Full wwPDB X-ray Structure Validation Report (i)

Oct 24, 2023 – 09:00 PM EDT

PDB ID	:	3GIG
Title	:	Crystal structure of phosphorylated DesKC in complex with AMP-PCP
Authors	:	Trajtenberg, F.; Albanesi, D.; Alzari, P.M.; Buschiazzo, A.; de Mendoza, D.
Deposited on	:	2009-03-05
Resolution	:	3.50 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

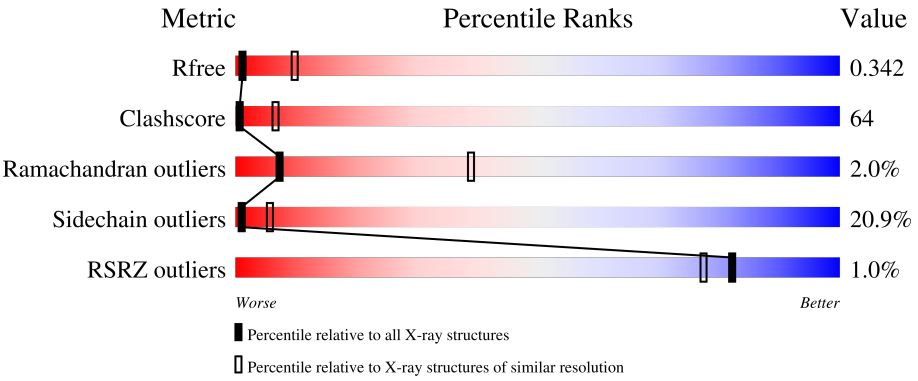
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	218	33% 47% 16% ·
2	B	218	2% 43% 40% 11% 6%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	ACP	A	1303	-	-	X	-
3	ACP	B	1303	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 3031 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 Sensor histidine kinase desK.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	212	Total	C	N	O	S	0	0	0
			1542	968	267	301	6			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	153	GLY	-	expression tag	UNP O34757

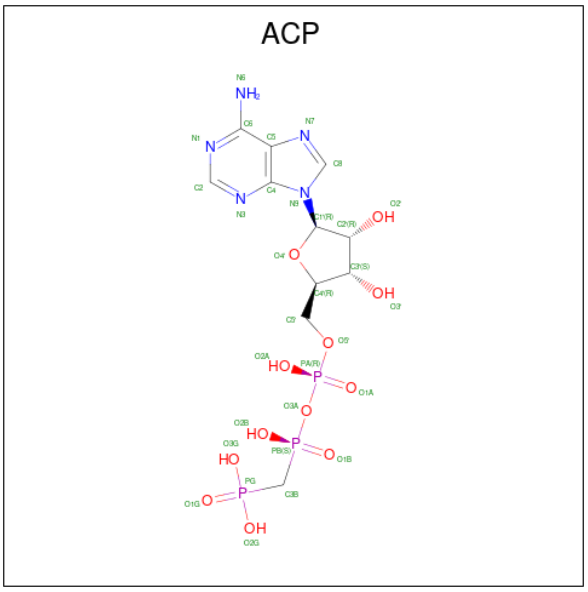
- Molecule 2 is a protein called Sensor histidine kinase desK.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	B	205	Total	C	N	O	P	S	0	0	0
			1425	877	253	289	1	5			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	153	GLY	-	expression tag	UNP O34757

- Molecule 3 is PHOSPHOMETHYLPHOSPHONIC ACID ADENYLATE ESTER (three-letter code: ACP) (formula: $C_{11}H_{18}N_5O_{12}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
3	B	1	Total	C	N	O	P	0	0
			31	11	5	12	3		

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

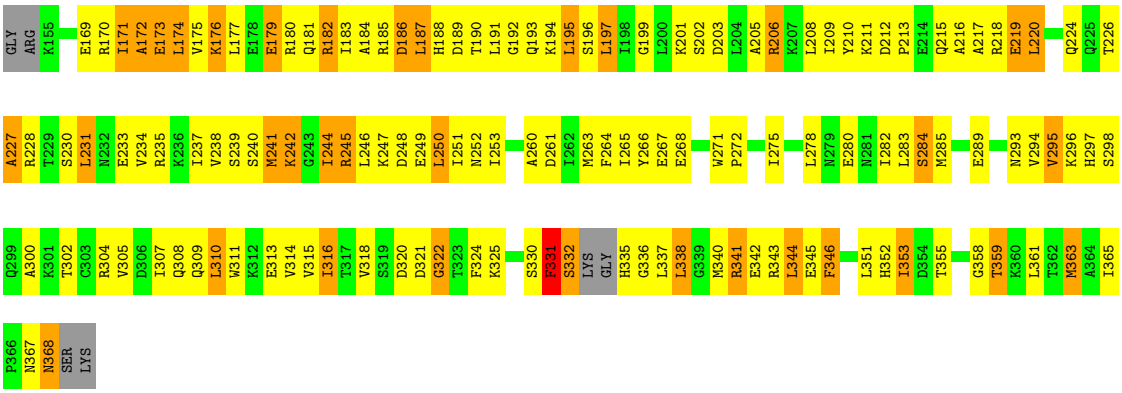
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Mg	0	0
			1	1		
4	B	1	Total	Mg	0	0
			1	1		

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.

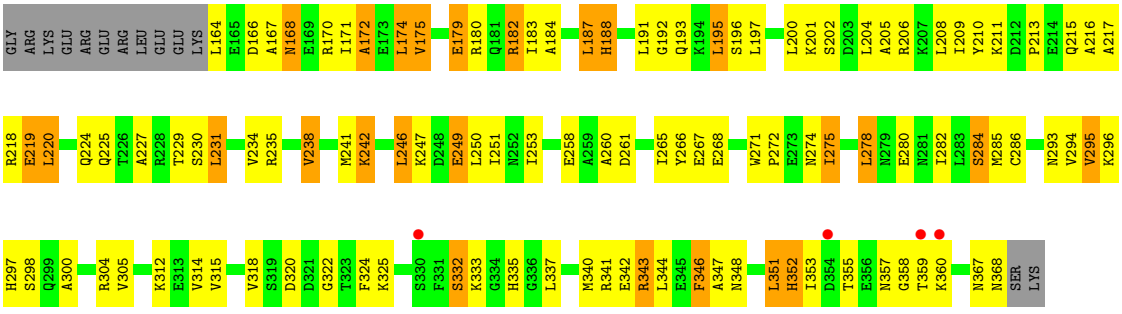
• Molecule 1: Sensor histidine kinase desK

Chain A:



• Molecule 2: Sensor histidine kinase desK

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	94.63Å 94.63Å 162.46Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	28.85 – 3.50 28.85 – 3.50	Depositor EDS
% Data completeness (in resolution range)	99.5 (28.85-3.50) 99.5 (28.85-3.50)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.08 (at 3.47Å)	Xtriage
Refinement program	PHENIX 2009_02_15_2320_3	Depositor
R, R_{free}	0.287 , 0.335 0.294 , 0.342	Depositor DCC
R_{free} test set	896 reflections (8.15%)	wwPDB-VP
Wilson B-factor (Å^2)	92.5	Xtriage
Anisotropy	0.121	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.26 , 110.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.074 for -h,-k,l	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	3031	wwPDB-VP
Average B, all atoms (Å^2)	147.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.71% 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: ACP, MG, NEP

