



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 03:09 PM GMT

PDB ID : 4BO4
Title : Crystal structure of 3-oxoacyl-(acyl-carrier-protein) reductase (FabG) from *Pseudomonas aeruginosa* in complex with N-(2-methoxyphenyl)-3,4-dihydro-2H-quinoline-1-carboxamide at 2.7Å resolution
Authors : Cukier, C.D.; Schnell, R.; Lindqvist, Y.; Schneider, G.
Deposited on : 2013-05-18
Resolution : 2.70 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

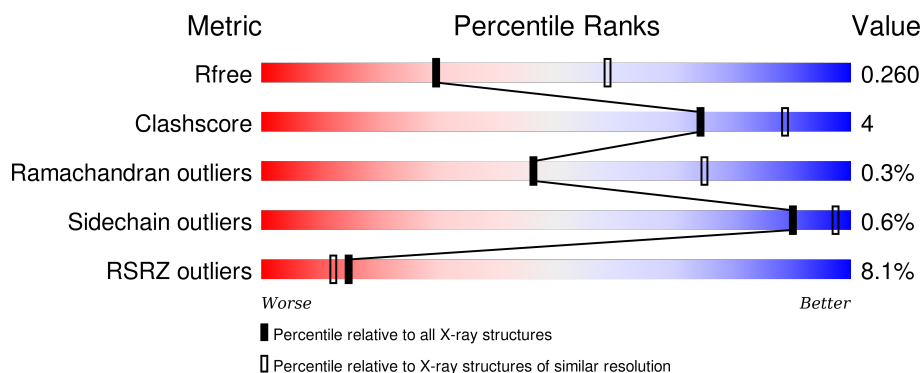
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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	2103 (2.70-2.70)
Clashscore	102246	2422 (2.70-2.70)
Ramachandran outliers	100387	2382 (2.70-2.70)
Sidechain outliers	100360	2382 (2.70-2.70)
RSRZ outliers	91569	2107 (2.70-2.70)

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	269	<div> <div>6%</div> <div>81% 6% 13%</div> </div>
1	B	269	<div> <div>9%</div> <div>80% 9% 11%</div> </div>
1	C	269	<div> <div>11%</div> <div>85% 9% 5%</div> </div>
1	D	269	<div> <div>4%</div> <div>84% 7% 8%</div> </div>

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 7201 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 3-OXOACYL-[ACYL-CARRIER-PROTEIN] REDUCTASE FABG.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	235	Total	C	N	O	S	0	1	0
			1703	1061	305	331	6			
1	B	240	Total	C	N	O	S	0	0	0
			1744	1089	311	338	6			
1	C	255	Total	C	N	O	S	0	1	0
			1879	1170	344	359	6			
1	D	247	Total	C	N	O	S	0	1	0
			1803	1126	321	349	7			

There are 88 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-21	MET	-	EXPRESSION TAG	UNP O54438
A	-20	HIS	-	EXPRESSION TAG	UNP O54438
A	-19	HIS	-	EXPRESSION TAG	UNP O54438
A	-18	HIS	-	EXPRESSION TAG	UNP O54438
A	-17	HIS	-	EXPRESSION TAG	UNP O54438
A	-16	HIS	-	EXPRESSION TAG	UNP O54438
A	-15	HIS	-	EXPRESSION TAG	UNP O54438
A	-14	SER	-	EXPRESSION TAG	UNP O54438
A	-13	SER	-	EXPRESSION TAG	UNP O54438
A	-12	GLY	-	EXPRESSION TAG	UNP O54438
A	-11	VAL	-	EXPRESSION TAG	UNP O54438
A	-10	ASP	-	EXPRESSION TAG	UNP O54438
A	-9	LEU	-	EXPRESSION TAG	UNP O54438
A	-8	GLY	-	EXPRESSION TAG	UNP O54438
A	-7	THR	-	EXPRESSION TAG	UNP O54438
A	-6	GLU	-	EXPRESSION TAG	UNP O54438
A	-5	ASN	-	EXPRESSION TAG	UNP O54438
A	-4	LEU	-	EXPRESSION TAG	UNP O54438
A	-3	TYR	-	EXPRESSION TAG	UNP O54438
A	-2	PHE	-	EXPRESSION TAG	UNP O54438

