



Full wwPDB X-ray Structure Validation Report

Aug 25, 2014 – 11:49 AM EDT

PDB ID : 4PV2
Title : Crystal structure of potassium-dependent plant-type L-asparaginase from Phaseolus vulgaris in complex with K⁺ and Na⁺ cations
Authors : Bejger, M.; Gilski, M.; Imiolczyk, B.; Clavel, D.; Jaskolski, M.
Deposited on : 2014-03-14
Resolution : 1.79 Å(reported)

This is a full wwPDB 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/ValidationPDFNotes.html>

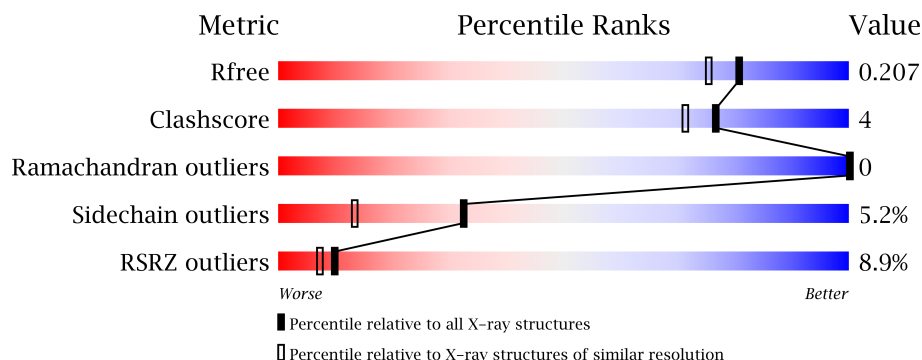
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.16 November 2013
Xtriage (Phenix) : dev-1439
EDS : stable23489
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable23489

1 Overall quality at a glance

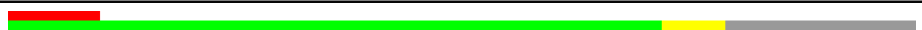



The reported resolution of this entry is 1.79 Å.

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}	66092	3513 (1.80-1.80)
Clashscore	79885	4461 (1.80-1.80)
Ramachandran outliers	78287	4404 (1.80-1.80)
Sidechain outliers	78261	4403 (1.80-1.80)
RSRZ outliers	66119	3515 (1.80-1.80)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	197	
1	C	197	
2	B	131	
2	D	131	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
4	K	A	203[B]	-	X
4	K	A	204[B]	-	X
4	K	C	203[B]	-	X
5	NO3	A	205	X	-

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Mol	Type	Chain	Res	Geometry	Electron density
5	NO3	A	206	X	X
5	NO3	A	207	X	X
5	NO3	B	401	X	X
5	NO3	B	402	X	X
5	NO3	B	403	X	X
5	NO3	C	205	X	X
5	NO3	C	206	X	X
5	NO3	C	207	X	X
5	NO3	C	208	X	X
5	NO3	C	209	X	X
5	NO3	C	210	X	X
5	NO3	C	211	X	X
5	NO3	D	401	X	X
5	NO3	D	402	X	X
5	NO3	D	403	X	X
5	NO3	D	404	X	X
5	NO3	D	405	X	X
5	NO3	D	406	X	X
5	NO3	D	407	X	X
5	NO3	D	408	X	X

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 4799 atoms, of which 0 are hydrogen and 0 are deuterium.

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 L-ASPARAGINASE ALPHA SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	155	Total	C	N	O	S	0	1	0
			1166	728	204	228	6			
1	C	158	Total	C	N	O	S	0	3	0
			1198	746	211	235	6			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	EXPRESSION TAG	UNP V7CU13
A	0	ALA	-	EXPRESSION TAG	UNP V7CU13
A	17	THR	ASN	SEE REMARK 999	UNP V7CU13
C	-1	GLY	-	EXPRESSION TAG	UNP V7CU13
C	0	ALA	-	EXPRESSION TAG	UNP V7CU13
C	17	THR	ASN	SEE REMARK 999	UNP V7CU13

- Molecule 2 is a protein called L-ASPARAGINASE BETA SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	131	Total	C	N	O	S	0	5	0
			965	596	170	185	14			
2	D	131	Total	C	N	O	S	0	3	0
			957	588	170	184	15			

