



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 5, 2025 – 08:16 PM JST

PDB ID : 8YEB
Title : Crystal structure of L-ribulose 3-epimerase from *Arthrobacter globiformis* M30
Authors : Watanabe, M.; Nakamich, Y.; Mine, S.
Deposited on : 2024-02-22
Resolution : 2.20 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 : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.21
EDS : 3.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.004 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.40

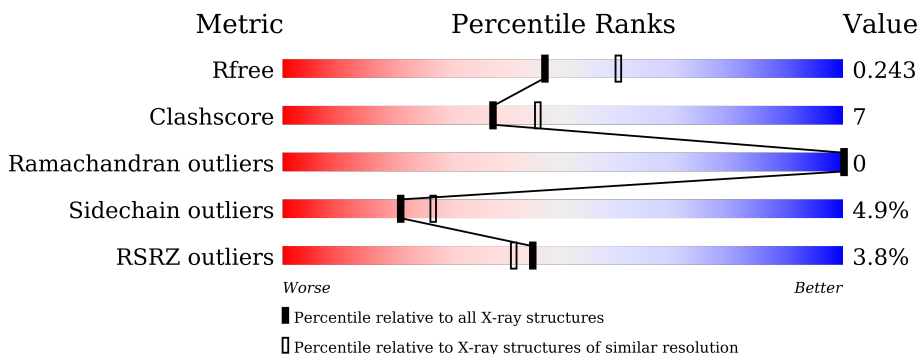
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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.



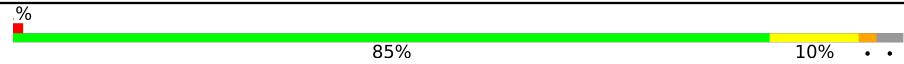

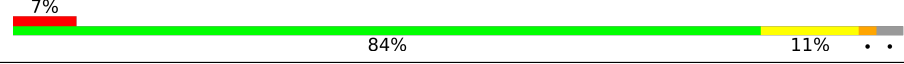
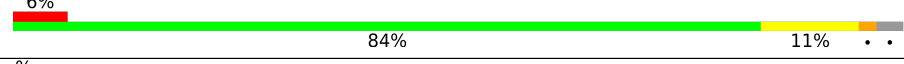

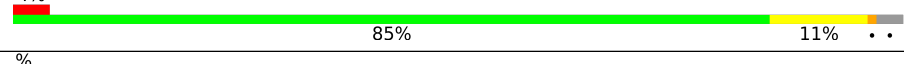
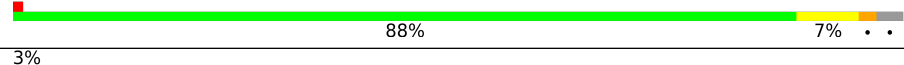

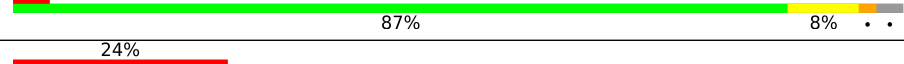

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	5791 (2.20-2.20)
Clashscore	180529	6634 (2.20-2.20)
Ramachandran outliers	177936	6560 (2.20-2.20)
Sidechain outliers	177891	6561 (2.20-2.20)
RSRZ outliers	164620	5791 (2.20-2.20)

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 $\leq 5\%$. 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	297	 84% 12% . .
1	B	297	 2% 80% 15% . .
1	C	297	 2% 80% 15% . .
1	D	297	 2% 81% 14% . .
1	E	297	 2% 78% 18% . .
1	F	297	 2% 84% 11% . .

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Mol	Chain	Length	Quality of chain
1	G	297	 % 85% 10% ..
1	H	297	 % 88% 8% ..
1	I	297	 7% 84% 11% ..
1	J	297	 6% 84% 11% ..
1	K	297	 % 84% 11% ..
1	L	297	 4% 85% 11% ..
1	M	297	 % 88% 7% ..
1	N	297	 3% 87% 9% ..
1	O	297	 4% 87% 8% ..
1	P	297	 24% 87% 9% ..

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
3	PEG	C	402	-	-	X	-
3	PEG	F	402	-	-	X	-

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 36664 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 Ketose 3-epimerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	289	2212	1395	377	431	9	0	0	0
1	E	289	2212	1395	377	431	9	0	0	0
1	B	289	2212	1395	377	431	9	0	0	0
1	C	289	2212	1395	377	431	9	0	0	0
1	D	289	2212	1395	377	431	9	0	0	0
1	F	289	2212	1395	377	431	9	0	0	0
1	G	289	2212	1395	377	431	9	0	0	0
1	H	289	2212	1395	377	431	9	0	0	0
1	I	288	2201	1389	374	429	9	0	0	0
1	J	289	2212	1395	377	431	9	0	0	0
1	K	289	2212	1395	377	431	9	0	0	0
1	L	289	2212	1395	377	431	9	0	0	0
1	M	289	2212	1395	377	431	9	0	0	0
1	N	289	2212	1395	377	431	9	0	0	0
1	O	289	2212	1395	377	431	9	0	0	0
1	P	289	2212	1395	377	431	9	0	0	0

There are 128 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-7	LEU	-	expression tag	UNP A0A1L7NQ96
A	-6	GLU	-	expression tag	UNP A0A1L7NQ96
A	-5	VAL	-	expression tag	UNP A0A1L7NQ96
A	-4	LEU	-	expression tag	UNP A0A1L7NQ96
A	-3	PHE	-	expression tag	UNP A0A1L7NQ96
A	-2	GLN	-	expression tag	UNP A0A1L7NQ96
A	-1	GLY	-	expression tag	UNP A0A1L7NQ96
A	0	PRO	-	expression tag	UNP A0A1L7NQ96
E	-7	LEU	-	expression tag	UNP A0A1L7NQ96
E	-6	GLU	-	expression tag	UNP A0A1L7NQ96
E	-5	VAL	-	expression tag	UNP A0A1L7NQ96
E	-4	LEU	-	expression tag	UNP A0A1L7NQ96
E	-3	PHE	-	expression tag	UNP A0A1L7NQ96
E	-2	GLN	-	expression tag	UNP A0A1L7NQ96
E	-1	GLY	-	expression tag	UNP A0A1L7NQ96
E	0	PRO	-	expression tag	UNP A0A1L7NQ96
B	-7	LEU	-	expression tag	UNP A0A1L7NQ96
B	-6	GLU	-	expression tag	UNP A0A1L7NQ96
B	-5	VAL	-	expression tag	UNP A0A1L7NQ96
B	-4	LEU	-	expression tag	UNP A0A1L7NQ96
B	-3	PHE	-	expression tag	UNP A0A1L7NQ96
B	-2	GLN	-	expression tag	UNP A0A1L7NQ96
B	-1	GLY	-	expression tag	UNP A0A1L7NQ96
B	0	PRO	-	expression tag	UNP A0A1L7NQ96
C	-7	LEU	-	expression tag	UNP A0A1L7NQ96
C	-6	GLU	-	expression tag	UNP A0A1L7NQ96
C	-5	VAL	-	expression tag	UNP A0A1L7NQ96
C	-4	LEU	-	expression tag	UNP A0A1L7NQ96
C	-3	PHE	-	expression tag	UNP A0A1L7NQ96
C	-2	GLN	-	expression tag	UNP A0A1L7NQ96
C	-1	GLY	-	expression tag	UNP A0A1L7NQ96
C	0	PRO	-	expression tag	UNP A0A1L7NQ96
D	-7	LEU	-	expression tag	UNP A0A1L7NQ96
D	-6	GLU	-	expression tag	UNP A0A1L7NQ96
D	-5	VAL	-	expression tag	UNP A0A1L7NQ96
D	-4	LEU	-	expression tag	UNP A0A1L7NQ96
D	-3	PHE	-	expression tag	UNP A0A1L7NQ96
D	-2	GLN	-	expression tag	UNP A0A1L7NQ96
D	-1	GLY	-	expression tag	UNP A0A1L7NQ96
D	0	PRO	-	expression tag	UNP A0A1L7NQ96
F	-7	LEU	-	expression tag	UNP A0A1L7NQ96
F	-6	GLU	-	expression tag	UNP A0A1L7NQ96

