



wwPDB X-ray Structure Validation Summary Report ⓘ

Jul 13, 2021 – 10:14 AM EDT

PDB ID : 1M1Y
Title : Chemical Crosslink of Nitrogenase MoFe Protein and Fe Protein
Authors : Schmid, B.; Einsle, O.; Chiu, H.J.; Willing, A.; Yoshida, M.; Howard, J.B.;
Rees, D.C.
Deposited on : 2002-06-20
Resolution : 3.20 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.22

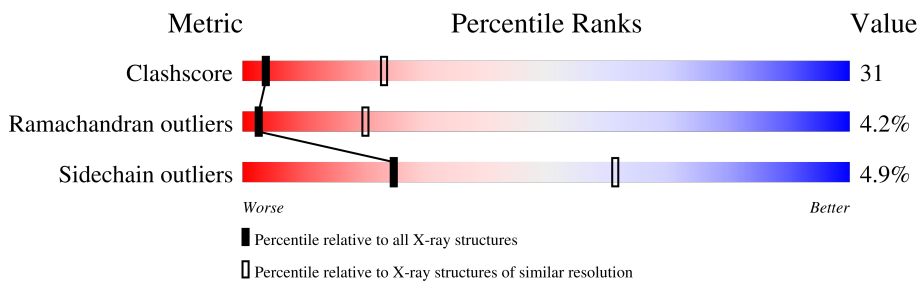
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 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))
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	491	51% 42% . .
1	C	491	50% 43% . .
1	I	491	50% 43% . .
1	K	491	51% 43% . .
2	B	522	53% 44% .
2	D	522	50% 47% .
2	J	522	49% 47% .
2	L	522	51% 45% .

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Mol	Chain	Length	Quality of chain		
3	E	289	31%	59%	8%
3	F	289	50%	43%	7%
3	G	289	31%	60%	8%
3	H	289	48%	45%	7%
3	M	289	35%	57%	7%
3	N	289	46%	47%	7%
3	O	289	34%	57%	8%
3	P	289	45%	48%	7%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	CFM	A	6496	-	-	X	-
5	CFM	C	7496	-	-	X	-
6	CLF	A	6498	-	-	X	-
6	CLF	J	8498	-	-	X	-
6	CLF	K	9498	-	-	X	-
8	SF4	E	290	-	-	X	-
8	SF4	G	1290	-	-	X	-
8	SF4	N	2290	-	-	X	-

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 49464 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 Nitrogenase molybdenum-iron protein alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	477	3790	2410	646	709	25	0	0	0
1	C	477	3790	2410	646	709	25	0	0	0
1	I	477	3790	2410	646	709	25	0	0	0
1	K	477	3790	2410	646	709	25	0	0	0

- Molecule 2 is a protein called Nitrogenase molybdenum-iron protein beta chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	522	4174	2666	705	775	28	0	0	0
2	D	522	4174	2666	705	775	28	0	0	0
2	J	522	4174	2666	705	775	28	0	0	0
2	L	522	4174	2666	705	775	28	0	0	0

- Molecule 3 is a protein called nitrogenase IRON protein 1.

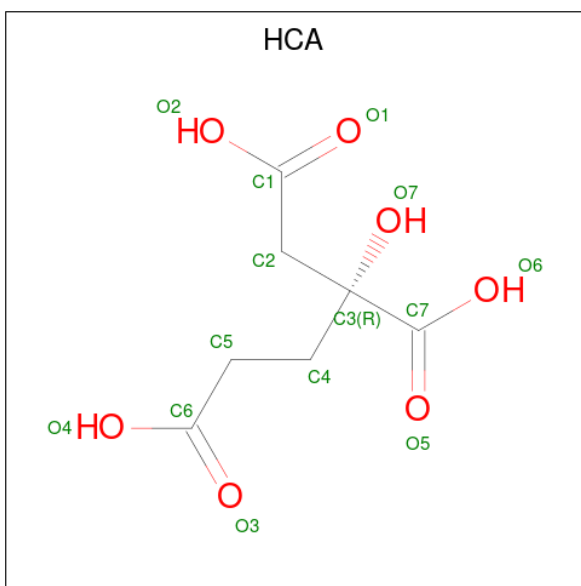
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	E	286	2161	1349	366	425	21	0	0	0
3	F	289	2186	1364	369	432	21	0	0	0
3	G	286	2161	1349	366	425	21	0	0	0
3	H	289	2186	1364	369	432	21	0	0	0

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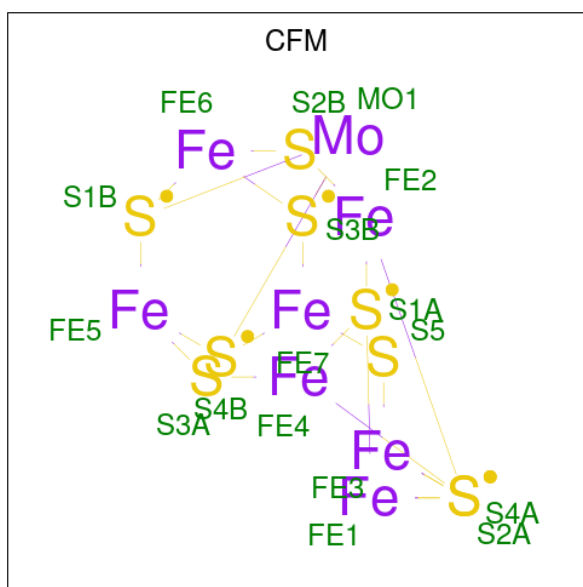
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	M	286	Total 2161	C 1349	N 366	O 425	S 21	0	0	0
3	N	289	Total 2186	C 1364	N 369	O 432	S 21	0	0	0
3	O	286	Total 2161	C 1349	N 366	O 425	S 21	0	0	0
3	P	289	Total 2186	C 1364	N 369	O 432	S 21	0	0	0

- Molecule 4 is 3-HYDROXY-3-CARBOXY-ADIPIC ACID (three-letter code: HCA) (formula: $C_7H_{10}O_7$).