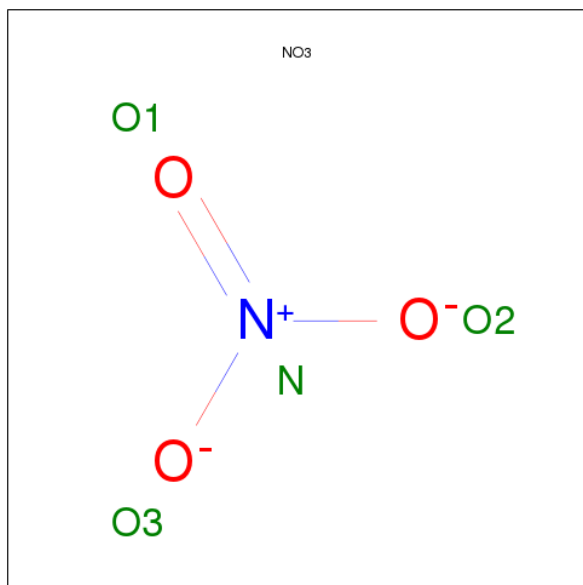
- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total	Na	0	2
			2	2		
3	C	2	Total	Na	0	2
			2	2		

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	K	0	2
			2	2		
4	C	2	Total	K	0	2
			2	2		

- Molecule 5 is NITRATE ION (three-letter code: NO3) (formula: NO₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	N	O	0	0
			4	1	3		
5	A	1	Total	N	O	0	0
			4	1	3		
5	A	1	Total	N	O	0	0
			4	1	3		
5	B	1	Total	N	O	0	0
			4	1	3		
5	B	1	Total	N	O	0	0
			4	1	3		
5	B	1	Total	N	O	0	0
			4	1	3		
5	C	1	Total	N	O	0	0
			4	1	3		
5	C	1	Total	N	O	0	0
			4	1	3		
5	C	1	Total	N	O	0	0
			4	1	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total	N	O	0	0
			4	1	3		
5	C	1	Total	N	O	0	0
			4	1	3		
5	C	1	Total	N	O	0	0
			4	1	3		
5	D	1	Total	N	O	0	0
			4	1	3		
5	D	1	Total	N	O	0	0
			4	1	3		
5	D	1	Total	N	O	0	0
			4	1	3		
5	D	1	Total	N	O	0	0
			4	1	3		
5	D	1	Total	N	O	0	0
			4	1	3		
5	D	1	Total	N	O	0	0
			4	1	3		

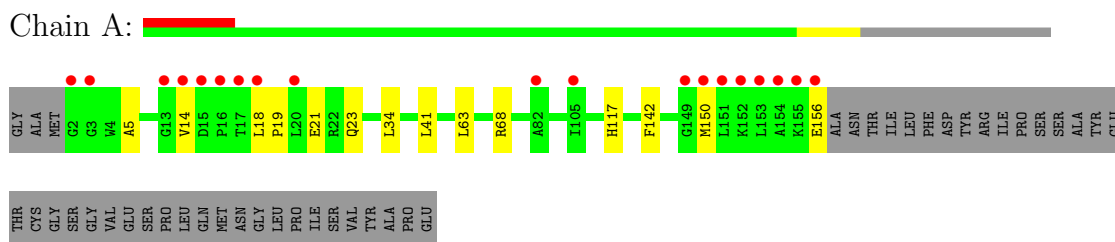
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	127	Total	O	0	1
			127	127		
6	B	50	Total	O	0	2
			50	50		
6	C	166	Total	O	0	3
			166	166		
6	D	78	Total	O	0	2
			78	78		

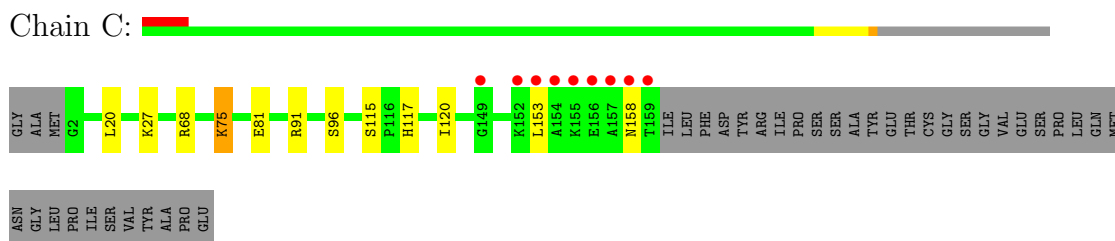
3 Residue-property plots

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.

