Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 06:52 AM EDT

PDB ID	:	6NS5
Title	:	Crystal structure of fungal lipoxygenase from Fusarium graminearum. Second C2 crystal form.
Authors	:	Pakhomova, S.; Boeglin, W.E.; Neau, D.B.; Bartlett, S.G.; Brash, A.R.; Newcomer, M.E.
Deposited on	:	2019-01-24
Resolution	:	2.79 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:

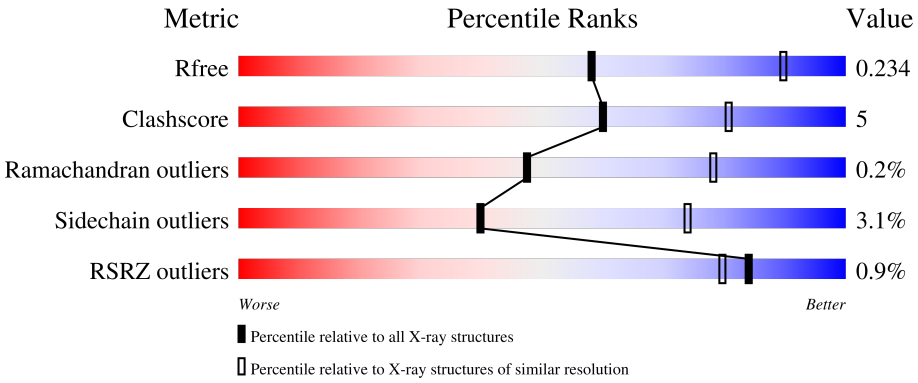
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 2.79 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	769	% 76% 10% • 13%
1	B	769	% 76% 10% • 13%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 10618 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 lipoxygenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	668	Total	C	N	O	S	0	1	0
			5294	3387	883	1014	10			
1	B	669	Total	C	N	O	S	0	0	0
			5302	3395	879	1018	10			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-23	MET	-	expression tag	UNP I1REW2
A	-22	GLY	-	expression tag	UNP I1REW2
A	-21	ARG	-	expression tag	UNP I1REW2
A	-20	ASP	-	expression tag	UNP I1REW2
A	-19	PRO	-	expression tag	UNP I1REW2
A	-18	ASN	-	expression tag	UNP I1REW2
A	-17	SER	-	expression tag	UNP I1REW2
A	-16	SER	-	expression tag	UNP I1REW2
A	-15	SER	-	expression tag	UNP I1REW2
A	-14	VAL	-	expression tag	UNP I1REW2
A	-13	ASP	-	expression tag	UNP I1REW2
A	-12	LYS	-	expression tag	UNP I1REW2
A	-11	LEU	-	expression tag	UNP I1REW2
A	-10	ALA	-	expression tag	UNP I1REW2
A	-9	ALA	-	expression tag	UNP I1REW2
A	-8	ALA	-	expression tag	UNP I1REW2
A	-7	LEU	-	expression tag	UNP I1REW2
A	-6	GLU	-	expression tag	UNP I1REW2
A	-5	HIS	-	expression tag	UNP I1REW2
A	-4	HIS	-	expression tag	UNP I1REW2
A	-3	HIS	-	expression tag	UNP I1REW2
A	-2	HIS	-	expression tag	UNP I1REW2
A	-1	HIS	-	expression tag	UNP I1REW2
A	0	HIS	-	expression tag	UNP I1REW2
B	-23	MET	-	expression tag	UNP I1REW2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-22	GLY	-	expression tag	UNP I1REW2
B	-21	ARG	-	expression tag	UNP I1REW2
B	-20	ASP	-	expression tag	UNP I1REW2
B	-19	PRO	-	expression tag	UNP I1REW2
B	-18	ASN	-	expression tag	UNP I1REW2
B	-17	SER	-	expression tag	UNP I1REW2
B	-16	SER	-	expression tag	UNP I1REW2
B	-15	SER	-	expression tag	UNP I1REW2
B	-14	VAL	-	expression tag	UNP I1REW2
B	-13	ASP	-	expression tag	UNP I1REW2
B	-12	LYS	-	expression tag	UNP I1REW2
B	-11	LEU	-	expression tag	UNP I1REW2
B	-10	ALA	-	expression tag	UNP I1REW2
B	-9	ALA	-	expression tag	UNP I1REW2
B	-8	ALA	-	expression tag	UNP I1REW2
B	-7	LEU	-	expression tag	UNP I1REW2
B	-6	GLU	-	expression tag	UNP I1REW2
B	-5	HIS	-	expression tag	UNP I1REW2
B	-4	HIS	-	expression tag	UNP I1REW2
B	-3	HIS	-	expression tag	UNP I1REW2
B	-2	HIS	-	expression tag	UNP I1REW2
B	-1	HIS	-	expression tag	UNP I1REW2
B	0	HIS	-	expression tag	UNP I1REW2

- Molecule 2 is FE (II) ION (three-letter code: FE2) (formula: Fe).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Fe 1 1	0	0
2	B	1	Total Fe 1 1	0	0

- Molecule 3 is water.

