



Full wwPDB X-ray Structure Validation Report ⓘ

May 21, 2024 – 02:01 PM EDT

PDB ID : 8EWW
Title : Structure of Arabidopsis fatty acid amide hydrolase mutant S305A
Authors : Aziz, M.; Wang, X.; Gaguancela, O.A.; Chapman, K.D.
Deposited on : 2022-10-24
Resolution : 2.80 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

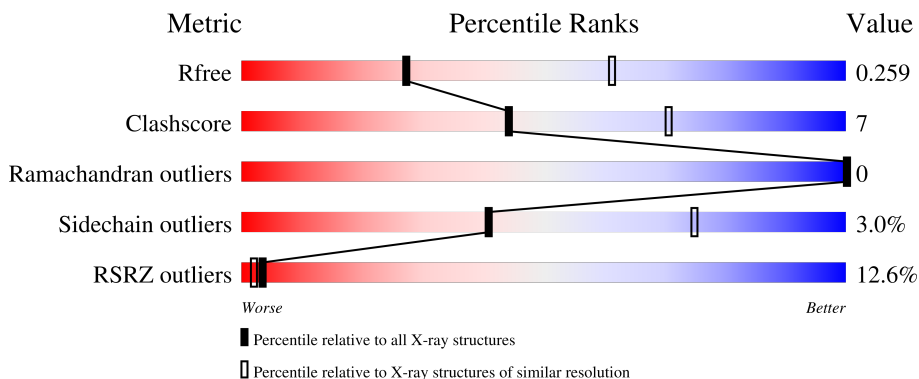
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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 $\leq 5\%$. 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	636	
1	B	636	

2 Entry composition i

There are 2 unique types of molecules in this entry. The entry contains 9228 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 amide hydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	593	4537	2881	764	869	23	0	0	0
1	B	596	4558	2894	768	872	24	0	0	0

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	305	ALA	SER	engineered mutation	UNP Q7XJJ7
A	608	LYS	-	expression tag	UNP Q7XJJ7
A	609	GLY	-	expression tag	UNP Q7XJJ7
A	610	GLU	-	expression tag	UNP Q7XJJ7
A	611	PHE	-	expression tag	UNP Q7XJJ7
A	612	GLU	-	expression tag	UNP Q7XJJ7
A	613	ALA	-	expression tag	UNP Q7XJJ7
A	614	TYR	-	expression tag	UNP Q7XJJ7
A	615	VAL	-	expression tag	UNP Q7XJJ7
A	616	GLU	-	expression tag	UNP Q7XJJ7
A	617	GLN	-	expression tag	UNP Q7XJJ7
A	618	LYS	-	expression tag	UNP Q7XJJ7
A	619	LEU	-	expression tag	UNP Q7XJJ7
A	620	ILE	-	expression tag	UNP Q7XJJ7
A	621	SER	-	expression tag	UNP Q7XJJ7
A	622	GLU	-	expression tag	UNP Q7XJJ7
A	623	GLU	-	expression tag	UNP Q7XJJ7
A	624	ASP	-	expression tag	UNP Q7XJJ7
A	625	LEU	-	expression tag	UNP Q7XJJ7
A	626	ASN	-	expression tag	UNP Q7XJJ7
A	627	SER	-	expression tag	UNP Q7XJJ7
A	628	ALA	-	expression tag	UNP Q7XJJ7
A	629	VAL	-	expression tag	UNP Q7XJJ7
A	630	ASP	-	expression tag	UNP Q7XJJ7
A	631	HIS	-	expression tag	UNP Q7XJJ7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	632	HIS	-	expression tag	UNP Q7XJJ7
A	633	HIS	-	expression tag	UNP Q7XJJ7
A	634	HIS	-	expression tag	UNP Q7XJJ7
A	635	HIS	-	expression tag	UNP Q7XJJ7
A	636	HIS	-	expression tag	UNP Q7XJJ7
B	305	ALA	SER	engineered mutation	UNP Q7XJJ7
B	608	LYS	-	expression tag	UNP Q7XJJ7
B	609	GLY	-	expression tag	UNP Q7XJJ7
B	610	GLU	-	expression tag	UNP Q7XJJ7
B	611	PHE	-	expression tag	UNP Q7XJJ7
B	612	GLU	-	expression tag	UNP Q7XJJ7
B	613	ALA	-	expression tag	UNP Q7XJJ7
B	614	TYR	-	expression tag	UNP Q7XJJ7
B	615	VAL	-	expression tag	UNP Q7XJJ7
B	616	GLU	-	expression tag	UNP Q7XJJ7
B	617	GLN	-	expression tag	UNP Q7XJJ7
B	618	LYS	-	expression tag	UNP Q7XJJ7
B	619	LEU	-	expression tag	UNP Q7XJJ7
B	620	ILE	-	expression tag	UNP Q7XJJ7
B	621	SER	-	expression tag	UNP Q7XJJ7
B	622	GLU	-	expression tag	UNP Q7XJJ7
B	623	GLU	-	expression tag	UNP Q7XJJ7
B	624	ASP	-	expression tag	UNP Q7XJJ7
B	625	LEU	-	expression tag	UNP Q7XJJ7
B	626	ASN	-	expression tag	UNP Q7XJJ7
B	627	SER	-	expression tag	UNP Q7XJJ7
B	628	ALA	-	expression tag	UNP Q7XJJ7
B	629	VAL	-	expression tag	UNP Q7XJJ7
B	630	ASP	-	expression tag	UNP Q7XJJ7
B	631	HIS	-	expression tag	UNP Q7XJJ7
B	632	HIS	-	expression tag	UNP Q7XJJ7
B	633	HIS	-	expression tag	UNP Q7XJJ7
B	634	HIS	-	expression tag	UNP Q7XJJ7
B	635	HIS	-	expression tag	UNP Q7XJJ7
B	636	HIS	-	expression tag	UNP Q7XJJ7

