Full wwPDB X-ray Structure Validation Report (i)

Apr 5, 2026 – 03:42 AM UTC

PDB ID	:	9QGH / pdb_00009qgh
Title	:	BV333 aminotransferase from Streptomyces sp. mutant F61C
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Deposited on	:	2025-03-13
Resolution	:	1.31 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:

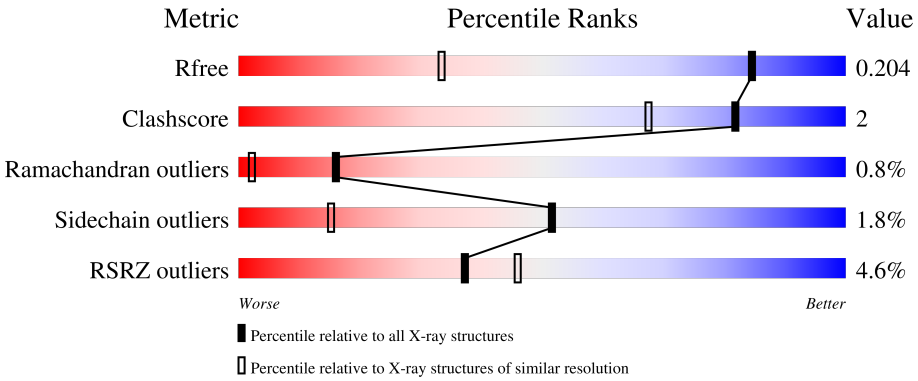
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 1.31 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}	180053	2531 (1.34-1.30)
Clashscore	190562	2585 (1.34-1.30)
Ramachandran outliers	187476	2528 (1.34-1.30)
Sidechain outliers	187428	2528 (1.34-1.30)
RSRZ outliers	180081	2528 (1.34-1.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	451	4% 88% 10% ·
1	B	451	5% 86% 12% ·

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 7645 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 Aspartate aminotransferase family protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	451	Total	C	N	O	P	S	0	0	0
			3522	2258	588	663	1	12			
1	B	451	Total	C	N	O	P	S	0	0	0
			3522	2258	588	663	1	12			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	61	CYS	PHE	engineered mutation	UNP A0AA46ZEV9
B	61	CYS	PHE	engineered mutation	UNP A0AA46ZEV9

- Molecule 2 is water.

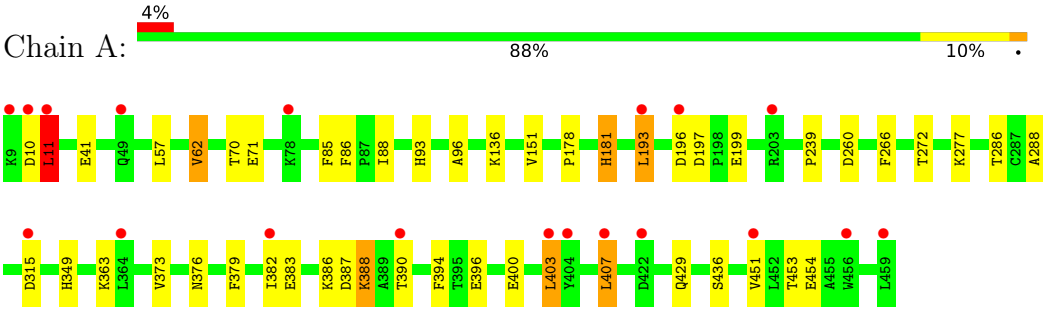
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	298	Total	O	0	0
			298	298		
2	B	303	Total	O	0	0
			303	303		

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.