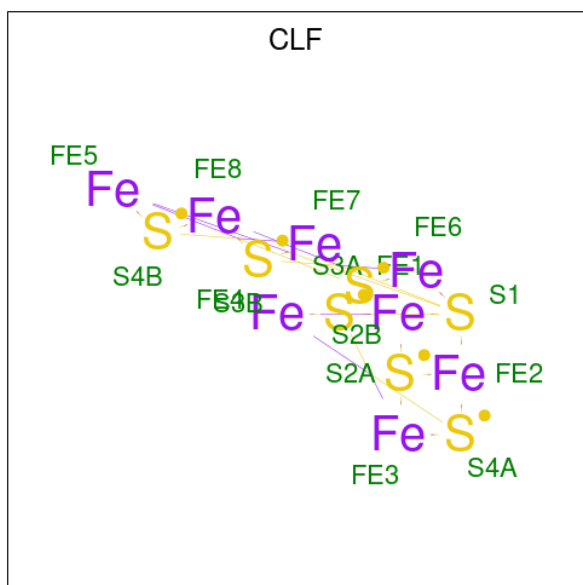
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
4	A	1	Total 14	C 7	O 7	0	0
4	C	1	Total 14	C 7	O 7	0	0
4	I	1	Total 14	C 7	O 7	0	0
4	K	1	Total 14	C 7	O 7	0	0

- Molecule 5 is FE-MO-S CLUSTER (three-letter code: CFM) (formula: Fe_7MoS_9).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	Fe	Mo	S		
5	A	1	Total	Fe	Mo	S	0	0
			17	7	1	9		
5	C	1	Total	Fe	Mo	S	0	0
			17	7	1	9		
5	I	1	Total	Fe	Mo	S	0	0
			17	7	1	9		
5	K	1	Total	Fe	Mo	S	0	0
			17	7	1	9		

- Molecule 6 is FE(8)-S(7) CLUSTER (three-letter code: CLF) (formula: Fe₈S₇).

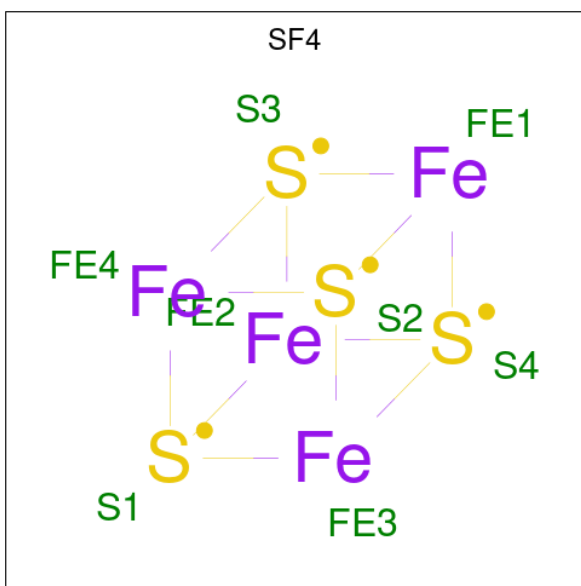


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	Fe	S	0	0
			15	8	7		
6	D	1	Total	Fe	S	0	0
			15	8	7		
6	J	1	Total	Fe	S	0	0
			15	8	7		
6	K	1	Total	Fe	S	0	0
			15	8	7		

- Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	1	Total	Ca	0	0
			1	1		
7	D	1	Total	Ca	0	0
			1	1		
7	J	1	Total	Ca	0	0
			1	1		
7	L	1	Total	Ca	0	0
			1	1		

- Molecule 8 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	E	1	Total	Fe	S	0	0
			8	4	4		
8	G	1	Total	Fe	S	0	0
			8	4	4		

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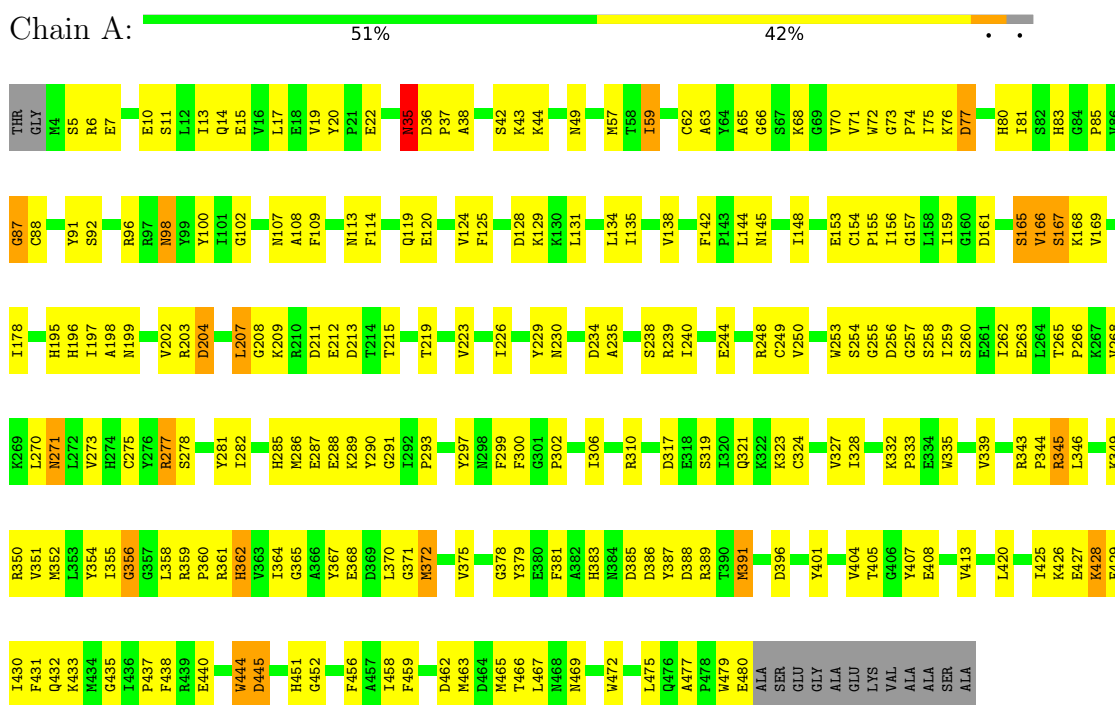
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	N	1	Total 8	Fe 4	S 4	0	0
8	P	1	Total 8	Fe 4	S 4	0	0

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. 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. 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.