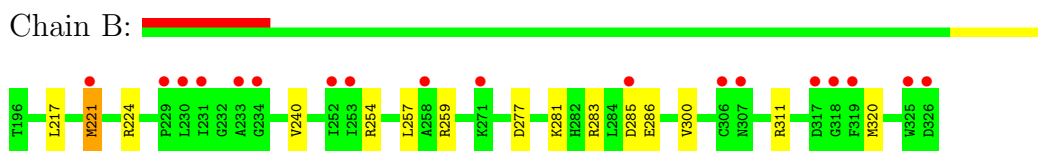
• Molecule 1: L-ASPARAGINASE ALPHA SUBUNIT



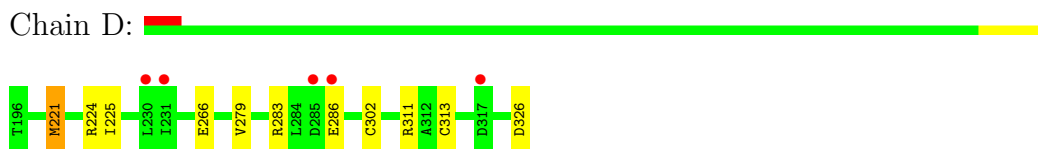
• Molecule 1: L-ASPARAGINASE ALPHA SUBUNIT



• Molecule 2: L-ASPARAGINASE BETA SUBUNIT



• Molecule 2: L-ASPARAGINASE BETA SUBUNIT



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	56.88Å 102.63Å 123.75Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.77 – 1.79 38.77 – 1.79	Depositor EDS
% Data completeness (in resolution range)	99.1 (38.77-1.79) 99.1 (38.77-1.79)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.81 (at 1.79Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, R_{free}	0.164 , 0.207 0.163 , 0.207	Depositor DCC
R_{free} test set	1231 reflections (1.80%)	DCC
Wilson B-factor (Å ²)	25.0	Xtriage
Anisotropy	0.369	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.40 , 40.4	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 68445 reflections	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	4799	wwPDB-VP
Average B, all atoms (Å ²)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.84% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NA, K, NO3

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	0/1188	0.64	0/1610
1	C	0.57	0/1228	0.67	0/1664
2	B	0.53	0/995	0.70	0/1338
2	D	0.59	0/979	0.70	0/1315
All	All	0.55	0/4390	0.68	0/5927

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1166	0	1167	10	0
1	C	1198	0	1197	10	0
2	B	965	0	959	13	0
2	D	957	0	945	8	0
3	A	2	0	0	0	0
3	C	2	0	0	0	0
4	A	2	0	0	0	0
4	C	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	12	0	0	1	0
5	B	12	0	0	2	0
5	C	28	0	0	0	0
5	D	32	0	0	2	0
6	A	127	0	0	0	0
6	B	50	0	0	0	0
6	C	166	0	0	1	0
6	D	78	0	0	1	0
All	All	4799	0	4268	33	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 4.