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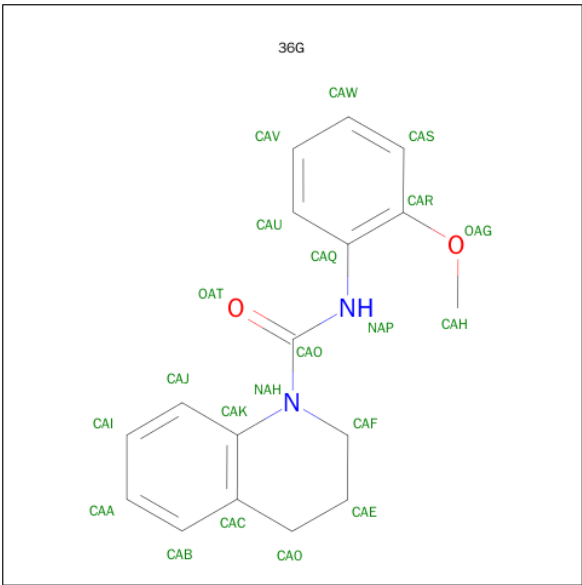
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLN	-	EXPRESSION TAG	UNP O54438
A	0	SER	-	EXPRESSION TAG	UNP O54438
B	-21	MET	-	EXPRESSION TAG	UNP O54438
B	-20	HIS	-	EXPRESSION TAG	UNP O54438
B	-19	HIS	-	EXPRESSION TAG	UNP O54438
B	-18	HIS	-	EXPRESSION TAG	UNP O54438
B	-17	HIS	-	EXPRESSION TAG	UNP O54438
B	-16	HIS	-	EXPRESSION TAG	UNP O54438
B	-15	HIS	-	EXPRESSION TAG	UNP O54438
B	-14	SER	-	EXPRESSION TAG	UNP O54438
B	-13	SER	-	EXPRESSION TAG	UNP O54438
B	-12	GLY	-	EXPRESSION TAG	UNP O54438
B	-11	VAL	-	EXPRESSION TAG	UNP O54438
B	-10	ASP	-	EXPRESSION TAG	UNP O54438
B	-9	LEU	-	EXPRESSION TAG	UNP O54438
B	-8	GLY	-	EXPRESSION TAG	UNP O54438
B	-7	THR	-	EXPRESSION TAG	UNP O54438
B	-6	GLU	-	EXPRESSION TAG	UNP O54438
B	-5	ASN	-	EXPRESSION TAG	UNP O54438
B	-4	LEU	-	EXPRESSION TAG	UNP O54438
B	-3	TYR	-	EXPRESSION TAG	UNP O54438
B	-2	PHE	-	EXPRESSION TAG	UNP O54438
B	-1	GLN	-	EXPRESSION TAG	UNP O54438
B	0	SER	-	EXPRESSION TAG	UNP O54438
C	-21	MET	-	EXPRESSION TAG	UNP O54438
C	-20	HIS	-	EXPRESSION TAG	UNP O54438
C	-19	HIS	-	EXPRESSION TAG	UNP O54438
C	-18	HIS	-	EXPRESSION TAG	UNP O54438
C	-17	HIS	-	EXPRESSION TAG	UNP O54438
C	-16	HIS	-	EXPRESSION TAG	UNP O54438
C	-15	HIS	-	EXPRESSION TAG	UNP O54438
C	-14	SER	-	EXPRESSION TAG	UNP O54438
C	-13	SER	-	EXPRESSION TAG	UNP O54438
C	-12	GLY	-	EXPRESSION TAG	UNP O54438
C	-11	VAL	-	EXPRESSION TAG	UNP O54438
C	-10	ASP	-	EXPRESSION TAG	UNP O54438
C	-9	LEU	-	EXPRESSION TAG	UNP O54438
C	-8	GLY	-	EXPRESSION TAG	UNP O54438
C	-7	THR	-	EXPRESSION TAG	UNP O54438
C	-6	GLU	-	EXPRESSION TAG	UNP O54438
C	-5	ASN	-	EXPRESSION TAG	UNP O54438
C	-4	LEU	-	EXPRESSION TAG	UNP O54438

