



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 10:12 PM GMT

PDB ID : 4WZB
Title : Crystal Structure of MgAMPPCP-bound Av2-Av1 complex
Authors : Tezcan, F.A.; Kaiser, J.T.; Mustafi, D.; Walton, M.Y.; Howard, J.B.; Rees, D.C.
Deposited on : 2014-11-19
Resolution : 2.30 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
<http://wwpdb.org/validation/2016/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 : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

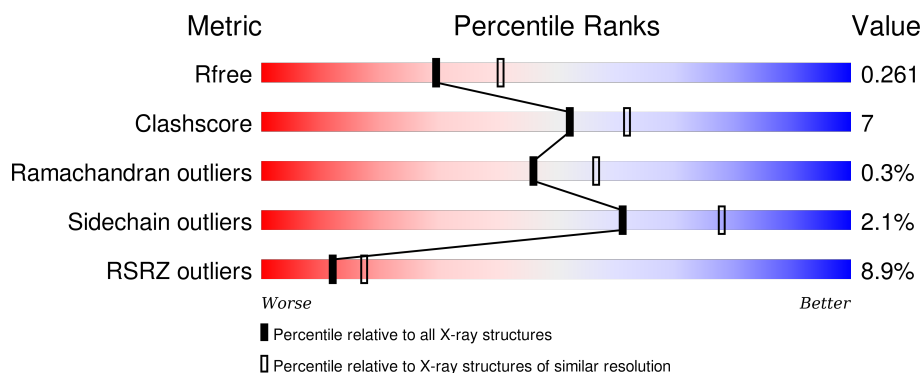
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	91344	3852 (2.30-2.30)
Clashscore	102246	4452 (2.30-2.30)
Ramachandran outliers	100387	4410 (2.30-2.30)
Sidechain outliers	100360	4409 (2.30-2.30)
RSRZ outliers	91569	3857 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	477	<div> <div>9%</div> <div>83%</div> <div>16%</div> </div>
1	C	477	<div> <div>6%</div> <div>84%</div> <div>16%</div> </div>
2	B	522	<div> <div>3%</div> <div>84%</div> <div>15%</div> <div>.</div> </div>
2	D	522	<div> <div>4%</div> <div>85%</div> <div>14%</div> <div>.</div> </div>
3	E	272	<div> <div>25%</div> <div>83%</div> <div>14%</div> <div>..</div> </div>

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Mol	Chain	Length	Quality of chain
3	F	272	
3	G	272	
3	H	272	

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 25156 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
1	A	477	Total	C	N	O	S	0	0	0
			3790	2410	647	708	25			
1	C	476	Total	C	N	O	S	0	0	0
			3782	2405	646	707	24			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	440	GLN	GLU	variant	UNP P07328
C	440	GLN	GLU	variant	UNP P07328

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

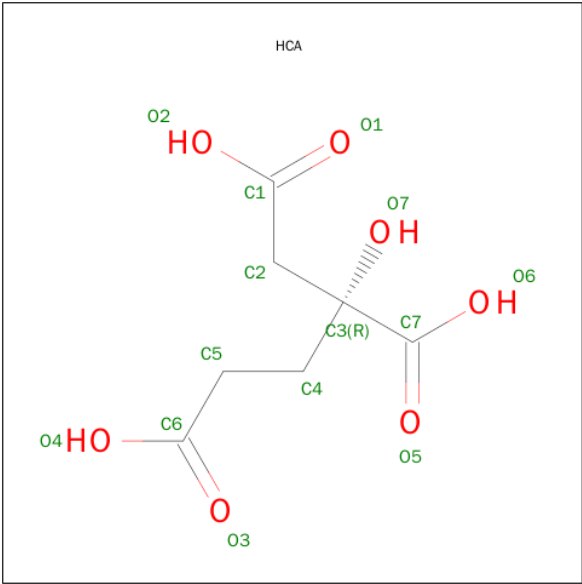
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	522	Total	C	N	O	S	0	0	0
			4174	2666	705	775	28			
2	D	522	Total	C	N	O	S	1	0	0
			4174	2666	705	775	28			

- Molecule 3 is a protein called Nitrogenase iron protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	E	270	Total	C	N	O	S	151	0	0
			2042	1274	349	399	20			
3	F	263	Total	C	N	O	S	94	0	0
			1983	1236	342	386	19			
3	G	272	Total	C	N	O	S	91	0	0
			2057	1285	351	401	20			
3	H	262	Total	C	N	O	S	31	0	0
			1974	1231	341	383	19			

