215:LEU:HD22	1:A:1347:LEU:HD11	2.01	0.42
1:A:1247:ALA:HB3	1:A:1280:LEU:HD21	2.02	0.41
1:A:1460:LEU:HB3	1:A:1469:LEU:HD13	2.01	0.41
1:B:1329:LEU:O	1:B:1333:VAL:HG23	2.21	0.41
1:A:1259:LEU:HD11	6:A:2324:HOH:O	2.19	0.41
1:A:1349:ARG:HB2	1:A:1371:ILE:HG22	2.01	0.41
1:B:1209:LEU:O	1:B:1215:LEU:HD12	2.21	0.41
1:B:1460:LEU:CB	1:B:1469:LEU:HD13	2.51	0.41
1:A:2098:PHE:CD1	1:A:2106:LEU:HD13	2.56	0.41
1:B:1245:VAL:HG12	1:B:1246:LEU:HG	2.02	0.40
1:A:1176:GLN:C	1:A:1179:PRO:HD2	2.42	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	599/660 (91%)	588 (98%)	11 (2%)	0	100	100
1	B	598/660 (91%)	587 (98%)	11 (2%)	0	100	100
All	All	1197/1320 (91%)	1175 (98%)	22 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	454/548 (83%)	450 (99%)	4 (1%)	84	93
1	B	462/548 (84%)	453 (98%)	9 (2%)	65	81
All	All	916/1096 (84%)	903 (99%)	13 (1%)	74	86

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1149	GLN
1	A	1206	ARG
1	A	1896	PHE
1	A	1996	TYR
1	B	1144	LEU
1	B	1174	SER
1	B	1206	ARG
1	B	1209	LEU
1	B	1284	GLN
1	B	1896	PHE
1	B	1996	TYR
1	B	2071	GLU
1	B	2100	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1110	GLN
1	A	1176	GLN
1	B	1135	GLN
1	B	1176	GLN

5.3.3 RNA

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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

10 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	CAC	A	2201	1	0,3,4	0.00	-	0,3,6	0.00	-
3	NDP	A	2202	-	42,52,52	0.75	1 (2%)	55,80,80	2.11	11 (20%)
4	SO4	A	2203	-	4,4,4	0.37	0	6,6,6	0.07	0
4	SO4	A	2204	-	4,4,4	0.42	0	6,6,6	0.07	0
5	2W4	A	2205	-	32,37,37	0.66	0	32,54,54	0.94	1 (3%)
2	CAC	B	2201	1	0,3,4	0.00	-	0,3,6	0.00	-
3	NDP	B	2202	-	42,52,52	0.74	1 (2%)	55,80,80	2.21	12 (21%)
4	SO4	B	2203	-	4,4,4	0.35	0	6,6,6	0.17	0
4	SO4	B	2204	-	4,4,4	0.38	0	6,6,6	0.08	0
5	2W4	B	2205	-	32,37,37	0.59	0	32,54,54	0.93	1 (3%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CAC	A	2201	1	-	0/0/0/0	0/0/0/0
3	NDP	A	2202	-	-	0/30/77/77	0/4/5/5
4	SO4	A	2203	-	-	0/0/0/0	0/0/0/0
4	SO4	A	2204	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	2W4	A	2205	-	-	0/19/31/31	0/4/6/6
2	CAC	B	2201	1	-	0/0/0/0	0/0/0/0
3	NDP	B	2202	-	-	0/30/77/77	0/4/5/5
4	SO4	B	2203	-	-	0/0/0/0	0/0/0/0
4	SO4	B	2204	-	-	0/0/0/0	0/0/0/0
5	2W4	B	2205	-	-	0/19/31/31	0/4/6/6

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	2202	NDP	O4B-C1B	2.46	1.44	1.41
3	A	2202	NDP	O4B-C1B	2.59	1.44	1.41