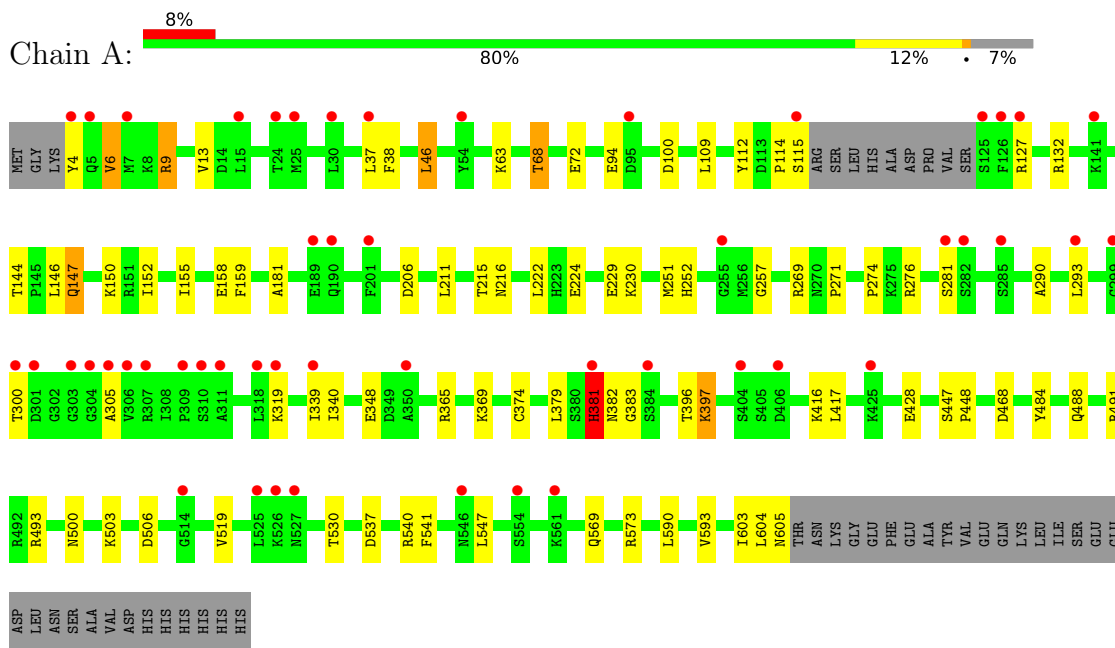
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	66	Total O 66 66	0	0
2	B	67	Total O 67 67	0	0