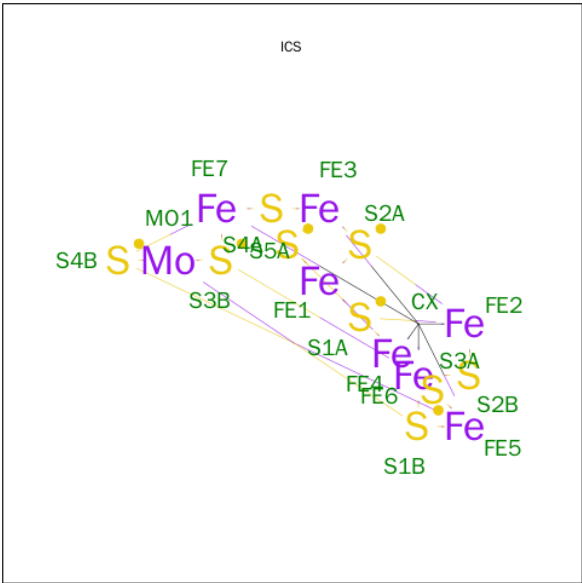
- Molecule 4 is 3-HYDROXY-3-CARBOXY-ADIPIC ACID (three-letter code: HCA) (for-

mula: C₇H₁₀O₇).



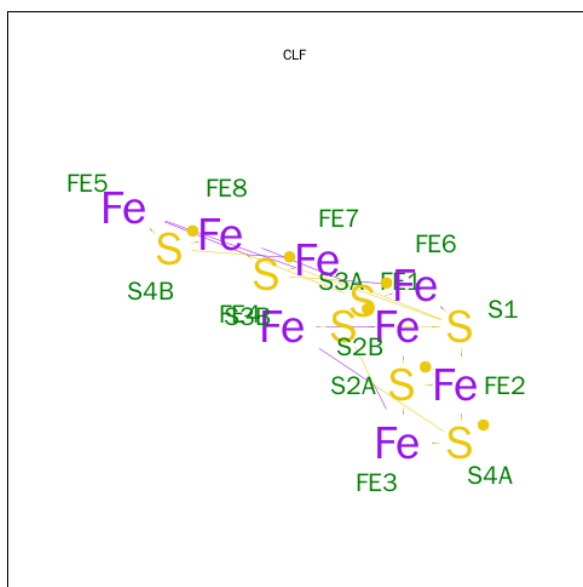
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			14	7	7		
4	C	1	Total	C	O	0	0
			14	7	7		

- Molecule 5 is iron-sulfur-molybdenum cluster with interstitial carbon (three-letter code: ICS) (formula: CFe₇MoS₉).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	Fe	Mo	S	
			18	1	7	1	9	
5	C	1	Total	C	Fe	Mo	S	
			18	1	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		
			15	8	7		
6	C	1	Total	Fe	S		
			15	8	7		

- Molecule 7 is FE (II) ION (three-letter code: FE2) (formula: Fe).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	1	Total	Fe		
			1	1		
7	D	1	Total	Fe		
			1	1		

- Molecule 8 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

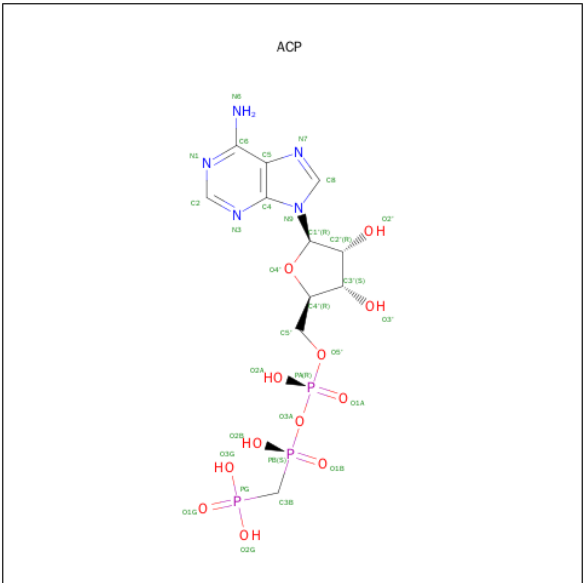
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	H	1	Total	Mg		
			1	1		