All (33) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:B:224[B]:ARG:HG3	1:C:117[B]:HIS:CG	2.19	0.77
1:A:5:ALA:HB1	2:B:300[A]:VAL:HG22	1.76	0.67
2:D:302[A]:CYS:SG	6:D:516:HOH:O	2.54	0.66
1:A:117[B]:HIS:CG	2:D:224[B]:ARG:HG3	2.34	0.62
2:B:221[A]:MET:HE1	1:C:117[A]:HIS:HD1	1.64	0.62
1:A:5:ALA:HB1	2:B:300[A]:VAL:CG2	2.31	0.61
1:A:68:ARG:HG3	1:A:142:PHE:HA	1.83	0.60
2:B:285:ASP:OD2	2:B:286:GLU:N	2.34	0.55
1:A:68:ARG:NH1	5:A:207:NO3:O1	2.44	0.51
2:B:224[B]:ARG:HG3	1:C:117[B]:HIS:CD2	2.46	0.51
2:B:221[A]:MET:HE2	5:B:402:NO3:O3	2.12	0.49
1:A:21:GLU:CD	1:A:21:GLU:H	2.16	0.48
1:C:27:LYS:NZ	5:D:402:NO3:O2	2.28	0.47
1:A:117[A]:HIS:CD2	2:D:224[A]:ARG:HB3	2.50	0.47
2:B:224[A]:ARG:HD2	1:C:120:ILE:HG23	1.95	0.46
2:B:221[A]:MET:HB2	2:B:224[A]:ARG:CZ	2.46	0.46
1:C:81:GLU:HB3	1:C:96:SER:HA	1.97	0.46
5:B:402:NO3:O1	1:C:115:SER:HA	2.18	0.43
1:A:18:LEU:HA	1:A:19:PRO:HD3	1.92	0.42
2:D:224[B]:ARG:HG2	2:D:225:ILE:N	2.33	0.42
1:C:68[B]:ARG:NH1	6:C:453[B]:HOH:O	2.51	0.42
1:C:75:LYS:H	1:C:75:LYS:HD3	1.85	0.41
2:D:313:CYS:SG	5:D:407:NO3:N	2.92	0.41
2:D:221[A]:MET:HB2	2:D:224[A]:ARG:CZ	2.50	0.41
2:D:279:VAL:O	2:D:283:ARG:HB3	2.21	0.41
2:B:221[A]:MET:SD	2:B:224[A]:ARG:HG2	2.61	0.41
1:A:18:LEU:HD23	1:A:23:GLN:HG2	2.03	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:91:ARG:HD2	1:C:91:ARG:HH11	1.77	0.40
1:A:41:LEU:HD23	1:A:41:LEU:HA	1.93	0.40
2:B:254:ARG:HH12	2:B:286:GLU:HB2	1.86	0.40
2:B:283:ARG:HD3	2:B:283:ARG:HA	1.84	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

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	154/197 (78%)	151 (98%)	3 (2%)	0	100	100
1	C	159/197 (81%)	156 (98%)	3 (2%)	0	100	100
2	B	134/131 (102%)	127 (95%)	7 (5%)	0	100	100
2	D	132/131 (101%)	126 (96%)	6 (4%)	0	100	100
All	All	579/656 (88%)	560 (97%)	19 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	127/160 (79%)	122 (96%)	5 (4%)	43	23
1	C	131/160 (82%)	127 (97%)	4 (3%)	52	33
2	B	101/96 (105%)	91 (90%)	10 (10%)	11	3

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	D	99/96 (103%)	93 (94%)	6 (6%)	26 9
All	All	458/512 (90%)	433 (94%)	25 (6%)	32 12