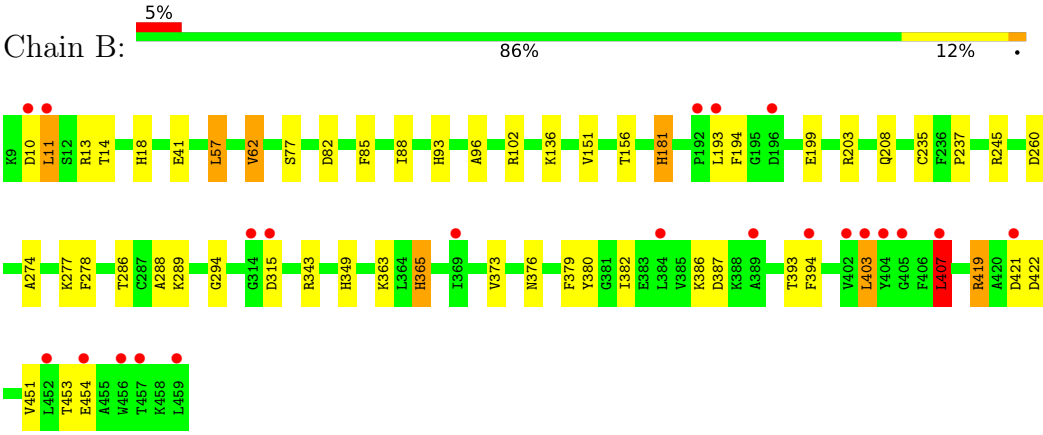
• Molecule 1: Aspartate aminotransferase family protein

Chain A:



• Molecule 1: Aspartate aminotransferase family protein

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	99.75Å 176.46Å 111.26Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	88.23 – 1.31 88.23 – 1.31	Depositor EDS
% Data completeness (in resolution range)	94.7 (88.23-1.31) 77.8 (88.23-1.31)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.67 (at 1.31Å)	Xtriage
Refinement program	REFMAC 5.8.0430 (refmacat 0.4.100)	Depositor
R, R_{free}	0.188 , 0.210 0.181 , 0.204	Depositor DCC
R_{free} test set	2041 reflections (0.92%)	wwPDB-VP
Wilson B-factor (Å^2)	22.6	Xtriage
Anisotropy	0.141	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 32.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.009 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.016 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	7645	wwPDB-VP
Average B, all atoms (Å^2)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.47% 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: LLP

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	1.11	1/3592 (0.0%)	1.48	34/4885 (0.7%)
1	B	1.14	2/3592 (0.1%)	1.50	34/4885 (0.7%)
All	All	1.13	3/7184 (0.0%)	1.49	68/9770 (0.7%)

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	B	0	3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	18	HIS	ND1-CE1	6.29	1.38	1.32
1	B	365	HIS	CE1-NE2	-5.76	1.26	1.32
1	A	293	SER	CA-CB	5.55	1.62	1.53

All (68) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	388	LYS	N-CA-CB	-8.35	97.36	110.22
1	A	70	THR	CA-CB-OG1	-8.05	97.53	109.60
1	B	10	ASP	CB-CA-C	8.05	123.08	109.80
1	A	266	PHE	CA-CB-CG	-7.67	106.13	113.80
1	A	239	PRO	O-C-N	-7.62	117.80	121.31
1	A	10	ASP	CA-CB-CG	7.54	120.14	112.60
1	B	11	LEU	N-CA-CB	-7.53	98.92	110.44
1	B	199	GLU	N-CA-CB	7.44	120.80	110.01