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	0.89	1/1557 (0.1%)	1.10	6/2112 (0.3%)
2	B	0.74	0/1421	0.97	3/1936 (0.2%)
All	All	0.82	1/2978 (0.0%)	1.04	9/4048 (0.2%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	182	ARG	C-O	5.99	1.34	1.23

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	250	LEU	CA-CB-CG	8.42	134.66	115.30
2	B	174	LEU	CA-CB-CG	6.68	130.67	115.30
2	B	187	LEU	CB-CG-CD2	-6.12	100.60	111.00
1	A	239	SER	N-CA-C	-5.83	95.27	111.00
2	B	187	LEU	CB-CA-C	-5.62	99.52	110.20
1	A	197	LEU	CB-CG-CD2	-5.41	101.80	111.00
1	A	235	ARG	CB-CA-C	-5.19	100.02	110.40
1	A	344	LEU	CB-CG-CD2	-5.13	102.28	111.00
1	A	310	LEU	CA-CB-CG	-5.03	103.74	115.30

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	1542	0	1446	229	0
2	B	1425	0	1252	183	0
3	A	31	0	14	16	0
3	B	31	0	14	12	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
All	All	3031	0	2726	370	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 64.

All (370) 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:246:LEU:HB3	2:B:271:TRP:CH2	1.46	1.47
1:A:241:MET:HG2	2:B:180:ARG:CD	1.47	1.45
2:B:231:LEU:HD12	2:B:235:ARG:NE	1.13	1.40
2:B:231:LEU:O	2:B:235:ARG:HG2	1.21	1.28
2:B:242:LYS:HD3	2:B:242:LYS:N	1.44	1.20
1:A:241:MET:CG	2:B:180:ARG:HD2	1.72	1.20
1:A:188:HIS:CE1	2:B:235:ARG:HH12	1.60	1.18
1:A:188:HIS:CE1	2:B:235:ARG:NH1	2.12	1.18
2:B:231:LEU:CD1	2:B:235:ARG:NE	2.10	1.15
2:B:246:LEU:CB	2:B:271:TRP:CH2	2.33	1.10
1:A:179:GLU:OE1	1:A:179:GLU:HA	1.52	1.07
1:A:241:MET:HG2	2:B:180:ARG:HD2	1.07	1.06
2:B:242:LYS:H	2:B:242:LYS:CD	1.67	1.06
1:A:245:ARG:HH11	1:A:245:ARG:HB2	1.20	1.04
1:A:171:ILE:O	1:A:175:VAL:HG23	1.60	1.01
1:A:180:ARG:O	1:A:183:ILE:HG12	1.57	1.01
2:B:225:GLN:O	2:B:229:THR:HG23	1.63	0.97
1:A:331:PHE:HD1	1:A:338:LEU:HD23	1.30	0.96
2:B:182:ARG:O	2:B:182:ARG:HD3	1.63	0.96
1:A:188:HIS:ND1	2:B:235:ARG:NH1	2.15	0.95
1:A:346:PHE:HD2	2:B:174:LEU:HD12	1.29	0.95
1:A:245:ARG:HB2	1:A:245:ARG:NH1	1.82	0.94
1:A:322:GLY:O	1:A:358:GLY:HA2	1.70	0.91
1:A:245:ARG:NH1	1:A:245:ARG:CB	2.33	0.91
2:B:246:LEU:HB3	2:B:271:TRP:HH2	0.83	0.91