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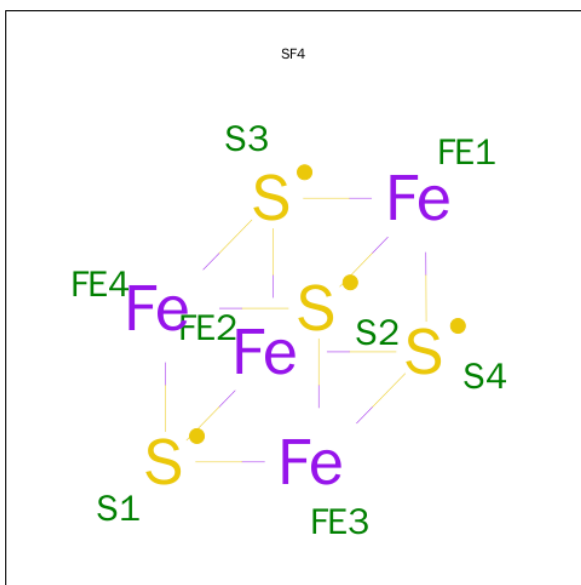
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	G	1	Total	Mg	0	0
			1	1		
8	F	1	Total	Mg	0	0
			1	1		
8	E	1	Total	Mg	0	0
			1	1		

- Molecule 9 is PHOSPHOMETHYLPHOSPHONIC ACID ADENYLATE ESTER (three-letter code: ACP) (formula: C₁₁H₁₈N₅O₁₂P₃).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	E	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
9	F	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
9	G	1	Total	C	N	O	P	0	0
			31	11	5	12	3		
9	H	1	Total	C	N	O	P	0	0
			31	11	5	12	3		

- Molecule 10 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).



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

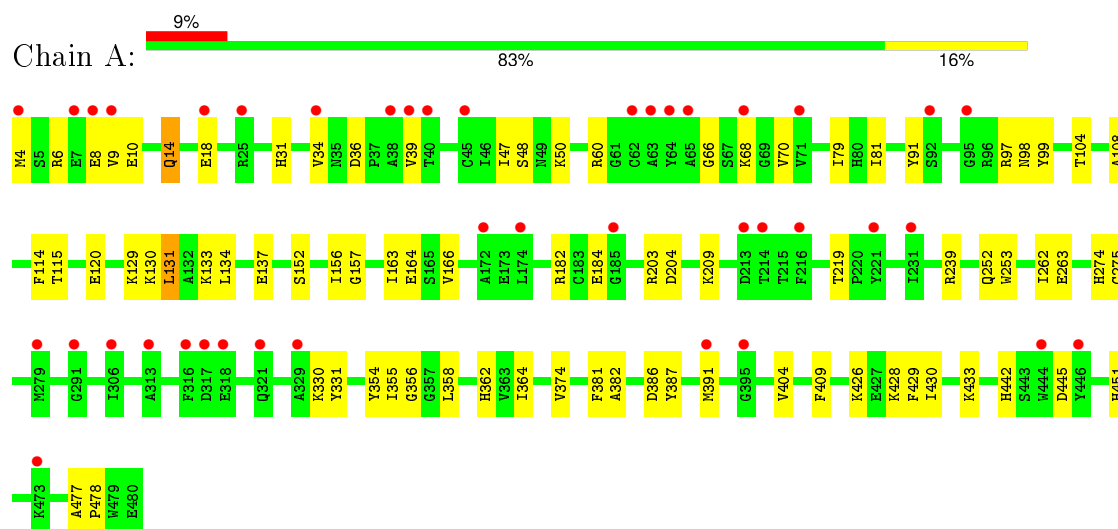
- Molecule 11 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	A	131	Total	O	0	0
			131	131		
11	B	243	Total	O	0	0
			243	243		
11	C	172	Total	O	0	0
			172	172		
11	D	213	Total	O	0	0
			213	213		
11	E	23	Total	O	0	0
			23	23		
11	F	42	Total	O	0	0
			42	42		
11	G	54	Total	O	0	0
			54	54		
11	H	62	Total	O	0	0
			62	62		