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	VAL
1	A	34	LEU
1	A	63	LEU
1	A	150	MET
1	A	156	GLU
2	B	217	LEU
2	B	221[A]	MET
2	B	221[B]	MET
2	B	240	VAL
2	B	257	LEU
2	B	259	ARG
2	B	277	ASP
2	B	281	LYS
2	B	311	ARG
2	B	320	MET
1	C	20	LEU
1	C	75	LYS
1	C	153	LEU
1	C	158	ASN
2	D	221[A]	MET
2	D	221[B]	MET
2	D	266	GLU
2	D	286	GLU
2	D	311	ARG
2	D	326	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 29 ligands modelled in this entry, 8 are monoatomic - leaving 21 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
5	NO3	A	205	-	3,3,3	3.26	3 (100%)	3,3,3	0.09	0
5	NO3	A	206	-	3,3,3	3.36	3 (100%)	3,3,3	0.19	0
5	NO3	A	207	-	3,3,3	3.35	3 (100%)	3,3,3	0.38	0
5	NO3	B	401	-	3,3,3	3.23	3 (100%)	3,3,3	0.18	0
5	NO3	B	402	-	3,3,3	3.08	3 (100%)	3,3,3	0.39	0
5	NO3	B	403	-	3,3,3	3.12	3 (100%)	3,3,3	0.18	0
5	NO3	C	205	-	3,3,3	3.21	3 (100%)	3,3,3	0.15	0
5	NO3	C	206	-	3,3,3	3.21	3 (100%)	3,3,3	0.20	0
5	NO3	C	207	-	3,3,3	3.15	3 (100%)	3,3,3	0.16	0
5	NO3	C	208	-	3,3,3	3.23	3 (100%)	3,3,3	0.19	0
5	NO3	C	209	-	3,3,3	3.28	3 (100%)	3,3,3	0.13	0
5	NO3	C	210	-	3,3,3	3.22	3 (100%)	3,3,3	0.08	0
5	NO3	C	211	-	3,3,3	3.10	3 (100%)	3,3,3	0.29	0
5	NO3	D	401	-	3,3,3	2.99	3 (100%)	3,3,3	0.07	0
5	NO3	D	402	-	3,3,3	3.17	3 (100%)	3,3,3	0.28	0
5	NO3	D	403	-	3,3,3	3.26	3 (100%)	3,3,3	0.11	0
5	NO3	D	404	-	3,3,3	3.32	3 (100%)	3,3,3	0.13	0
5	NO3	D	405	-	3,3,3	3.20	3 (100%)	3,3,3	0.19	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NO3	D	406	-	3,3,3	3.21	3 (100%)	3,3,3	0.14	0
5	NO3	D	407	-	3,3,3	3.29	3 (100%)	3,3,3	0.13	0
5	NO3	D	408	-	3,3,3	3.36	3 (100%)	3,3,3	0.07	0

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
5	NO3	A	205	-	-	0/0/0/0	0/0/0/0
5	NO3	A	206	-	-	0/0/0/0	0/0/0/0
5	NO3	A	207	-	-	0/0/0/0	0/0/0/0
5	NO3	B	401	-	-	0/0/0/0	0/0/0/0
5	NO3	B	402	-	-	0/0/0/0	0/0/0/0
5	NO3	B	403	-	-	0/0/0/0	0/0/0/0
5	NO3	C	205	-	-	0/0/0/0	0/0/0/0
5	NO3	C	206	-	-	0/0/0/0	0/0/0/0
5	NO3	C	207	-	-	0/0/0/0	0/0/0/0
5	NO3	C	208	-	-	0/0/0/0	0/0/0/0
5	NO3	C	209	-	-	0/0/0/0	0/0/0/0
5	NO3	C	210	-	-	0/0/0/0	0/0/0/0
5	NO3	C	211	-	-	0/0/0/0	0/0/0/0
5	NO3	D	401	-	-	0/0/0/0	0/0/0/0
5	NO3	D	402	-	-	0/0/0/0	0/0/0/0
5	NO3	D	403	-	-	0/0/0/0	0/0/0/0
5	NO3	D	404	-	-	0/0/0/0	0/0/0/0
5	NO3	D	405	-	-	0/0/0/0	0/0/0/0
5	NO3	D	406	-	-	0/0/0/0	0/0/0/0
5	NO3	D	407	-	-	0/0/0/0	0/0/0/0
5	NO3	D	408	-	-	0/0/0/0	0/0/0/0