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:246:LEU:CB	2:B:271:TRP:HH2	1.77	0.91
1:A:171:ILE:HA	1:A:174:LEU:HD12	1.52	0.91
1:A:188:HIS:HE1	2:B:235:ARG:HH12	1.13	0.91
1:A:241:MET:HG2	2:B:180:ARG:HD3	1.52	0.90
1:A:195:LEU:HD22	2:B:227:ALA:O	1.71	0.90
1:A:271:TRP:CG	1:A:272:PRO:HD2	2.04	0.90
1:A:316:ILE:HB	1:A:363:MET:CE	2.01	0.90
2:B:231:LEU:HD12	2:B:235:ARG:CZ	2.01	0.90
2:B:300:ALA:HB2	2:B:322:GLY:H	1.37	0.89
1:A:300:ALA:HB2	1:A:322:GLY:H	1.37	0.89
2:B:231:LEU:O	2:B:235:ARG:CG	2.17	0.87
2:B:271:TRP:CG	2:B:272:PRO:HD2	2.10	0.87
2:B:351:LEU:C	2:B:351:LEU:HD23	1.96	0.86
1:A:209:ILE:O	1:A:213:PRO:HG3	1.76	0.86
1:A:250:LEU:O	1:A:253:ILE:HG12	1.76	0.85
2:B:231:LEU:CD1	2:B:235:ARG:HE	1.77	0.85
1:A:192:GLY:HA2	2:B:231:LEU:HD21	1.58	0.85
1:A:240:SER:O	1:A:241:MET:HB2	1.74	0.85
1:A:307:ILE:HG12	1:A:316:ILE:HG23	1.58	0.85
2:B:231:LEU:HD12	2:B:235:ARG:CD	2.05	0.85
2:B:344:LEU:HD12	2:B:351:LEU:HB2	1.56	0.84
2:B:322:GLY:O	2:B:358:GLY:HA2	1.77	0.84
2:B:215:GLN:NE2	2:B:218:ARG:HH11	1.76	0.84
1:A:351:LEU:C	1:A:351:LEU:HD23	1.99	0.83
1:A:231:LEU:H	1:A:231:LEU:HD12	1.45	0.82
1:A:195:LEU:HD23	2:B:227:ALA:HB1	1.63	0.81
1:A:215:GLN:NE2	1:A:218:ARG:HH11	1.79	0.81
1:A:297:HIS:CD2	3:A:1303:ACP:H2'	2.16	0.81
1:A:241:MET:HG2	2:B:180:ARG:CG	2.11	0.80
2:B:183:ILE:O	2:B:187:LEU:HD23	1.82	0.80
2:B:182:ARG:HD3	2:B:182:ARG:C	2.02	0.79
1:A:176:LYS:HB3	1:A:176:LYS:HZ2	1.45	0.79
1:A:335:HIS:HB3	3:A:1303:ACP:O2A	1.81	0.79
2:B:247:LYS:O	2:B:251:ILE:HG13	1.83	0.78
1:A:181:GLN:HB3	2:B:241:MET:SD	2.24	0.78
1:A:346:PHE:CD2	2:B:174:LEU:HD12	2.17	0.78
1:A:314:VAL:HG23	1:A:367:ASN:HB2	1.66	0.78
1:A:227:ALA:O	1:A:231:LEU:HD12	1.85	0.77
1:A:249:GLU:O	1:A:253:ILE:HG23	1.84	0.77
2:B:231:LEU:C	2:B:235:ARG:HG2	2.05	0.77
1:A:250:LEU:HA	1:A:253:ILE:CD1	2.15	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:187:LEU:HD23	1:A:187:LEU:H	1.50	0.76
1:A:181:GLN:CG	2:B:241:MET:SD	2.74	0.76
1:A:173:GLU:O	1:A:177:LEU:HG	1.86	0.76
1:A:176:LYS:HB3	1:A:176:LYS:NZ	2.00	0.76
1:A:346:PHE:CE2	2:B:171:ILE:HG23	2.20	0.76
2:B:335:HIS:HB3	3:B:1303:ACP:O2A	1.84	0.75
2:B:246:LEU:CB	2:B:271:TRP:CZ2	2.69	0.75
1:A:344:LEU:HD12	1:A:351:LEU:HB2	1.67	0.75
2:B:346:PHE:O	2:B:346:PHE:HD1	1.68	0.74
1:A:179:GLU:OE1	1:A:179:GLU:CA	2.31	0.74
1:A:265:ILE:HB	1:A:304:ARG:HA	1.71	0.73
2:B:231:LEU:HD12	2:B:235:ARG:HE	0.92	0.73
2:B:351:LEU:HD23	2:B:351:LEU:O	1.87	0.73
1:A:331:PHE:CD1	1:A:338:LEU:HD23	2.21	0.73
1:A:341:ARG:CZ	1:A:345:GLU:CB	2.67	0.72
1:A:324:PHE:CD2	1:A:355:THR:HG21	2.24	0.72
1:A:337:LEU:CD1	3:A:1303:ACP:H5'1	2.20	0.72
1:A:245:ARG:CZ	1:A:245:ARG:HB3	2.20	0.72
1:A:337:LEU:HD11	3:A:1303:ACP:H5'1	1.71	0.72
1:A:191:LEU:O	1:A:195:LEU:HB2	1.90	0.71
1:A:309:GLN:HE22	1:A:367:ASN:ND2	1.87	0.71
2:B:300:ALA:HB2	2:B:322:GLY:N	2.05	0.71
1:A:245:ARG:HH11	1:A:245:ARG:CB	1.93	0.71
2:B:265:ILE:HB	2:B:304:ARG:HA	1.73	0.71
1:A:245:ARG:NH1	1:A:245:ARG:HB3	2.06	0.71
2:B:246:LEU:HB3	2:B:271:TRP:CZ2	2.21	0.71
1:A:245:ARG:NH1	1:A:280:GLU:OE2	2.22	0.70
1:A:241:MET:CG	2:B:180:ARG:CD	2.39	0.70
2:B:312:LYS:O	2:B:367:ASN:CB	2.40	0.70
1:A:224:GLN:O	1:A:228:ARG:HG3	1.92	0.70
2:B:191:LEU:O	2:B:195:LEU:HB2	1.92	0.70
1:A:246:LEU:O	1:A:247:LYS:C	2.30	0.69
1:A:245:ARG:NH1	1:A:280:GLU:OE1	2.25	0.69
2:B:242:LYS:N	2:B:242:LYS:CD	2.35	0.69
1:A:195:LEU:HD21	2:B:227:ALA:HA	1.74	0.69
1:A:300:ALA:HB2	1:A:322:GLY:N	2.07	0.69
1:A:351:LEU:HD23	1:A:351:LEU:O	1.92	0.69
2:B:182:ARG:C	2:B:182:ARG:CD	2.59	0.68
2:B:337:LEU:CD1	3:B:1303:ACP:H5'1	2.23	0.68
1:A:238:VAL:HG13	2:B:184:ALA:HB1	1.75	0.67
1:A:316:ILE:HB	1:A:363:MET:HE3	1.77	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:181:GLN:HG2	2:B:241:MET:SD	2.35	0.66
1:A:195:LEU:CD2	2:B:227:ALA:O	2.43	0.66
1:A:224:GLN:HG3	2:B:202:SER:HB3	1.77	0.66
2:B:191:LEU:HD21	2:B:230:SER:HB3	1.77	0.66
1:A:271:TRP:CD2	1:A:272:PRO:HD2	2.30	0.66
2:B:337:LEU:HG	3:B:1303:ACP:O2A	1.95	0.66
1:A:187:LEU:HD23	1:A:187:LEU:N	2.10	0.66
2:B:209:ILE:O	2:B:213:PRO:HG3	1.96	0.65
1:A:294:VAL:HG22	3:A:1303:ACP:HN62	1.60	0.65
2:B:215:GLN:HE22	2:B:218:ARG:HH11	1.42	0.65
1:A:245:ARG:NH1	1:A:280:GLU:CD	2.50	0.65
2:B:246:LEU:HB2	2:B:271:TRP:CZ2	2.31	0.65
2:B:242:LYS:HD3	2:B:242:LYS:H	0.72	0.64
2:B:324:PHE:CD2	2:B:355:THR:HG21	2.32	0.64
2:B:164:LEU:O	2:B:168:ASN:HB2	1.98	0.64
2:B:192:GLY:O	2:B:193:GLN:C	2.36	0.64
2:B:260:ALA:O	2:B:261:ASP:HB2	1.98	0.64
1:A:215:GLN:HE22	1:A:218:ARG:HH11	1.44	0.64
1:A:228:ARG:HA	1:A:231:LEU:CD1	2.27	0.64
2:B:297:HIS:HB2	3:B:1303:ACP:C2	2.28	0.64
1:A:180:ARG:O	1:A:183:ILE:CG1	2.41	0.64
1:A:181:GLN:NE2	2:B:241:MET:SD	2.71	0.63
1:A:245:ARG:HH12	1:A:280:GLU:CD	2.01	0.63
1:A:298:SER:HB3	3:A:1303:ACP:N1	2.12	0.63
1:A:203:ASP:HA	2:B:224:GLN:NE2	2.14	0.63
1:A:305:VAL:HG22	1:A:318:VAL:HG22	1.80	0.63
2:B:234:VAL:O	2:B:238:VAL:HG23	1.99	0.63
1:A:169:GLU:O	1:A:172:ALA:HB3	1.97	0.63
2:B:295:VAL:HG12	2:B:295:VAL:O	1.99	0.63
1:A:271:TRP:CG	1:A:272:PRO:CD	2.82	0.63
2:B:337:LEU:HD12	3:B:1303:ACP:H5'1	1.82	0.62
1:A:245:ARG:CB	1:A:245:ARG:CZ	2.75	0.62
1:A:231:LEU:HD12	1:A:231:LEU:N	2.14	0.62