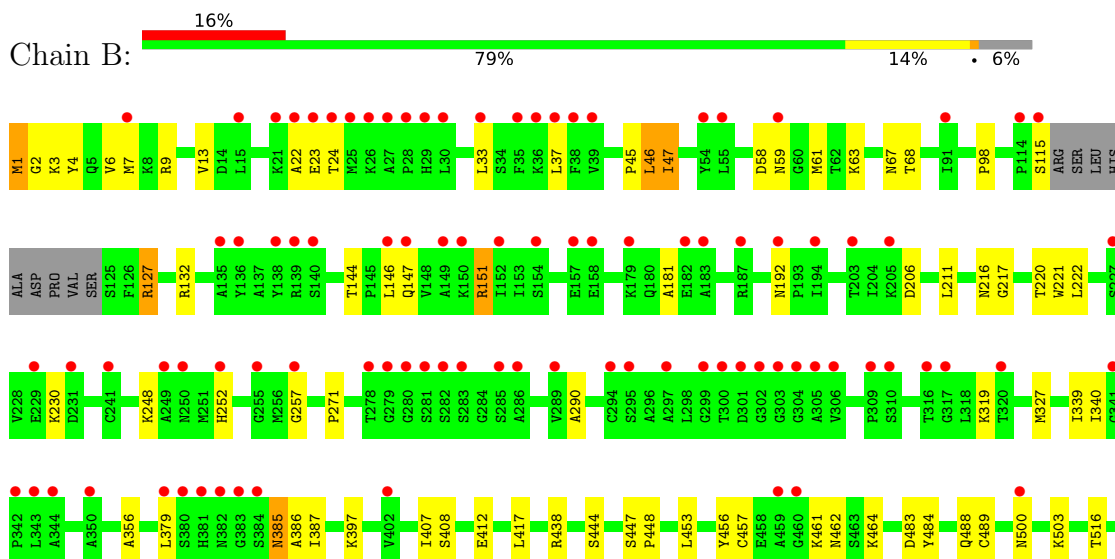
3 Residue-property plots [i](#)

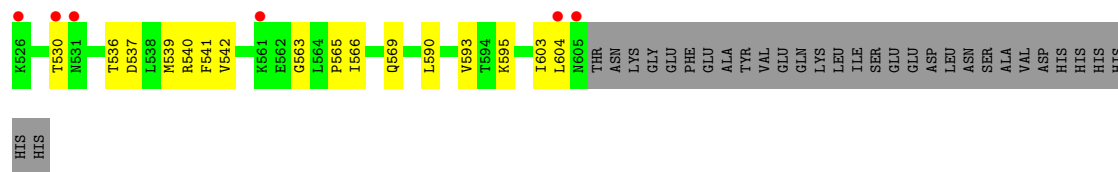
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Fatty acid amide hydrolase



- Molecule 1: Fatty acid amide hydrolase





4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	72.45Å 81.32Å 133.18Å 90.00° 104.51° 90.00°	Depositor
Resolution (Å)	38.78 – 2.80 38.78 – 2.80	Depositor EDS
% Data completeness (in resolution range)	98.5 (38.78-2.80) 98.5 (38.78-2.80)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.36 (at 2.81Å)	Xtrriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.234 , 0.260 0.234 , 0.259	Depositor DCC
R_{free} test set	1882 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å ²)	82.6	Xtrriage
Anisotropy	0.349	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 52.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.015 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	9228	wwPDB-VP
Average B, all atoms (Å ²)	99.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.21% 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, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.25	0/4633	0.44	0/6292
1	B	0.25	0/4654	0.43	1/6318 (0.0%)
All	All	0.25	0/9287	0.43	1/12610 (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	A	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	B	22	ALA	CB-CA-C	8.33	122.60	110.10

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	381	HIS	Peptide

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	4537	0	4560	60	0
1	B	4558	0	4588	62	0
2	A	66	0	0	17	0
2	B	67	0	0	18	0
All	All	9228	0	9148	121	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 7.