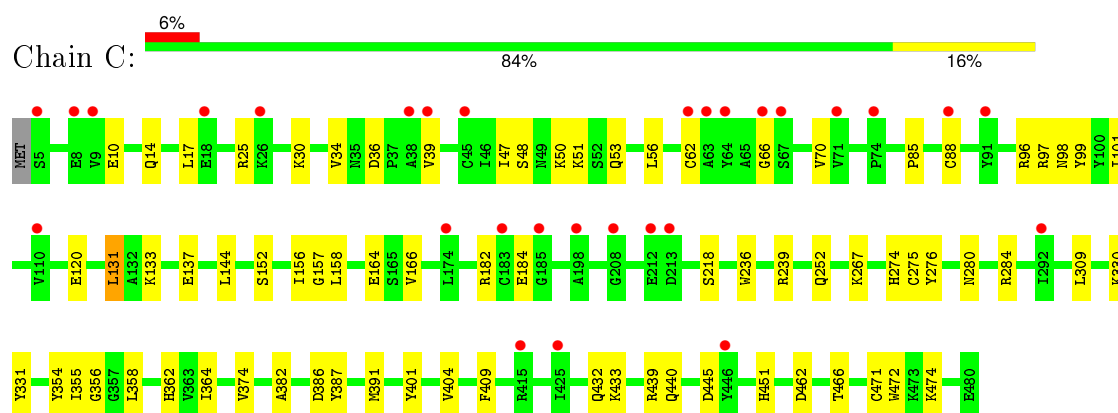
3 Residue-property plots

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.

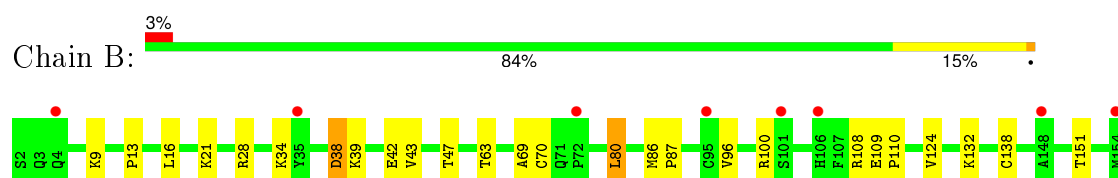
- Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

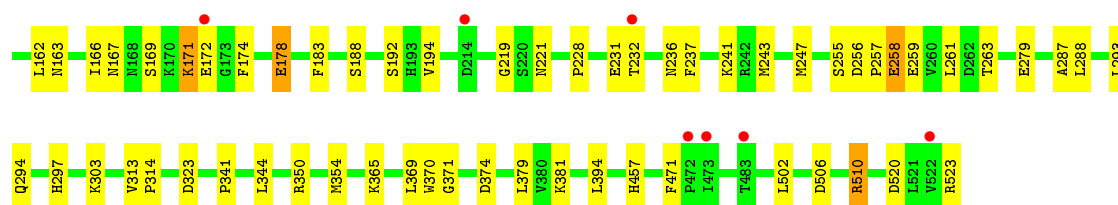


- Molecule 1: Nitrogenase molybdenum-iron protein alpha chain

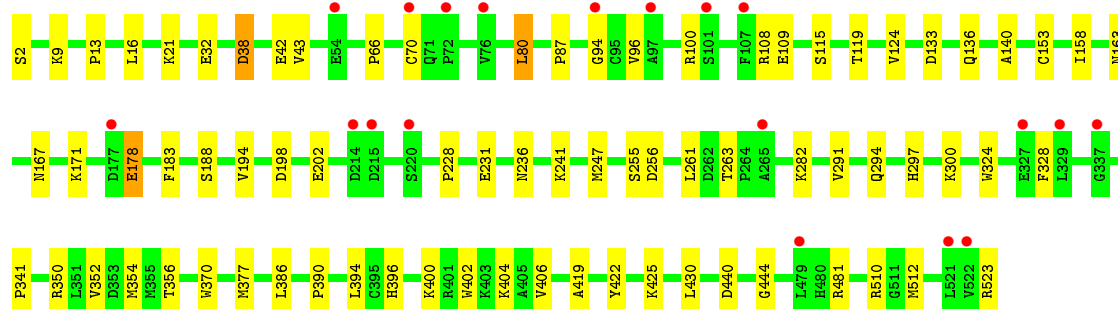
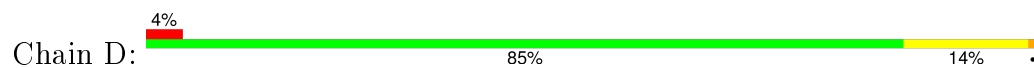


