



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 17, 2026 – 05:56 PM UTC

PDB ID : 6VCZ / pdb_00006vcz
Title : Crystal structure of Arabidopsis thaliana S-adenosylmethionine Synthase 2 (AtMAT2)
Authors : Sekula, B.; Ruskowski, M.; Dauter, Z.
Deposited on : 2019-12-23
Resolution : 1.52 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 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

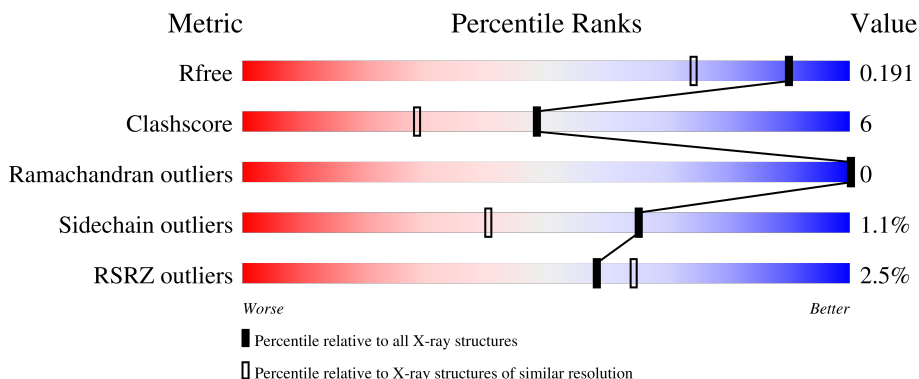
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.52 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	5890 (1.54-1.50)
Clashscore	190562	6116 (1.54-1.50)
Ramachandran outliers	187476	6002 (1.54-1.50)
Sidechain outliers	187428	5999 (1.54-1.50)
RSRZ outliers	180081	5891 (1.54-1.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	402	 2% 84% 9% 6%
1	B	402	 2% 84% 10% 5%

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 7107 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 S-adenosylmethionine synthase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	378	2976	1883	509	566	18	0	10	0
1	B	380	3012	1908	513	573	18	0	14	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	expression tag	UNP P17562
A	-1	ASN	-	expression tag	UNP P17562
A	0	ALA	-	expression tag	UNP P17562
A	393	LEU	-	expression tag	UNP P17562
A	394	ASN	-	expression tag	UNP P17562
A	395	ASN	-	expression tag	UNP P17562
A	396	ILE	-	expression tag	UNP P17562
A	397	GLY	-	expression tag	UNP P17562
A	398	SER	-	expression tag	UNP P17562
A	399	GLY	-	expression tag	UNP P17562
B	-2	SER	-	expression tag	UNP P17562
B	-1	ASN	-	expression tag	UNP P17562
B	0	ALA	-	expression tag	UNP P17562
B	393	LEU	-	expression tag	UNP P17562
B	394	ASN	-	expression tag	UNP P17562
B	395	ASN	-	expression tag	UNP P17562
B	396	ILE	-	expression tag	UNP P17562
B	397	GLY	-	expression tag	UNP P17562
B	398	SER	-	expression tag	UNP P17562
B	399	GLY	-	expression tag	UNP P17562

- Molecule 2 is PHOSPHATE ION (CCD ID: PO4) (formula: O₄P).

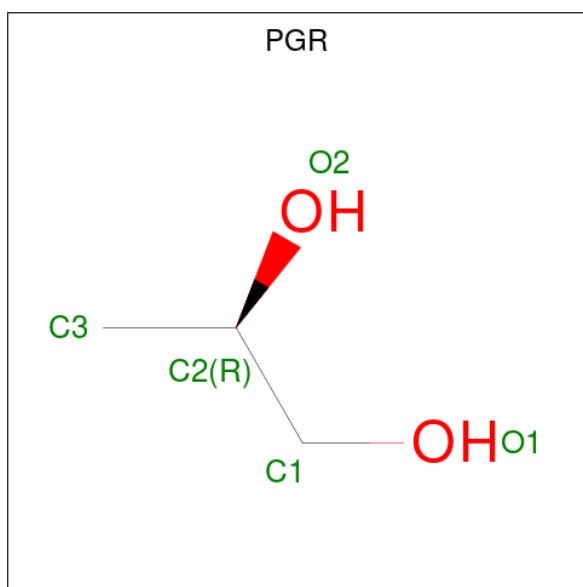


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O P 5 4 1	0	0
2	A	1	Total O P 5 4 1	0	0
2	A	1	Total O P 5 4 1	0	0
2	A	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

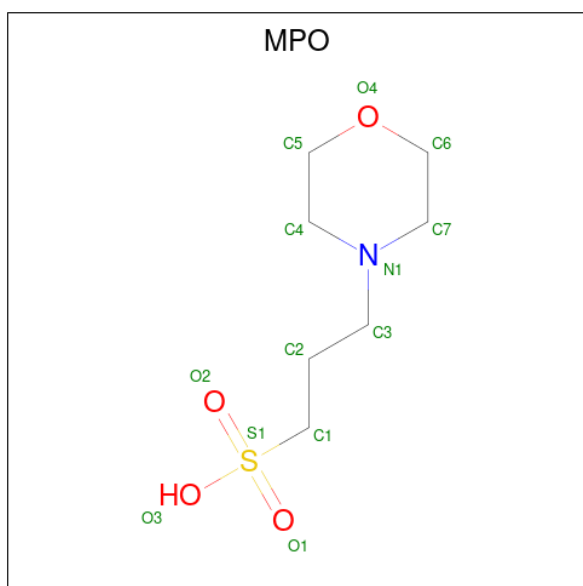
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	3	Total Mg 3 3	0	0
3	B	4	Total Mg 4 4	0	0

- Molecule 4 is R-1,2-PROPANEDIOL (CCD ID: PGR) (formula: C₃H₈O₂).



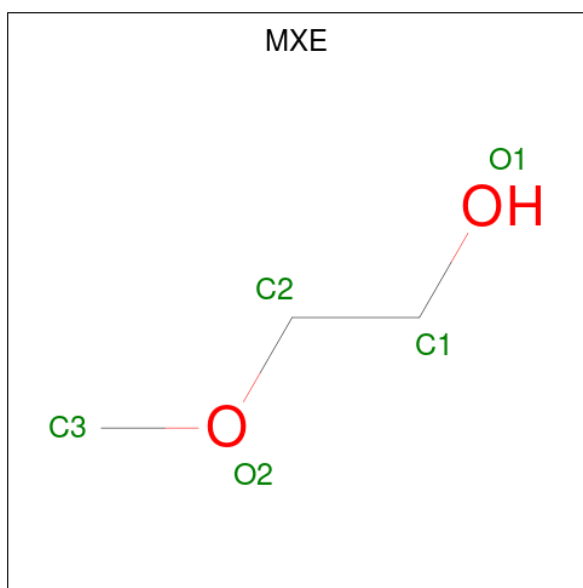
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			5	3	2		
4	B	1	Total	C	O	0	0
			5	3	2		

- Molecule 5 is 3[N-MORPHOLINO]PROPANE SULFONIC ACID (CCD ID: MPO) (formula: $C_7H_{15}NO_4S$).