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	10	ASP	CA-CB-CG	7.38	119.98	112.60
1	B	10	ASP	CA-C-N	7.24	135.48	122.38
1	B	10	ASP	C-N-CA	7.24	135.48	122.38
1	A	199	GLU	N-CA-CB	7.19	120.80	110.16
1	A	394	PHE	CA-CB-CG	7.13	120.93	113.80
1	B	394	PHE	CA-CB-CG	7.11	120.91	113.80
1	A	11	LEU	N-CA-CB	-7.03	99.68	110.44
1	B	85	PHE	CA-CB-CG	-6.88	106.92	113.80
1	A	10	ASP	CA-C-N	6.67	134.46	122.38
1	A	10	ASP	C-N-CA	6.67	134.46	122.38
1	A	454	GLU	CB-CG-CD	6.56	123.75	112.60
1	A	62	VAL	N-CA-CB	-6.53	106.29	111.64
1	A	41	GLU	CB-CG-CD	6.51	123.67	112.60
1	B	454	GLU	CB-CG-CD	6.46	123.59	112.60
1	A	390	THR	OG1-CB-CG2	-6.46	96.38	109.30
1	A	387	ASP	CA-CB-CG	6.33	118.93	112.60
1	B	387	ASP	CA-CB-CG	6.29	118.89	112.60
1	A	136	LYS	CA-CB-CG	-6.27	101.55	114.10
1	A	10	ASP	CB-CA-C	6.08	120.73	109.54
1	A	363	LYS	CB-CG-CD	-6.05	97.37	111.30
1	A	70	THR	OG1-CB-CG2	-6.04	97.23	109.30
1	B	13	ARG	CB-CG-CD	-5.92	97.68	111.30
1	B	41	GLU	CB-CG-CD	5.90	122.62	112.60
1	A	400	GLU	CB-CG-CD	5.89	122.62	112.60
1	A	181	HIS	CA-CB-CG	-5.88	107.92	113.80
1	A	386	LYS	N-CA-CB	-5.88	101.24	110.30
1	A	86	PHE	CA-CB-CG	-5.81	107.99	113.80
1	A	383	GLU	CB-CG-CD	5.71	122.31	112.60
1	B	403	LEU	CB-CG-CD2	5.66	127.69	110.70
1	B	57	LEU	CB-CG-CD2	5.64	127.62	110.70
1	A	178	PRO	CB-CA-C	-5.63	104.03	111.23
1	B	386	LYS	N-CA-CB	-5.62	101.64	110.30
1	A	403	LEU	CB-CG-CD2	5.57	127.42	110.70
1	A	193	LEU	CB-CG-CD1	5.53	127.29	110.70
1	B	62	VAL	N-CA-CB	-5.53	107.11	111.64
1	B	136	LYS	CA-CB-CG	-5.49	103.12	114.10
1	B	203	ARG	NE-CZ-NH1	-5.43	116.07	121.50
1	B	278	PHE	CA-CB-CG	-5.43	108.37	113.80
1	B	379	PHE	N-CA-CB	-5.42	102.44	110.90
1	B	419	ARG	CG-CD-NE	5.36	123.79	112.00
1	B	393	THR	CA-CB-OG1	-5.36	101.56	109.60
1	A	379	PHE	N-CA-CB	-5.34	102.57	110.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	85	PHE	CA-CB-CG	-5.32	108.48	113.80
1	A	388	LYS	CA-CB-CG	5.32	124.74	114.10
1	B	419	ARG	CA-CB-CG	-5.30	103.49	114.10
1	B	453	THR	CA-CB-OG1	-5.30	101.65	109.60
1	B	194	PHE	CA-C-N	5.28	126.78	120.13
1	B	194	PHE	C-N-CA	5.28	126.78	120.13
1	B	271	THR	OG1-CB-CG2	-5.28	98.75	109.30
1	B	363	LYS	CB-CG-CD	-5.22	99.30	111.30
1	A	315	ASP	CA-CB-CG	5.19	117.79	112.60
1	B	407	LEU	CB-CG-CD1	5.16	126.19	110.70
1	B	315	ASP	CA-CB-CG	5.14	117.74	112.60
1	A	453	THR	CA-CB-OG1	-5.11	101.94	109.60
1	B	421	ASP	CA-CB-CG	5.11	117.71	112.60
1	B	181	HIS	CA-CB-CG	-5.07	108.73	113.80
1	B	14	THR	O-C-N	5.07	127.93	122.15
1	A	272	THR	CA-CB-OG1	-5.05	102.02	109.60
1	A	197	ASP	CA-CB-CG	5.01	117.61	112.60
1	B	82	ASP	CA-CB-CG	5.01	117.61	112.60

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	245	ARG	Sidechain
1	B	380	TYR	Sidechain
1	B	419	ARG	Sidechain

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	3522	0	3403	14	0
1	B	3522	0	3403	20	0
2	A	298	0	0	7	0
2	B	303	0	0	10	0
All	All	7645	0	6806	34	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 2.