Note EDS was not executed.

- Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

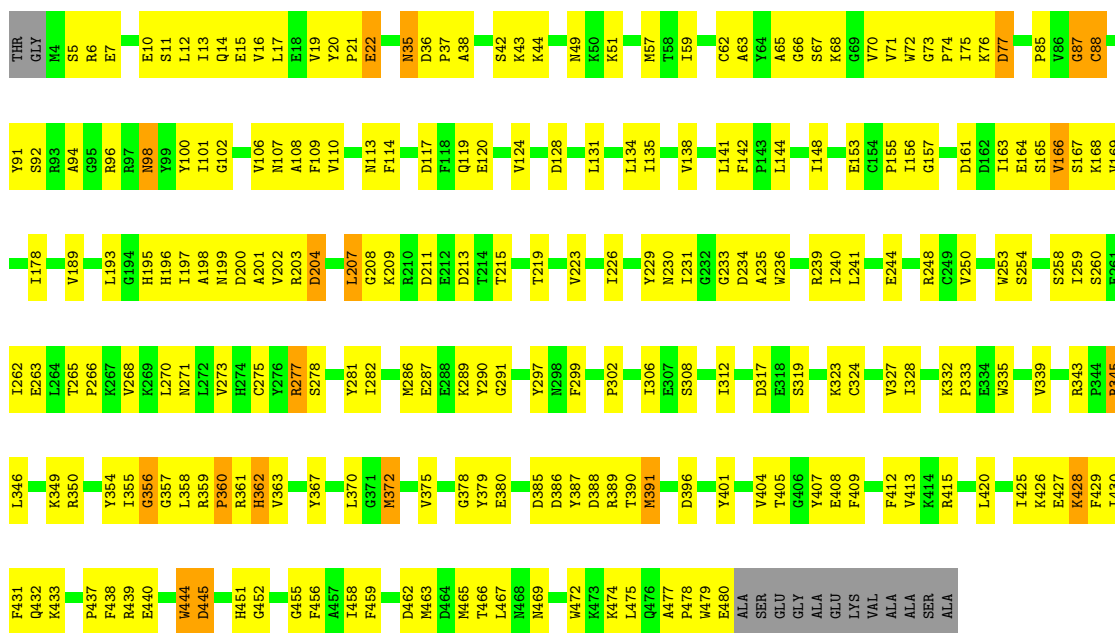


- Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

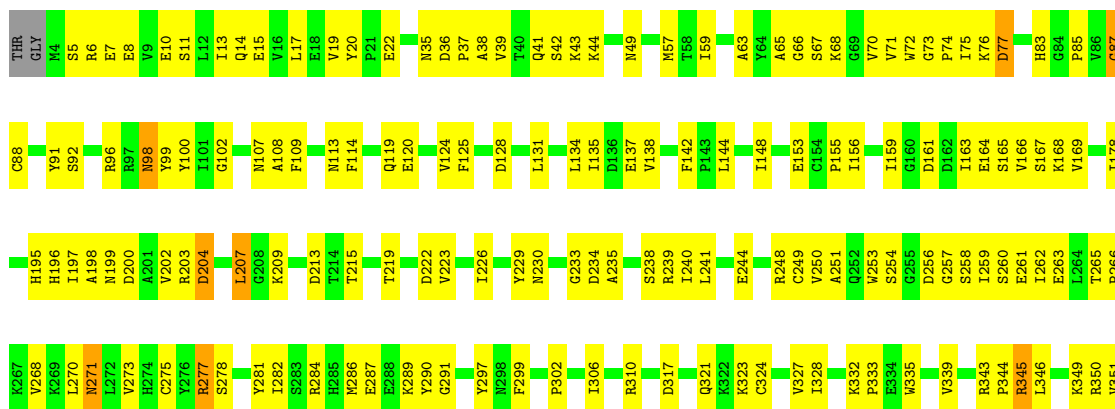




• Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

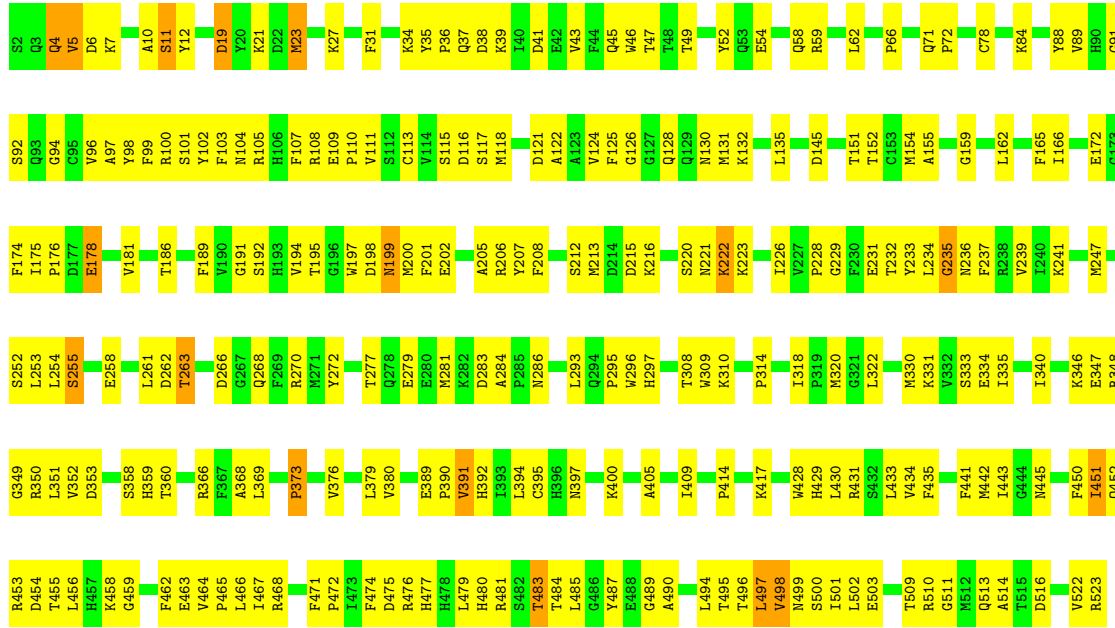


• Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