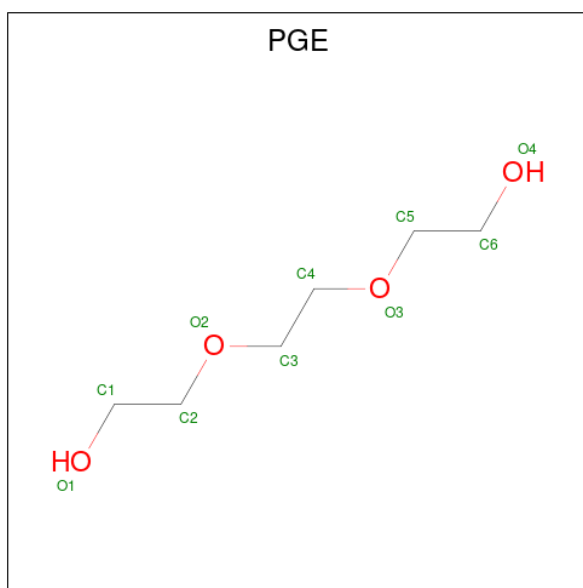
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	B	1	Total	C	N	O	S	0	0
			13	7	1	4	1		

- Molecule 6 is 2-METHOXYETHANOL (CCD ID: MXE) (formula: $C_3H_8O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	B	1	Total	C	O	0	0
			5	3	2		

- Molecule 7 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	B	1	Total	C	O	0	0
			10	6	4		
7	B	1	Total	C	O	0	0
			10	6	4		

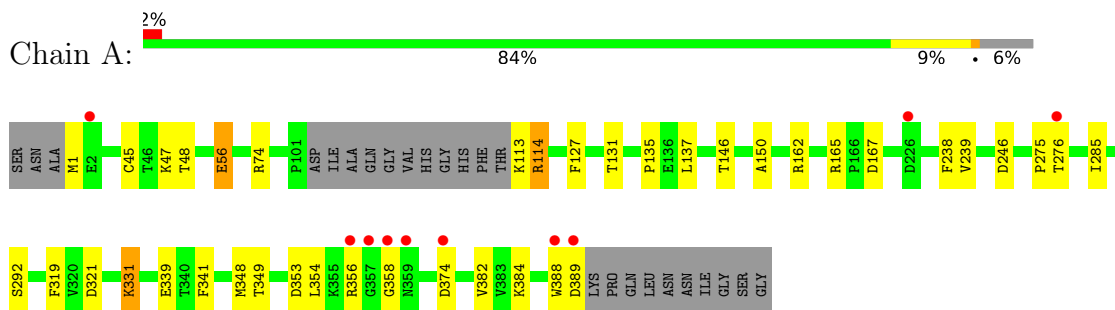
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	498	Total 501	O 501	0	3
8	B	516	Total 523	O 523	0	7

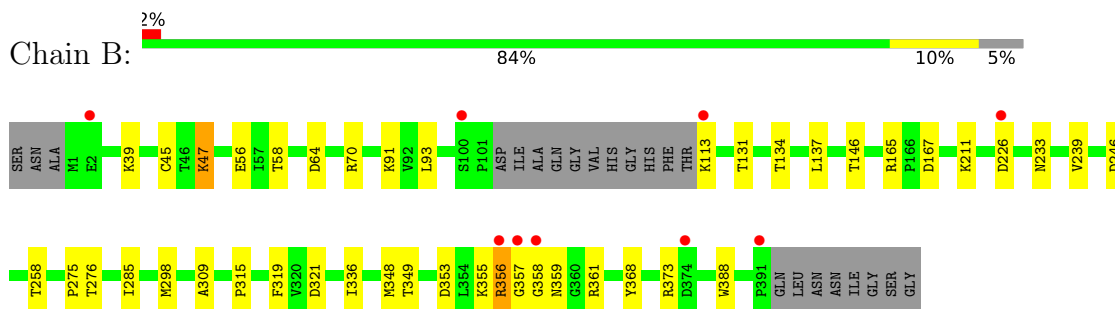
3 Residue-property plots [i](#)

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: S-adenosylmethionine synthase 2



- Molecule 1: S-adenosylmethionine synthase 2



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	62.80Å 99.28Å 86.93Å 90.00° 109.74° 90.00°	Depositor
Resolution (Å)	42.44 – 1.52 42.44 – 1.52	Depositor EDS
% Data completeness (in resolution range)	99.8 (42.44-1.52) 99.9 (42.44-1.52)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.59 (at 1.52Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.160 , 0.180 0.172 , 0.191	Depositor DCC
R_{free} test set	1542 reflections (1.00%)	wwPDB-VP
Wilson B-factor (Å ²)	17.0	Xtrriage
Anisotropy	0.099	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 44.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.027 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	7107	wwPDB-VP
Average B, all atoms (Å ²)	22.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 14.26% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MPO, MG, PGR, PO4, PGE, MXE

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	1.19	8/3066 (0.3%)	1.26	13/4149 (0.3%)
1	B	1.19	7/3115 (0.2%)	1.25	7/4214 (0.2%)
All	All	1.19	15/6181 (0.2%)	1.26	20/8363 (0.2%)

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	246	ASP	C-O	7.66	1.30	1.24
1	A	74	ARG	C-O	6.68	1.31	1.24
1	A	45[A]	CYS	C-O	6.04	1.31	1.23
1	A	45[B]	CYS	C-O	6.04	1.31	1.23
1	B	373	ARG	C-O	-5.93	1.16	1.24
1	A	292	SER	C-O	5.93	1.31	1.24
1	B	134	THR	N-CA	5.48	1.50	1.45
1	A	45[A]	CYS	CA-C	5.48	1.59	1.52
1	A	45[B]	CYS	CA-C	5.48	1.59	1.52
1	B	315	PRO	C-O	5.26	1.29	1.23
1	A	382	VAL	N-CA	5.15	1.52	1.46
1	B	45[A]	CYS	CA-C	5.08	1.58	1.52
1	B	45[B]	CYS	CA-C	5.08	1.58	1.52
1	B	246	ASP	CG-OD1	-5.06	1.15	1.25
1	B	309	ALA	C-O	5.03	1.30	1.24