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-3	TYR	-	EXPRESSION TAG	UNP O54438
C	-2	PHE	-	EXPRESSION TAG	UNP O54438
C	-1	GLN	-	EXPRESSION TAG	UNP O54438
C	0	SER	-	EXPRESSION TAG	UNP O54438
D	-21	MET	-	EXPRESSION TAG	UNP O54438
D	-20	HIS	-	EXPRESSION TAG	UNP O54438
D	-19	HIS	-	EXPRESSION TAG	UNP O54438
D	-18	HIS	-	EXPRESSION TAG	UNP O54438
D	-17	HIS	-	EXPRESSION TAG	UNP O54438
D	-16	HIS	-	EXPRESSION TAG	UNP O54438
D	-15	HIS	-	EXPRESSION TAG	UNP O54438
D	-14	SER	-	EXPRESSION TAG	UNP O54438
D	-13	SER	-	EXPRESSION TAG	UNP O54438
D	-12	GLY	-	EXPRESSION TAG	UNP O54438
D	-11	VAL	-	EXPRESSION TAG	UNP O54438
D	-10	ASP	-	EXPRESSION TAG	UNP O54438
D	-9	LEU	-	EXPRESSION TAG	UNP O54438
D	-8	GLY	-	EXPRESSION TAG	UNP O54438
D	-7	THR	-	EXPRESSION TAG	UNP O54438
D	-6	GLU	-	EXPRESSION TAG	UNP O54438
D	-5	ASN	-	EXPRESSION TAG	UNP O54438
D	-4	LEU	-	EXPRESSION TAG	UNP O54438
D	-3	TYR	-	EXPRESSION TAG	UNP O54438
D	-2	PHE	-	EXPRESSION TAG	UNP O54438
D	-1	GLN	-	EXPRESSION TAG	UNP O54438
D	0	SER	-	EXPRESSION TAG	UNP O54438

- Molecule 2 is N-(2-METHOXYPHENYL)-3,4-DIHYDRO-2H-QUINOLINE-1-CARBOXYAMIDE (three-letter code: 36G) (formula: C₁₇H₁₈N₂O₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			21	17	2	2		
2	C	1	Total	C	N	O	0	0
			21	17	2	2		

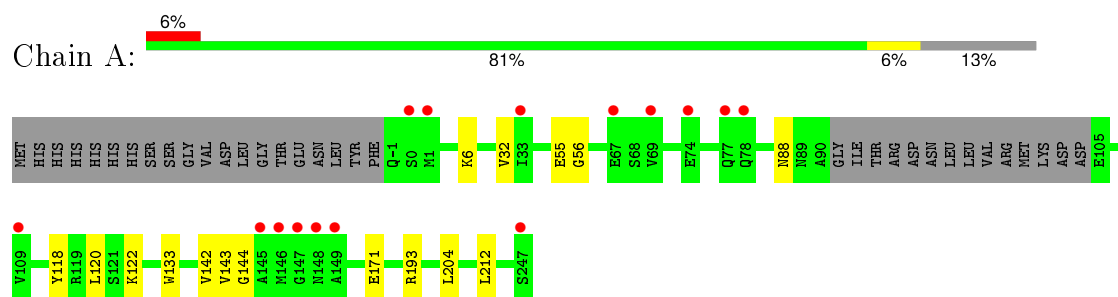
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	8	Total	O	0	0
			8	8		
3	B	6	Total	O	0	0
			6	6		
3	C	8	Total	O	0	0
			8	8		
3	D	8	Total	O	0	0
			8	8		

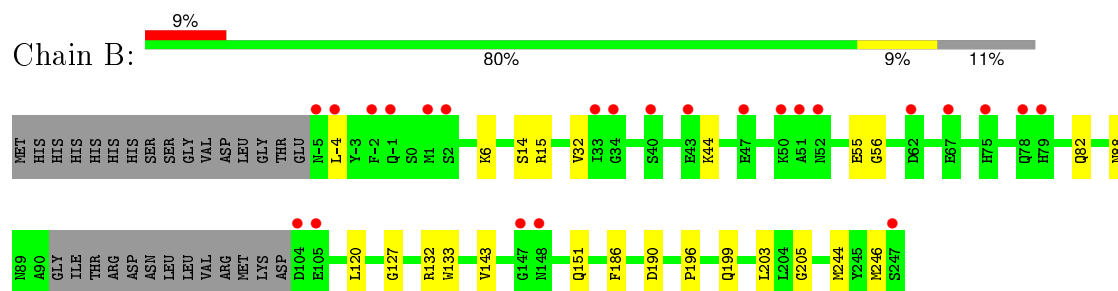
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