2:B:215:GLN:NE2	2:B:215:GLN:HA	2.14	0.62
1:A:353:ILE:HG13	1:A:361:LEU:HD23	1.81	0.61
1:A:316:ILE:HB	1:A:363:MET:HE2	1.81	0.61
1:A:298:SER:HA	3:A:1303:ACP:H2	1.82	0.61
1:A:181:GLN:CB	2:B:241:MET:SD	2.89	0.61
1:A:250:LEU:HA	1:A:253:ILE:HD11	1.82	0.61
1:A:295:VAL:HG12	1:A:295:VAL:O	2.01	0.61
1:A:297:HIS:HB2	3:A:1303:ACP:N3	2.16	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:264:PHE:CZ	1:A:266:TYR:HB2	2.36	0.60
2:B:166:ASP:OD1	2:B:166:ASP:O	2.20	0.60
1:A:322:GLY:O	1:A:358:GLY:CA	2.46	0.59
1:A:298:SER:HB2	1:A:320:ASP:OD1	2.01	0.59
2:B:271:TRP:CD2	2:B:272:PRO:HD2	2.37	0.59
1:A:202:SER:CB	2:B:224:GLN:HG3	2.32	0.59
2:B:215:GLN:HA	2:B:215:GLN:HE21	1.65	0.59
1:A:346:PHE:O	1:A:346:PHE:CD1	2.56	0.59
1:A:245:ARG:HB2	1:A:280:GLU:OE1	2.02	0.59
2:B:201:LYS:HD2	2:B:219:GLU:HG3	1.85	0.59
1:A:293:ASN:ND2	3:A:1303:ACP:O1A	2.29	0.58
1:A:337:LEU:HD11	3:A:1303:ACP:C5'	2.33	0.58
1:A:187:LEU:N	1:A:187:LEU:CD2	2.65	0.58
1:A:332:SER:O	1:A:335:HIS:HB2	2.02	0.58
1:A:246:LEU:HB3	1:A:271:TRP:HH2	1.68	0.58
2:B:205:ALA:CB	2:B:220:LEU:HD21	2.33	0.58
1:A:190:THR:OG1	1:A:191:LEU:N	2.36	0.58
2:B:167:ALA:O	2:B:171:ILE:CD1	2.52	0.58
1:A:250:LEU:HA	1:A:253:ILE:HD13	1.86	0.57
1:A:172:ALA:O	1:A:173:GLU:C	2.42	0.57
1:A:227:ALA:O	1:A:231:LEU:CD1	2.53	0.57
1:A:266:TYR:CD2	1:A:267:GLU:N	2.72	0.57
1:A:309:GLN:HE22	1:A:367:ASN:HD22	1.51	0.57
2:B:322:GLY:O	2:B:358:GLY:CA	2.53	0.57
1:A:181:GLN:O	1:A:182:ARG:C	2.43	0.56
2:B:182:ARG:O	2:B:182:ARG:CD	2.47	0.56
1:A:201:LYS:HD2	1:A:219:GLU:HG3	1.87	0.56
1:A:215:GLN:NE2	1:A:215:GLN:HA	2.19	0.56
1:A:247:LYS:HG2	1:A:271:TRP:CZ2	2.39	0.56
1:A:231:LEU:HG	2:B:195:LEU:HD22	1.88	0.56
2:B:271:TRP:CG	2:B:272:PRO:CD	2.87	0.56
1:A:195:LEU:CD2	2:B:227:ALA:HA	2.36	0.56
1:A:215:GLN:NE2	1:A:218:ARG:NH1	2.53	0.56
2:B:179:GLU:HG2	2:B:182:ARG:HG2	1.88	0.55
2:B:335:HIS:CE1	3:B:1303:ACP:H3B1	2.40	0.55
1:A:246:LEU:HB3	1:A:271:TRP:CH2	2.41	0.55
2:B:249:GLU:O	2:B:253:ILE:HG23	2.06	0.55
1:A:250:LEU:HD21	1:A:266:TYR:CE1	2.41	0.55
2:B:167:ALA:O	2:B:171:ILE:HD13	2.05	0.55
2:B:266:TYR:CD2	2:B:267:GLU:N	2.74	0.55
1:A:177:LEU:N	1:A:177:LEU:HD23	2.20	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:ARG:O	1:A:342:GLU:C	2.43	0.55
1:A:283:LEU:CD2	1:A:316:ILE:HG13	2.37	0.55
2:B:351:LEU:C	2:B:351:LEU:CD2	2.70	0.55
1:A:215:GLN:HA	1:A:215:GLN:HE21	1.71	0.55
1:A:195:LEU:CD2	2:B:227:ALA:CA	2.85	0.55
2:B:337:LEU:HD11	3:B:1303:ACP:H5'1	1.88	0.55
1:A:206:ARG:HG3	2:B:217:ALA:HA	1.89	0.54
1:A:264:PHE:CE1	1:A:266:TYR:HB2	2.42	0.54
1:A:346:PHE:O	1:A:346:PHE:HD1	1.90	0.54
1:A:241:MET:HG3	2:B:180:ARG:HD2	1.81	0.54
2:B:282:ILE:O	2:B:285:MET:HB2	2.07	0.54
1:A:228:ARG:HA	1:A:231:LEU:HD13	1.90	0.54
1:A:234:VAL:HA	1:A:237:ILE:HB	1.89	0.54
1:A:294:VAL:HG22	3:A:1303:ACP:N6	2.22	0.54
1:A:297:HIS:O	1:A:325:LYS:NZ	2.36	0.54
1:A:300:ALA:CB	1:A:322:GLY:H	2.14	0.54
2:B:298:SER:HB2	2:B:320:ASP:OD1	2.07	0.54
2:B:215:GLN:NE2	2:B:218:ARG:NH1	2.49	0.53
2:B:274:ASN:OD1	2:B:274:ASN:O	2.26	0.53
2:B:205:ALA:HB1	2:B:220:LEU:HD21	1.89	0.53
2:B:187:LEU:N	2:B:187:LEU:CD2	2.72	0.53
2:B:305:VAL:HG22	2:B:318:VAL:HG22	1.91	0.53
1:A:227:ALA:O	1:A:228:ARG:C	2.47	0.53
1:A:314:VAL:CG2	1:A:367:ASN:HD22	2.21	0.53
1:A:340:MET:O	1:A:344:LEU:HG	2.08	0.53
2:B:346:PHE:O	2:B:346:PHE:CD1	2.57	0.53
2:B:346:PHE:CD1	2:B:346:PHE:C	2.82	0.53
1:A:179:GLU:O	1:A:180:ARG:C	2.45	0.52
1:A:187:LEU:O	1:A:188:HIS:C	2.45	0.52
1:A:283:LEU:HD22	1:A:316:ILE:HD11	1.91	0.52
1:A:195:LEU:HD13	2:B:231:LEU:HD23	1.91	0.52
2:B:210:TYR:O	2:B:213:PRO:HD3	2.09	0.52
1:A:199:GLY:O	1:A:202:SER:HB2	2.10	0.52
1:A:351:LEU:C	1:A:351:LEU:CD2	2.70	0.52
2:B:294:VAL:C	2:B:296:LYS:H	2.13	0.52
1:A:220:LEU:N	1:A:220:LEU:HD23	2.24	0.52
1:A:294:VAL:C	1:A:296:LYS:H	2.13	0.52
2:B:179:GLU:HG2	2:B:182:ARG:CG	2.40	0.52
1:A:324:PHE:CD2	1:A:355:THR:CG2	2.93	0.51
2:B:266:TYR:CE2	2:B:268:GLU:N	2.78	0.51
2:B:347:ALA:O	2:B:348:ASN:HB2	2.09	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:278:LEU:HD12	2:B:278:LEU:O	2.10	0.51
2:B:220:LEU:N	2:B:220:LEU:HD23	2.24	0.51
2:B:208:LEU:N	2:B:208:LEU:HD23	2.25	0.51
1:A:209:ILE:CG2	2:B:213:PRO:HB3	2.40	0.51
1:A:241:MET:HG2	2:B:180:ARG:HG2	1.93	0.51
1:A:246:LEU:O	1:A:249:GLU:N	2.43	0.51
2:B:346:PHE:HD1	2:B:346:PHE:C	2.15	0.51
1:A:181:GLN:CD	2:B:241:MET:SD	2.89	0.50
1:A:195:LEU:HD23	2:B:227:ALA:CB	2.39	0.50
2:B:340:MET:O	2:B:344:LEU:HG	2.12	0.50
1:A:246:LEU:HD12	1:A:284:SER:OG	2.12	0.49
2:B:271:TRP:CD1	2:B:272:PRO:N	2.79	0.49
1:A:330:SER:O	1:A:332:SER:N	2.41	0.49
2:B:171:ILE:O	2:B:175:VAL:HG22	2.11	0.49
1:A:210:TYR:O	1:A:213:PRO:HD3	2.13	0.49
1:A:202:SER:HB3	2:B:224:GLN:HG3	1.95	0.49
2:B:271:TRP:CD1	2:B:271:TRP:C	2.85	0.49
2:B:341:ARG:O	2:B:342:GLU:C	2.51	0.49
1:A:298:SER:CB	3:A:1303:ACP:N1	2.75	0.49
2:B:188:NEP:ND1	2:B:188:NEP:C	2.76	0.49
1:A:266:TYR:CE2	1:A:268:GLU:N	2.81	0.49
1:A:245:ARG:O	1:A:246:LEU:C	2.51	0.48
1:A:337:LEU:HG	3:A:1303:ACP:PA	2.53	0.48
1:A:170:ARG:O	1:A:174:LEU:HG	2.12	0.48
1:A:250:LEU:HD11	1:A:271:TRP:CZ3	2.48	0.48
1:A:271:TRP:CD1	1:A:272:PRO:N	2.82	0.48
1:A:181:GLN:O	1:A:184:ALA:N	2.47	0.48