All (121) 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:221:TRP:CD1	1:B:464:LYS:HB3	2.00	0.97
1:B:489:CYS:SG	2:B:720:HOH:O	2.29	0.91
1:A:224:GLU:O	2:A:701:HOH:O	1.93	0.86
1:B:386:ALA:N	2:B:706:HOH:O	2.22	0.73
1:B:221:TRP:CD1	2:B:703:HOH:O	2.41	0.72
1:B:221:TRP:CD1	1:B:464:LYS:CB	2.73	0.71
1:A:63:LYS:O	1:A:68:THR:OG1	2.09	0.69
1:A:540:ARG:NH2	2:A:711:HOH:O	2.27	0.68
1:B:221:TRP:HD1	2:B:703:HOH:O	1.75	0.68
1:A:397:LYS:NZ	1:A:428:GLU:OE2	2.25	0.68
1:A:381:HIS:H	1:A:383:GLY:H	1.40	0.67
1:A:319:LYS:HE2	1:A:339:ILE:HG12	1.79	0.65
1:B:221:TRP:HD1	1:B:464:LYS:HB3	1.57	0.65
1:B:6:VAL:HB	1:B:68:THR:HG23	1.81	0.63
1:B:319:LYS:HE2	1:B:339:ILE:HG12	1.81	0.62
1:B:397:LYS:NZ	2:B:717:HOH:O	2.32	0.61
1:B:385:ASN:ND2	2:B:715:HOH:O	2.32	0.61
1:A:603:ILE:HG22	1:A:604:LEU:H	1.66	0.61
1:B:603:ILE:HG22	1:B:604:LEU:H	1.67	0.60
1:A:365:ARG:NH1	2:A:708:HOH:O	2.24	0.59
1:A:381:HIS:H	1:A:383:GLY:N	2.01	0.59
1:B:23:GLU:OE2	1:B:438:ARG:NH1	2.36	0.58
1:A:216:ASN:HA	1:A:222:LEU:HB3	1.86	0.58
1:A:229:GLU:OE1	2:A:702:HOH:O	2.17	0.58
1:B:151:ARG:HG2	1:B:603:ILE:HG23	1.85	0.58
1:B:211:LEU:HD11	1:B:230:LYS:HA	1.86	0.58
1:A:271:PRO:HG2	1:A:290:ALA:HB3	1.86	0.57
1:B:563:GLY:O	1:B:595:LYS:NZ	2.37	0.57
1:B:327:MET:HG2	1:B:340:ILE:HG13	1.88	0.56
1:A:9:ARG:O	1:A:13:VAL:HG23	2.06	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:500:ASN:HA	1:B:503:LYS:HD3	1.88	0.55
1:A:381:HIS:N	1:A:383:GLY:H	2.05	0.55
1:B:1:MET:HB3	1:B:7:MET:HG2	1.87	0.55
1:A:605:ASN:ND2	2:A:724:HOH:O	2.39	0.54
1:B:387:ILE:HG12	2:B:706:HOH:O	2.07	0.54
1:A:155:ILE:O	2:A:703:HOH:O	2.18	0.53
1:A:46:LEU:HD21	1:B:46:LEU:HD21	1.91	0.53
1:B:541:PHE:O	1:B:569:GLN:NE2	2.36	0.53
1:B:216:ASN:HA	1:B:222:LEU:HB3	1.91	0.53
1:A:381:HIS:HA	1:A:383:GLY:H	1.74	0.52
1:A:132:ARG:NH2	1:A:348:GLU:OE2	2.42	0.52
1:A:379:LEU:H	1:A:379:LEU:HD23	1.74	0.52