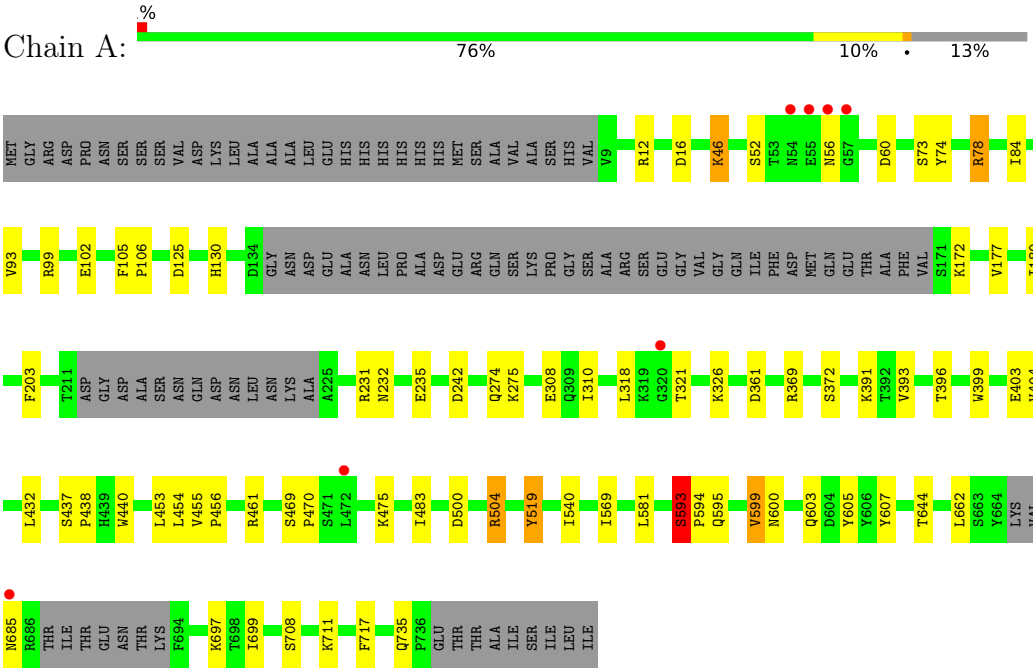
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	14	Total O 14 14	0	0
3	B	6	Total O 6 6	0	0

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.

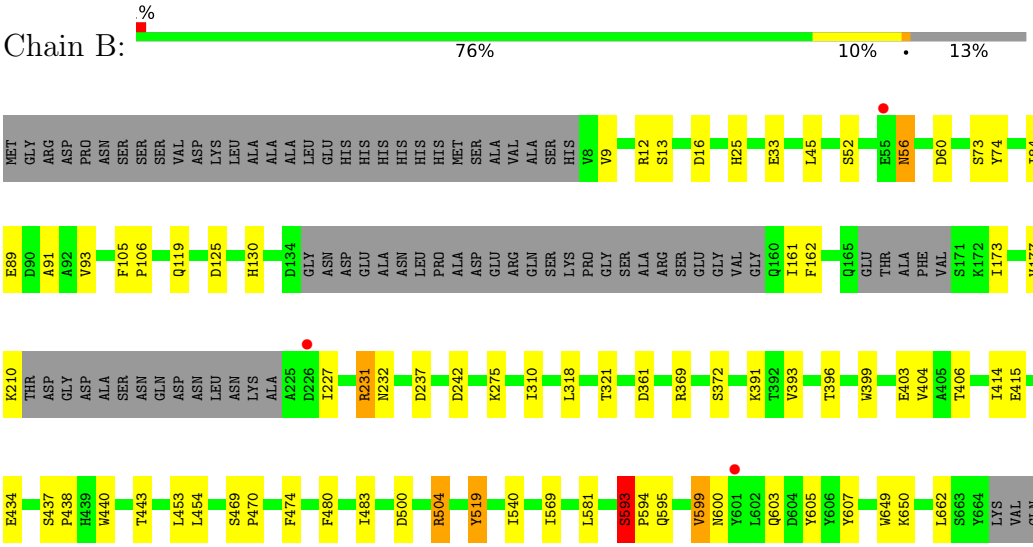
• Molecule 1: lipoxygenase

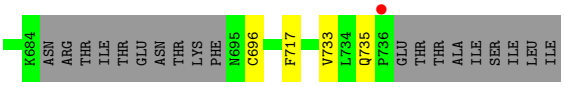
Chain A:



• Molecule 1: lipoxygenase

Chain B:




K684
ASN
ARG
THR
ILE
THR
GLU
ASN
THR
LYS
PHE
N695
C696
F717
V733
L734
Q735
P736
GLU
THR
THR
ALA
ILE
SER
ILE
LEU
ILE

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	123.36Å 113.67Å 99.44Å 90.00° 90.25° 90.00°	Depositor
Resolution (Å)	64.08 – 2.79 64.08 – 2.80	Depositor EDS
% Data completeness (in resolution range)	98.8 (64.08-2.79) 98.8 (64.08-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.08 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.8.0073	Depositor
R, R_{free}	0.175 , 0.237 0.176 , 0.234	Depositor DCC
R_{free} test set	1090 reflections (3.22%)	wwPDB-VP
Wilson B-factor (Å^2)	42.4	Xtriage
Anisotropy	0.261	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 10.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.43$, $< L^2 > = 0.26$	Xtriage
Estimated twinning fraction	0.150 for -h,-k,l	Xtriage
Reported twinning fraction	0.814 for H, K, L 0.186 for h,-k,-l	Depositor
Outliers	0 of 33861 reflections	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	10618	wwPDB-VP
Average B, all atoms (Å^2)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.91% 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: FE2

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	0.67	1/5422 (0.0%)	0.77	3/7368 (0.0%)
1	B	0.63	0/5431	0.75	2/7381 (0.0%)
All	All	0.65	1/10853 (0.0%)	0.76	5/14749 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	102	GLU	CD-OE2	5.16	1.31	1.25

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	99	ARG	NE-CZ-NH1	6.17	123.38	120.30
1	A	461	ARG	NE-CZ-NH1	5.90	123.25	120.30
1	A	504	ARG	NE-CZ-NH1	5.56	123.08	120.30
1	B	504	ARG	NE-CZ-NH1	5.49	123.05	120.30
1	B	369	ARG	NE-CZ-NH1	5.10	122.85	120.30