1:A:263:MET:CB	1:A:302:THR:HG23	2.44	0.48
2:B:297:HIS:HB2	3:B:1303:ACP:N3	2.29	0.48
1:A:188:HIS:O	1:A:189:ASP:C	2.50	0.48
2:B:250:LEU:O	2:B:253:ILE:HG12	2.14	0.48
1:A:238:VAL:HG12	1:A:242:LYS:HG3	1.96	0.48
2:B:171:ILE:O	2:B:175:VAL:CG2	2.62	0.48
2:B:293:ASN:ND2	3:B:1303:ACP:O1A	2.46	0.48
2:B:305:VAL:HG22	2:B:318:VAL:HA	1.94	0.47
1:A:308:GLN:HB2	1:A:310:LEU:HD11	1.96	0.47
1:A:353:ILE:HD11	1:A:359:THR:HG22	1.95	0.47
2:B:172:ALA:O	2:B:174:LEU:N	2.47	0.47
1:A:202:SER:HB2	2:B:224:GLN:HG3	1.95	0.47
2:B:192:GLY:O	2:B:195:LEU:N	2.47	0.47
2:B:231:LEU:CD1	2:B:235:ARG:CD	2.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:300:ALA:CB	2:B:322:GLY:H	2.19	0.47
1:A:234:VAL:HG12	1:A:238:VAL:HG23	1.96	0.47
1:A:300:ALA:HB1	1:A:321:ASP:OD1	2.15	0.47
1:A:305:VAL:HG22	1:A:318:VAL:HA	1.95	0.47
2:B:343:ARG:HD3	2:B:343:ARG:HA	1.81	0.47
1:A:230:SER:O	1:A:233:GLU:N	2.47	0.47
1:A:205:ALA:HB3	2:B:220:LEU:CD1	2.44	0.47
2:B:332:SER:O	2:B:335:HIS:HB2	2.14	0.47
1:A:245:ARG:O	1:A:248:ASP:N	2.47	0.46
2:B:166:ASP:OD1	2:B:170:ARG:CB	2.63	0.46
2:B:235:ARG:HA	2:B:238:VAL:HG23	1.96	0.46
1:A:193:GLN:O	1:A:194:LYS:C	2.54	0.46
1:A:250:LEU:HD21	1:A:266:TYR:HE1	1.81	0.46
1:A:247:LYS:HE2	1:A:271:TRP:CE2	2.51	0.46
1:A:305:VAL:CG2	1:A:318:VAL:HG22	2.46	0.46
1:A:298:SER:O	1:A:325:LYS:NZ	2.48	0.46
2:B:210:TYR:O	2:B:211:LYS:C	2.53	0.46
1:A:282:ILE:O	1:A:285:MET:HB2	2.15	0.46
2:B:278:LEU:HD12	2:B:278:LEU:C	2.35	0.46
1:A:185:ARG:O	1:A:186:ASP:C	2.55	0.45
2:B:351:LEU:C	2:B:352:HIS:ND1	2.70	0.45
1:A:205:ALA:HB3	2:B:220:LEU:HD12	1.99	0.45
1:A:367:ASN:HB3	1:A:368:ASN:H	1.60	0.45
2:B:231:LEU:CD1	2:B:235:ARG:CZ	2.80	0.45
1:A:266:TYR:OH	1:A:268:GLU:HG3	2.17	0.45
1:A:338:LEU:HD22	1:A:338:LEU:HA	1.73	0.45
2:B:208:LEU:O	2:B:209:ILE:C	2.54	0.45
2:B:234:VAL:O	2:B:238:VAL:CG2	2.65	0.45
2:B:187:LEU:HA	2:B:187:LEU:HD22	1.74	0.44
1:A:208:LEU:O	1:A:209:ILE:C	2.56	0.44
1:A:215:GLN:HE21	1:A:215:GLN:CA	2.27	0.44
1:A:278:LEU:HD12	1:A:278:LEU:O	2.17	0.44
1:A:314:VAL:HG12	1:A:315:VAL:N	2.32	0.44
1:A:335:HIS:O	1:A:337:LEU:N	2.51	0.44
1:A:341:ARG:O	1:A:343:ARG:N	2.51	0.44
1:A:314:VAL:HG22	1:A:367:ASN:HD22	1.82	0.44
1:A:324:PHE:CB	1:A:355:THR:HG22	2.48	0.44
1:A:264:PHE:CD1	1:A:264:PHE:C	2.90	0.43
1:A:210:TYR:O	1:A:211:LYS:C	2.57	0.43
1:A:335:HIS:C	1:A:337:LEU:H	2.22	0.43
2:B:215:GLN:HE21	2:B:215:GLN:CA	2.26	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:335:HIS:O	2:B:337:LEU:N	2.50	0.43
1:A:228:ARG:CA	1:A:231:LEU:CD1	2.94	0.43
1:A:250:LEU:CD2	1:A:266:TYR:CE1	3.01	0.43
1:A:271:TRP:CD1	1:A:271:TRP:C	2.92	0.43
2:B:286:CYS:HB3	2:B:340:MET:SD	2.58	0.43
2:B:300:ALA:CB	2:B:322:GLY:N	2.80	0.43
2:B:333:LYS:C	2:B:335:HIS:H	2.22	0.43
1:A:337:LEU:HD12	3:A:1303:ACP:H5'1	2.00	0.43
1:A:318:VAL:O	1:A:318:VAL:HG12	2.19	0.43
1:A:353:ILE:HG13	1:A:361:LEU:CD2	2.45	0.43
2:B:202:SER:O	2:B:205:ALA:HB3	2.19	0.43
2:B:325:LYS:H	3:B:1303:ACP:H2	1.83	0.43
1:A:216:ALA:O	1:A:217:ALA:C	2.57	0.43
2:B:367:ASN:O	2:B:368:ASN:CB	2.67	0.43
1:A:250:LEU:O	1:A:251:ILE:C	2.56	0.42
1:A:289:GLU:OE2	1:A:336:GLY:HA3	2.19	0.42
2:B:274:ASN:OD1	2:B:274:ASN:C	2.58	0.42
2:B:314:VAL:HG12	2:B:315:VAL:N	2.35	0.42
2:B:216:ALA:O	2:B:217:ALA:C	2.55	0.42
1:A:212:ASP:OD1	1:A:212:ASP:C	2.58	0.42
2:B:167:ALA:O	2:B:171:ILE:HD12	2.18	0.42
1:A:172:ALA:O	1:A:176:LYS:HG2	2.19	0.42
1:A:226:THR:O	1:A:227:ALA:C	2.57	0.42
1:A:324:PHE:CG	1:A:355:THR:HG22	2.54	0.42
2:B:335:HIS:ND1	3:B:1303:ACP:O3A	2.53	0.42
1:A:344:LEU:N	1:A:344:LEU:HD23	2.33	0.42
1:A:242:LYS:NZ	1:A:242:LYS:HB3	2.30	0.42
2:B:353:ILE:HA	2:B:360:LYS:O	2.20	0.42
1:A:208:LEU:N	1:A:208:LEU:HD23	2.34	0.42
2:B:275:ILE:HD11	2:B:280:GLU:N	2.35	0.42
1:A:300:ALA:CB	1:A:322:GLY:N	2.80	0.41
2:B:204:LEU:HD23	2:B:219:GLU:HG2	2.01	0.41
2:B:266:TYR:OH	2:B:268:GLU:HG3	2.21	0.41
2:B:341:ARG:O	2:B:343:ARG:N	2.53	0.41
1:A:260:ALA:O	1:A:261:ASP:CB	2.68	0.41
2:B:260:ALA:O	2:B:261:ASP:CB	2.68	0.41
1:A:337:LEU:HG	3:A:1303:ACP:O1A	2.20	0.41
1:A:228:ARG:HA	1:A:231:LEU:HD11	2.02	0.41
1:A:244:ILE:HD13	1:A:244:ILE:N	2.36	0.41
1:A:304:ARG:O	1:A:305:VAL:HG23	2.21	0.41
1:A:341:ARG:NH2	1:A:345:GLU:CB	2.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:271:TRP:HA	1:A:272:PRO:HD3	1.70	0.41
2:B:200:LEU:HD23	2:B:200:LEU:HA	1.84	0.41
2:B:249:GLU:HG2	2:B:284:SER:OG	2.21	0.41
2:B:294:VAL:HG13	2:B:298:SER:OG	2.20	0.41
1:A:183:ILE:CG1	1:A:184:ALA:N	2.84	0.40
2:B:191:LEU:HD23	2:B:191:LEU:HA	1.74	0.40
2:B:335:HIS:C	2:B:337:LEU:H	2.24	0.40
1:A:205:ALA:CB	1:A:220:LEU:HD21	2.51	0.40
1:A:298:SER:HA	3:A:1303:ACP:C2	2.49	0.40
1:A:313:GLU:HG3	1:A:365:ILE:O	2.21	0.40
2:B:250:LEU:HA	2:B:253:ILE:CD1	2.51	0.40
2:B:335:HIS:ND1	3:B:1303:ACP:H3B1	2.36	0.40
1:A:251:ILE:O	1:A:252:ASN:C	2.59	0.40
2:B:179:GLU:O	2:B:182:ARG:HG3	2.21	0.40
2:B:179:GLU:O	2:B:183:ILE:HG13	2.21	0.40
1:A:278:LEU:HD12	1:A:278:LEU:C	2.42	0.40
1:A:346:PHE:CD2	2:B:171:ILE:HG23	2.55	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	208/218 (95%)	168 (81%)	35 (17%)	5 (2%)	6 35
2	B	202/218 (93%)	161 (80%)	38 (19%)	3 (2%)	10 45
All	All	410/436 (94%)	329 (80%)	73 (18%)	8 (2%)	7 39