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-5	VAL	-	expression tag	UNP A0A1L7NQ96
F	-4	LEU	-	expression tag	UNP A0A1L7NQ96
F	-3	PHE	-	expression tag	UNP A0A1L7NQ96
F	-2	GLN	-	expression tag	UNP A0A1L7NQ96
F	-1	GLY	-	expression tag	UNP A0A1L7NQ96
F	0	PRO	-	expression tag	UNP A0A1L7NQ96
G	-7	LEU	-	expression tag	UNP A0A1L7NQ96
G	-6	GLU	-	expression tag	UNP A0A1L7NQ96
G	-5	VAL	-	expression tag	UNP A0A1L7NQ96
G	-4	LEU	-	expression tag	UNP A0A1L7NQ96
G	-3	PHE	-	expression tag	UNP A0A1L7NQ96
G	-2	GLN	-	expression tag	UNP A0A1L7NQ96
G	-1	GLY	-	expression tag	UNP A0A1L7NQ96
G	0	PRO	-	expression tag	UNP A0A1L7NQ96
H	-7	LEU	-	expression tag	UNP A0A1L7NQ96
H	-6	GLU	-	expression tag	UNP A0A1L7NQ96
H	-5	VAL	-	expression tag	UNP A0A1L7NQ96
H	-4	LEU	-	expression tag	UNP A0A1L7NQ96
H	-3	PHE	-	expression tag	UNP A0A1L7NQ96
H	-2	GLN	-	expression tag	UNP A0A1L7NQ96
H	-1	GLY	-	expression tag	UNP A0A1L7NQ96
H	0	PRO	-	expression tag	UNP A0A1L7NQ96
I	-7	LEU	-	expression tag	UNP A0A1L7NQ96
I	-6	GLU	-	expression tag	UNP A0A1L7NQ96
I	-5	VAL	-	expression tag	UNP A0A1L7NQ96
I	-4	LEU	-	expression tag	UNP A0A1L7NQ96
I	-3	PHE	-	expression tag	UNP A0A1L7NQ96
I	-2	GLN	-	expression tag	UNP A0A1L7NQ96
I	-1	GLY	-	expression tag	UNP A0A1L7NQ96
I	0	PRO	-	expression tag	UNP A0A1L7NQ96
J	-7	LEU	-	expression tag	UNP A0A1L7NQ96
J	-6	GLU	-	expression tag	UNP A0A1L7NQ96
J	-5	VAL	-	expression tag	UNP A0A1L7NQ96
J	-4	LEU	-	expression tag	UNP A0A1L7NQ96
J	-3	PHE	-	expression tag	UNP A0A1L7NQ96
J	-2	GLN	-	expression tag	UNP A0A1L7NQ96
J	-1	GLY	-	expression tag	UNP A0A1L7NQ96
J	0	PRO	-	expression tag	UNP A0A1L7NQ96
K	-7	LEU	-	expression tag	UNP A0A1L7NQ96
K	-6	GLU	-	expression tag	UNP A0A1L7NQ96
K	-5	VAL	-	expression tag	UNP A0A1L7NQ96
K	-4	LEU	-	expression tag	UNP A0A1L7NQ96

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Chain	Residue	Modelled	Actual	Comment	Reference
K	-3	PHE	-	expression tag	UNP A0A1L7NQ96
K	-2	GLN	-	expression tag	UNP A0A1L7NQ96
K	-1	GLY	-	expression tag	UNP A0A1L7NQ96
K	0	PRO	-	expression tag	UNP A0A1L7NQ96
L	-7	LEU	-	expression tag	UNP A0A1L7NQ96
L	-6	GLU	-	expression tag	UNP A0A1L7NQ96
L	-5	VAL	-	expression tag	UNP A0A1L7NQ96
L	-4	LEU	-	expression tag	UNP A0A1L7NQ96
L	-3	PHE	-	expression tag	UNP A0A1L7NQ96
L	-2	GLN	-	expression tag	UNP A0A1L7NQ96
L	-1	GLY	-	expression tag	UNP A0A1L7NQ96
L	0	PRO	-	expression tag	UNP A0A1L7NQ96
M	-7	LEU	-	expression tag	UNP A0A1L7NQ96
M	-6	GLU	-	expression tag	UNP A0A1L7NQ96
M	-5	VAL	-	expression tag	UNP A0A1L7NQ96
M	-4	LEU	-	expression tag	UNP A0A1L7NQ96
M	-3	PHE	-	expression tag	UNP A0A1L7NQ96
M	-2	GLN	-	expression tag	UNP A0A1L7NQ96
M	-1	GLY	-	expression tag	UNP A0A1L7NQ96
M	0	PRO	-	expression tag	UNP A0A1L7NQ96
N	-7	LEU	-	expression tag	UNP A0A1L7NQ96
N	-6	GLU	-	expression tag	UNP A0A1L7NQ96
N	-5	VAL	-	expression tag	UNP A0A1L7NQ96
N	-4	LEU	-	expression tag	UNP A0A1L7NQ96
N	-3	PHE	-	expression tag	UNP A0A1L7NQ96
N	-2	GLN	-	expression tag	UNP A0A1L7NQ96
N	-1	GLY	-	expression tag	UNP A0A1L7NQ96
N	0	PRO	-	expression tag	UNP A0A1L7NQ96
O	-7	LEU	-	expression tag	UNP A0A1L7NQ96
O	-6	GLU	-	expression tag	UNP A0A1L7NQ96
O	-5	VAL	-	expression tag	UNP A0A1L7NQ96
O	-4	LEU	-	expression tag	UNP A0A1L7NQ96
O	-3	PHE	-	expression tag	UNP A0A1L7NQ96
O	-2	GLN	-	expression tag	UNP A0A1L7NQ96
O	-1	GLY	-	expression tag	UNP A0A1L7NQ96
O	0	PRO	-	expression tag	UNP A0A1L7NQ96
P	-7	LEU	-	expression tag	UNP A0A1L7NQ96
P	-6	GLU	-	expression tag	UNP A0A1L7NQ96
P	-5	VAL	-	expression tag	UNP A0A1L7NQ96
P	-4	LEU	-	expression tag	UNP A0A1L7NQ96
P	-3	PHE	-	expression tag	UNP A0A1L7NQ96
P	-2	GLN	-	expression tag	UNP A0A1L7NQ96