1:B:63:LYS:HA	1:B:67:ASN:HB2	1.91	0.52
1:A:146:LEU:HG	1:A:150:LYS:HE2	1.91	0.52
1:B:417:LEU:HD23	1:B:590:LEU:HB3	1.92	0.52
1:B:536:THR:O	2:B:701:HOH:O	2.19	0.51
1:A:374:CYS:HB2	2:A:719:HOH:O	2.10	0.51
1:A:215:THR:HA	2:A:723:HOH:O	2.11	0.51
1:B:417:LEU:HB3	1:B:590:LEU:HD13	1.93	0.50
1:B:565:PRO:HD2	2:B:732:HOH:O	2.11	0.50
1:A:152:ILE:HG23	1:A:293:LEU:HD22	1.93	0.49
1:A:305:ALA:HB2	2:A:761:HOH:O	2.12	0.49
1:A:417:LEU:HD23	1:A:590:LEU:HB3	1.94	0.49
1:B:356:ALA:HB3	2:B:714:HOH:O	2.12	0.49
1:A:38:PHE:HB3	2:A:718:HOH:O	2.12	0.49
1:B:221:TRP:O	1:B:221:TRP:HE3	1.96	0.49
1:A:300:THR:HG22	1:A:340:ILE:HG12	1.94	0.48
1:A:491:ARG:HG3	1:A:547:LEU:HG	1.96	0.48
1:A:500:ASN:HA	1:A:503:LYS:HD3	1.95	0.48
1:A:276:ARG:HA	1:A:519:VAL:HA	1.96	0.48
1:B:144:THR:HG23	1:B:147:GLN:H	1.78	0.47
1:B:206:ASP:OD2	1:B:217:GLY:N	2.47	0.47
1:A:506:ASP:OD1	1:A:573:ARG:NH2	2.40	0.47
1:B:483:ASP:OD2	2:B:702:HOH:O	2.20	0.47
1:A:396:THR:HB	1:A:397:LYS:HZ1	1.80	0.47
1:A:541:PHE:O	1:A:569:GLN:NE2	2.39	0.46
1:A:159:PHE:N	2:A:703:HOH:O	2.20	0.46
1:B:115:SER:N	2:B:727:HOH:O	2.46	0.46
1:B:271:PRO:HG2	1:B:290:ALA:HB3	1.98	0.46
1:B:457:CYS:HB3	1:B:462:ASN:HB2	1.97	0.46
1:A:109:LEU:HD22	1:A:348:GLU:HG3	1.98	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:9:ARG:O	1:B:13:VAL:HG23	2.16	0.45
1:B:2:GLY:O	1:B:3:LYS:HD2	2.16	0.45
1:A:252:HIS:CE1	1:A:257:GLY:HA3	2.51	0.45
1:B:98:PRO:HB3	1:B:356:ALA:HB1	1.99	0.45
1:B:407:ILE:HA	1:B:566:ILE:HD13	1.99	0.45
1:A:94:GLU:O	2:A:704:HOH:O	2.21	0.44
1:A:252:HIS:NE2	1:A:468:ASP:OD2	2.46	0.44
1:A:484:TYR:O	1:A:488:GLN:HG2	2.17	0.44
1:B:221:TRP:NE1	1:B:464:LYS:CB	2.80	0.44
1:B:444:SER:N	2:B:709:HOH:O	2.28	0.44
1:A:381:HIS:N	1:A:383:GLY:N	2.64	0.44
1:B:461:LYS:HD3	1:B:464:LYS:HD2	2.00	0.44
1:A:158:GLU:HB3	2:A:703:HOH:O	2.17	0.44
1:B:146:LEU:HA	1:B:181:ALA:HB1	2.00	0.44
1:B:206:ASP:HA	1:B:248:LYS:HE2	1.98	0.44