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	331	PHE

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Mol	Chain	Res	Type
2	B	168	ASN
1	A	172	ALA
1	A	227	ALA
1	A	295	VAL
2	B	295	VAL
2	B	172	ALA
1	A	322	GLY

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	148/194 (76%)	116 (78%)	32 (22%)	1	5
2	B	125/193 (65%)	100 (80%)	25 (20%)	1	7
All	All	273/387 (70%)	216 (79%)	57 (21%)	1	6

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	171	ILE
1	A	173	GLU
1	A	174	LEU
1	A	176	LYS
1	A	179	GLU
1	A	186	ASP
1	A	187	LEU
1	A	195	LEU
1	A	196	SER
1	A	197	LEU
1	A	206	ARG
1	A	219	GLU
1	A	220	LEU
1	A	231	LEU
1	A	241	MET
1	A	242	LYS

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Mol	Chain	Res	Type
1	A	244	ILE
1	A	245	ARG
1	A	275	ILE
1	A	284	SER
1	A	311	TRP
1	A	316	ILE
1	A	331	PHE
1	A	332	SER
1	A	338	LEU
1	A	341	ARG
1	A	346	PHE
1	A	352	HIS
1	A	353	ILE
1	A	359	THR
1	A	363	MET
1	A	368	ASN
2	B	175	VAL
2	B	179	GLU
2	B	182	ARG
2	B	195	LEU
2	B	196	SER
2	B	197	LEU
2	B	206	ARG
2	B	219	GLU
2	B	220	LEU
2	B	231	LEU
2	B	238	VAL
2	B	242	LYS
2	B	246	LEU
2	B	249	GLU
2	B	258	GLU
2	B	275	ILE
2	B	278	LEU
2	B	284	SER
2	B	332	SER
2	B	343	ARG
2	B	346	PHE
2	B	351	LEU
2	B	352	HIS
2	B	357	ASN
2	B	359	THR

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

sidechains are listed below:

Mol	Chain	Res	Type
1	A	181	GLN
1	A	188	HIS
1	A	215	GLN
1	A	279	ASN
1	A	367	ASN
1	A	368	ASN
2	B	215	GLN
2	B	224	GLN
2	B	357	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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	$\#\|Z\| > 2$
2	NEP	B	188	2	10,14,15	2.16	2 (20%)	5,20,22	1.76	1 (20%)

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	NEP	B	188	2	-	3/5/12/14	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	188	NEP	P-O3P	5.01	1.51	1.47
2	B	188	NEP	CD2-NE2	-3.52	1.33	1.39

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	188	NEP	CB-CA-C	-3.00	105.84	111.47

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	188	NEP	CA-CB-CG-ND1
2	B	188	NEP	CA-CB-CG-CD2
2	B	188	NEP	C-CA-CB-CG

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	188	NEP	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 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	$\#\|Z\| > 2$
3	ACP	B	1303	4	27,33,33	1.27	3 (11%)	32,52,52	1.71	8 (25%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	ACP	A	1303	4	27,33,33	1.29	4 (14%)	32,52,52	1.62	6 (18%)