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	5294	0	5170	47	0
1	B	5302	0	5165	53	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	14	0	0	0	0
3	B	6	0	0	0	0
All	All	10618	0	10335	97	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 (97) 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:415:GLU:OE1	1:B:443:THR:HG21	1.84	0.76
1:A:275:LYS:NZ	1:A:361:ASP:OD1	2.19	0.76
1:B:432:LEU:HD21	1:B:581:LEU:HD11	1.71	0.72
1:B:177:VAL:HG21	1:B:453:LEU:HD11	1.71	0.72
1:B:275:LYS:NZ	1:B:361:ASP:OD1	2.19	0.72
1:A:432:LEU:HD21	1:A:581:LEU:HD11	1.71	0.72
1:B:33:GLU:OE1	1:B:33:GLU:HA	1.94	0.68
1:A:187:HIS:CD2	1:A:644:THR:HG23	2.29	0.67
1:A:504:ARG:NH2	1:A:519:TYR:OH	2.28	0.66
1:B:600:ASN:ND2	1:B:603:GLN:OE1	2.28	0.66
1:A:12:ARG:NH1	1:A:16:ASP:OD2	2.28	0.65
1:A:595:GLN:O	1:A:599:VAL:HG13	1.98	0.63
1:A:177:VAL:HG11	1:A:453:LEU:HD11	1.80	0.63
1:A:318:LEU:HD11	1:A:470:PRO:HG3	1.80	0.63
1:B:91:ALA:HB1	1:B:161:ILE:HG21	1.82	0.62
1:B:504:ARG:NH2	1:B:519:TYR:OH	2.32	0.61
1:B:318:LEU:HD11	1:B:470:PRO:HG3	1.82	0.61
1:B:393:VAL:O	1:B:396:THR:OG1	2.17	0.60
1:B:595:GLN:NE2	1:B:595:GLN:HA	2.18	0.59
1:B:227:ILE:HG12	1:B:231:ARG:HD3	1.86	0.58
1:B:161:ILE:HD11	1:B:173:ILE:CG1	2.34	0.57
1:B:403:GLU:OE2	1:B:603:GLN:NE2	2.37	0.57
1:B:406:THR:HG22	1:B:599:VAL:HG21	1.86	0.57
1:A:403:GLU:OE2	1:A:603:GLN:NE2	2.38	0.56
1:A:231:ARG:NH2	1:A:235:GLU:OE2	2.39	0.56
1:B:9:VAL:HG13	1:B:13:SER:HB2	1.87	0.56
1:A:454:LEU:HD21	1:A:662:LEU:HD21	1.88	0.56
1:A:595:GLN:NE2	1:A:595:GLN:HA	2.19	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:406:THR:HG22	1:B:599:VAL:CG2	2.36	0.55
1:B:404:VAL:HG13	1:B:483:ILE:HG12	1.89	0.54
1:B:500:ASP:OD2	1:B:504:ARG:HD3	2.08	0.54
1:B:454:LEU:HD21	1:B:662:LEU:HD21	1.88	0.54
1:A:393:VAL:O	1:A:396:THR:OG1	2.21	0.54
1:A:500:ASP:OD2	1:A:504:ARG:HD3	2.08	0.53
1:A:453:LEU:HD12	1:A:453:LEU:O	2.09	0.52
1:A:89:GLU:O	1:A:93:VAL:HG23	2.08	0.52
1:A:404:VAL:HG13	1:A:483:ILE:HG12	1.91	0.52
1:B:595:GLN:HA	1:B:595:GLN:HE21	1.75	0.52
1:A:242:ASP:OD1	1:A:391:LYS:NZ	2.40	0.52
1:B:89:GLU:O	1:B:93:VAL:HG23	2.09	0.51
1:A:600:ASN:ND2	1:A:603:GLN:OE1	2.43	0.51
1:B:161:ILE:HD11	1:B:173:ILE:HG12	1.92	0.51
1:A:593:SER:HB3	1:A:594:PRO:HD3	1.93	0.50
1:B:649:TRP:CZ2	1:B:650:LYS:HE2	2.46	0.50
1:A:369:ARG:HG2	1:A:369:ARG:NH1	2.27	0.49
1:B:419:ILE:HG12	1:B:440:TRP:CD2	2.47	0.49
1:A:177:VAL:CG1	1:A:453:LEU:HD11	2.43	0.49
1:B:242:ASP:OD1	1:B:391:LYS:NZ	2.40	0.48
1:A:595:GLN:HA	1:A:595:GLN:HE21	1.77	0.48
1:B:453:LEU:O	1:B:453:LEU:HD12	2.13	0.48
1:A:454:LEU:CD2	1:A:662:LEU:HD21	2.44	0.48
1:A:419:ILE:HG12	1:A:440:TRP:CD2	2.48	0.48
1:B:474:PHE:HB3	1:B:480:PHE:CE2	2.49	0.47
1:B:454:LEU:CD2	1:B:662:LEU:HD21	2.45	0.47
1:A:180:ILE:HG22	1:A:180:ILE:O	2.16	0.46
1:B:227:ILE:CD1	1:B:231:ARG:HD3	2.46	0.46
1:A:369:ARG:HG2	1:A:369:ARG:HH11	1.81	0.46
1:B:717:PHE:HB2	1:B:735:GLN:HE22	1.81	0.45
1:A:106:PRO:HB2	1:B:45:LEU:HD12	1.98	0.45
1:A:414:ILE:HG23	1:A:569:ILE:HD13	1.98	0.45
1:B:209:PRO:O	1:B:210:LYS:CB	2.65	0.45
1:B:84:ILE:HA	1:B:87:ILE:HD12	1.99	0.45
1:B:227:ILE:CG1	1:B:231:ARG:HD3	2.46	0.45
1:B:56:ASN:N	1:B:56:ASN:OD1	2.50	0.44
1:A:84:ILE:HA	1:A:87:ILE:HD12	2.00	0.44
1:A:717:PHE:HB2	1:A:735:GLN:HE22	1.83	0.44
1:A:399:TRP:HD1	1:A:607:TYR:CE1	2.35	0.44
1:B:73:SER:O	1:B:74:TYR:C	2.57	0.43
1:A:74:TYR:O	1:A:78:ARG:HB2	2.17	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:232:ASN:HA	1:A:605:TYR:CD1	2.53	0.43
1:B:399:TRP:HD1	1:B:607:TYR:CE1	2.35	0.43
1:B:474:PHE:HB3	1:B:480:PHE:CZ	2.53	0.43
1:B:161:ILE:HG23	1:B:162:PHE:CD2	2.54	0.43
1:B:125:ASP:OD1	1:B:130:HIS:NE2	2.52	0.43
1:A:73:SER:O	1:A:74:TYR:C	2.57	0.43
1:A:469:SER:HA	1:A:470:PRO:C	2.39	0.43
1:B:180:ILE:O	1:B:180:ILE:HG22	2.18	0.43
1:A:125:ASP:OD1	1:A:130:HIS:NE2	2.52	0.42
1:A:455:VAL:HB	1:A:456:PRO:HD3	2.01	0.42
1:B:414:ILE:HG23	1:B:569:ILE:HD13	2.01	0.42
1:B:105:PHE:CD2	1:B:106:PRO:HD2	2.55	0.42
1:A:52:SER:OG	1:A:60:ASP:OD2	2.36	0.42
1:A:105:PHE:CD2	1:A:106:PRO:HD2	2.55	0.42
1:B:593:SER:HB3	1:B:594:PRO:HD3	2.01	0.42
1:B:469:SER:HA	1:B:470:PRO:C	2.40	0.41
1:A:191:PRO:HA	1:A:203:PHE:CD2	2.55	0.41
1:B:161:ILE:HG23	1:B:162:PHE:HD2	1.84	0.41
1:B:232:ASN:HA	1:B:605:TYR:CD1	2.56	0.41
1:A:593:SER:HB3	1:A:594:PRO:CD	2.50	0.41
1:A:12:ARG:O	1:A:12:ARG:HD2	2.20	0.41
1:B:52:SER:OG	1:B:60:ASP:OD2	2.37	0.41
1:A:46:LYS:HD2	1:B:434:GLU:OE1	2.21	0.41
1:B:227:ILE:HD11	1:B:231:ARG:HD3	2.01	0.41
1:A:187:HIS:NE2	1:A:644:THR:HG23	2.36	0.40
1:B:437:SER:N	1:B:438:PRO:CD	2.84	0.40
1:A:437:SER:N	1:A:438:PRO:CD	2.85	0.40
1:A:708:SER:HG	1:B:25:HIS:H	1.69	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	659/769 (86%)	629 (95%)	29 (4%)	1 (0%)	47 78
1	B	657/769 (85%)	630 (96%)	26 (4%)	1 (0%)	47 78
All	All	1316/1538 (86%)	1259 (96%)	55 (4%)	2 (0%)	47 78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	593	SER
1	B	593	SER