- Molecule 2: Nitrogenase molybdenum-iron protein beta chain

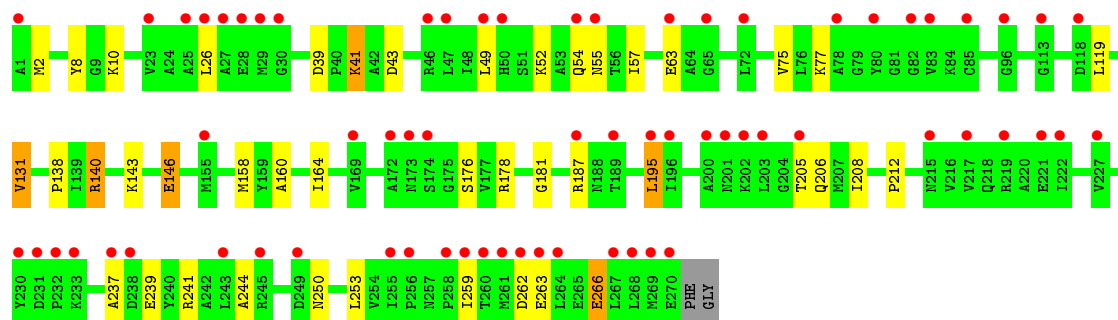
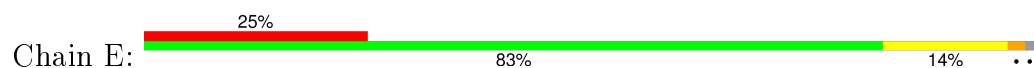




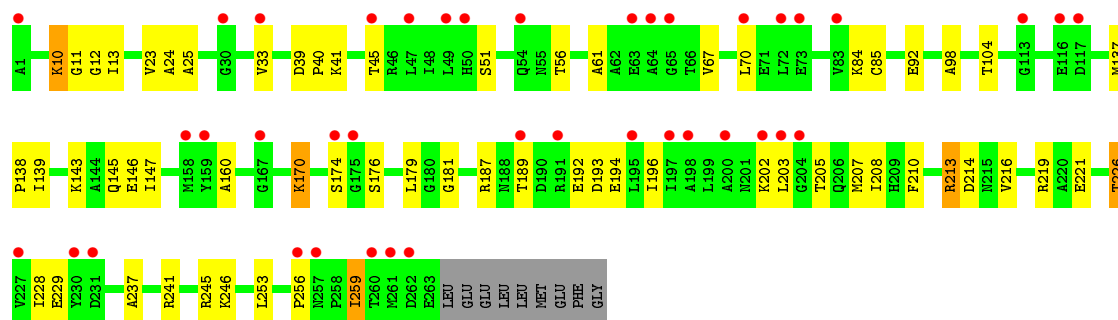
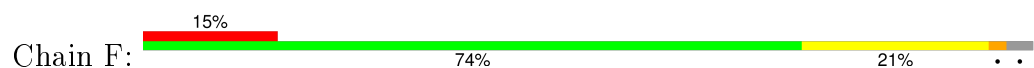
• Molecule 2: Nitrogenase molybdenum-iron protein beta chain



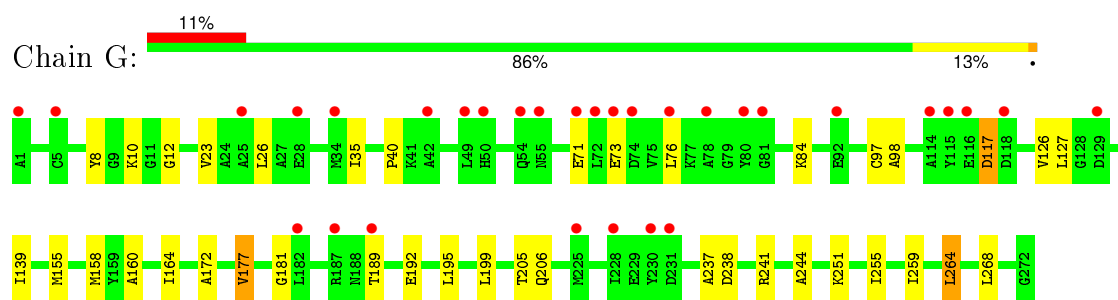
• Molecule 3: Nitrogenase iron protein 1