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	233	ASN	O-C-N	-8.79	117.48	121.53
1	A	321	ASP	CA-CB-CG	-6.11	106.49	112.60
1	A	389	ASP	CA-CB-CG	6.01	118.61	112.60
1	A	127	PHE	CA-C-N	6.00	126.71	122.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	127	PHE	C-N-CA	6.00	126.71	122.33
1	A	374	ASP	CA-C-N	5.99	128.79	120.65
1	A	374	ASP	C-N-CA	5.99	128.79	120.65
1	A	56	GLU	CB-CG-CD	5.97	122.75	112.60
1	B	258	THR	O-C-N	5.95	125.23	120.83
1	A	246	ASP	CA-CB-CG	5.92	118.52	112.60
1	A	114	ARG	N-CA-C	-5.43	101.38	109.42
1	B	258	THR	CA-C-O	-5.34	116.73	119.77
1	B	355	LYS	CA-C-N	5.30	127.39	120.28
1	B	355	LYS	C-N-CA	5.30	127.39	120.28
1	A	167	ASP	CA-CB-CG	5.27	117.87	112.60
1	B	167	ASP	CA-CB-CG	5.21	117.81	112.60
1	B	356	ARG	CB-CA-C	5.11	119.28	110.79
1	A	275	PRO	CA-C-O	-5.10	111.82	118.86
1	A	238	PHE	CA-CB-CG	5.03	118.83	113.80
1	A	150	ALA	N-CA-C	-5.02	105.81	111.28

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	2976	0	2987	28	0
1	B	3012	0	3035	37	0
2	A	20	0	0	0	0
2	B	20	0	0	1	0
3	A	3	0	0	0	0
3	B	4	0	0	0	0
4	A	5	0	8	1	0
4	B	5	0	8	0	0
5	B	13	0	14	4	0
6	B	5	0	8	0	0
7	B	20	0	28	1	0
8	A	501	0	0	12	0
8	B	523	0	0	20	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	7107	0	6088	67	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 6.

All (67) 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:361:ARG:HB2	8:B:505:HOH:O	1.39	1.20
1:A:146[B]:THR:HG21	8:A:665:HOH:O	1.72	0.88
1:A:56:GLU:HG2	8:A:517:HOH:O	1.80	0.79
1:B:91[A]:LYS:HE2	1:B:93:LEU:HD21	1.64	0.77
1:B:276:THR:HG23	8:B:697:HOH:O	1.83	0.76
1:B:146[B]:THR:HG21	8:B:678:HOH:O	1.86	0.74
1:A:388:TRP:HA	8:A:823:HOH:O	1.88	0.73
1:B:359:ASN:ND2	8:B:503:HOH:O	2.23	0.72
1:A:353:ASP:OD2	1:A:356:ARG:NE	2.24	0.70
1:B:358:GLY:N	8:B:505:HOH:O	2.26	0.69
1:B:56:GLU:HG3	8:B:511:HOH:O	1.95	0.67
1:A:146[B]:THR:CG2	8:A:665:HOH:O	2.36	0.66
1:B:357:GLY:C	8:B:508:HOH:O	2.41	0.64
1:B:146[B]:THR:CG2	8:B:678:HOH:O	2.44	0.64
1:A:56:GLU:HG3	8:A:702:HOH:O	1.97	0.64
1:B:358:GLY:CA	8:B:508:HOH:O	2.47	0.61
1:A:276:THR:HG22	1:A:349[B]:THR:HG21	1.84	0.60
1:B:64:ASP:OD2	5:B:409:MPO:N1	2.36	0.59
1:A:114:ARG:HH21	1:A:114:ARG:HG3	1.67	0.58
1:B:358:GLY:N	8:B:508:HOH:O	2.36	0.58
1:B:358:GLY:HA2	8:B:508:HOH:O	2.03	0.58
1:A:358:GLY:N	8:A:502:HOH:O	2.22	0.58
1:B:113:LYS:HE2	8:B:829:HOH:O	2.03	0.57
1:B:211[B]:LYS:HG3	8:B:774:HOH:O	2.03	0.57
1:A:165:ARG:NH1	1:A:239[A]:VAL:HG13	2.20	0.57
1:B:359:ASN:CG	8:B:503:HOH:O	2.51	0.54
1:B:91[A]:LYS:NZ	8:B:512:HOH:O	2.41	0.53
1:B:56:GLU:HG3	8:B:704:HOH:O	2.09	0.52
1:B:275:PRO:O	1:B:349[B]:THR:HG22	2.10	0.52
1:A:135:PRO:HD2	4:A:408:PGR:H33	1.90	0.52
1:A:276:THR:HG23	8:A:604:HOH:O	2.09	0.51
1:B:131:THR:O	1:B:137:LEU:HA	2.12	0.49
1:A:239[A]:VAL:CG1	8:A:756:HOH:O	2.59	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:B:413:PGE:O1	7:B:413:PGE:H3	2.13	0.49
1:B:276:THR:HA	1:B:349[B]:THR:HG21	1.95	0.48
1:B:319[B]:PHE:CZ	1:B:321[B]:ASP:HB2	2.49	0.48
1:B:91[A]:LYS:CE	1:B:93:LEU:HD21	2.37	0.48
1:A:276:THR:CG2	1:A:349[B]:THR:HG21	2.43	0.48
1:B:298:MET:HE2	1:B:388:TRP:HB3	1.95	0.47
1:A:131:THR:O	1:A:137:LEU:HA	2.13	0.47
1:B:64:ASP:OD2	5:B:409:MPO:H31	2.14	0.47
1:B:285:ILE:HG21	1:B:348:MET:SD	2.55	0.47
1:B:39[B]:LYS:HB2	1:B:58:THR:HB	1.98	0.46
1:A:353:ASP:OD2	1:A:356:ARG:NH1	2.48	0.45
1:A:349[A]:THR:HG23	1:A:354:LEU:HB2	1.97	0.45
1:B:353:ASP:CG	1:B:356:ARG:HD3	2.42	0.45
1:A:276:THR:HG22	8:A:785:HOH:O	2.16	0.44
1:A:1:MET:HA	8:A:544:HOH:O	2.16	0.44
1:B:64:ASP:OD2	5:B:409:MPO:C3	2.65	0.44
1:B:298:MET:HE1	1:B:336:ILE:HG21	1.99	0.43
1:B:165:ARG:NH1	1:B:239[B]:VAL:HG13	2.33	0.43
2:B:404:PO4:O2	8:B:501:HOH:O	2.21	0.42
1:A:276:THR:OG1	8:A:501:HOH:O	2.21	0.42
1:B:70:ARG:HD2	5:B:409:MPO:O2	2.19	0.42
1:A:239[A]:VAL:HG11	8:A:756:HOH:O	2.19	0.42
1:A:341:PHE:CE1	1:A:384:LYS:HD3	2.54	0.42
1:A:331:LYS:HE2	1:A:331:LYS:HB2	1.60	0.42
1:B:368:TYR:HA	8:B:543:HOH:O	2.20	0.42
1:A:165:ARG:HH12	1:A:239[A]:VAL:HG13	1.85	0.41
1:B:113:LYS:N	8:B:531:HOH:O	2.53	0.41
1:B:47[A]:LYS:HB2	1:B:47[A]:LYS:HE3	1.92	0.41
1:A:388:TRP:O	1:A:388:TRP:CG	2.72	0.40
1:A:285:ILE:HG21	1:A:348:MET:SD	2.62	0.40
1:B:56:GLU:CG	8:B:511:HOH:O	2.62	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	384/402 (96%)	377 (98%)	7 (2%)	0	100	100
1	B	390/402 (97%)	382 (98%)	8 (2%)	0	100	100
All	All	774/804 (96%)	759 (98%)	15 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	329/337 (98%)	323 (98%)	6 (2%)	51	23
1	B	335/337 (99%)	332 (99%)	3 (1%)	70	49
All	All	664/674 (98%)	655 (99%)	9 (1%)	65	31