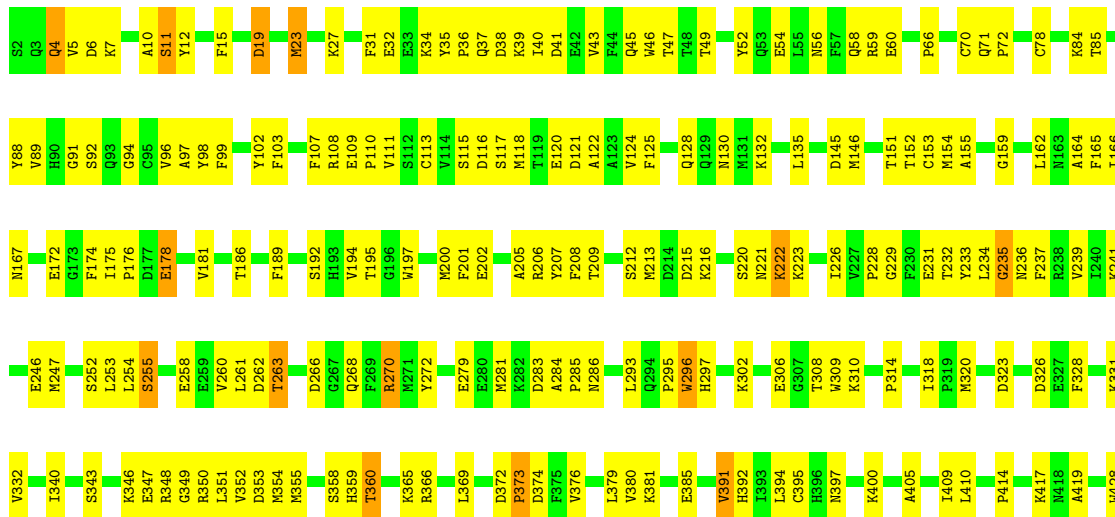


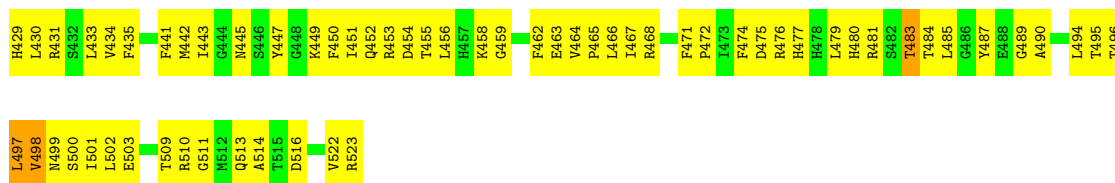


• Molecule 2: Nitrogenase molybdenum-iron protein beta chain



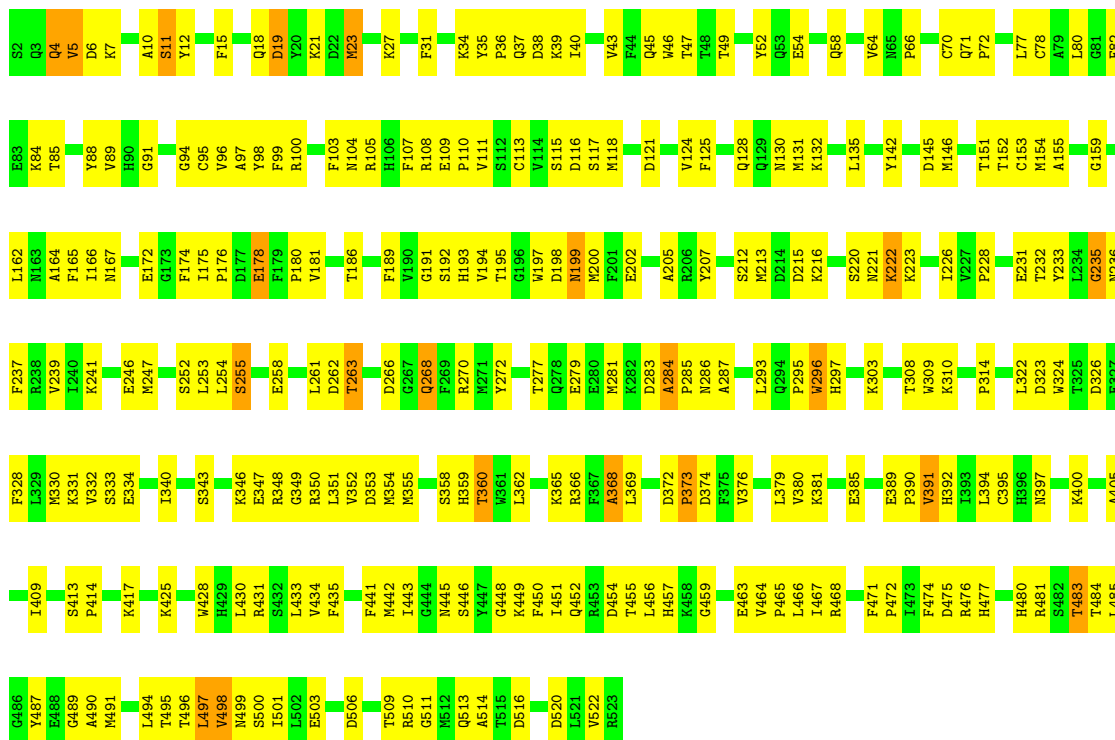
• Molecule 2: Nitrogenase molybdenum-iron protein beta chain





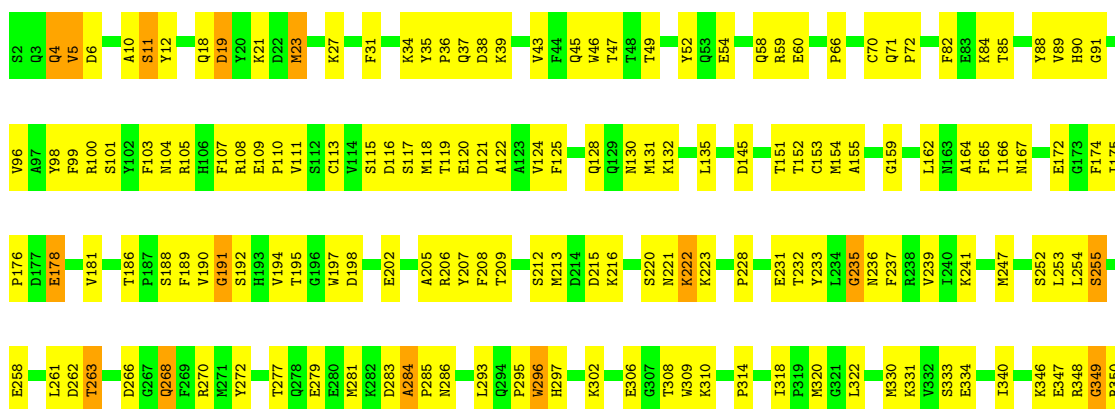
• Molecule 2: Nitrogenase molybdenum-iron protein beta chain