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	2202	NDP	N3A-C2A-N1A	-10.32	120.99	128.89
3	B	2202	NDP	N3A-C2A-N1A	-9.88	121.33	128.89
3	B	2202	NDP	C1D-N1N-C6N	-4.92	109.79	120.81
3	B	2202	NDP	O2B-P2B-O1X	-4.72	95.31	107.11
3	A	2202	NDP	C1D-N1N-C6N	-4.23	111.33	120.81
3	A	2202	NDP	C1D-N1N-C2N	-3.60	114.63	120.91
5	A	2205	2W4	C24-C23-C20	-3.47	117.22	120.39
5	B	2205	2W4	C24-C23-C20	-3.44	117.25	120.39
3	A	2202	NDP	C4B-O4B-C1B	-3.27	106.12	109.72
3	B	2202	NDP	C3N-C2N-N1N	-3.09	118.71	123.14
3	A	2202	NDP	C1B-N9A-C4A	-2.96	122.47	126.94
3	A	2202	NDP	C3N-C2N-N1N	-2.94	118.92	123.14
3	B	2202	NDP	PN-O3-PA	-2.77	124.94	132.73
3	B	2202	NDP	C4B-O4B-C1B	-2.63	106.83	109.72
3	A	2202	NDP	C4A-C5A-N7A	-2.55	107.13	109.48
3	B	2202	NDP	C1B-N9A-C4A	-2.48	123.19	126.94
3	A	2202	NDP	PN-O3-PA	-2.37	126.06	132.73
3	B	2202	NDP	C1D-N1N-C2N	-2.08	117.29	120.91
3	B	2202	NDP	O2B-C2B-C1B	2.05	118.00	110.02
3	B	2202	NDP	O2X-P2B-O1X	2.13	117.42	110.58
3	A	2202	NDP	P2B-O2B-C2B	2.79	128.24	121.56
3	A	2202	NDP	O2B-C2B-C1B	3.15	122.31	110.02
3	A	2202	NDP	O4D-C1D-N1N	3.30	115.03	108.07
3	B	2202	NDP	O4D-C1D-N1N	3.82	116.13	108.07
3	B	2202	NDP	P2B-O2B-C2B	5.25	134.16	121.56

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

6 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2201	CAC	2	0
3	A	2202	NDP	1	0
5	A	2205	2W4	1	0
2	B	2201	CAC	2	0
3	B	2202	NDP	1	0
5	B	2205	2W4	2	0

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, 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	610/660 (92%)	0.64	74 (12%) 6 9	25, 39, 67, 86	2 (0%)
1	B	610/660 (92%)	0.59	70 (11%) 6 10	22, 37, 70, 92	3 (0%)
All	All	1220/1320 (92%)	0.62	144 (11%) 6 10	22, 38, 70, 92	5 (0%)

All (144) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	2075	THR	11.6
1	A	2070	VAL	9.1
1	A	2066	VAL	8.0
1	A	1145	VAL	7.3
1	B	1150	THR	6.9
1	A	1185	ALA	6.9
1	A	2067	GLY	6.2
1	A	2069	LEU	6.0
1	A	1968	VAL	5.4
1	B	1189	GLN	5.3
1	A	2076	ASN	5.1
1	B	1201	VAL	5.1
1	B	1173	PRO	5.0
1	B	1184	ALA	5.0
1	B	1368	GLY	4.9
1	B	1175	GLN	4.9
1	B	1359	PHE	4.7
1	B	1188	LEU	4.7
1	A	2068	ILE	4.5
1	A	1200	GLN	4.5
1	A	1362	SER	4.5
1	A	2077	ASP	4.4
1	A	2058	VAL	4.4
1	A	1140	LEU	4.2