All (63) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	408	NO3	O1-N	4.03	1.41	1.24
5	A	206	NO3	O1-N	4.01	1.41	1.24
5	A	205	NO3	O1-N	3.99	1.41	1.24
5	D	403	NO3	O1-N	3.97	1.41	1.24
5	C	209	NO3	O1-N	3.97	1.41	1.24
5	C	210	NO3	O1-N	3.95	1.40	1.24
5	D	405	NO3	O1-N	3.93	1.40	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	404	NO3	O1-N	3.92	1.40	1.24
5	C	207	NO3	O1-N	3.92	1.40	1.24
5	D	407	NO3	O1-N	3.90	1.40	1.24
5	C	211	NO3	O1-N	3.88	1.40	1.24
5	C	208	NO3	O1-N	3.88	1.40	1.24
5	D	402	NO3	O1-N	3.88	1.40	1.24
5	C	206	NO3	O1-N	3.86	1.40	1.24
5	A	207	NO3	O1-N	3.84	1.40	1.24
5	B	401	NO3	O1-N	3.81	1.40	1.24
5	C	205	NO3	O1-N	3.79	1.40	1.24
5	D	406	NO3	O1-N	3.77	1.40	1.24
5	B	403	NO3	O1-N	3.68	1.39	1.24
5	D	401	NO3	O1-N	3.59	1.39	1.24
5	B	402	NO3	O1-N	3.51	1.39	1.24
5	A	207	NO3	O3-N	3.18	1.42	1.25
5	A	206	NO3	O3-N	3.02	1.41	1.25
5	D	408	NO3	O2-N	3.00	1.41	1.25
5	C	206	NO3	O3-N	3.00	1.41	1.25
5	D	404	NO3	O2-N	3.00	1.41	1.25
5	D	403	NO3	O3-N	3.00	1.41	1.25
5	D	407	NO3	O2-N	2.97	1.41	1.25
5	A	206	NO3	O2-N	2.95	1.40	1.25
5	A	207	NO3	O2-N	2.95	1.40	1.25
5	D	404	NO3	O3-N	2.93	1.40	1.25
5	C	209	NO3	O2-N	2.93	1.40	1.25
5	D	408	NO3	O3-N	2.92	1.40	1.25
5	D	407	NO3	O3-N	2.91	1.40	1.25
5	B	401	NO3	O2-N	2.91	1.40	1.25
5	D	406	NO3	O2-N	2.91	1.40	1.25
5	C	208	NO3	O3-N	2.90	1.40	1.25
5	D	402	NO3	O2-N	2.89	1.40	1.25
5	B	401	NO3	O3-N	2.89	1.40	1.25
5	B	403	NO3	O2-N	2.89	1.40	1.25
5	D	406	NO3	O3-N	2.88	1.40	1.25
5	C	205	NO3	O2-N	2.87	1.40	1.25
5	C	205	NO3	O3-N	2.86	1.40	1.25
5	A	205	NO3	O2-N	2.86	1.40	1.25
5	B	402	NO3	O2-N	2.86	1.40	1.25
5	D	405	NO3	O2-N	2.85	1.40	1.25
5	B	402	NO3	O3-N	2.82	1.40	1.25
5	D	401	NO3	O3-N	2.82	1.40	1.25
5	C	209	NO3	O3-N	2.82	1.40	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	208	NO3	O2-N	2.82	1.40	1.25
5	C	210	NO3	O3-N	2.81	1.40	1.25
5	A	205	NO3	O3-N	2.79	1.40	1.25
5	C	210	NO3	O2-N	2.74	1.39	1.25
5	C	207	NO3	O2-N	2.71	1.39	1.25
5	B	403	NO3	O3-N	2.70	1.39	1.25
5	C	211	NO3	O2-N	2.67	1.39	1.25
5	D	405	NO3	O3-N	2.67	1.39	1.25
5	C	206	NO3	O2-N	2.67	1.39	1.25
5	C	207	NO3	O3-N	2.67	1.39	1.25
5	D	403	NO3	O2-N	2.66	1.39	1.25
5	D	402	NO3	O3-N	2.60	1.39	1.25
5	C	211	NO3	O3-N	2.59	1.39	1.25
5	D	401	NO3	O2-N	2.46	1.38	1.25

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

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, 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	155/197 (78%)	0.54	19 (12%) 5 3	14, 27, 57, 84	4 (2%)
1	C	158/197 (80%)	0.02	9 (5%) 23 17	12, 23, 53, 90	0
2	B	131/131 (100%)	0.75	18 (13%) 4 2	16, 35, 57, 101	2 (1%)
2	D	131/131 (100%)	0.04	5 (3%) 38 31	13, 23, 43, 67	2 (1%)
All	All	575/656 (87%)	0.33	51 (8%) 10 7	12, 26, 55, 101	8 (1%)