Chain J: 49% 47%



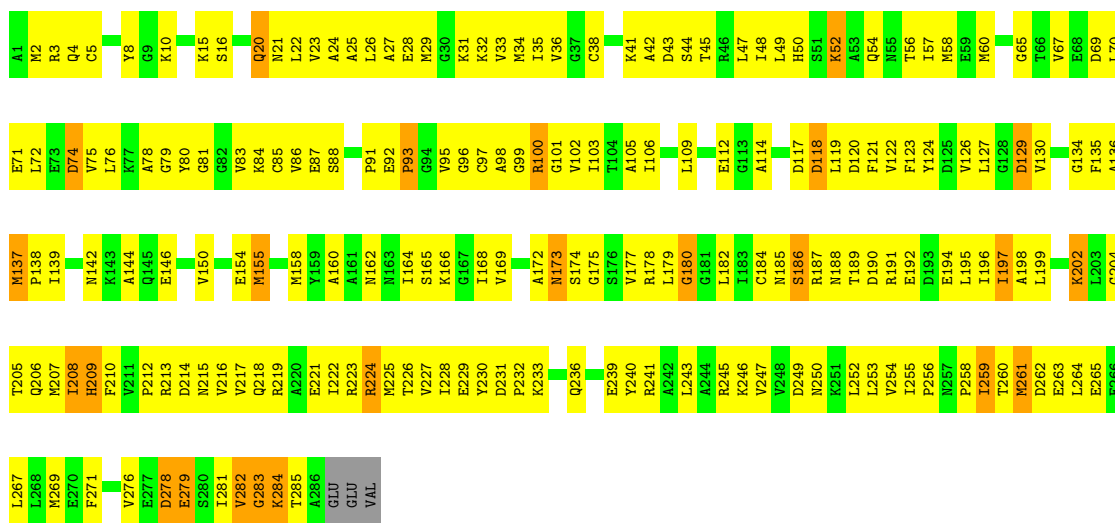
• Molecule 2: Nitrogenase molybdenum-iron protein beta chain