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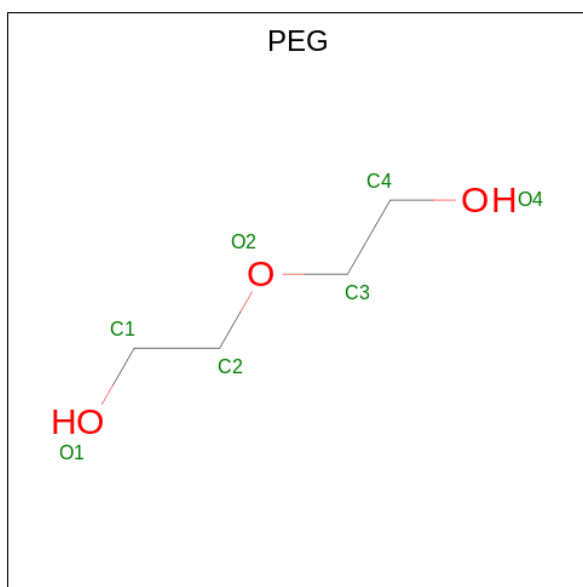
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Chain	Residue	Modelled	Actual	Comment	Reference
P	-1	GLY	-	expression tag	UNP A0A1L7NQ96
P	0	PRO	-	expression tag	UNP A0A1L7NQ96

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Mg 1 1	0	0
2	E	1	Total Mg 1 1	0	0
2	B	1	Total Mg 1 1	0	0
2	C	1	Total Mg 1 1	0	0
2	D	1	Total Mg 1 1	0	0
2	F	1	Total Mg 1 1	0	0
2	G	1	Total Mg 1 1	0	0
2	H	1	Total Mg 1 1	0	0
2	I	1	Total Mg 1 1	0	0
2	J	1	Total Mg 1 1	0	0
2	K	1	Total Mg 1 1	0	0
2	L	1	Total Mg 1 1	0	0
2	M	1	Total Mg 1 1	0	0
2	N	1	Total Mg 1 1	0	0
2	O	1	Total Mg 1 1	0	0
2	P	1	Total Mg 1 1	0	0

- Molecule 3 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C₄H₁₀O₃) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	E	1	Total C O 7 4 3	0	0
3	C	1	Total C O 7 4 3	0	0
3	F	1	Total C O 7 4 3	0	0
3	G	1	Total C O 7 4 3	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	149	Total O 149 149	0	0
4	E	91	Total O 91 91	0	0
4	B	114	Total O 114 114	0	0
4	C	85	Total O 85 85	0	0
4	D	93	Total O 93 93	0	0
4	F	87	Total O 87 87	0	0
4	G	136	Total O 136 136	0	0
4	H	84	Total O 84 84	0	0

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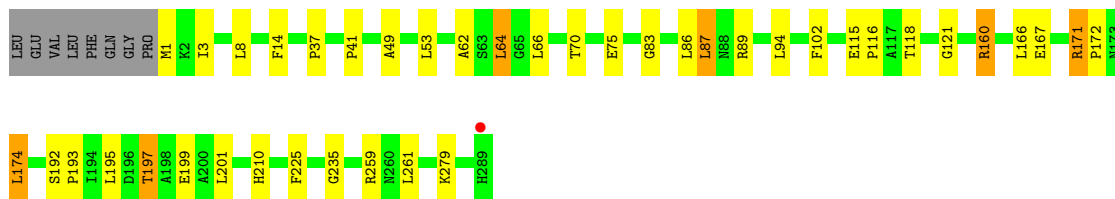
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	I	40	Total 40	O 40	0	0
4	J	50	Total 50	O 50	0	0
4	K	78	Total 78	O 78	0	0
4	L	59	Total 59	O 59	0	0
4	M	52	Total 52	O 52	0	0
4	N	55	Total 55	O 55	0	0
4	O	32	Total 32	O 32	0	0
4	P	34	Total 34	O 34	0	0

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 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.

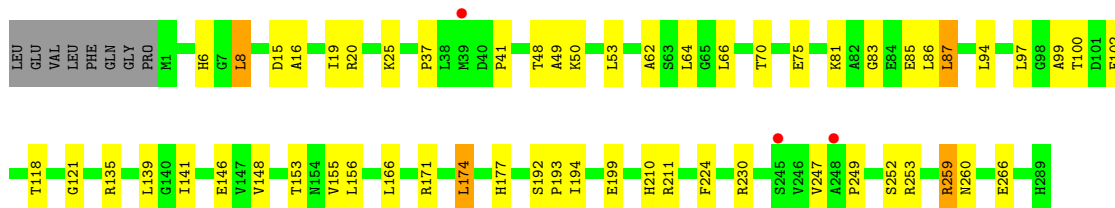
- Molecule 1: Ketose 3-epimerase

Chain A: 




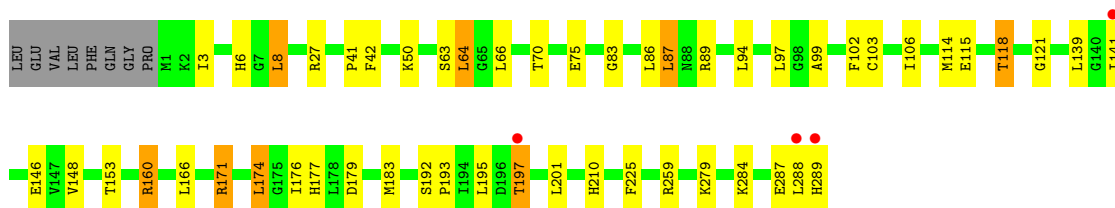
- Molecule 1: Ketose 3-epimerase

Chain E: 




- Molecule 1: Ketose 3-epimerase

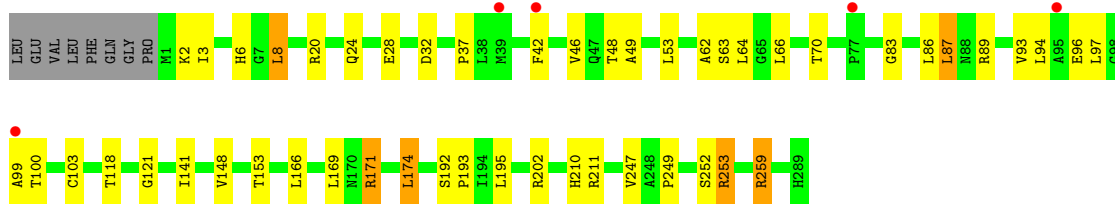
Chain B: 



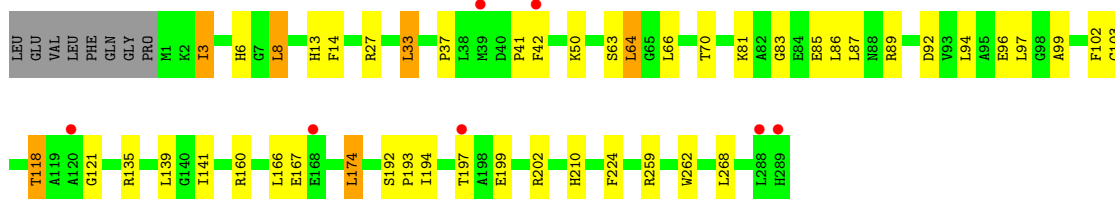
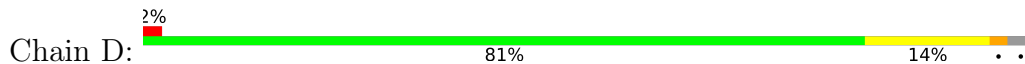
- Molecule 1: Ketose 3-epimerase

Chain C: 