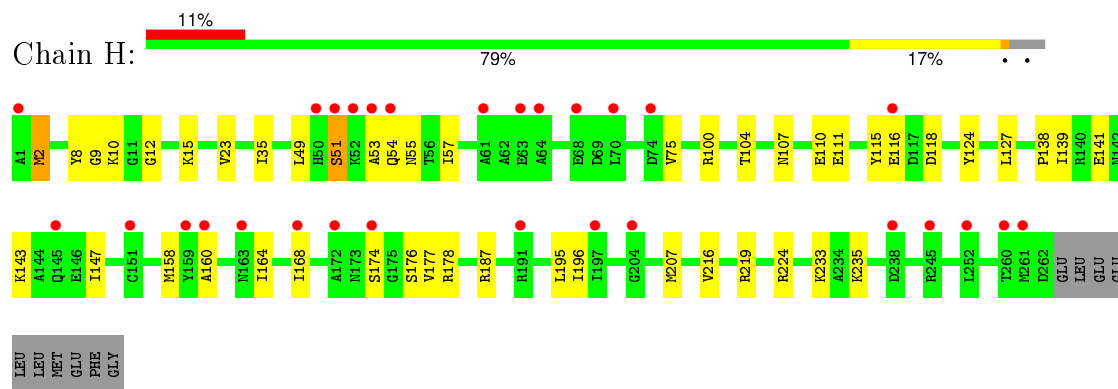
• Molecule 3: Nitrogenase iron protein 1



• Molecule 3: Nitrogenase iron protein 1



• Molecule 3: Nitrogenase iron protein 1



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	110.53Å 120.89Å 264.83Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.38 – 2.30 49.38 – 2.20	Depositor EDS
% Data completeness (in resolution range)	89.2 (49.38-2.30) 88.7 (49.38-2.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.12	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.04 (at 2.20Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.204 , 0.255 0.215 , 0.261	Depositor DCC
R_{free} test set	9916 reflections (7.58%)	DCC
Wilson B-factor (Å ²)	26.3	Xtriage
Anisotropy	0.753	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 47.5	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtriage
Outliers	0 of 159724 reflections	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	25156	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 15.52% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

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: MG, HCA, SF4, ACP, FE2, ICS, CLF

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	0.54	0/3878	0.66	0/5229
1	C	0.59	1/3870 (0.0%)	0.70	0/5219
2	B	0.61	0/4280	0.69	2/5786 (0.0%)
2	D	0.63	0/4280	0.68	0/5786
3	E	0.39	0/2065	0.64	0/2782
3	F	0.44	0/2006	0.65	0/2703
3	G	0.48	0/2081	0.66	0/2803
3	H	0.51	0/1997	0.73	0/2691
All	All	0.56	1/24457 (0.0%)	0.68	2/32999 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	88	CYS	CB-SG	-6.80	1.70	1.82

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	510	ARG	NE-CZ-NH2	-5.77	117.42	120.30
2	B	506	ASP	CB-CG-OD1	5.54	123.28	118.30

There are no chirality outliers.

There are no planarity outliers.

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	3790	0	3731	52	0
1	C	3782	0	3722	53	0
2	B	4174	0	4088	53	0
2	D	4174	0	4088	54	0
3	E	2042	0	2059	27	0
3	F	1983	0	1999	46	0
3	G	2057	0	2071	22	0
3	H	1974	0	1993	28	0
4	A	14	0	6	2	0
4	C	14	0	6	1	0
5	A	18	0	0	0	0
5	C	18	0	0	1	0
6	A	15	0	0	0	0
6	C	15	0	0	1	0
7	B	1	0	0	0	0
7	D	1	0	0	0	0
8	E	1	0	0	0	0
8	F	1	0	0	0	0
8	G	1	0	0	0	0
8	H	1	0	0	0	0
9	E	31	0	14	0	0
9	F	31	0	14	3	0
9	G	31	0	14	1	0
9	H	31	0	14	1	0
10	E	8	0	0	0	0
10	G	8	0	0	0	0
11	A	131	0	0	7	0
11	B	243	0	0	7	0
11	C	172	0	0	8	0
11	D	213	0	0	14	0
11	E	23	0	0	3	0
11	F	42	0	0	4	0
11	G	54	0	0	1	0
11	H	62	0	0	3	0
All	All	25156	0	23819	318	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.