Chain L: 51% 45%

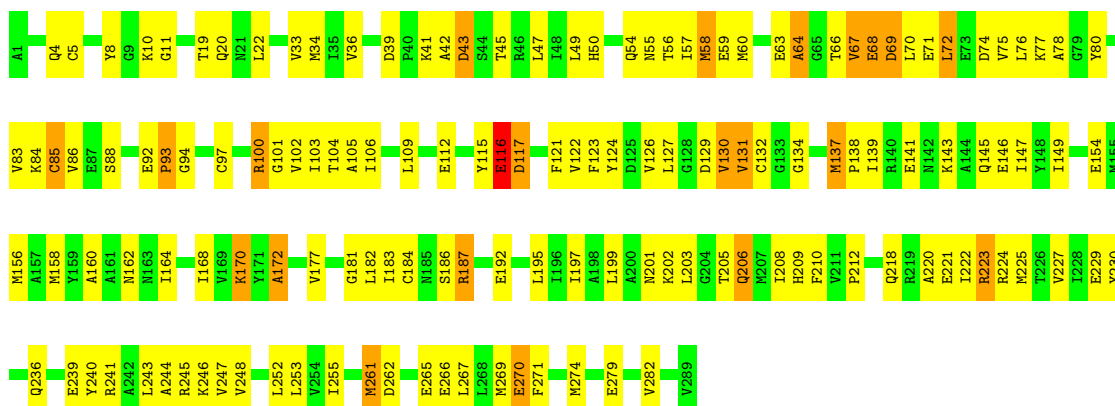




● Molecule 3: nitrogenase IRON protein 1

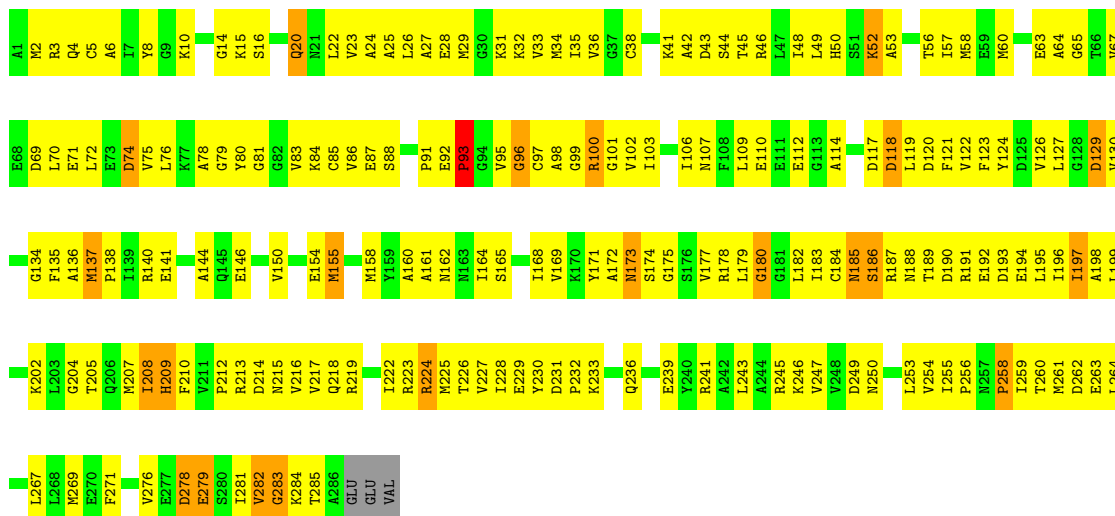


● Molecule 3: nitrogenase IRON protein 1



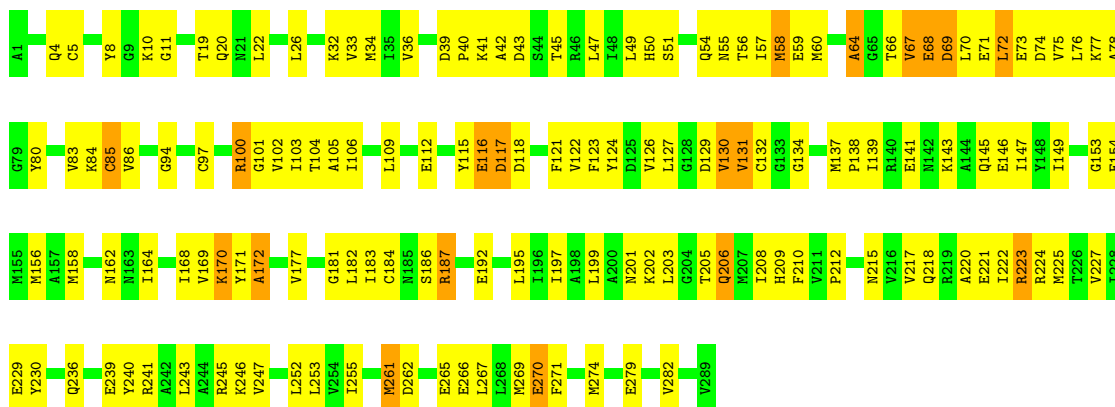
● Molecule 3: nitrogenase IRON protein 1





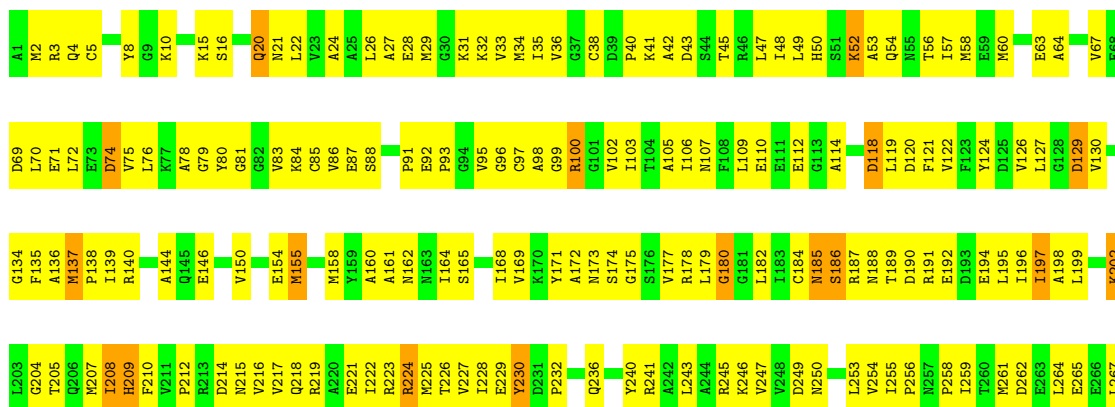
• Molecule 3: nitrogenase IRON protein 1

Chain H: 48% 45% 7%



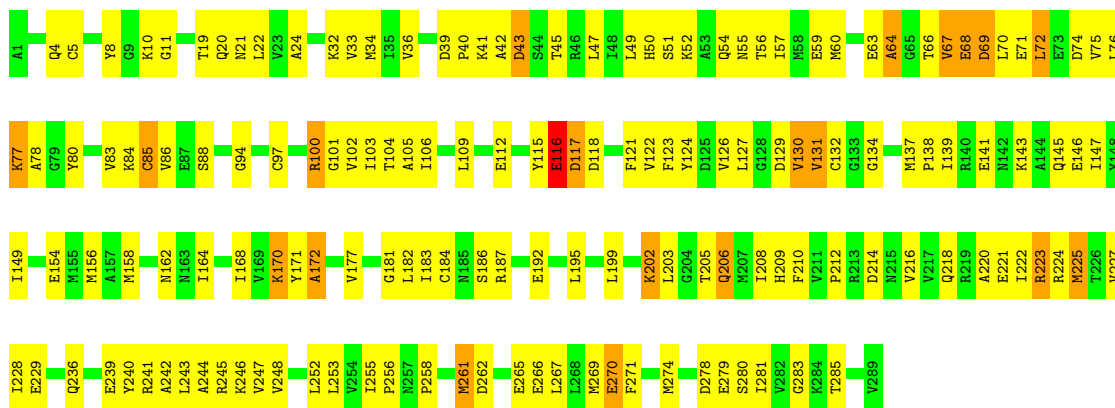
• Molecule 3: nitrogenase IRON protein 1