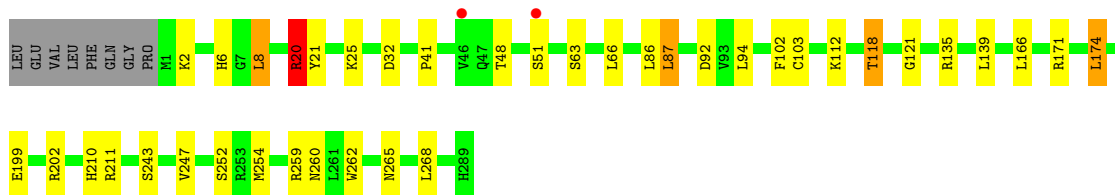
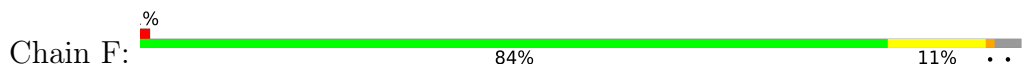




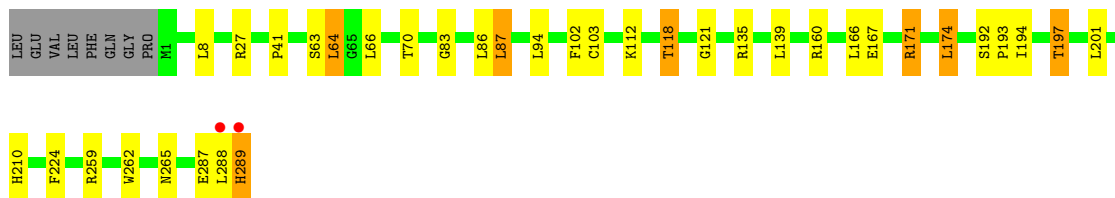
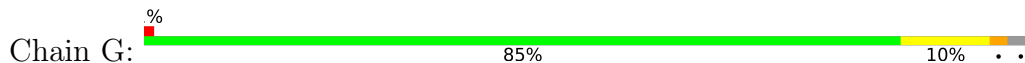
● Molecule 1: Ketose 3-epimerase



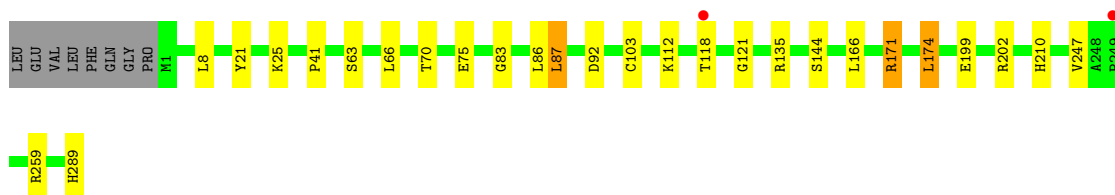
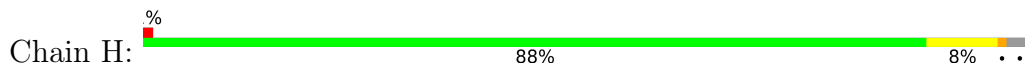
● Molecule 1: Ketose 3-epimerase