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	47[A]	LYS
1	A	47[B]	LYS
1	A	113	LYS
1	A	162	ARG
1	A	331	LYS
1	A	339	GLU
1	B	47[A]	LYS
1	B	47[B]	LYS
1	B	226	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	244	HIS

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Mol	Chain	Res	Type
1	A	288	GLN
1	B	288	GLN
1	B	363	GLN

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 21 ligands modelled in this entry, 7 are monoatomic - leaving 14 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	PGR	B	411	-	4,4,4	0.58	0	4,4,4	0.72	0
2	PO4	A	403	-	4,4,4	0.74	0	6,6,6	0.49	0
7	PGE	B	412	-	9,9,9	0.23	0	8,8,8	0.25	0
2	PO4	A	401	3	4,4,4	1.21	0	6,6,6	0.50	0
2	PO4	A	404	-	4,4,4	1.07	0	6,6,6	0.54	0
2	PO4	B	402	3	4,4,4	0.72	0	6,6,6	0.97	0
2	PO4	B	404	3	4,4,4	0.56	0	6,6,6	0.39	0
4	PGR	A	408	-	4,4,4	0.57	0	4,4,4	0.50	0
5	MPO	B	409	-	13,13,13	0.82	1 (7%)	17,17,17	1.04	2 (11%)
2	PO4	A	402	3	4,4,4	1.07	0	6,6,6	0.76	0
2	PO4	B	403	-	4,4,4	0.96	0	6,6,6	0.72	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	MXE	B	410	-	4,4,4	0.06	0	3,3,3	0.27	0
7	PGE	B	413	-	9,9,9	0.25	0	8,8,8	0.23	0
2	PO4	B	401	3	4,4,4	1.25	0	6,6,6	0.56	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
4	PGR	B	411	-	-	1/2/2/2	-
7	PGE	B	412	-	-	4/7/7/7	-
4	PGR	A	408	-	-	0/2/2/2	-
5	MPO	B	409	-	-	4/7/15/15	0/1/1/1
6	MXE	B	410	-	-	1/2/2/2	-
7	PGE	B	413	-	-	4/7/7/7	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	409	MPO	O2-S1	2.60	1.52	1.45

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	409	MPO	O3-S1-O1	2.73	118.24	111.40
5	B	409	MPO	C2-C1-S1	-2.15	109.96	113.25

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	409	MPO	C2-C3-N1-C7
7	B	412	PGE	O1-C1-C2-O2
7	B	412	PGE	O3-C5-C6-O4
7	B	413	PGE	O2-C3-C4-O3
5	B	409	MPO	C2-C3-N1-C4
7	B	413	PGE	O1-C1-C2-O2
7	B	412	PGE	O2-C3-C4-O3
7	B	413	PGE	O3-C5-C6-O4

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Mol	Chain	Res	Type	Atoms
4	B	411	PGR	O1-C1-C2-O2
5	B	409	MPO	S1-C1-C2-C3
7	B	412	PGE	C3-C4-O3-C5
5	B	409	MPO	C1-C2-C3-N1
7	B	413	PGE	C3-C4-O3-C5
6	B	410	MXE	O1-C1-C2-O2

There are no ring outliers.

4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	404	PO4	1	0
4	A	408	PGR	1	0
5	B	409	MPO	4	0
7	B	413	PGE	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	378/402 (94%)	-0.12	10 (2%) 57 63	8, 18, 34, 60	10 (2%)
1	B	380/402 (94%)	-0.05	9 (2%) 59 65	8, 19, 36, 59	14 (3%)
All	All	758/804 (94%)	-0.08	19 (2%) 58 64	8, 18, 35, 60	24 (3%)

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	356	ARG	4.9
1	A	389	ASP	4.6
1	B	358	GLY	4.2
1	A	374	ASP	3.8
1	B	357	GLY	3.6
1	A	357	GLY	3.6
1	A	356	ARG	3.5
1	B	113	LYS	3.0
1	B	100	SER	3.0
1	B	374	ASP	3.0
1	A	359	ASN	3.0
1	A	388	TRP	2.7
1	A	358	GLY	2.7
1	B	391	PRO	2.5
1	A	2	GLU	2.5
1	B	226	ASP	2.5
1	A	276	THR	2.3
1	B	2	GLU	2.1
1	A	226	ASP	2.1