Chain M: 35% 57% 7%

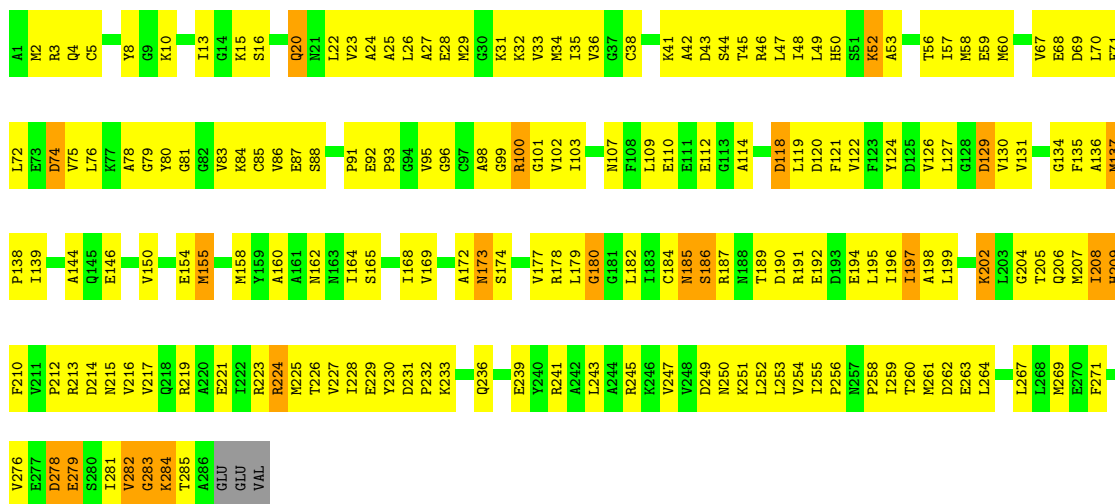




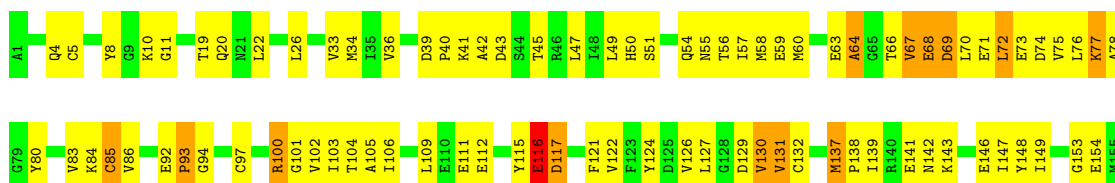
• Molecule 3: nitrogenase IRON protein 1

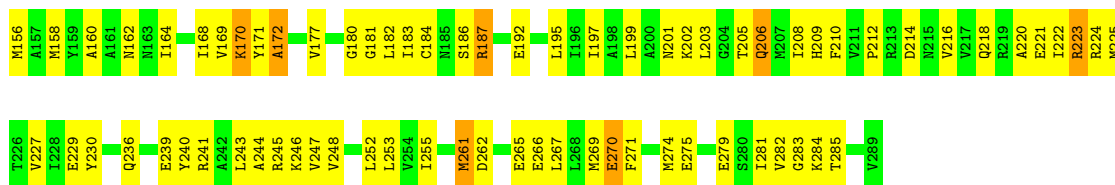


• Molecule 3: nitrogenase IRON protein 1



• Molecule 3: nitrogenase IRON protein 1





4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	113.27Å 214.94Å 320.47Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 3.20	Depositor
% Data completeness (in resolution range)	81.1 (50.00-3.20)	Depositor
R_{merge}	0.09	Depositor
R_{sym}	0.07	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.279 , 0.329	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	49464	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CLF, HCA, SF4, CFM, CA

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	0.49	0/3878	0.68	0/5229
1	C	0.43	0/3878	0.65	0/5229
1	I	0.43	0/3878	0.66	0/5229
1	K	0.41	0/3878	0.65	0/5229
2	B	0.53	0/4280	0.68	0/5786
2	D	0.49	0/4280	0.67	0/5786
2	J	0.46	0/4280	0.67	1/5786 (0.0%)
2	L	0.49	0/4280	0.67	0/5786
3	E	0.42	0/2185	0.61	0/2943
3	F	0.45	0/2210	0.62	0/2975
3	G	0.43	0/2185	0.61	0/2943
3	H	0.42	0/2210	0.62	0/2975
3	M	0.47	0/2185	0.62	0/2943
3	N	0.46	0/2210	0.62	0/2975
3	O	0.42	0/2185	0.63	0/2943
3	P	0.44	0/2210	0.63	0/2975
All	All	0.46	0/50212	0.65	1/67732 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	J	368	ALA	N-CA-C	-5.13	97.16	111.00

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	3790	0	3732	217	0
1	C	3790	0	3732	217	0
1	I	3790	0	3731	217	0
1	K	3790	0	3730	196	0
2	B	4174	0	4088	238	0
2	D	4174	0	4088	243	0
2	J	4174	0	4089	246	0
2	L	4174	0	4089	246	0
3	E	2161	0	2176	195	0
3	F	2186	0	2197	153	0
3	G	2161	0	2176	194	0
3	H	2186	0	2197	155	0
3	M	2161	0	2176	198	0
3	N	2186	0	2197	171	0
3	O	2161	0	2176	195	0
3	P	2186	0	2197	174	0
4	A	14	0	6	1	0
4	C	14	0	6	1	0
4	I	14	0	6	1	0
4	K	14	0	6	1	0
5	A	17	0	0	8	0
5	C	17	0	0	5	0
5	I	17	0	0	3	0
5	K	17	0	0	3	0
6	A	15	0	0	6	0
6	D	15	0	0	3	0
6	J	15	0	0	5	0
6	K	15	0	0	5	0
7	B	1	0	0	0	0
7	D	1	0	0	0	0
7	J	1	0	0	0	0
7	L	1	0	0	0	0
8	E	8	0	0	2	0
8	G	8	0	0	2	0
8	N	8	0	0	5	0
8	P	8	0	0	0	0
All	All	49464	0	48795	3025	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 31.

The worst 5 of 3025 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)
2:B:400:LYS:NZ	3:F:112:GLU:CD	1.81	1.34
2:B:96:VAL:HG21	2:B:115:SER:HB2	1.32	1.11
2:B:400:LYS:HZ3	3:F:112:GLU:CD	1.43	1.09
2:D:96:VAL:HG21	2:D:115:SER:HB2	1.35	1.08
2:L:96:VAL:HG21	2:L:115:SER:HB2	1.34	1.08

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	475/491 (97%)	364 (77%)	96 (20%)	15 (3%)	4	26
1	C	475/491 (97%)	358 (75%)	102 (22%)	15 (3%)	4	26
1	I	475/491 (97%)	357 (75%)	104 (22%)	14 (3%)	4	28
1	K	475/491 (97%)	364 (77%)	99 (21%)	12 (2%)	5	32
2	B	520/522 (100%)	423 (81%)	74 (14%)	23 (4%)	2	19
2	D	520/522 (100%)	417 (80%)	82 (16%)	21 (4%)	3	21
2	J	520/522 (100%)	421 (81%)	74 (14%)	25 (5%)	2	17
2	L	520/522 (100%)	423 (81%)	75 (14%)	22 (4%)	3	20
3	E	284/289 (98%)	219 (77%)	50 (18%)	15 (5%)	2	15
3	F	287/289 (99%)	228 (79%)	43 (15%)	16 (6%)	2	14
3	G	284/289 (98%)	221 (78%)	47 (16%)	16 (6%)	2	14
3	H	287/289 (99%)	224 (78%)	50 (17%)	13 (4%)	2	18