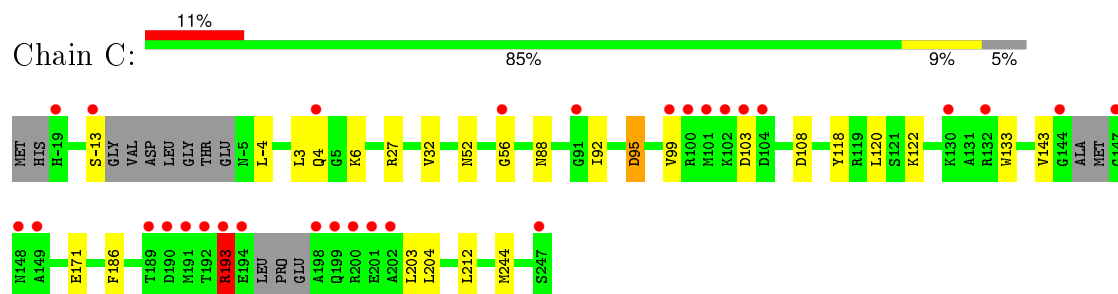
- Molecule 1: 3-OXOACYL-[ACYL-CARRIER-PROTEIN] REDUCTASE FABG



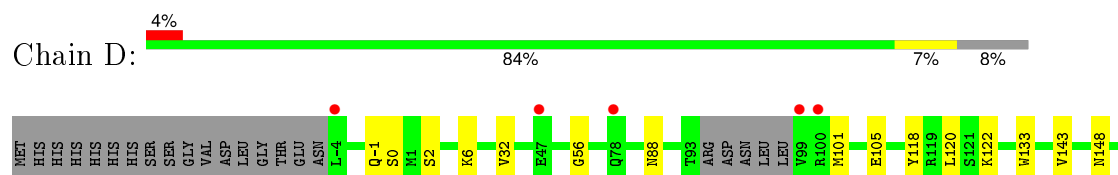
- Molecule 1: 3-OXOACYL-[ACYL-CARRIER-PROTEIN] REDUCTASE FABG

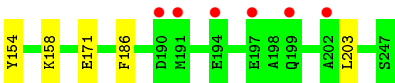


- Molecule 1: 3-OXOACYL-[ACYL-CARRIER-PROTEIN] REDUCTASE FABG



- Molecule 1: 3-OXOACYL-[ACYL-CARRIER-PROTEIN] REDUCTASE FABG





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	55.42Å 108.61Å 148.31Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	22.95 – 2.70 22.94 – 2.70	Depositor EDS
% Data completeness (in resolution range)	99.2 (22.95-2.70) 99.5 (22.94-2.70)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.46 (at 2.71Å)	Xtriage
Refinement program	REFMAC 5.7.0032	Depositor
R, R_{free}	0.206 , 0.260 0.209 , 0.260	Depositor DCC
R_{free} test set	1248 reflections (5.21%)	DCC
Wilson B-factor (Å ²)	46.0	Xtriage
Anisotropy	0.366	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 46.6	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Outliers	1 of 25193 reflections (0.004%)	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	7201	wwPDB-VP
Average B, all atoms (Å ²)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.01% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 36G

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	0.52	0/1723	0.70	0/2331
1	B	0.50	0/1763	0.72	2/2386 (0.1%)
1	C	0.53	0/1903	0.70	0/2570
1	D	0.53	0/1825	0.73	0/2468
All	All	0.52	0/7214	0.71	2/9755 (0.0%)

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

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

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	B	132	ARG	NE-CZ-NH2	-5.59	117.51	120.30
1	B	132	ARG	NE-CZ-NH1	5.45	123.02	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	3	LEU	Peptide