1:B:252:HIS:CE1	1:B:257:GLY:HA3	2.53	0.44
1:A:112:TYR:CE2	1:A:114:PRO:HG3	2.53	0.44
1:A:146:LEU:HA	1:A:181:ALA:HB1	2.00	0.44
1:B:603:ILE:HG22	1:B:604:LEU:N	2.32	0.44
1:A:100:ASP:OD2	2:A:705:HOH:O	2.21	0.43
1:B:537:ASP:OD1	1:B:540:ARG:NH1	2.41	0.43
1:B:1:MET:O	1:B:6:VAL:HA	2.18	0.43
1:B:453:LEU:HD23	1:B:456:TYR:HD2	1.83	0.43
1:A:144:THR:HG23	1:A:147:GLN:H	1.84	0.42
1:B:132:ARG:NH1	2:B:724:HOH:O	2.41	0.42
1:B:63:LYS:HE2	1:B:63:LYS:HB3	1.81	0.42
1:B:220:THR:OG1	2:B:703:HOH:O	2.21	0.42
1:B:408:SER:O	1:B:412:GLU:HB2	2.20	0.42
1:A:537:ASP:HA	1:A:540:ARG:HH12	1.85	0.42
1:B:537:ASP:N	2:B:711:HOH:O	2.52	0.42
1:B:539:MET:HA	1:B:542:VAL:HG22	2.00	0.42
1:A:281:SER:H	1:A:305:ALA:CB	2.33	0.42
1:B:484:TYR:O	1:B:488:GLN:HG2	2.20	0.42
1:B:447:SER:HB2	1:B:448:PRO:HD3	2.01	0.42
1:A:6:VAL:HB	1:A:68:THR:HG23	2.02	0.42
1:A:229:GLU:HB2	2:A:707:HOH:O	2.20	0.41
1:A:6:VAL:CG2	1:A:68:THR:HG23	2.51	0.41
1:A:211:LEU:HD11	1:A:230:LYS:HA	2.03	0.41
1:B:58:ASP:OD2	2:B:704:HOH:O	2.21	0.41
1:A:115:SER:N	2:A:727:HOH:O	2.42	0.41
1:B:47:ILE:H	1:B:47:ILE:HG13	1.51	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:72:GLU:OE1	1:A:493:ARG:NH1	2.52	0.41
1:A:281:SER:H	1:A:305:ALA:HB1	1.85	0.41
1:A:381:HIS:HA	1:A:382:ASN:HA	1.71	0.41
1:B:127:ARG:HH11	1:B:127:ARG:H	1.68	0.41
1:A:416:LYS:HA	2:A:749:HOH:O	2.20	0.41
1:A:269:ARG:HB3	1:A:274:PRO:HA	2.03	0.40
1:A:447:SER:HB2	1:A:448:PRO:HD3	2.02	0.40
1:B:45:PRO:O	2:B:707:HOH:O	2.22	0.40
1:A:206:ASP:HB3	1:A:251:MET:SD	2.62	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	589/636 (93%)	569 (97%)	20 (3%)	0	100	100
1	B	592/636 (93%)	566 (96%)	26 (4%)	0	100	100
All	All	1181/1272 (93%)	1135 (96%)	46 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	501/539 (93%)	488 (97%)	13 (3%)	46	79
1	B	503/539 (93%)	486 (97%)	17 (3%)	37	71
All	All	1004/1078 (93%)	974 (97%)	30 (3%)	41	75