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Mol	Chain	Res	Type	RSRZ
1	B	1186	CYS	4.2
1	A	1359	PHE	4.2
1	B	1174	SER	4.2
1	A	1522	ASP	4.1
1	B	1183	SER	4.1
1	B	2070	VAL	4.0
1	B	1202	LEU	4.0
1	B	1491	ALA	4.0
1	B	1200	GLN	3.9
1	B	1132	ALA	3.9
1	A	1184	ALA	3.9
1	B	1482	HIS	3.8
1	A	1361	THR	3.8
1	B	1185	ALA	3.7
1	B	1187	ARG	3.7
1	B	1140	LEU	3.7
1	A	1132	ALA	3.6
1	A	1148	LEU	3.4
1	B	1522	ASP	3.4
1	A	1186	CYS	3.3
1	A	1343	LEU	3.3
1	A	1436	ASP	3.3
1	B	2039	SER	3.3
1	A	1282	ALA	3.3
1	A	2019	PHE	3.3
1	A	1480	THR	3.3
1	B	1276	HIS	3.3
1	A	1147	ALA	3.2
1	A	1369	GLN	3.2
1	B	1145	VAL	3.2
1	B	1520	GLU	3.1
1	A	2065	ASP	3.1
1	B	1289	GLN	3.1
1	A	1199	ALA	3.1
1	A	1890	ALA	3.1
1	A	2018	VAL	3.0
1	B	1290	HIS	3.0
1	A	2020	SER	3.0
1	B	1436	ASP	2.9
1	B	1521	GLU	2.9
1	B	1454	VAL	2.9
1	A	1889	ILE	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	1471	CYS	2.9
1	A	1971	LEU	2.9
1	A	1447	ASN	2.9
1	A	1387	ARG	2.8
1	B	1285	ALA	2.8
1	B	1453	VAL	2.8
1	A	2060	TRP	2.8
1	B	1455	GLY	2.8
1	A	1488	PRO	2.8
1	B	2058	VAL	2.8
1	B	1408	PRO	2.8
1	B	2040	ALA	2.8
1	A	1342	LEU	2.7
1	A	1201	VAL	2.7
1	A	2100	ASN	2.7
1	A	1276	HIS	2.7
1	B	1410	ASP	2.6
1	A	1969	PHE	2.6
1	A	1315	CYS	2.6
1	A	1173	PRO	2.6
1	A	1408	PRO	2.6
1	A	2057	ALA	2.6
1	B	2069	LEU	2.6
1	B	1480	THR	2.6
1	B	1409	GLN	2.6
1	B	1969	PHE	2.5
1	B	1199	ALA	2.5
1	A	1130	GLU	2.5
1	B	2071	GLU	2.5
1	B	1181	LEU	2.5
1	B	1456	LEU	2.5
1	A	2047	LYS	2.5
1	B	1889	ILE	2.5
1	B	1968	VAL	2.5
1	B	1288	GLN	2.4
1	A	1402	LEU	2.4
1	B	1203	ALA	2.4
1	A	1314	VAL	2.4
1	A	2035	GLY	2.4
1	B	1314	VAL	2.4
1	A	1110	GLN	2.3
1	B	1387	ARG	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	1970	ASN	2.3
1	A	1357	VAL	2.3
1	A	1183	SER	2.3
1	A	1150	THR	2.3
1	A	1479	SER	2.3
1	B	1971	LEU	2.3
1	A	1317	CYS	2.2
1	B	1315	CYS	2.2
1	B	1301	ASP	2.2
1	B	1286	GLU	2.2
1	B	1343	LEU	2.2
1	B	2100	ASN	2.2
1	B	2019	PHE	2.2
1	A	1207	PRO	2.2
1	A	1421	SER	2.2
1	A	1434	ASP	2.2
1	B	1147	ALA	2.2
1	A	1360	LEU	2.2
1	A	2101	GLN	2.2
1	B	1317	CYS	2.2
1	B	1420	THR	2.1
1	A	1433	ALA	2.1
1	A	1518	LEU	2.1
1	B	1890	ALA	2.1
1	A	1202	LEU	2.1
1	A	2017	VAL	2.1
1	A	1318	ALA	2.0
1	B	2101	GLN	2.0
1	A	1970	ASN	2.0
1	B	1349	ARG	2.0
1	B	1452	GLY	2.0
1	A	1144	LEU	2.0
1	B	1208	LYS	2.0
1	A	2024	CYS	2.0
1	B	1246	LEU	2.0
1	A	1484	PRO	2.0

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(\AA^2)	Q<0.9
4	SO4	A	2203	5/5	0.93	0.22	1.29	60,63,65,66	0
4	SO4	B	2203	5/5	0.97	0.18	0.53	49,51,52,54	0
4	SO4	A	2204	5/5	0.89	0.18	0.52	74,74,77,78	0
2	CAC	A	2201	4/5	0.96	0.15	0.10	38,38,40,41	0
2	CAC	B	2201	4/5	0.96	0.15	-0.23	39,40,43,44	0
5	2W4	B	2205	32/32	0.94	0.13	-0.48	24,25,28,30	0
4	SO4	B	2204	5/5	0.94	0.12	-0.62	65,65,70,72	0
3	NDP	A	2202	48/48	0.95	0.14	-0.63	26,29,33,34	0
5	2W4	A	2205	32/32	0.94	0.13	-0.64	26,27,28,29	0
3	NDP	B	2202	48/48	0.96	0.12	-1.15	24,26,30,31	0

6.5 Other polymers [i](#)

There are no such residues in this entry.