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	1703	0	1739	8	0
1	B	1744	0	1772	17	1
1	C	1879	0	1905	17	0
1	D	1803	0	1839	13	1
2	A	21	0	18	5	0
2	C	21	0	18	1	0
3	A	8	0	0	0	0
3	B	6	0	0	0	0
3	C	8	0	0	0	0
3	D	8	0	0	0	0
All	All	7201	0	7291	58	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (58) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:82:GLN:NE2	1:B:127:GLY:HA3	1.70	1.05
1:B:82:GLN:HE21	1:B:127:GLY:HA3	1.48	0.75
1:A:88:ASN:OD1	1:A:120:LEU:HD23	1.93	0.69
1:B:88:ASN:OD1	1:B:120:LEU:HD23	1.94	0.68
1:D:88:ASN:OD1	1:D:120:LEU:HD23	1.93	0.67
1:C:88:ASN:OD1	1:C:120:LEU:HD23	1.94	0.67
1:D:122:LYS:NZ	1:D:171:GLU:OE2	2.29	0.65
1:C:204:LEU:HD21	1:C:212:LEU:HD12	1.78	0.64
1:A:122:LYS:NZ	1:A:171:GLU:OE2	2.29	0.64
1:A:204:LEU:HD21	1:A:212:LEU:HD12	1.79	0.64
1:C:122:LYS:NZ	1:C:171:GLU:OE2	2.31	0.63
1:B:205:GLY:O	1:D:148:ASN:ND2	2.32	0.62
1:B:14:SER:O	1:B:44:LYS:HE3	2.05	0.57
1:C:-13:SER:OG	1:C:-13:SER:O	2.22	0.54
1:B:151:GLN:HE21	1:B:246:MET:CG	2.22	0.53
1:C:186:PHE:CZ	1:C:203:LEU:HD11	2.45	0.52
1:C:103:ASP:HB3	1:C:108:ASP:OD2	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1248:36G:HAP	2:A:1248:36G:CAJ	2.22	0.51
1:B:151:GLN:HE21	1:B:246:MET:HG2	1.74	0.51
1:D:186:PHE:CZ	1:D:203:LEU:HD11	2.46	0.50
2:C:1248:36G:HAP	2:C:1248:36G:CAJ	2.24	0.50
2:A:1248:36G:HAU	2:A:1248:36G:OAT	2.12	0.49
1:D:186:PHE:CE1	1:D:203:LEU:HD11	2.48	0.49
1:C:186:PHE:CE1	1:C:203:LEU:HD11	2.48	0.49
2:A:1248:36G:CAU	2:A:1248:36G:OAT	2.59	0.48
2:A:1248:36G:HAJ	2:A:1248:36G:HAP	1.77	0.48
1:C:193:ARG:H	1:C:193:ARG:HG3	1.54	0.48
1:D:101:MET:HA	1:D:105:GLU:OE2	2.15	0.47
1:C:95:ASP:O	1:C:99:VAL:HG23	2.15	0.47
1:D:143:VAL:HG11	1:D:186:PHE:CZ	2.50	0.47
1:A:55:GLU:OE1	1:A:55:GLU:HA	2.15	0.47
1:B:196:PRO:HG2	1:B:199:GLN:HG2	1.97	0.46
1:D:154:TYR:CE2	1:D:158:LYS:HE3	2.51	0.46
1:B:186:PHE:CZ	1:B:203:LEU:HD11	2.50	0.45
1:D:-1:GLN:HB3	1:D:2:SER:CB	2.47	0.45
1:D:-1:GLN:HB3	1:D:2:SER:HB2	1.98	0.45
1:C:244:MET:HE3	1:C:244:MET:O	2.17	0.45
1:A:32:VAL:O	1:A:56:GLY:HA3	2.17	0.45
1:B:32:VAL:O	1:B:56:GLY:HA3	2.17	0.44
1:A:142:VAL:HG12	1:A:143:VAL:O	2.18	0.44
1:C:143:VAL:HG11	1:C:186:PHE:CZ	2.52	0.44
1:B:186:PHE:CE1	1:B:203:LEU:HD11	2.52	0.44
1:B:143:VAL:HG11	1:B:186:PHE:CZ	2.53	0.44
1:C:32:VAL:O	1:C:56:GLY:HA3	2.17	0.44
1:D:32:VAL:O	1:D:56:GLY:HA3	2.18	0.43
1:C:92:ILE:HG23	1:C:92:ILE:O	2.18	0.43
1:C:6:LYS:HE3	1:C:133:TRP:CH2	2.53	0.43
2:A:1248:36G:HAJ	2:A:1248:36G:NAP	2.34	0.43
1:A:118:TYR:OH	1:A:122:LYS:HE2	2.18	0.43
1:A:6:LYS:HE3	1:A:133:TRP:CH2	2.54	0.43
1:D:118:TYR:OH	1:D:122:LYS:HE2	2.19	0.42
1:C:118:TYR:OH	1:C:122:LYS:HE2	2.19	0.42
1:D:6:LYS:HE3	1:D:133:TRP:CH2	2.54	0.42
1:B:15:ARG:NH2	1:B:190:ASP:OD2	2.53	0.42
1:B:6:LYS:HE3	1:B:133:TRP:CH2	2.55	0.41
1:B:-4:LEU:HD22	1:C:52:ASN:HB3	2.02	0.41
1:B:244:MET:HE3	1:B:244:MET:O	2.20	0.41
1:B:-4:LEU:O	1:C:27:ARG:HD2	2.21	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:55:GLU:OE2	1:D:0:SER:OG[2_454]	2.06	0.14