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

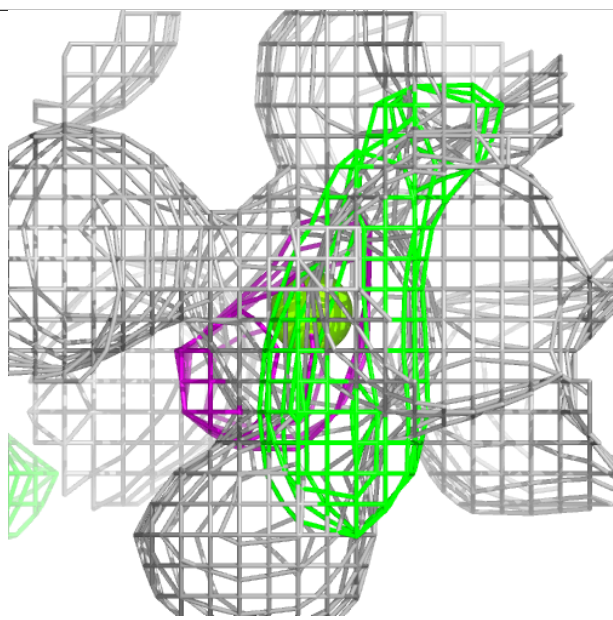
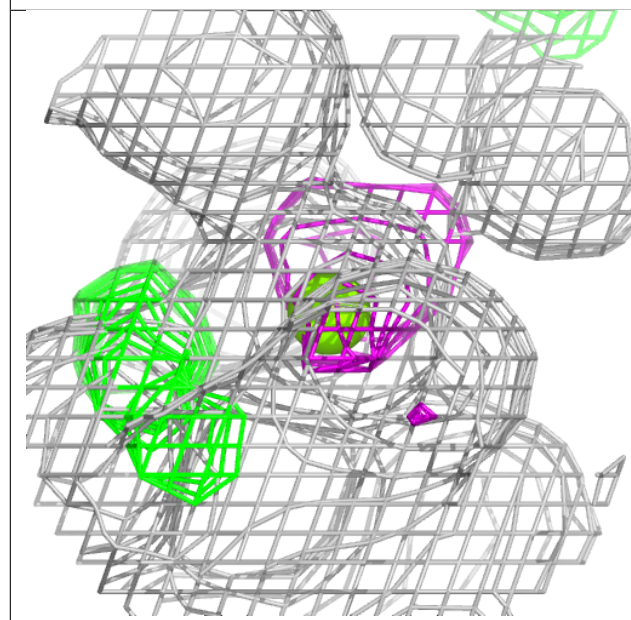
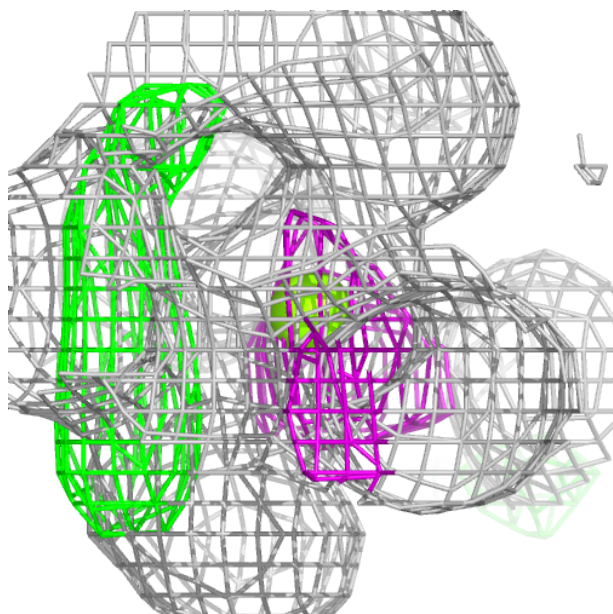
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	PGR	B	411	5/5	0.71	0.23	44,48,51,51	0
2	PO4	A	404	5/5	0.76	0.19	29,29,34,35	5
4	PGR	A	408	5/5	0.82	0.17	46,48,52,55	0
7	PGE	B	413	10/10	0.82	0.17	42,50,54,56	0
6	MXE	B	410	5/5	0.83	0.18	47,48,51,52	0
7	PGE	B	412	10/10	0.85	0.17	23,52,53,55	0
5	MPO	B	409	13/13	0.90	0.16	25,30,33,34	13
2	PO4	A	403	5/5	0.91	0.12	27,32,36,39	5
2	PO4	B	404	5/5	0.94	0.09	19,27,34,35	5
2	PO4	B	403	5/5	0.95	0.09	26,26,32,36	5
3	MG	B	408	1/1	0.95	0.14	19,19,19,19	1
3	MG	A	407	1/1	0.96	0.10	16,16,16,16	1
3	MG	B	407	1/1	0.98	0.06	18,18,18,18	0
3	MG	A	406	1/1	0.99	0.11	20,20,20,20	0
2	PO4	B	401	5/5	0.99	0.04	13,13,15,15	0
2	PO4	B	402	5/5	0.99	0.06	14,15,16,18	0
2	PO4	A	401	5/5	0.99	0.06	15,16,17,17	0
2	PO4	A	402	5/5	0.99	0.06	14,16,18,21	0
3	MG	B	406	1/1	1.00	0.12	17,17,17,17	0
3	MG	A	405	1/1	1.00	0.04	14,14,14,14	0
3	MG	B	405	1/1	1.00	0.05	12,12,12,12	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

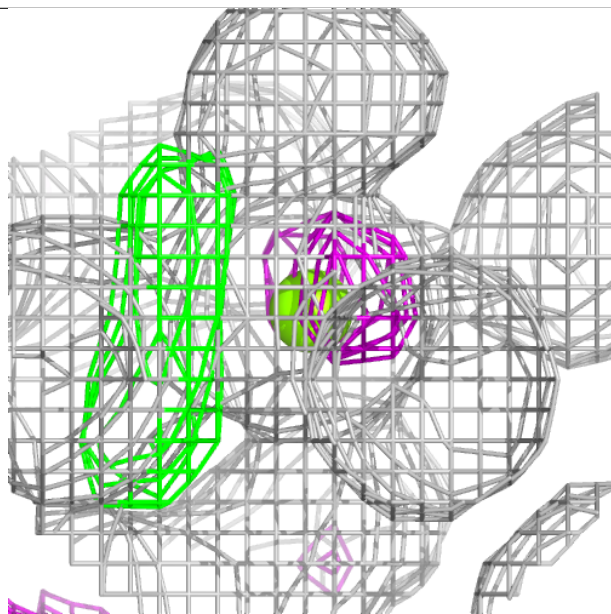
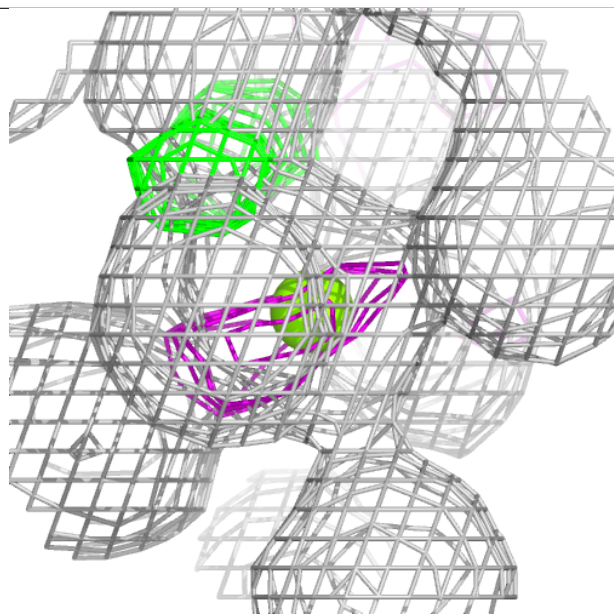
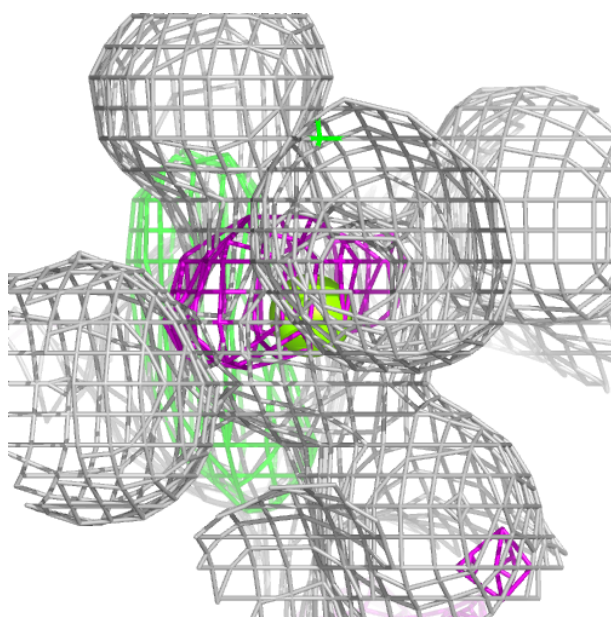
Electron density around MG B 408:

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and green (positive)



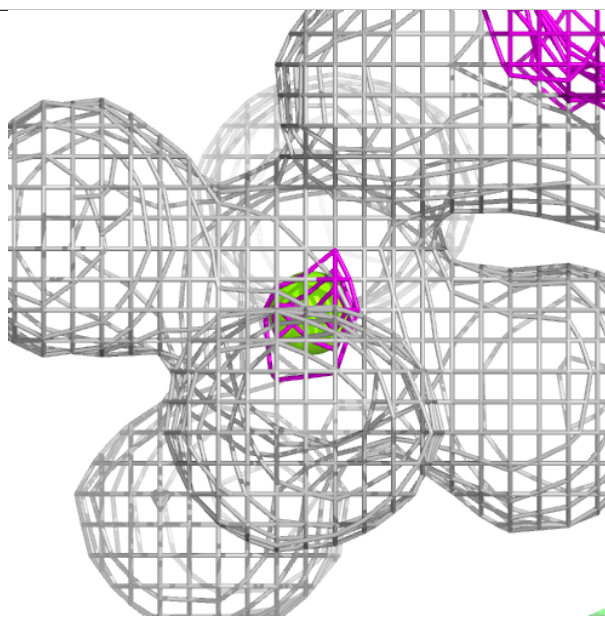
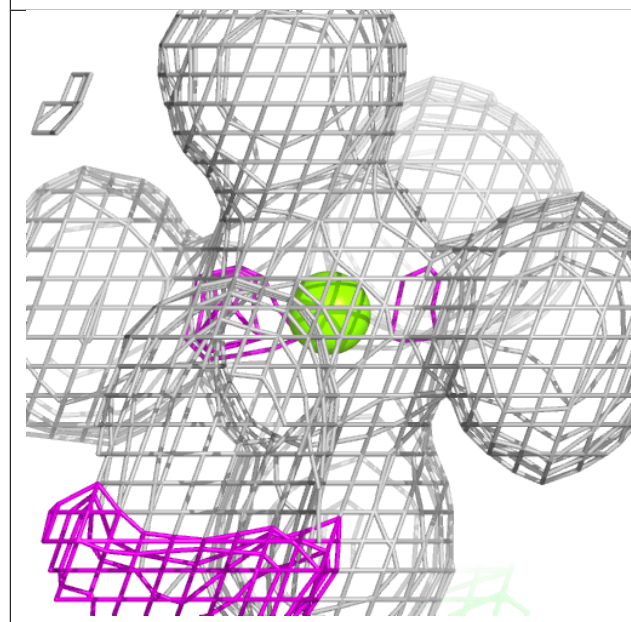
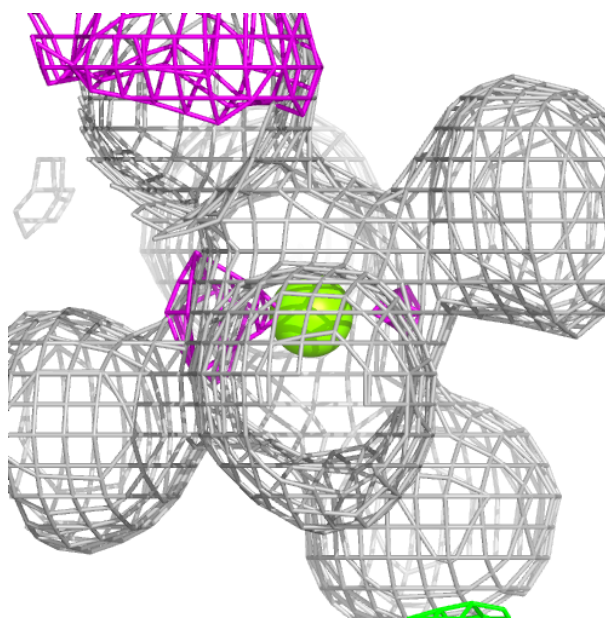
Electron density around MG A 407:

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and green (positive)