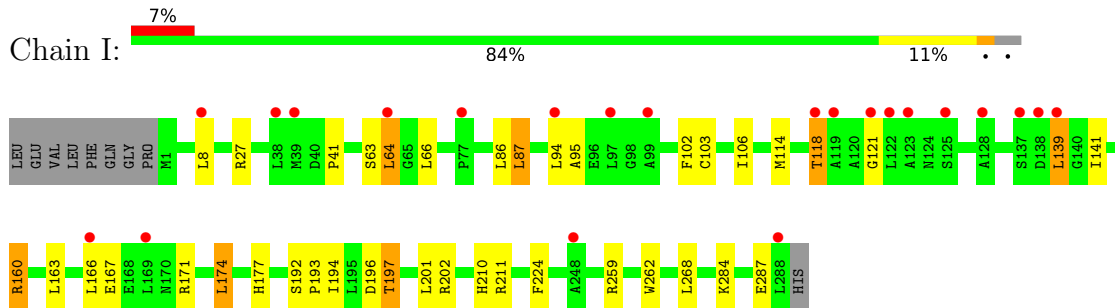
● Molecule 1: Ketose 3-epimerase



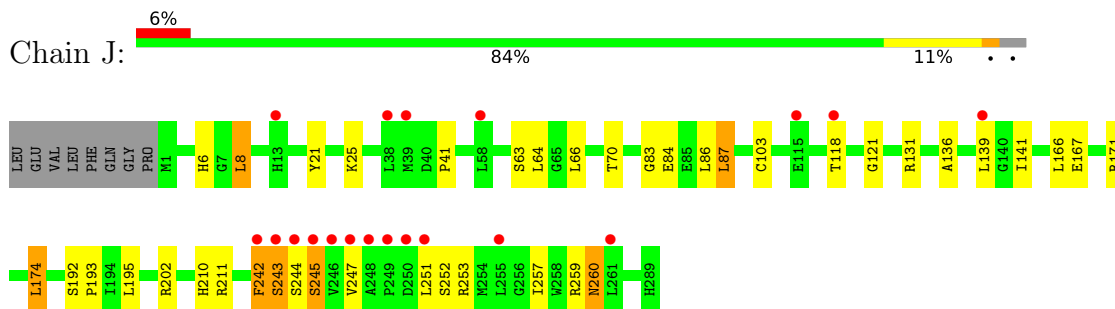
● Molecule 1: Ketose 3-epimerase



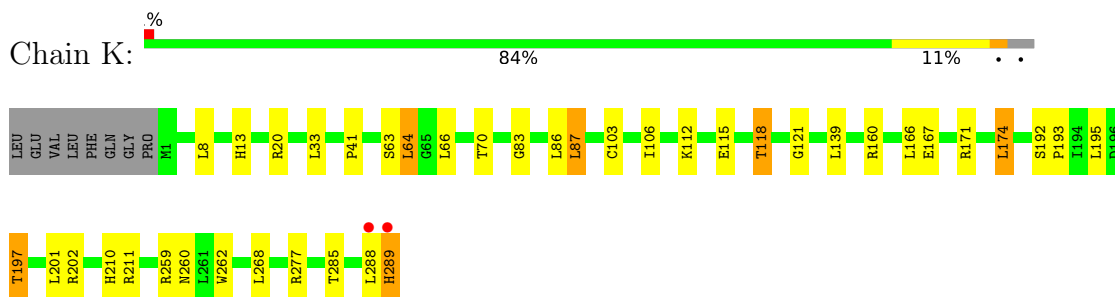
- Molecule 1: Ketose 3-epimerase



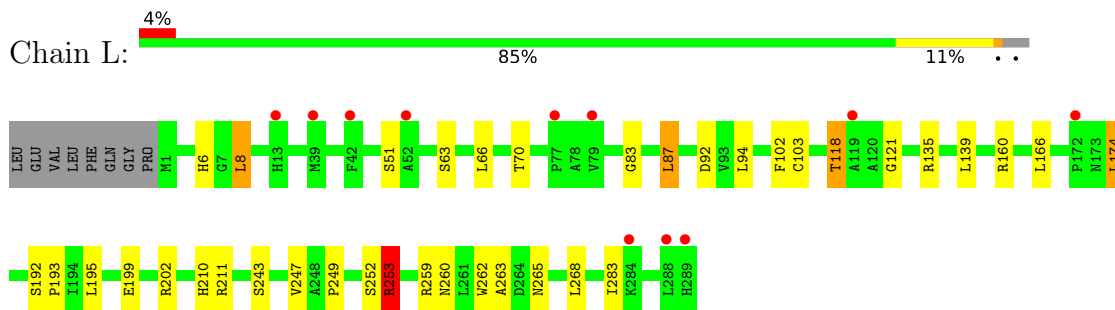
- Molecule 1: Ketose 3-epimerase



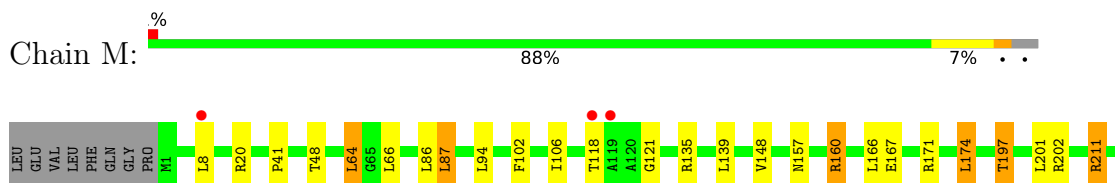
- Molecule 1: Ketose 3-epimerase



- Molecule 1: Ketose 3-epimerase

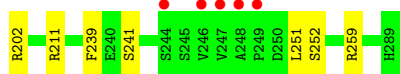
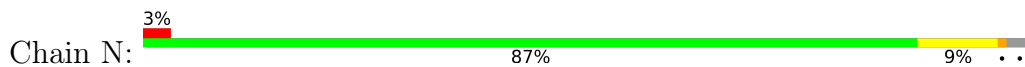


- Molecule 1: Ketose 3-epimerase

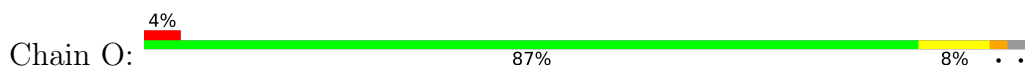




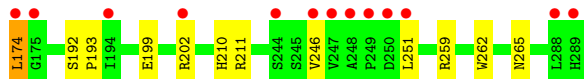
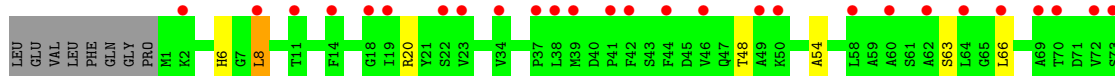
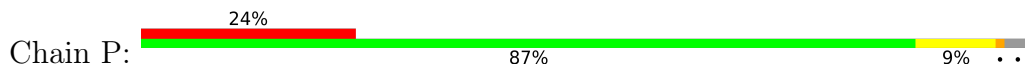
• Molecule 1: Ketose 3-epimerase



• Molecule 1: Ketose 3-epimerase



• Molecule 1: Ketose 3-epimerase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	130.09Å 148.26Å 136.71Å 90.00° 94.97° 90.00°	Depositor
Resolution (Å)	49.12 – 2.20 49.12 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.1 (49.12-2.20) 99.1 (49.12-2.20)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.00 (at 2.20Å)	Xtrriage
Refinement program	REFMAC 5.8.0405	Depositor
R, R_{free}	0.201 , 0.240 0.207 , 0.243	Depositor DCC
R_{free} test set	12925 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	38.9	Xtrriage
Anisotropy	0.014	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 43.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.014 for l,-k,h	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	36664	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.65% 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: PEG, MG

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	0.42	0/2256	0.58	0/3058
1	B	0.39	0/2256	0.57	0/3058
1	C	0.38	0/2256	0.53	0/3058
1	D	0.41	0/2256	0.66	0/3058
1	E	0.39	0/2256	0.53	0/3058
1	F	0.40	0/2256	0.69	1/3058 (0.0%)
1	G	0.44	0/2256	0.75	0/3058
1	H	0.40	0/2256	0.71	0/3058
1	I	0.34	0/2244	0.65	0/3043
1	J	0.36	0/2256	0.66	0/3058
1	K	0.39	0/2256	0.69	0/3058
1	L	0.37	0/2256	0.67	0/3058
1	M	0.39	0/2256	0.70	2/3058 (0.1%)
1	N	0.35	0/2256	0.67	0/3058
1	O	0.34	0/2256	0.66	0/3058
1	P	0.35	0/2256	0.63	0/3058
All	All	0.38	0/36084	0.65	3/48913 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	F	0	1
1	H	0	1
1	I	0	1
1	J	0	2
1	K	0	2
1	L	0	2
1	M	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
All	All	0	10

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	M	259	ARG	NE-CZ-NH2	-6.85	116.88	120.30
1	M	259	ARG	NE-CZ-NH1	5.45	123.03	120.30
1	F	259	ARG	CB-CA-C	-5.37	99.67	110.40

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	F	20	ARG	Sidechain
1	H	171	ARG	Sidechain
1	I	171	ARG	Sidechain
1	J	242	PHE	Peptide
1	J	245	SER	Peptide
1	K	171	ARG	Sidechain
1	K	259	ARG	Sidechain
1	L	160	ARG	Sidechain
1	L	253	ARG	Sidechain
1	M	135	ARG	Sidechain

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2212	0	2152	34	0
1	B	2212	0	2152	43	0
1	C	2212	0	2152	59	0
1	D	2212	0	2152	37	0
1	E	2212	0	2152	48	0
1	F	2212	0	2152	38	0
1	G	2212	0	2152	26	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	H	2212	0	2152	15	0
1	I	2201	0	2145	31	0
1	J	2212	0	2152	33	0
1	K	2212	0	2152	25	0
1	L	2212	0	2152	24	0
1	M	2212	0	2152	19	0
1	N	2212	0	2152	22	0
1	O	2212	0	2152	20	0
1	P	2212	0	2152	24	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
2	I	1	0	0	0	0
2	J	1	0	0	0	0
2	K	1	0	0	0	0
2	L	1	0	0	0	0
2	M	1	0	0	0	0
2	N	1	0	0	0	0
2	O	1	0	0	0	0
2	P	1	0	0	0	0
3	C	7	0	10	12	0
3	E	7	0	10	0	0
3	F	7	0	10	13	0
3	G	7	0	10	0	0
4	A	149	0	0	6	0
4	B	114	0	0	4	0
4	C	85	0	0	2	0
4	D	93	0	0	2	0
4	E	91	0	0	3	0
4	F	87	0	0	3	0
4	G	136	0	0	4	0
4	H	84	0	0	1	0
4	I	40	0	0	2	0
4	J	50	0	0	2	0
4	K	78	0	0	4	0
4	L	59	0	0	0	0
4	M	52	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	N	55	0	0	1	0
4	O	32	0	0	0	0
4	P	34	0	0	1	0
All	All	36664	0	34465	484	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.