All (34) 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:77:SER:HB2	2:B:503:HOH:O	1.09	1.21
1:B:208:GLN:NE2	2:B:501:HOH:O	2.20	0.74
1:A:71:GLU:OE2	2:A:501:HOH:O	2.11	0.68
1:B:77:SER:CB	2:B:503:HOH:O	1.87	0.67
1:A:349:HIS:HE1	1:A:436:SER:O	1.77	0.67
1:A:407:LEU:HD12	1:A:451:VAL:HG12	1.77	0.67
1:B:349:HIS:HE1	1:B:436:SER:O	1.77	0.67
1:A:181:HIS:HD2	2:A:782:HOH:O	1.79	0.66
2:A:782:HOH:O	1:B:181:HIS:HD2	1.81	0.63
1:A:349:HIS:HD2	2:A:781:HOH:O	1.88	0.55
1:B:102:ARG:HG3	2:B:568:HOH:O	2.09	0.52
1:B:11:LEU:HA	2:B:508:HOH:O	2.10	0.52
1:A:429:GLN:NE2	2:A:505:HOH:O	2.44	0.49
1:B:429:GLN:NE2	2:B:510:HOH:O	2.45	0.48
1:A:289:LLP:H4'1	2:A:767:HOH:O	2.14	0.48
1:B:365:HIS:HE1	2:B:574:HOH:O	1.96	0.47
1:B:407:LEU:HD12	1:B:451:VAL:HG12	1.97	0.47
1:A:373:VAL:HG22	1:A:382:ILE:HD12	1.98	0.46
1:B:373:VAL:HG22	1:B:382:ILE:HD12	1.97	0.46
1:A:407:LEU:CD1	1:A:451:VAL:HG12	2.46	0.45
1:A:277:LYS:NZ	1:A:376:ASN:HD21	2.15	0.44
1:B:365:HIS:HD2	2:B:660:HOH:O	2.01	0.43
1:A:93:HIS:CE1	1:A:96:ALA:HB2	2.54	0.42
1:B:62:VAL:CG1	1:B:294:GLY:HA3	2.49	0.42
1:B:181:HIS:HE1	2:B:763:HOH:O	2.02	0.42
1:B:93:HIS:CE1	1:B:96:ALA:HB2	2.55	0.41
1:A:260:ASP:HA	1:A:286:THR:OG1	2.19	0.41
1:A:11:LEU:HA	2:A:516:HOH:O	2.19	0.41
1:A:62:VAL:CG1	1:A:294:GLY:HA3	2.51	0.41
1:B:269:LEU:HD12	1:B:274:ALA:HB1	2.02	0.41
1:B:277:LYS:NZ	1:B:376:ASN:HD21	2.19	0.41
1:B:260:ASP:HA	1:B:286:THR:OG1	2.21	0.40
1:B:235:CYS:O	1:B:237:PRO:HD3	2.21	0.40
1:B:343:ARG:HD2	2:B:520:HOH:O	2.22	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	448/451 (99%)	427 (95%)	18 (4%)	3 (1%)	18 3
1	B	448/451 (99%)	425 (95%)	19 (4%)	4 (1%)	14 2
All	All	896/902 (99%)	852 (95%)	37 (4%)	7 (1%)	16 2

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	151	VAL
1	B	151	VAL
1	A	288	ALA
1	B	288	ALA
1	A	88	ILE
1	B	88	ILE
1	B	156	THR

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	364/364 (100%)	356 (98%)	8 (2%)	45 10
1	B	364/364 (100%)	359 (99%)	5 (1%)	59 22
All	All	728/728 (100%)	715 (98%)	13 (2%)	51 15

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

Mol	Chain	Res	Type
1	A	11	LEU
1	A	57	LEU
1	A	193	LEU
1	A	196	ASP
1	A	388	LYS
1	A	396	GLU
1	A	403	LEU
1	A	407	LEU
1	B	57	LEU
1	B	193	LEU
1	B	403	LEU
1	B	407	LEU
1	B	422	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	133	GLN
1	A	181	HIS
1	A	347	ASN
1	A	349	HIS
1	A	376	ASN
1	B	18	HIS
1	B	112	ASN
1	B	181	HIS
1	B	349	HIS
1	B	365	HIS
1	B	376	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)