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	232/269 (86%)	228 (98%)	3 (1%)	1 (0%)	39	69
1	B	236/269 (88%)	232 (98%)	4 (2%)	0	100	100
1	C	248/269 (92%)	240 (97%)	6 (2%)	2 (1%)	24	51
1	D	244/269 (91%)	239 (98%)	5 (2%)	0	100	100
All	All	960/1076 (89%)	939 (98%)	18 (2%)	3 (0%)	46	75

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	144	GLY
1	C	193	ARG
1	C	4	GLN

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	171/201 (85%)	170 (99%)	1 (1%)	90	97
1	B	175/201 (87%)	175 (100%)	0	100	100
1	C	191/201 (95%)	188 (98%)	3 (2%)	70	91
1	D	182/201 (90%)	182 (100%)	0	100	100
All	All	719/804 (89%)	715 (99%)	4 (1%)	90	97

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	193	ARG
1	C	-4	LEU
1	C	95	ASP
1	C	193	ARG

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	151	GLN
1	B	151	GLN
1	D	4	GLN
1	D	151	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	36G	A	1248	-	22,23,23	1.92	4 (18%)	28,31,31	1.67	8 (28%)
2	36G	C	1248	-	22,23,23	1.68	4 (18%)	28,31,31	1.69	8 (28%)

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	36G	A	1248	-	-	0/10/20/20	0/3/3/3
2	36G	C	1248	-	-	0/10/20/20	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1248	36G	CA0-CAC	-5.37	1.41	1.51
2	C	1248	36G	CA0-CAC	-5.01	1.42	1.51
2	A	1248	36G	CAQ-NAP	-4.62	1.33	1.41
2	C	1248	36G	CAK-NAH	-3.86	1.33	1.41
2	A	1248	36G	CAK-NAH	-3.48	1.34	1.41
2	C	1248	36G	CAQ-NAP	-3.32	1.35	1.41
2	A	1248	36G	CAE-CAF	-2.86	1.40	1.51
2	C	1248	36G	CAK-CAC	-2.26	1.37	1.40