All (484) 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:I:95:ALA:HB2	1:I:139:LEU:CD1	1.54	1.34
1:I:95:ALA:CB	1:I:139:LEU:HD11	1.61	1.27
1:F:2:LYS:CE	3:F:402:PEG:H21	1.75	1.15
1:C:2:LYS:CE	3:C:402:PEG:H42	1.77	1.13
1:F:2:LYS:CE	3:F:402:PEG:C2	2.30	1.09
1:F:2:LYS:HE3	3:F:402:PEG:H21	1.37	1.07
1:F:2:LYS:HE3	3:F:402:PEG:C2	1.89	1.03
1:E:199:GLU:HG2	4:E:529:HOH:O	1.58	1.01
1:F:2:LYS:HE2	3:F:402:PEG:C2	1.90	1.00
1:C:2:LYS:HE3	3:C:402:PEG:H42	1.43	0.99
1:C:2:LYS:HE2	3:C:402:PEG:H21	1.44	0.97
1:C:32:ASP:HB3	3:C:402:PEG:H22	1.49	0.95
1:J:247:VAL:HG23	1:J:252:SER:HB3	1.50	0.93
1:C:89:ARG:HB2	4:C:568:HOH:O	1.66	0.93
1:A:115:GLU:OE2	1:C:249:PRO:HG3	1.70	0.91
1:I:259:ARG:HD3	4:J:513:HOH:O	1.69	0.91
1:N:6:HIS:HE1	1:N:8:LEU:HD23	1.38	0.88
1:E:135:ARG:O	1:E:139:LEU:HD13	1.72	0.87
1:C:166:LEU:HD22	1:C:174:LEU:HD13	1.53	0.86
1:B:114:MET:O	1:C:253:ARG:HG2	1.76	0.86
1:A:160:ARG:HG2	1:A:160:ARG:HH21	1.39	0.85
1:F:2:LYS:CE	3:F:402:PEG:H22	2.04	0.85
1:C:89:ARG:NH1	1:C:93:VAL:HG23	1.92	0.84
1:B:118:THR:HG22	1:B:121:GLY:H	1.43	0.83
1:O:166:LEU:HD22	1:O:174:LEU:HD13	1.60	0.82
1:A:75:GLU:OE1	1:A:118:THR:HG21	1.79	0.82
1:C:2:LYS:CE	3:C:402:PEG:C4	2.58	0.82
1:E:249:PRO:O	1:E:253:ARG:HG3	1.80	0.81
1:P:118:THR:HG22	4:P:533:HOH:O	1.80	0.81
1:K:285:THR:O	1:K:288:LEU:HG	1.81	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:2:LYS:HE2	3:F:402:PEG:H22	1.61	0.80
1:C:2:LYS:HE2	3:C:402:PEG:H42	1.63	0.80
1:N:6:HIS:CE1	1:N:8:LEU:HD23	2.18	0.79
1:C:118:THR:HG23	1:C:121:GLY:H	1.48	0.78
1:B:160:ARG:HG3	1:B:160:ARG:HH11	1.45	0.78
1:C:62:ALA:CB	1:C:94:LEU:HD21	2.13	0.78
1:D:193:PRO:O	1:D:197:THR:HG22	1.83	0.78
1:E:118:THR:HG23	1:E:121:GLY:H	1.49	0.77
1:G:41:PRO:HD2	1:G:86:LEU:HD11	1.65	0.76
1:C:2:LYS:CE	3:C:402:PEG:H21	2.15	0.76
1:M:259:ARG:HD3	4:N:544:HOH:O	1.86	0.76
1:B:75:GLU:OE1	1:B:118:THR:HG21	1.86	0.75
1:F:254:MET:HE3	4:F:551:HOH:O	1.87	0.75
1:N:166:LEU:HD22	1:N:174:LEU:HD13	1.66	0.75
1:F:166:LEU:HD22	1:F:174:LEU:HD13	1.69	0.74
1:G:166:LEU:HD22	1:G:174:LEU:HD13	1.70	0.74
1:M:64:LEU:C	1:M:64:LEU:HD23	2.08	0.73
1:C:2:LYS:HE3	3:C:402:PEG:C4	2.17	0.73
1:I:64:LEU:C	1:I:64:LEU:HD23	2.09	0.73
1:N:6:HIS:HE1	1:N:8:LEU:CD2	2.00	0.73
1:N:6:HIS:CE1	1:N:8:LEU:CD2	2.73	0.72
1:J:166:LEU:HD22	1:J:174:LEU:HD13	1.70	0.71
1:A:118:THR:HG23	1:A:121:GLY:H	1.55	0.71
1:O:64:LEU:C	1:O:64:LEU:HD23	2.10	0.71
1:B:41:PRO:CD	1:B:86:LEU:HD11	2.20	0.71
1:G:197:THR:HG23	1:G:201:LEU:HB2	1.74	0.70
1:B:41:PRO:CG	1:B:86:LEU:CD1	2.70	0.70
1:I:95:ALA:HB1	1:I:139:LEU:HD21	1.73	0.70
1:F:20:ARG:NH2	1:F:51:SER:OG	2.23	0.69
1:M:197:THR:HG23	1:M:201:LEU:HB2	1.74	0.68
1:O:118:THR:HG23	1:O:121:GLY:H	1.58	0.68
1:K:64:LEU:C	1:K:64:LEU:HD23	2.14	0.68
1:F:32:ASP:HB3	3:F:402:PEG:H32	1.76	0.67
1:F:254:MET:CE	4:F:551:HOH:O	2.42	0.67
1:P:8:LEU:HD21	1:P:251:LEU:CD2	2.25	0.67
1:A:70:THR:HB	1:A:83:GLY:HA2	1.77	0.67
1:C:2:LYS:HE2	3:C:402:PEG:C4	2.21	0.67
1:G:41:PRO:CD	1:G:86:LEU:HD11	2.23	0.67
1:C:62:ALA:HB3	1:C:94:LEU:HD21	1.76	0.66
1:A:41:PRO:HD2	1:A:86:LEU:HD11	1.78	0.66
1:J:243:SER:HB3	1:J:247:VAL:HG13	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:70:THR:HB	1:E:83:GLY:HA2	1.78	0.66
1:I:166:LEU:HD22	1:I:174:LEU:HD13	1.77	0.65
1:K:197:THR:HG23	1:K:201:LEU:HB2	1.77	0.65
1:E:6:HIS:NE2	1:E:8:LEU:HD23	2.11	0.65
1:E:99:ALA:O	1:E:141:ILE:CD1	2.45	0.65
1:J:242:PHE:HA	1:J:243:SER:HB2	1.78	0.64
1:A:41:PRO:CD	1:A:86:LEU:HD11	2.27	0.64
1:J:118:THR:HG23	1:J:121:GLY:H	1.62	0.64
1:E:75:GLU:OE1	1:E:118:THR:HG21	1.97	0.64
1:G:41:PRO:HD2	1:G:86:LEU:CD1	2.27	0.64
1:I:95:ALA:HB2	1:I:139:LEU:HD11	0.71	0.63
1:E:50:LYS:HG3	1:E:97:LEU:HD23	1.79	0.63
1:C:8:LEU:HD22	1:C:37:PRO:HG3	1.80	0.63
1:C:99:ALA:O	1:C:141:ILE:CD1	2.47	0.63
1:G:135:ARG:HG2	1:G:135:ARG:HH11	1.62	0.63
1:A:172:PRO:HB2	1:L:263:ALA:HB1	1.78	0.63