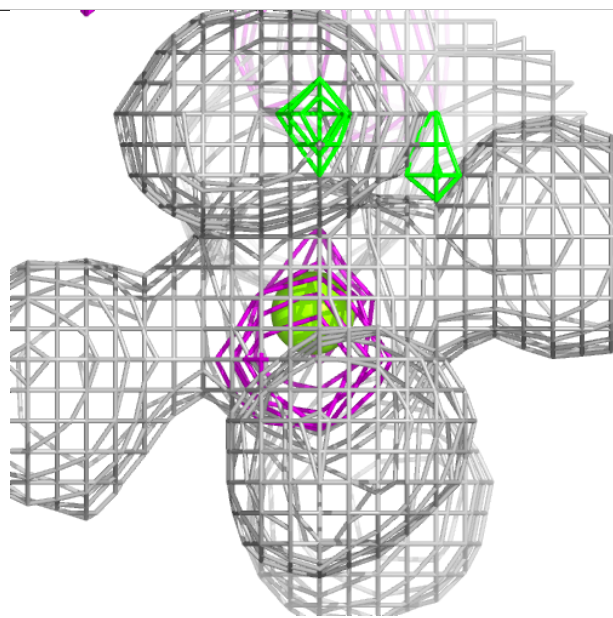
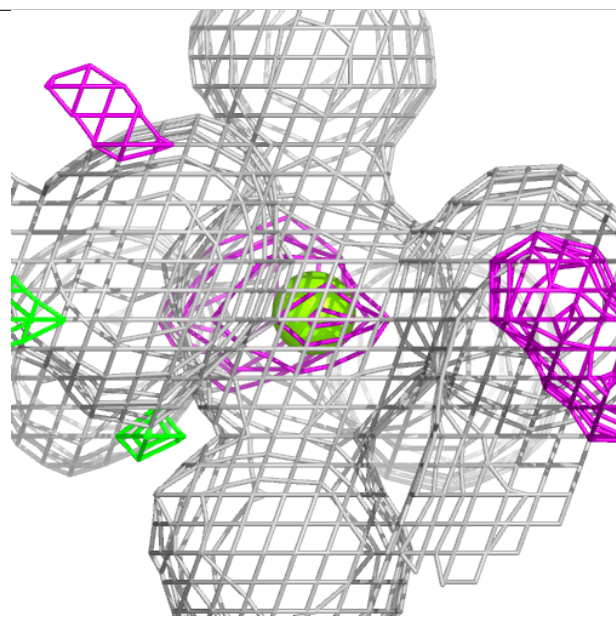
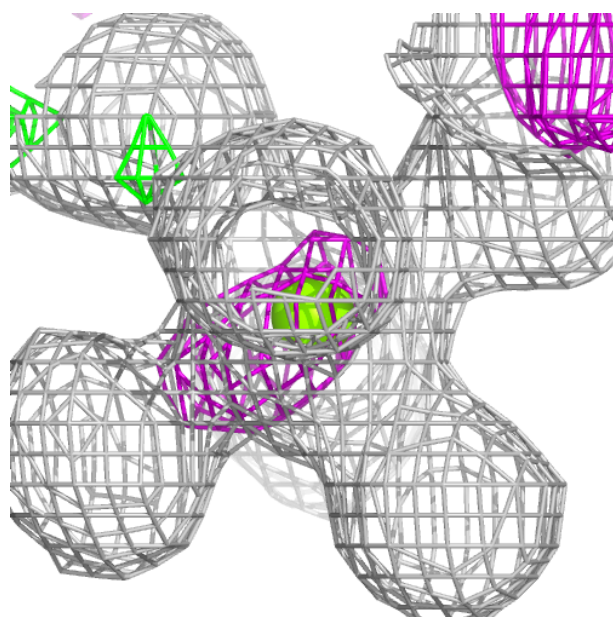
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and green (positive)



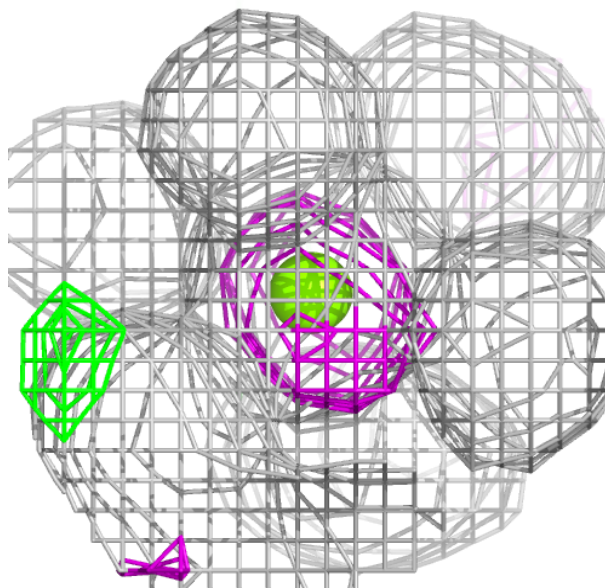
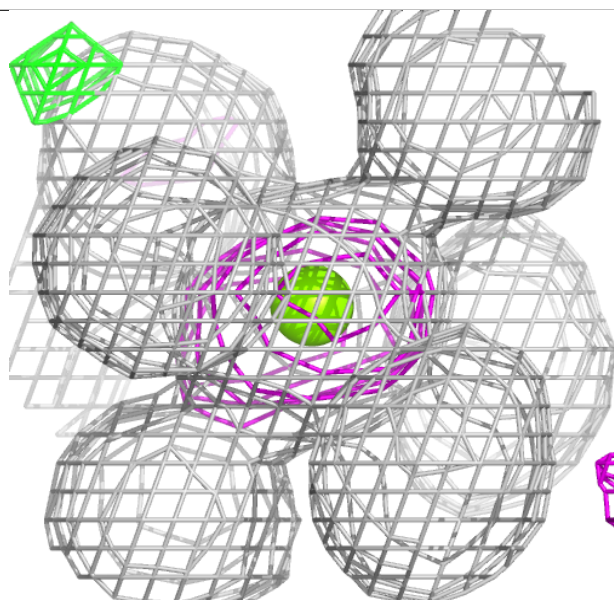
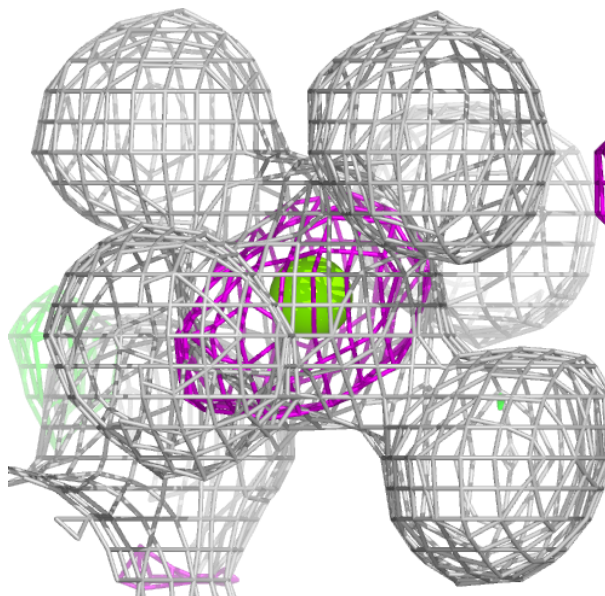
Electron density around MG A 406:

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and green (positive)