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1248	36G	CAE-CAF-NAH	-3.98	102.91	110.00
2	C	1248	36G	CAE-CAF-NAH	-3.18	104.33	110.00
2	C	1248	36G	CAR-CAQ-NAP	-3.01	111.10	116.68
2	A	1248	36G	CAF-CAE-CA0	-2.80	101.93	111.97
2	A	1248	36G	CAR-CAQ-NAP	-2.59	111.88	116.68
2	A	1248	36G	CAQ-NAP-CAO	-2.44	120.18	125.86
2	C	1248	36G	CAC-CAK-NAH	-2.19	115.35	117.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1248	36G	CAC-CAK-NAH	-2.10	115.43	117.30
2	A	1248	36G	CAA-CAI-CAJ	-2.03	117.21	120.19
2	C	1248	36G	OAT-CAO-NAH	-2.02	117.51	119.92
2	C	1248	36G	CAJ-CAK-NAH	2.03	124.23	121.35
2	A	1248	36G	CAU-CAQ-CAR	2.26	121.69	119.05
2	A	1248	36G	NAP-CAO-NAH	2.45	118.59	115.61
2	C	1248	36G	CAS-CAR-CAQ	2.73	123.28	120.43
2	C	1248	36G	NAP-CAO-NAH	2.96	119.21	115.61
2	C	1248	36G	CAU-CAQ-NAP	3.14	129.15	121.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1248	36G	5	0
2	C	1248	36G	1	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	235/269 (87%)	0.16	15 (6%)	23 21	22, 40, 87, 111	0
1	B	240/269 (89%)	0.20	24 (10%)	9 7	25, 45, 86, 99	0
1	C	255/269 (94%)	0.52	29 (11%)	7 5	27, 43, 104, 128	0
1	D	247/269 (91%)	0.15	11 (4%)	37 36	21, 39, 90, 132	0
All	All	977/1076 (90%)	0.26	79 (8%)	15 12	21, 41, 94, 132	0

All (79) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	101	MET	8.6
1	C	148	ASN	6.8
1	A	148	ASN	6.2
1	C	103	ASP	6.1
1	C	198	ALA	5.6
1	C	149	ALA	5.5
1	B	51	ALA	5.0
1	C	247	SER	4.9
1	C	99	VAL	4.9
1	D	99	VAL	4.9
1	D	194	GLU	4.8
1	C	194	GLU	4.8
1	C	147	GLY	4.7
1	A	78	GLN	4.4
1	C	200	ARG	4.3
1	C	192	THR	4.3
1	C	191	MET	4.2
1	B	-5	ASN	4.1
1	B	-4	LEU	4.0
1	B	-1	GLN	3.9
1	C	189	THR	3.9

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Mol	Chain	Res	Type	RSRZ
1	C	102	LYS	3.9
1	B	104	ASP	3.8
1	D	78	GLN	3.8
1	D	197	GLU	3.8
1	C	100	ARG	3.7
1	B	105	GLU	3.6
1	C	104	ASP	3.5
1	C	91	GLY	3.4
1	C	144	GLY	3.4
1	A	67	GLU	3.3
1	B	67	GLU	3.3
1	A	146	MET	3.2
1	B	79	HIS	3.1
1	B	50	LYS	3.1
1	B	148	ASN	3.1
1	C	201	GLU	3.1
1	A	247	SER	3.0
1	C	56	GLY	3.0
1	C	199	GLN	3.0
1	D	-4	LEU	3.0
1	B	33	ILE	2.9
1	D	100	ARG	2.8
1	D	47	GLU	2.8
1	B	40	SER	2.8
1	C	-19	HIS	2.8
1	B	78	GLN	2.8
1	D	190	ASP	2.7
1	C	132	ARG	2.7
1	A	0	SER	2.7
1	A	33	ILE	2.7
1	A	1	MET	2.6
1	B	247	SER	2.6
1	A	147	GLY	2.6
1	B	2	SER	2.6
1	C	202	ALA	2.6
1	D	202	ALA	2.6
1	B	52	ASN	2.5
1	B	-2	PHE	2.5
1	B	62	ASP	2.5
1	C	4	GLN	2.5
1	A	149	ALA	2.4
1	B	75	HIS	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	74	GLU	2.4
1	D	199	GLN	2.4
1	A	109	VAL	2.4
1	B	43	GLU	2.3
1	C	190	ASP	2.3
1	C	-13	SER	2.2
1	B	34	GLY	2.2
1	B	1	MET	2.2
1	B	47	GLU	2.2
1	C	130	LYS	2.2
1	A	69	VAL	2.1
1	A	77	GLN	2.1
1	C	193	ARG	2.1
1	B	147	GLY	2.1
1	D	191	MET	2.0
1	A	145	ALA	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no 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(Å ²)	Q<0.9
2	36G	A	1248	21/21	0.93	0.20	1.09	47,51,55,57	0
2	36G	C	1248	21/21	0.95	0.16	0.97	33,36,38,42	0

6.5 Other polymers

There are no such residues in this entry.