2 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
1	LLP	B	289	1	23,24,25	1.98	4 (17%)	25,32,34	1.77	5 (20%)
1	LLP	A	289	1	23,24,25	1.83	4 (17%)	25,32,34	1.70	4 (16%)

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
1	LLP	B	289	1	-	4/16/17/19	0/1/1/1
1	LLP	A	289	1	-	5/16/17/19	0/1/1/1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	289	LLP	C4'-NZ	6.36	1.48	1.27
1	A	289	LLP	C4'-NZ	6.19	1.47	1.27
1	B	289	LLP	C4-C4'	3.65	1.54	1.46
1	B	289	LLP	CD-CE	3.62	1.63	1.51
1	A	289	LLP	C4-C4'	3.50	1.54	1.46
1	A	289	LLP	CD-CE	3.18	1.62	1.51
1	B	289	LLP	CE-NZ	2.79	1.53	1.46
1	A	289	LLP	CE-NZ	2.41	1.52	1.46

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	289	LLP	CE-NZ-C4'	4.35	132.64	118.72
1	B	289	LLP	C5-C4-C4'	4.19	127.93	121.47
1	A	289	LLP	C4-C3-C2	3.97	122.38	120.14
1	A	289	LLP	CE-NZ-C4'	3.94	131.34	118.72
1	B	289	LLP	C3-C4-C5	-3.66	115.34	118.28
1	A	289	LLP	C5-C4-C4'	3.38	126.69	121.47
1	A	289	LLP	C3-C4-C5	-3.38	115.56	118.28
1	B	289	LLP	C4-C3-C2	3.01	121.84	120.14
1	B	289	LLP	C3-C4-C4'	-2.36	116.13	120.40

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	289	LLP	O-C-CA-CB
1	A	289	LLP	CG-CD-CE-NZ
1	B	289	LLP	O-C-CA-CB
1	B	289	LLP	CG-CD-CE-NZ
1	A	289	LLP	C4-C4'-NZ-CE
1	B	289	LLP	C4-C4'-NZ-CE
1	B	289	LLP	C3-C4-C4'-NZ
1	A	289	LLP	C3-C4-C4'-NZ
1	A	289	LLP	C-CA-CB-CG

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	289	LLP	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides 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, 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	450/451 (99%)	0.47	19 (4%)	40	49	16, 24, 47, 106	0
1	B	450/451 (99%)	0.41	22 (4%)	35	43	15, 23, 46, 102	0
All	All	900/902 (99%)	0.44	41 (4%)	37	46	15, 23, 47, 106	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	404	TYR	6.2
1	A	193	LEU	6.0
1	A	10	ASP	5.5
1	B	459	LEU	4.8
1	B	11	LEU	4.7
1	B	10	ASP	4.4
1	A	11	LEU	4.3
1	B	193	LEU	3.6
1	B	192	PRO	3.6
1	A	382	ILE	3.2
1	B	369	ILE	3.1
1	A	459	LEU	3.1
1	B	404	TYR	3.0
1	B	456	TRP	3.0
1	A	315	ASP	2.9
1	A	364	LEU	2.8
1	B	402	VAL	2.7
1	B	384	LEU	2.7
1	A	422	ASP	2.7
1	A	456	TRP	2.6
1	B	457	THR	2.6
1	B	407	LEU	2.6
1	B	389	ALA	2.6
1	B	196	ASP	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	403	LEU	2.4
1	B	405	GLY	2.4
1	A	9	LYS	2.4
1	B	452	LEU	2.4
1	A	390	THR	2.4
1	A	196	ASP	2.3
1	B	454	GLU	2.3
1	B	315	ASP	2.3
1	B	314	GLY	2.2
1	A	203	ARG	2.2
1	B	403	LEU	2.1
1	A	451	VAL	2.1
1	A	407	LEU	2.1
1	B	421	ASP	2.1
1	B	394	PHE	2.1
1	A	78	LYS	2.1
1	A	49	GLN	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (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
1	LLP	B	289	24/25	0.95	0.08	16,19,27,41	0
1	LLP	A	289	24/25	0.96	0.08	18,20,28,41	0

6.3 Carbohydrates (i)

There are no oligosaccharides 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.