1:L:51:SER:OG	1:P:54:ALA:HA	1.98	0.63
1:O:197:THR:HG23	1:O:201:LEU:HB2	1.81	0.63
1:A:197:THR:HG23	1:A:201:LEU:HB2	1.81	0.63
1:B:284:LYS:O	1:B:287:GLU:HG2	1.98	0.63
1:F:6:HIS:NE2	1:F:8:LEU:HD22	2.14	0.63
1:G:64:LEU:HD23	1:G:64:LEU:C	2.20	0.62
1:B:41:PRO:CG	1:B:86:LEU:HD12	2.29	0.62
1:L:166:LEU:HD22	1:L:174:LEU:HD13	1.82	0.62
1:B:41:PRO:HG3	1:B:86:LEU:HD12	1.79	0.62
1:B:197:THR:HG23	1:B:201:LEU:HB2	1.82	0.62
1:C:89:ARG:HH12	1:C:93:VAL:HG23	1.65	0.62
1:G:118:THR:HG23	1:G:121:GLY:H	1.65	0.62
1:C:24:GLN:O	1:C:28:GLU:HG3	2.00	0.62
1:J:41:PRO:CD	1:J:86:LEU:HD11	2.29	0.62
1:E:6:HIS:HD2	1:E:8:LEU:H	1.47	0.62
1:P:166:LEU:HD22	1:P:174:LEU:HD13	1.80	0.62
1:B:99:ALA:O	1:B:141:ILE:CD1	2.48	0.61
1:K:166:LEU:HD22	1:K:174:LEU:HD13	1.82	0.61
1:C:2:LYS:CD	3:C:402:PEG:H21	2.31	0.61
1:C:62:ALA:HB2	1:C:94:LEU:HD21	1.84	0.60
4:A:594:HOH:O	1:E:259:ARG:CD	2.48	0.60
4:G:576:HOH:O	1:H:259:ARG:HD3	2.01	0.60
1:C:64:LEU:C	1:C:64:LEU:HD12	2.22	0.59
1:E:62:ALA:CB	1:E:94:LEU:HD21	2.32	0.59
1:B:64:LEU:HD23	1:B:64:LEU:C	2.23	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:62:ALA:HB3	1:C:94:LEU:HD11	1.85	0.59
1:J:247:VAL:CG2	1:J:252:SER:HB3	2.27	0.59
1:E:94:LEU:CD1	1:E:102:PHE:HB2	2.33	0.59
1:M:166:LEU:HD22	1:M:174:LEU:HD13	1.85	0.59
1:E:247:VAL:HG23	1:E:252:SER:HB3	1.83	0.59
1:B:160:ARG:HH11	1:B:160:ARG:CG	2.15	0.59
1:H:118:THR:HG23	1:H:121:GLY:H	1.67	0.59
1:C:100:THR:HA	1:C:141:ILE:HD13	1.84	0.59
1:L:6:HIS:HD2	1:L:8:LEU:H	1.51	0.59
1:E:16:ALA:O	1:E:20:ARG:HG3	2.03	0.58
1:E:139:LEU:HD12	1:E:139:LEU:N	2.18	0.58
1:B:41:PRO:CD	1:B:86:LEU:CD1	2.81	0.58
1:B:70:THR:HB	1:B:83:GLY:HA2	1.86	0.58
1:C:8:LEU:CD2	1:C:37:PRO:HG3	2.34	0.58
1:L:92:ASP:OD1	1:L:135:ARG:NH1	2.29	0.58
1:M:160:ARG:HG2	1:M:160:ARG:HH21	1.68	0.58
1:B:64:LEU:HD23	1:B:64:LEU:O	2.02	0.57
1:C:46:VAL:HG11	1:C:96:GLU:HB3	1.85	0.57
1:D:64:LEU:C	1:D:64:LEU:HD23	2.24	0.57
1:M:211:ARG:CD	4:M:543:HOH:O	2.52	0.57
1:E:192:SER:HB2	1:E:193:PRO:HD3	1.87	0.57
1:N:63:SER:HA	1:N:103:CYS:O	2.03	0.57
1:D:41:PRO:CD	1:D:86:LEU:HD11	2.34	0.57
1:M:118:THR:HG23	1:M:121:GLY:H	1.70	0.57
1:D:41:PRO:HD2	1:D:86:LEU:HD11	1.86	0.57
1:K:41:PRO:CD	1:K:86:LEU:HD11	2.35	0.57
1:I:114:MET:O	1:J:253:ARG:HD2	2.05	0.57
1:O:41:PRO:CD	1:O:86:LEU:HD11	2.35	0.57
1:A:199:GLU:OE2	1:A:199:GLU:HA	2.04	0.56
4:B:568:HOH:O	1:C:259:ARG:CD	2.53	0.56
1:E:64:LEU:C	1:E:64:LEU:HD12	2.26	0.56
1:I:259:ARG:CD	4:J:513:HOH:O	2.41	0.56
4:M:527:HOH:O	1:N:259:ARG:HD3	2.04	0.56
1:C:6:HIS:NE2	1:C:8:LEU:HD23	2.20	0.56
1:C:89:ARG:HH12	1:C:93:VAL:CG2	2.18	0.56
1:P:92:ASP:OD1	1:P:135:ARG:NH1	2.32	0.56
1:L:6:HIS:NE2	1:L:8:LEU:HD22	2.21	0.56
1:J:6:HIS:NE2	1:J:8:LEU:CD2	2.69	0.55
1:N:118:THR:HG23	1:N:121:GLY:H	1.71	0.55
1:C:2:LYS:CD	3:C:402:PEG:H42	2.35	0.55
1:P:63:SER:HA	1:P:103:CYS:O	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:146:GLU:HB2	1:E:177:HIS:ND1	2.21	0.55
1:A:64:LEU:C	1:A:64:LEU:HD23	2.26	0.55
1:H:166:LEU:HD22	1:H:174:LEU:HD13	1.88	0.55
1:K:288:LEU:HD12	1:K:288:LEU:C	2.26	0.55
1:M:211:ARG:HD3	4:M:543:HOH:O	2.05	0.55
1:P:6:HIS:NE2	1:P:8:LEU:CD2	2.70	0.55
1:C:6:HIS:HD2	1:C:8:LEU:H	1.55	0.55
1:E:49:ALA:O	1:E:53:LEU:HG	2.06	0.54
1:B:197:THR:HG23	1:B:197:THR:O	2.05	0.54
1:B:148:VAL:HG23	1:B:153:THR:HG22	1.89	0.54
4:A:594:HOH:O	1:E:259:ARG:HD2	2.06	0.54
1:G:192:SER:HB2	1:G:193:PRO:HD3	1.88	0.54
1:K:115:GLU:OE1	1:L:253:ARG:NH2	2.41	0.54
1:L:118:THR:HG23	1:L:121:GLY:H	1.71	0.54
1:D:41:PRO:CG	1:D:86:LEU:CD1	2.86	0.54
1:A:261:LEU:O	1:H:289:HIS:CE1	2.60	0.54
1:F:2:LYS:HE2	3:F:402:PEG:H21	1.60	0.54
1:H:92:ASP:OD1	1:H:135:ARG:NH1	2.34	0.54
1:K:118:THR:CG2	1:K:121:GLY:H	2.21	0.54
1:A:62:ALA:CB	1:A:94:LEU:HD21	2.38	0.53
4:B:568:HOH:O	1:C:259:ARG:HD3	2.08	0.53
1:C:118:THR:HG23	1:C:121:GLY:N	2.20	0.53
1:J:70:THR:HB	1:J:83:GLY:HA2	1.91	0.53