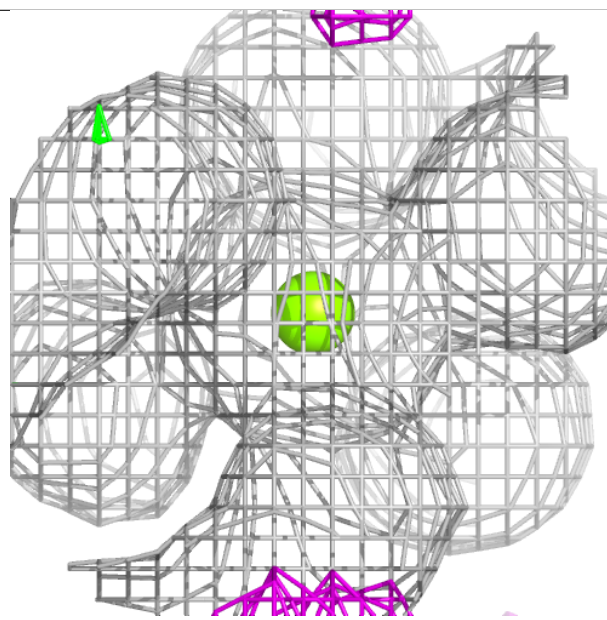
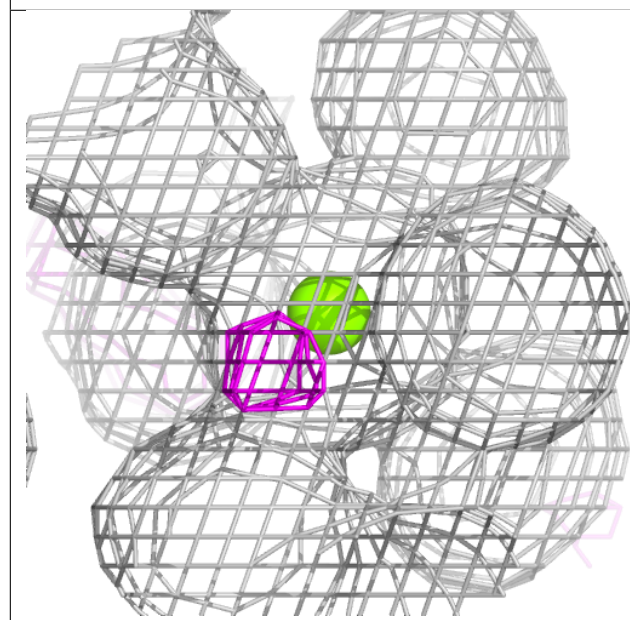
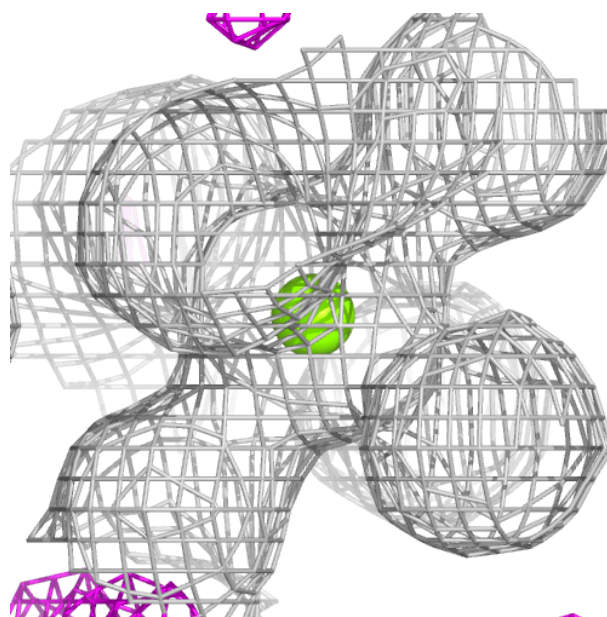
Electron density around MG B 406:

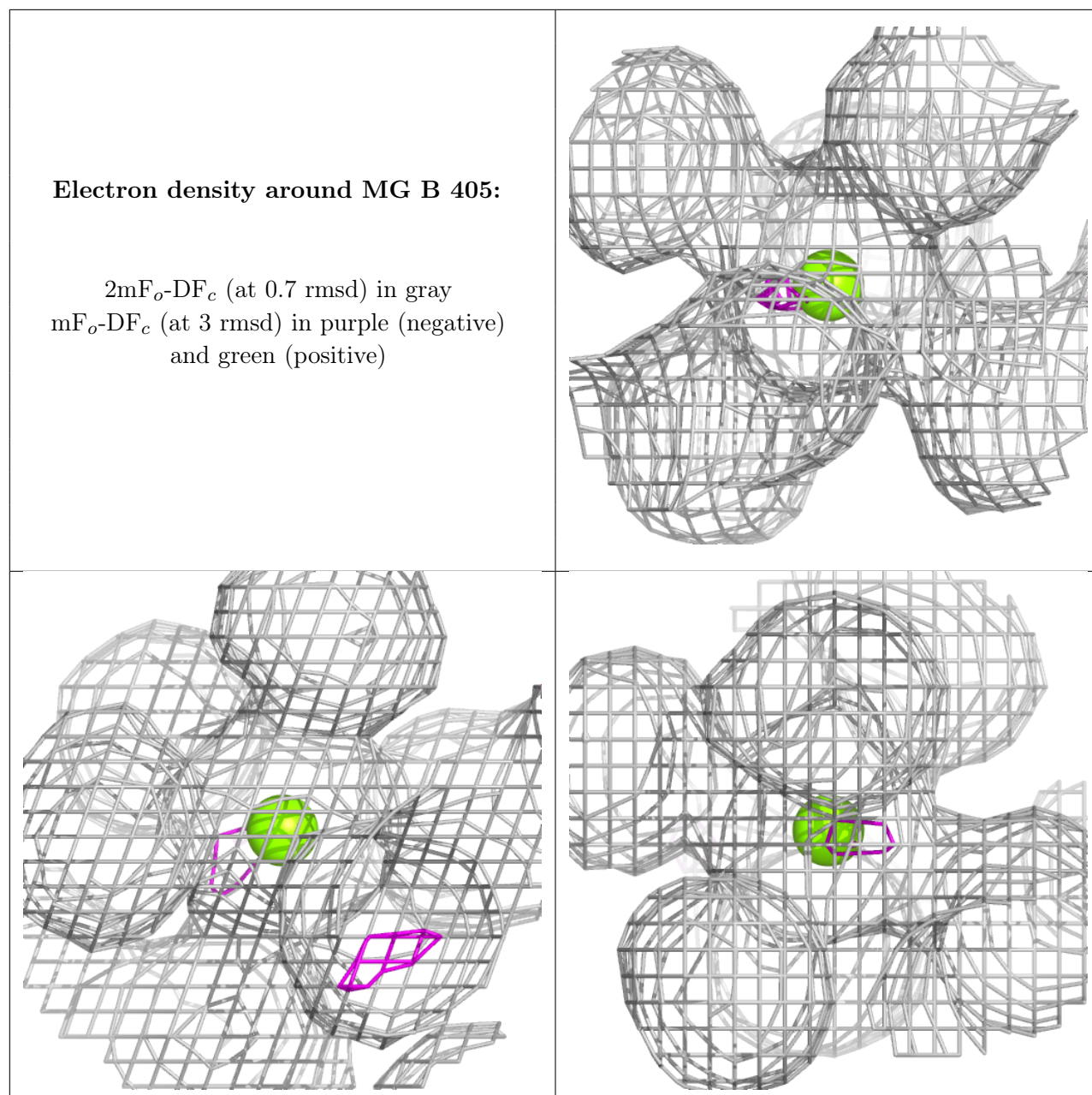
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around MG A 405:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.