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	ACP	B	1303	4	-	3/15/38/38	0/3/3/3
3	ACP	A	1303	4	-	3/15/38/38	0/3/3/3

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	1303	ACP	PB-O3A	3.48	1.62	1.58
3	A	1303	ACP	O4'-C1'	2.80	1.45	1.41
3	A	1303	ACP	PB-O3A	2.67	1.61	1.58
3	B	1303	ACP	C5-C4	2.40	1.47	1.40
3	A	1303	ACP	PB-O2B	-2.40	1.50	1.56
3	B	1303	ACP	PB-O2B	-2.40	1.50	1.56
3	A	1303	ACP	C5-C4	2.09	1.46	1.40

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	1303	ACP	C4-C5-N7	-4.09	105.13	109.40
3	B	1303	ACP	C3'-C2'-C1'	3.72	106.58	100.98
3	B	1303	ACP	O1G-PG-C3B	-3.59	103.51	111.24
3	A	1303	ACP	C4-C5-N7	-3.53	105.72	109.40
3	A	1303	ACP	PB-O3A-PA	-3.23	122.31	132.56
3	A	1303	ACP	C3'-C2'-C1'	3.20	105.79	100.98
3	A	1303	ACP	O2B-PB-O1B	2.97	119.98	110.07
3	A	1303	ACP	O1G-PG-C3B	-2.81	105.19	111.24
3	B	1303	ACP	N3-C2-N1	-2.79	124.31	128.68
3	B	1303	ACP	PB-O3A-PA	-2.70	124.00	132.56
3	B	1303	ACP	O2B-PB-O1B	2.44	118.20	110.07
3	A	1303	ACP	N3-C2-N1	-2.20	125.23	128.68
3	B	1303	ACP	O3G-PG-O2G	2.14	114.32	108.08
3	B	1303	ACP	O2A-PA-O1A	2.08	122.51	112.24

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1303	ACP	C5'-O5'-PA-O2A
3	B	1303	ACP	PB-C3B-PG-O1G
3	B	1303	ACP	PB-C3B-PG-O2G
3	B	1303	ACP	PB-C3B-PG-O3G
3	A	1303	ACP	C5'-O5'-PA-O3A
3	A	1303	ACP	C5'-O5'-PA-O1A

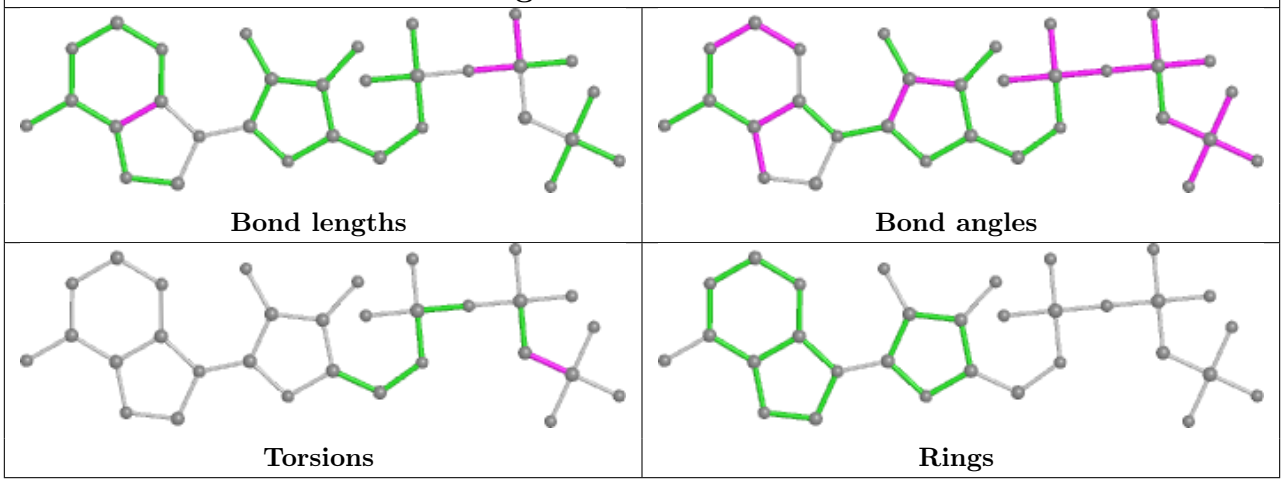
There are no ring outliers.

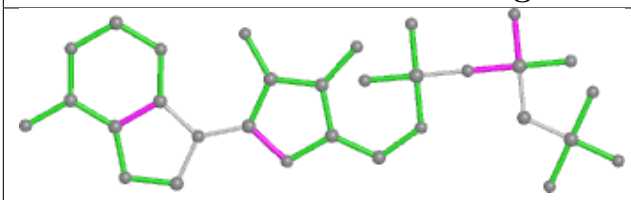
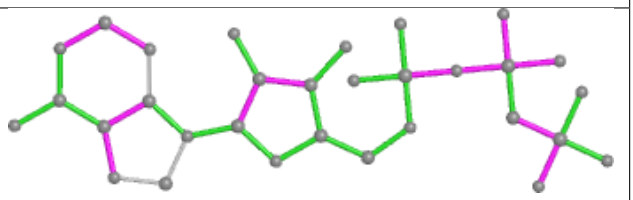
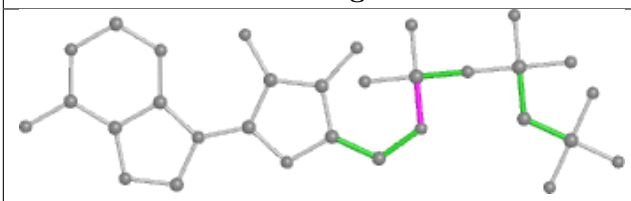
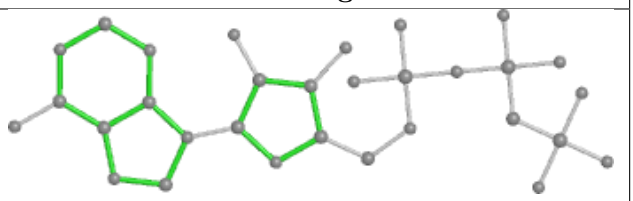
2 monomers are involved in 28 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1303	ACP	12	0
3	A	1303	ACP	16	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 ACP B 1303



Ligand ACP A 1303	
 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	212/218 (97%)	-0.62	0 100 100	57, 128, 221, 262	0
2	B	204/218 (93%)	-0.32	4 (1%) 65 60	62, 144, 326, 380	0
All	All	416/436 (95%)	-0.47	4 (0%) 82 77	57, 134, 283, 380	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	360	LYS	6.5
2	B	359	THR	3.5
2	B	354	ASP	3.3
2	B	330	SER	2.4

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

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
2	NEP	B	188	14/15	0.94	0.14	111,177,198,202	0

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands (i)