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	M	284/289 (98%)	223 (78%)	47 (16%)	14 (5%)	2	17
3	N	287/289 (99%)	230 (80%)	44 (15%)	13 (4%)	2	18
3	O	284/289 (98%)	221 (78%)	48 (17%)	15 (5%)	2	15
3	P	287/289 (99%)	228 (79%)	45 (16%)	14 (5%)	2	17
All	All	6264/6364 (98%)	4921 (79%)	1080 (17%)	263 (4%)	3	20

5 of 263 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	22	GLU
2	B	296	TRP
1	C	22	GLU
3	E	118	ASP
3	E	208	ILE

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	407/414 (98%)	390 (96%)	17 (4%)	30	65
1	C	407/414 (98%)	390 (96%)	17 (4%)	30	65
1	I	407/414 (98%)	391 (96%)	16 (4%)	32	67
1	K	407/414 (98%)	392 (96%)	15 (4%)	34	68
2	B	454/454 (100%)	439 (97%)	15 (3%)	38	71
2	D	454/454 (100%)	438 (96%)	16 (4%)	36	69
2	J	454/454 (100%)	438 (96%)	16 (4%)	36	69
2	L	454/454 (100%)	438 (96%)	16 (4%)	36	69
3	E	230/233 (99%)	214 (93%)	16 (7%)	15	48
3	F	233/233 (100%)	216 (93%)	17 (7%)	14	46
3	G	230/233 (99%)	214 (93%)	16 (7%)	15	48
3	H	233/233 (100%)	216 (93%)	17 (7%)	14	46

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	M	230/233 (99%)	214 (93%)	16 (7%)	15	48
3	N	233/233 (100%)	215 (92%)	18 (8%)	13	44
3	O	230/233 (99%)	214 (93%)	16 (7%)	15	48
3	P	233/233 (100%)	216 (93%)	17 (7%)	14	46
All	All	5296/5336 (99%)	5035 (95%)	261 (5%)	25	61

5 of 261 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	O	58	MET
3	O	190	ASP
3	P	270	GLU
3	F	270	GLU
3	F	223	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 140 such sidechains are listed below:

Mol	Chain	Res	Type
3	N	20	GLN
3	N	142	ASN
3	O	236	GLN
3	F	142	ASN
3	F	55	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](#)

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

Of 20 ligands modelled in this entry, 4 are monoatomic - leaving 16 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
6	CLF	K	9498	1,2	0,24,24	0.00	-	-		
8	SF4	G	1290	3	0,12,12	0.00	-	-		
5	CFM	K	9496	1	0,24,24	0.00	-	-		
5	CFM	A	6496	-	0,24,24	0.00	-	-		
8	SF4	P	3290	3	0,12,12	0.00	-	-		
6	CLF	A	6498	1,2	0,24,24	0.00	-	-		
4	HCA	C	7494	-	4,13,13	3.36	1 (25%)	4,18,18	2.17	2 (50%)
4	HCA	A	6494	-	4,13,13	3.18	2 (50%)	4,18,18	2.00	1 (25%)
6	CLF	D	7498	1,2	0,24,24	0.00	-	-		
4	HCA	K	9494	-	4,13,13	3.32	2 (50%)	4,18,18	2.27	1 (25%)
8	SF4	E	290	3	0,12,12	0.00	-	-		
4	HCA	I	8494	-	4,13,13	2.58	2 (50%)	4,18,18	1.67	1 (25%)
5	CFM	I	8496	1	0,24,24	0.00	-	-		
6	CLF	J	8498	1,2	0,24,24	0.00	-	-		
5	CFM	C	7496	1	0,24,24	0.00	-	-		
8	SF4	N	2290	3	0,12,12	0.00	-	-		

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
6	CLF	K	9498	1,2	-	-	0/12/10/10
8	SF4	G	1290	3	-	-	0/6/5/5
8	SF4	P	3290	3	-	-	0/6/5/5
6	CLF	A	6498	1,2	-	-	0/12/10/10
4	HCA	C	7494	-	-	3/7/17/17	-
4	HCA	A	6494	-	-	3/7/17/17	-
6	CLF	D	7498	1,2	-	-	0/12/10/10

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	HCA	K	9494	-	-	3/7/17/17	-
8	SF4	E	290	3	-	-	0/6/5/5
4	HCA	I	8494	-	-	3/7/17/17	-
6	CLF	J	8498	1,2	-	-	0/12/10/10
8	SF4	N	2290	3	-	-	0/6/5/5

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	7494	HCA	O7-C3	6.33	1.53	1.43
4	K	9494	HCA	O7-C3	5.76	1.52	1.43
4	A	6494	HCA	O7-C3	4.54	1.50	1.43
4	I	8494	HCA	O7-C3	4.51	1.50	1.43
4	A	6494	HCA	C2-C3	-4.26	1.48	1.54

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	K	9494	HCA	C3-C2-C1	-3.76	108.96	114.98
4	C	7494	HCA	C3-C2-C1	-3.54	109.32	114.98
4	I	8494	HCA	C3-C2-C1	-2.88	110.38	114.98
4	A	6494	HCA	C3-C2-C1	-2.85	110.41	114.98
4	C	7494	HCA	C4-C3-C7	2.04	115.12	111.52

There are no chirality outliers.

5 of 12 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	6494	HCA	C2-C3-C4-C5
4	A	6494	HCA	C7-C3-C4-C5
4	A	6494	HCA	O7-C3-C4-C5
4	C	7494	HCA	C2-C3-C4-C5
4	C	7494	HCA	C7-C3-C4-C5

There are no ring outliers.

15 monomers are involved in 51 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	K	9498	CLF	5	0
8	G	1290	SF4	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	K	9496	CFM	3	0
5	A	6496	CFM	8	0
6	A	6498	CLF	6	0
4	C	7494	HCA	1	0
4	A	6494	HCA	1	0
6	D	7498	CLF	3	0
4	K	9494	HCA	1	0
8	E	290	SF4	2	0
4	I	8494	HCA	1	0
5	I	8496	CFM	3	0
6	J	8498	CLF	5	0
5	C	7496	CFM	5	0
8	N	2290	SF4	5	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

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.