The worst 5 of 318 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)
3:H:178:ARG:NH1	11:H:1312:HOH:O	2.01	0.93
3:E:206:GLN:HE21	3:E:208:ILE:HD13	1.39	0.86
3:G:259:ILE:HD11	3:G:264:LEU:HD13	1.59	0.84
2:D:136:GLN:NE2	11:D:1618:HOH:O	2.11	0.84
1:A:157:GLY:HA3	1:A:184:GLU:HG2	1.66	0.78

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	475/477 (100%)	456 (96%)	19 (4%)	0	100	100
1	C	474/477 (99%)	453 (96%)	21 (4%)	0	100	100
2	B	520/522 (100%)	507 (98%)	12 (2%)	1 (0%)	52	64
2	D	520/522 (100%)	507 (98%)	12 (2%)	1 (0%)	52	64
3	E	268/272 (98%)	255 (95%)	10 (4%)	3 (1%)	17	18
3	F	261/272 (96%)	254 (97%)	6 (2%)	1 (0%)	39	48
3	G	270/272 (99%)	262 (97%)	8 (3%)	0	100	100
3	H	260/272 (96%)	250 (96%)	8 (3%)	2 (1%)	24	27
All	All	3048/3086 (99%)	2944 (97%)	96 (3%)	8 (0%)	46	57

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	E	52	LYS
3	E	262	ASP
3	H	54	GLN
3	E	55	ASN
3	H	51	SER

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	407/407 (100%)	401 (98%)	6 (2%)	72	85
1	C	406/407 (100%)	400 (98%)	6 (2%)	72	85
2	B	454/454 (100%)	446 (98%)	8 (2%)	66	82
2	D	454/454 (100%)	447 (98%)	7 (2%)	72	85
3	E	217/218 (100%)	209 (96%)	8 (4%)	41	55
3	F	210/218 (96%)	203 (97%)	7 (3%)	45	61
3	G	218/218 (100%)	213 (98%)	5 (2%)	58	75
3	H	209/218 (96%)	203 (97%)	6 (3%)	50	66
All	All	2575/2594 (99%)	2522 (98%)	53 (2%)	61	78

5 of 53 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	80	LEU
3	E	131	VAL
3	H	116	GLU
2	D	124	VAL
2	D	178	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 9 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	252	GLN
3	E	206	GLN
2	D	18	GLN
1	A	440	GLN
1	C	321	GLN

5.3.3 RNA ⓘ

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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 18 ligands modelled in this entry, 6 are monoatomic - leaving 12 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$
4	HCA	A	1494	-	4,13,13	0.80	0	3,18,18	2.32	1 (33%)
5	ICS	A	1496	1	6,30,30	1.95	2 (33%)	0,78,78	0.00	-
6	CLF	A	1498	1,2	0,24,24	0.00	-	0,57,57	0.00	-
4	HCA	C	1494	-	4,13,13	0.74	0	3,18,18	2.40	1 (33%)
5	ICS	C	1496	1	6,30,30	1.64	1 (16%)	0,78,78	0.00	-
6	CLF	C	1498	1,2	0,24,24	0.00	-	0,57,57	0.00	-
10	SF4	E	1290	3	0,12,12	0.00	-	0,24,24	0.00	-
9	ACP	E	1292	8	25,33,33	1.86	7 (28%)	31,52,52	1.94	7 (22%)
9	ACP	F	1292	8	25,33,33	1.70	5 (20%)	31,52,52	2.02	6 (19%)
9	ACP	G	1290	8	25,33,33	1.95	7 (28%)	31,52,52	1.99	8 (25%)
10	SF4	G	1292	3	0,12,12	0.00	-	0,24,24	0.00	-
9	ACP	H	1292	8	25,33,33	1.79	5 (20%)	31,52,52	2.01	6 (19%)

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
4	HCA	A	1494	-	-	0/7/17/17	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	ICS	A	1496	1	-	0/0/204/204	0/0/13/13
6	CLF	A	1498	1,2	-	0/0/132/132	0/12/10/10
4	HCA	C	1494	-	-	0/7/17/17	0/0/0/0
5	ICS	C	1496	1	-	0/0/204/204	0/0/13/13
6	CLF	C	1498	1,2	-	0/0/132/132	0/12/10/10
10	SF4	E	1290	3	-	0/0/48/48	0/6/5/5
9	ACP	E	1292	8	-	0/15/38/38	0/3/3/3
9	ACP	F	1292	8	-	0/15/38/38	0/3/3/3
9	ACP	G	1290	8	-	0/15/38/38	0/3/3/3
10	SF4	G	1292	3	-	0/0/48/48	0/6/5/5
9	ACP	H	1292	8	-	0/15/38/38	0/3/3/3