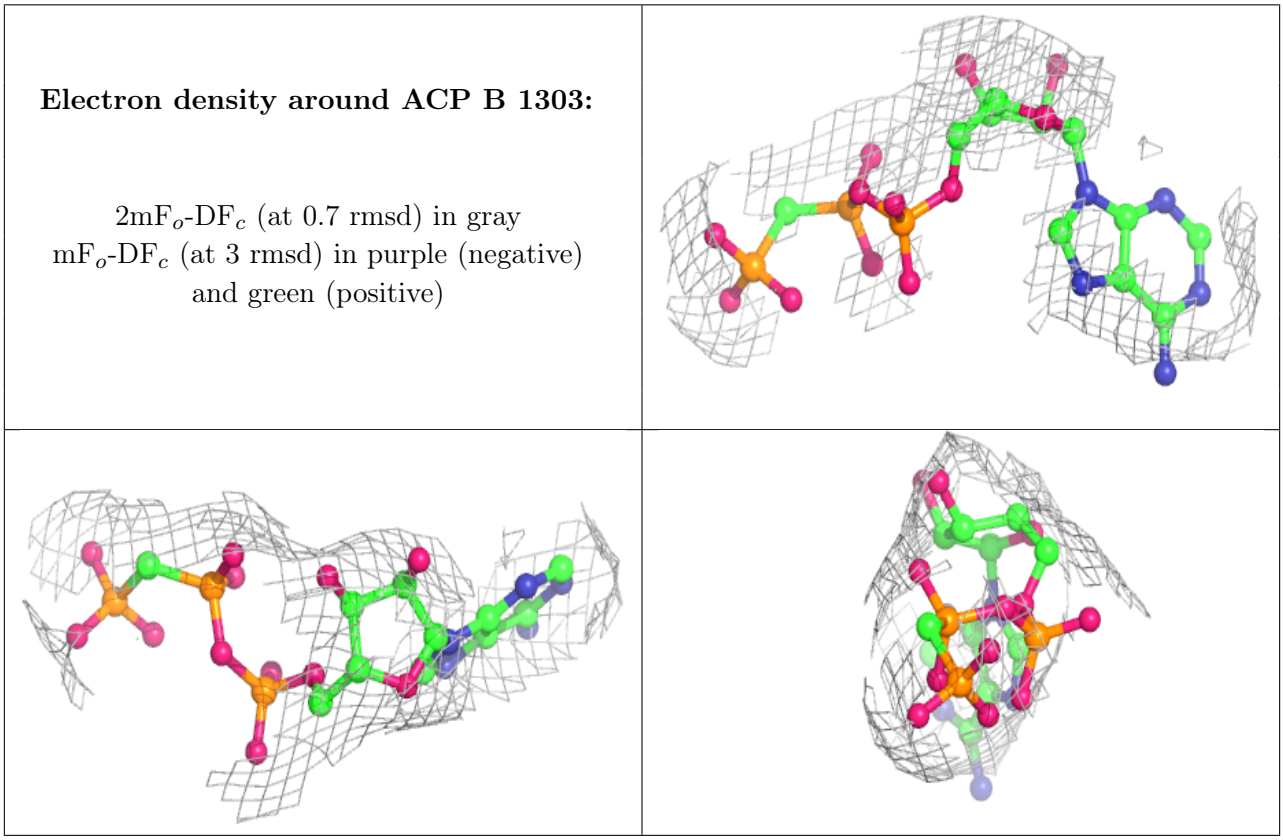
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
3	ACP	B	1303	31/31	0.92	0.17	147,169,195,243	0
3	ACP	A	1303	31/31	0.94	0.13	122,149,183,215	0
4	MG	B	1	1/1	0.95	0.09	108,108,108,108	0
4	MG	A	1	1/1	0.99	0.05	160,160,160,160	0

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

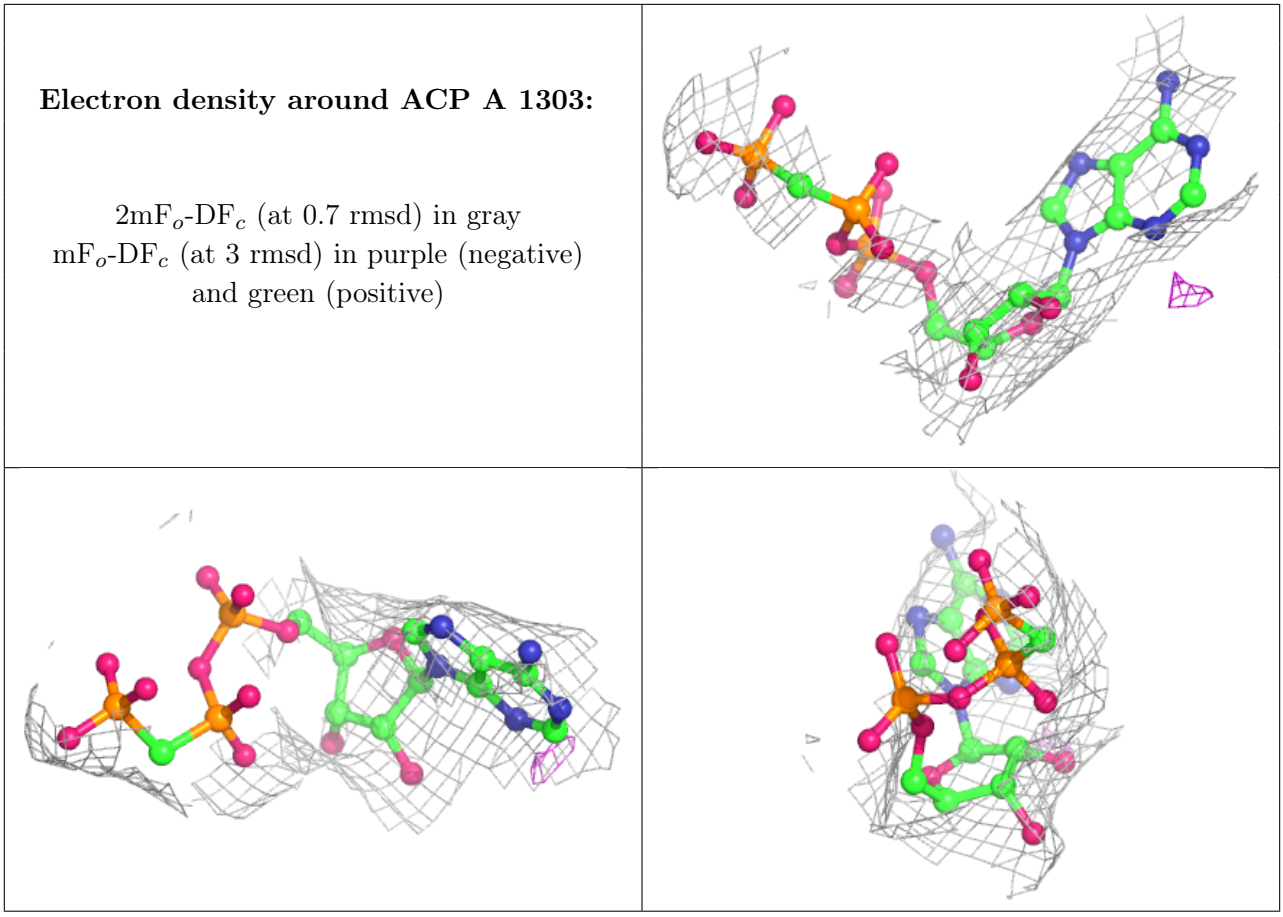
Electron density around ACP B 1303:

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



Electron density around ACP A 1303:

$2mF_o$-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.