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	TYR
1	A	6	VAL
1	A	9	ARG
1	A	37	LEU
1	A	46	LEU
1	A	68	THR
1	A	127	ARG
1	A	147	GLN
1	A	369	LYS
1	A	381	HIS
1	A	397	LYS
1	A	530	THR
1	A	593	VAL
1	B	1	MET
1	B	4	TYR
1	B	24	THR
1	B	33	LEU
1	B	37	LEU
1	B	46	LEU
1	B	47	ILE
1	B	59	ASN
1	B	61	MET
1	B	127	ARG
1	B	151	ARG
1	B	192	ASN
1	B	379	LEU
1	B	385	ASN
1	B	516	THR
1	B	530	THR
1	B	593	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	272	HIS

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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	593/636 (93%)	0.42	50 (8%) 11 5	67, 92, 124, 141	0
1	B	596/636 (93%)	0.74	100 (16%) 1 1	67, 103, 143, 170	0
All	All	1189/1272 (93%)	0.58	150 (12%) 3 2	67, 97, 136, 170	0

All (150) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	33	LEU	7.4
1	A	381	HIS	6.6
1	B	382	ASN	6.6
1	A	127	ARG	6.2
1	A	4	TYR	6.0
1	B	27	ALA	5.8
1	B	305	ALA	5.7
1	B	28	PRO	5.7
1	B	282	SER	5.6
1	B	383	GLY	5.6
1	A	190	GLN	5.5
1	B	24	THR	5.4
1	B	147	GLN	5.4
1	B	146	LEU	5.4
1	A	25	MET	5.3
1	B	22	ALA	5.2
1	B	26	LYS	5.1
1	B	194	ILE	5.0
1	A	115	SER	4.7
1	B	136	TYR	4.7
1	B	343	LEU	4.6
1	B	381	HIS	4.6
1	B	36	LYS	4.5
1	B	38	PHE	4.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	604	LEU	4.2
1	B	299	GLY	4.2
1	B	229	GLU	4.2
1	B	257	GLY	4.1
1	B	285	SER	4.1
1	B	384	SER	4.0
1	B	25	MET	4.0
1	B	300	THR	4.0
1	A	384	SER	4.0
1	B	281	SER	3.9
1	B	140	SER	3.8
1	A	425	LYS	3.8
1	B	283	SER	3.8
1	B	115	SER	3.7
1	A	126	PHE	3.7
1	B	39	VAL	3.7
1	B	158	GLU	3.6
1	A	37	LEU	3.6
1	A	54	TYR	3.6
1	B	15	LEU	3.5
1	A	189	GLU	3.5
1	A	306	VAL	3.5
1	B	37	LEU	3.4
1	B	531	ASN	3.4
1	A	310	SER	3.4
1	B	149	ALA	3.4
1	A	300	THR	3.4
1	A	285	SER	3.3
1	B	306	VAL	3.3
1	A	305	ALA	3.3
1	A	282	SER	3.3
1	B	280	GLY	3.3
1	B	138	TYR	3.3
1	B	135	ALA	3.2
1	B	342	PRO	3.2
1	B	139	ARG	3.2
1	B	301	ASP	3.2
1	B	152	ILE	3.1
1	B	252	HIS	3.1
1	B	530	THR	3.1
1	A	404	SER	3.1
1	B	241	CYS	3.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	21	LYS	3.0
1	B	182	GLU	3.0
1	A	561	LYS	3.0
1	A	95	ASP	3.0
1	B	23	GLU	3.0
1	B	309	PRO	3.0
1	B	310	SER	3.0
1	B	459	ALA	2.9
1	A	141	LYS	2.9
1	B	316	THR	2.9
1	A	301	ASP	2.8
1	B	54	TYR	2.8
1	A	526	LYS	2.8
1	B	150	LYS	2.8
1	B	192	ASN	2.8
1	B	279	GLY	2.8
1	A	201	PHE	2.8
1	A	304	GLY	2.8
1	B	302	GLY	2.8
1	A	514	GLY	2.7
1	B	286	ALA	2.7
1	B	303	GLY	2.7
1	A	318	LEU	2.7
1	B	304	GLY	2.7
1	A	125	SER	2.7
1	B	7	MET	2.7
1	B	183	ALA	2.7
1	B	605	ASN	2.7
1	A	7	MET	2.6
1	B	114	PRO	2.6
1	A	15	LEU	2.6
1	A	299	GLY	2.6
1	A	406	ASP	2.6
1	B	317	GLY	2.6
1	B	295	SER	2.6
1	B	55	LEU	2.5
1	A	546	ASN	2.5
1	B	255	GLY	2.5
1	A	554	SER	2.5
1	B	278	THR	2.5
1	B	227	SER	2.5
1	B	341	GLY	2.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	350	ALA	2.5
1	B	30	LEU	2.5
1	B	380	SER	2.5
1	B	154	SER	2.4
1	B	179	LYS	2.4
1	B	157	GLU	2.4
1	A	30	LEU	2.4
1	A	303	GLY	2.4
1	A	5	GLN	2.4
1	B	205	LYS	2.4
1	A	350	ALA	2.4
1	B	294	CYS	2.4
1	B	402	VAL	2.4
1	A	281	SER	2.4
1	B	289	VAL	2.3
1	B	460	GLY	2.3
1	A	527	ASN	2.3
1	B	526	LYS	2.3
1	A	255	GLY	2.3
1	A	309	PRO	2.3
1	A	307	ARG	2.3
1	B	561	LYS	2.3
1	B	35	PHE	2.2
1	B	379	LEU	2.2
1	B	91	ILE	2.2
1	A	293	LEU	2.2
1	B	500	ASN	2.2
1	B	250	ASN	2.2
1	B	29	HIS	2.1
1	A	339	ILE	2.1
1	A	525	LEU	2.1
1	B	203	THR	2.1
1	B	231	ASP	2.1
1	B	249	ALA	2.1
1	B	187	ARG	2.1
1	A	311	ALA	2.0
1	A	24	THR	2.0
1	B	320	THR	2.0
1	B	344	ALA	2.0
1	B	59	ASN	2.0
1	A	319	LYS	2.0
1	B	297	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 monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.