All (51) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	159	THR	7.6
1	A	153	LEU	7.0
2	D	286	GLU	5.9
1	C	158	ASN	5.3
1	A	154	ALA	5.2
1	A	16	PRO	4.9
1	A	17	THR	4.8
2	B	230[A]	LEU	4.7
1	A	2	GLY	4.6
1	C	157	ALA	4.6
2	B	326	ASP	4.5
1	A	152	LYS	3.9
1	A	150	MET	3.9
1	A	156	GLU	3.9
2	B	285	ASP	3.8
1	A	155	LYS	3.8
1	A	14	VAL	3.8
1	A	15	ASP	3.5
1	A	82	ALA	3.4
2	B	317	ASP	3.4
1	A	18	LEU	3.4

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Mol	Chain	Res	Type	RSRZ
2	B	319	PHE	3.3
1	C	152	LYS	3.2
2	D	317	ASP	2.9
2	B	307	ASN	2.8
1	A	149	GLY	2.8
2	D	285	ASP	2.8
2	B	253	ILE	2.7
2	B	271	LYS	2.6
1	C	149	GLY	2.5
1	A	3	GLY	2.5
1	A	20	LEU	2.5
2	B	318	GLY	2.5
2	D	230	LEU	2.4
2	B	231	ILE	2.3
1	A	13	GLY	2.3
1	A	105	ILE	2.3
1	C	154	ALA	2.3
2	D	231	ILE	2.3
1	A	151	LEU	2.2
2	B	233	ALA	2.2
2	B	306	CYS	2.2
2	B	229	PRO	2.2
1	C	153	LEU	2.2
1	C	155	LYS	2.2
2	B	258	ALA	2.1
2	B	221[A]	MET	2.1
1	C	156	GLU	2.1
2	B	325	TRP	2.1
2	B	252	ILE	2.0
2	B	234	GLY	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 carbohydrates in this entry.

6.4 Ligands ⓘ

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	RSR	LLDF	B-factors(Å ²)	Q<0.9
5	NO3	D	406	4/4	0.27	31.28	51,55,58,59	0
5	NO3	D	402	4/4	0.19	21.75	46,57,59,65	0
5	NO3	C	211	4/4	0.33	19.71	45,56,61,70	0
5	NO3	D	408	4/4	0.17	19.44	58,59,62,62	0
5	NO3	D	404	4/4	0.24	12.09	37,56,57,64	0
5	NO3	D	407	4/4	0.33	11.37	69,69,70,71	0
5	NO3	D	403	4/4	0.21	11.21	38,46,56,57	0
5	NO3	A	207	4/4	0.26	8.63	43,61,64,66	0
5	NO3	B	402	4/4	0.54	8.20	46,64,67,70	0
5	NO3	D	405	4/4	0.37	8.05	54,67,69,79	0
5	NO3	C	209	4/4	0.23	8.04	42,45,49,57	0
5	NO3	D	401	4/4	0.22	7.84	35,40,44,54	0
5	NO3	B	401	4/4	0.21	7.29	46,52,60,64	0
5	NO3	C	207	4/4	0.20	6.87	40,48,48,51	0
4	K	C	203[B]	1/1	0.21	6.85	26,26,26,26	1
5	NO3	C	206	4/4	0.15	5.53	26,43,45,50	0
4	K	A	204[B]	1/1	0.18	5.37	34,34,34,34	1
5	NO3	C	208	4/4	0.25	5.16	45,54,55,65	0
4	K	A	203[B]	1/1	0.26	4.97	36,36,36,36	1
5	NO3	A	206	4/4	0.19	4.45	48,54,56,59	0
5	NO3	C	205	4/4	0.21	4.21	40,49,52,53	0
5	NO3	B	403	4/4	0.20	3.72	63,65,65,67	0
5	NO3	C	210	4/4	0.32	3.31	59,64,65,66	0
3	NA	C	201[A]	1/1	0.11	1.66	13,13,13,13	1
3	NA	A	201[A]	1/1	0.15	1.64	18,18,18,18	1
5	NO3	A	205	4/4	0.23	1.44	43,47,50,55	0
3	NA	C	202[A]	1/1	0.10	0.02	25,25,25,25	1
3	NA	A	202[A]	1/1	0.06	-1.43	28,28,28,28	1
4	K	C	204[B]	1/1	0.05	-1.67	47,47,47,47	1

6.5 Other polymers ⓘ

There are no such residues in this entry.