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	566/660 (86%)	547 (97%)	19 (3%)	37 71
1	B	568/660 (86%)	552 (97%)	16 (3%)	43 77
All	All	1134/1320 (86%)	1099 (97%)	35 (3%)	40 74

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	LYS
1	A	56	ASN
1	A	78	ARG
1	A	172	LYS
1	A	274	GLN
1	A	308	GLU
1	A	310	ILE
1	A	321	THR
1	A	326	LYS
1	A	372	SER
1	A	475	LYS
1	A	519	TYR
1	A	540	ILE
1	A	593	SER

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Mol	Chain	Res	Type
1	A	599	VAL
1	A	685	ASN
1	A	697	LYS
1	A	699	ILE
1	A	711	LYS
1	B	12	ARG
1	B	16	ASP
1	B	56	ASN
1	B	86	SER
1	B	119	GLN
1	B	231	ARG
1	B	237	ASP
1	B	310	ILE
1	B	321	THR
1	B	372	SER
1	B	519	TYR
1	B	540	ILE
1	B	593	SER
1	B	599	VAL
1	B	696	CYS
1	B	733	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	42	ASN
1	A	294	GLN
1	A	307	ASN
1	A	568	GLN
1	A	595	GLN
1	A	600	ASN
1	A	629	GLN
1	A	681	ASN
1	A	719	ASN
1	A	735	GLN
1	B	25	HIS
1	B	42	ASN
1	B	294	GLN
1	B	307	ASN
1	B	568	GLN
1	B	595	GLN
1	B	629	GLN

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Mol	Chain	Res	Type
1	B	681	ASN
1	B	719	ASN
1	B	735	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

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.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	668/769 (86%)	-0.46	8 (1%)	79	73	25, 42, 75, 111	0
1	B	669/769 (86%)	-0.40	4 (0%)	89	86	28, 47, 79, 109	0
All	All	1337/1538 (86%)	-0.43	12 (0%)	84	80	25, 44, 78, 111	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	57	GLY	4.5
1	A	56	ASN	4.3
1	B	736	PRO	3.1
1	B	55	GLU	2.7
1	B	601	TYR	2.5
1	A	55	GLU	2.4
1	B	226	ASP	2.4
1	A	320	GLY	2.4
1	A	669	ASP	2.3
1	A	472	LEU	2.3
1	A	685	ASN	2.2
1	A	54	ASN	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

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
2	FE2	A	801	1/1	1.00	0.12	30,30,30,30	0
2	FE2	B	801	1/1	1.00	0.07	32,32,32,32	0

6.5 Other polymers (i)

There are no such residues in this entry.