The worst 5 of 27 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1496	ICS	S2B-FE6	-3.60	2.16	2.24
9	E	1292	ACP	PB-O2B	-3.13	1.48	1.56
9	H	1292	ACP	PG-O3G	-2.91	1.47	1.54
9	G	1290	ACP	PB-O2B	-2.81	1.49	1.56
5	C	1496	ICS	S2B-FE6	-2.77	2.18	2.24

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	H	1292	ACP	N3-C2-N1	-7.39	123.23	128.89
9	F	1292	ACP	N3-C2-N1	-7.01	123.53	128.89
9	E	1292	ACP	N3-C2-N1	-6.78	123.70	128.89
9	G	1290	ACP	N3-C2-N1	-6.43	123.97	128.89
9	H	1292	ACP	C2'-C1'-N9	-4.86	106.87	114.29

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

7 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1494	HCA	2	0
4	C	1494	HCA	1	0
5	C	1496	ICS	1	0
6	C	1498	CLF	1	0
9	F	1292	ACP	3	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	G	1290	ACP	1	0
9	H	1292	ACP	1	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 ⓘ

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	477/477 (100%)	0.77	41 (8%)	13 18	18, 31, 52, 70	0
1	C	476/477 (99%)	0.60	29 (6%)	25 33	15, 26, 43, 57	0
2	B	522/522 (100%)	0.47	15 (2%)	55 64	16, 24, 34, 46	0
2	D	522/522 (100%)	0.47	19 (3%)	46 55	15, 23, 33, 48	1 (0%)
3	E	267/272 (98%)	1.33	67 (25%)	1 1	26, 53, 69, 87	26 (9%)
3	F	260/272 (95%)	1.06	40 (15%)	3 4	23, 48, 69, 98	16 (6%)
3	G	270/272 (99%)	0.83	31 (11%)	6 10	20, 37, 52, 65	15 (5%)
3	H	262/272 (96%)	0.85	29 (11%)	7 11	18, 37, 58, 78	7 (2%)
All	All	3056/3086 (99%)	0.73	271 (8%)	12 17	15, 30, 58, 98	65 (2%)

The worst 5 of 271 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	E	1	ALA	8.3
3	H	53	ALA	7.0
3	H	1	ALA	6.2
3	H	51	SER	6.0
3	F	198	ALA	5.9

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 [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. 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	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
4	HCA	A	1494	14/14	0.93	0.25	0.12	19,21,23,24	0
4	HCA	C	1494	14/14	0.96	0.22	-0.46	15,17,20,23	0
9	ACP	F	1292	31/31	0.89	0.16	-0.70	34,47,53,54	0
9	ACP	H	1292	31/31	0.94	0.14	-0.79	22,30,35,35	0
9	ACP	E	1292	31/31	0.93	0.14	-0.97	37,47,51,52	0
6	CLF	A	1498	15/15	0.86	0.17	-0.99	17,20,106,128	0
9	ACP	G	1290	31/31	0.91	0.15	-1.11	29,40,44,47	0
5	ICS	A	1496	18/18	0.97	0.14	-1.42	20,24,26,29	0
6	CLF	C	1498	15/15	0.97	0.15	-1.66	12,15,18,19	0
5	ICS	C	1496	18/18	0.97	0.12	-1.88	15,19,24,26	0
10	SF4	E	1290	8/8	0.98	0.10	-2.14	21,23,26,27	0
8	MG	F	1291	1/1	0.93	0.12	-2.34	41,41,41,41	0
7	FE2	B	1492	1/1	0.92	0.10	-2.86	22,22,22,22	1
8	MG	H	1291	1/1	0.91	0.11	-2.89	25,25,25,25	0
8	MG	G	1291	1/1	0.93	0.08	-2.93	34,34,34,34	0
10	SF4	G	1292	8/8	0.97	0.12	-3.19	16,20,22,22	0
7	FE2	D	1492	1/1	0.95	0.04	-4.05	27,27,27,27	1
8	MG	E	1291	1/1	0.87	0.10	-	40,40,40,40	0

6.5 Other polymers [i](#)

There are no such residues in this entry.