4:G:576:HOH:O	1:H:259:ARG:CD	2.57	0.53
1:A:115:GLU:OE1	1:A:116:PRO:HD3	2.08	0.53
1:F:92:ASP:OD1	1:F:135:ARG:NH1	2.34	0.53
1:H:63:SER:HA	1:H:103:CYS:O	2.08	0.53
1:J:6:HIS:NE2	1:J:8:LEU:HD22	2.24	0.53
1:C:3:ILE:HD12	1:C:3:ILE:N	2.23	0.53
1:D:259:ARG:NH2	4:D:501:HOH:O	2.36	0.53
1:G:63:SER:HA	1:G:103:CYS:O	2.09	0.53
1:D:42:PHE:CD1	1:D:89:ARG:HG2	2.44	0.52
1:B:146:GLU:HB2	1:B:177:HIS:ND1	2.24	0.52
1:J:41:PRO:CD	1:J:86:LEU:CD1	2.87	0.52
1:C:89:ARG:NH1	1:C:93:VAL:CG2	2.68	0.52
1:F:32:ASP:HB3	3:F:402:PEG:C3	2.39	0.52
1:N:41:PRO:CD	1:N:86:LEU:HD11	2.40	0.52
1:P:66:LEU:HD21	1:P:87:LEU:HD13	1.91	0.52
1:C:247:VAL:HG23	1:C:252:SER:HB3	1.91	0.52
1:F:6:HIS:HD2	1:F:8:LEU:H	1.58	0.52
1:K:63:SER:HA	1:K:103:CYS:O	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:LEU:CD1	1:A:102:PHE:HB2	2.39	0.52
1:A:115:GLU:OE1	1:A:116:PRO:CD	2.58	0.52
1:A:171:ARG:HG3	4:A:588:HOH:O	2.09	0.52
1:B:115:GLU:OE1	1:B:115:GLU:HA	2.10	0.51
1:I:197:THR:HG23	1:I:201:LEU:HB2	1.91	0.51
1:E:166:LEU:HD22	1:E:174:LEU:HD13	1.92	0.51
1:M:41:PRO:CD	1:M:86:LEU:HD11	2.40	0.51
1:D:192:SER:HB2	1:D:193:PRO:HD3	1.92	0.51
1:B:41:PRO:HD2	1:B:86:LEU:HD11	1.92	0.51
1:F:21:TYR:CE1	1:F:25:LYS:HE2	2.46	0.51
1:F:6:HIS:NE2	1:F:8:LEU:CD2	2.74	0.51
1:M:20:ARG:CZ	1:M:48:THR:HG23	2.41	0.51
1:A:225:PHE:CD2	1:A:279:LYS:HG2	2.45	0.51
1:B:42:PHE:CD1	1:B:89:ARG:HG2	2.46	0.50
1:J:244:SER:HB2	1:J:260:ASN:HA	1.93	0.50
1:K:41:PRO:HD2	1:K:86:LEU:HD11	1.91	0.50
1:L:243:SER:HB2	1:L:262:TRP:CZ2	2.47	0.50
1:A:3:ILE:HD12	1:A:3:ILE:N	2.26	0.50
1:I:160:ARG:HG2	1:I:160:ARG:HH21	1.76	0.50
1:N:6:HIS:CE1	1:N:8:LEU:HD22	2.46	0.50
1:D:6:HIS:HD2	1:D:8:LEU:HB2	1.77	0.50
1:L:66:LEU:HD21	1:L:87:LEU:HD13	1.93	0.50
1:B:41:PRO:HG3	1:B:86:LEU:CD1	2.37	0.50
1:D:6:HIS:CD2	1:D:8:LEU:HB2	2.46	0.50
1:D:41:PRO:CG	1:D:86:LEU:HD12	2.41	0.50
1:I:63:SER:HA	1:I:103:CYS:O	2.11	0.50
1:F:118:THR:HG23	1:F:121:GLY:H	1.75	0.50
1:G:135:ARG:HG2	1:G:135:ARG:NH1	2.25	0.50
1:I:192:SER:HB2	1:I:193:PRO:HD3	1.93	0.50
1:P:6:HIS:NE2	1:P:8:LEU:HD23	2.26	0.50
1:P:20:ARG:HH11	1:P:48:THR:HG23	1.77	0.50
1:P:246:VAL:HG23	1:P:246:VAL:O	2.10	0.50
1:E:139:LEU:N	1:E:139:LEU:CD1	2.75	0.50
1:B:50:LYS:HG3	1:B:97:LEU:HD23	1.94	0.50
1:A:259:ARG:HD3	4:E:582:HOH:O	2.11	0.49
1:H:41:PRO:CD	1:H:86:LEU:CD1	2.90	0.49
1:I:194:ILE:HD11	1:I:224:PHE:CE1	2.47	0.49
1:E:62:ALA:HB3	1:E:94:LEU:HD21	1.93	0.49
1:F:2:LYS:CD	3:F:402:PEG:H21	2.41	0.49
1:J:66:LEU:HD21	1:J:87:LEU:HD13	1.94	0.49
1:N:192:SER:HB2	1:N:193:PRO:HD3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:50:LYS:HG3	1:D:97:LEU:HD23	1.94	0.49
1:N:118:THR:CG2	1:N:121:GLY:H	2.25	0.49
1:A:172:PRO:CB	1:L:263:ALA:CB	2.90	0.49
1:C:46:VAL:HG11	1:C:96:GLU:CB	2.42	0.49
1:D:66:LEU:HD21	1:D:87:LEU:HD13	1.95	0.49
1:J:63:SER:HA	1:J:103:CYS:O	2.12	0.49
1:O:41:PRO:HD2	1:O:86:LEU:HD11	1.95	0.49
1:L:63:SER:HA	1:L:103:CYS:O	2.13	0.49
1:P:8:LEU:HD21	1:P:251:LEU:HD23	1.94	0.49
1:C:70:THR:HB	1:C:83:GLY:HA2	1.95	0.49
1:I:41:PRO:CD	1:I:86:LEU:HD11	2.42	0.49
1:G:259:ARG:HD3	4:H:553:HOH:O	2.10	0.49
1:P:118:THR:HG23	1:P:121:GLY:H	1.77	0.49
1:D:118:THR:CG2	1:D:121:GLY:H	2.26	0.48
1:D:135:ARG:HG2	1:D:135:ARG:HH11	1.78	0.48
1:G:118:THR:CG2	1:G:121:GLY:H	2.25	0.48
1:L:262:TRP:CE2	1:L:268:LEU:HD22	2.48	0.48
1:E:99:ALA:O	1:E:141:ILE:HD13	2.13	0.48
1:J:41:PRO:CG	1:J:86:LEU:HD12	2.43	0.48
1:J:247:VAL:HG23	1:J:252:SER:CB	2.34	0.48
1:K:41:PRO:HD2	1:K:86:LEU:CD1	2.43	0.48
1:O:66:LEU:HD21	1:O:87:LEU:HD13	1.94	0.48
1:E:8:LEU:HD22	1:E:37:PRO:HG3	1.95	0.48
1:C:42:PHE:CD1	1:C:89:ARG:HG2	2.48	0.48
1:C:63:SER:HA	1:C:103:CYS:O	2.13	0.48
1:A:160:ARG:HH21	1:A:160:ARG:CG	2.18	0.48
4:A:540:HOH:O	1:D:13:HIS:CE1	2.65	0.48
1:E:94:LEU:HD12	1:E:102:PHE:HB2	1.95	0.48
1:B:41:PRO:HD2	1:B:86:LEU:CD1	2.43	0.48
1:P:146:GLU:HG2	1:P:148:VAL:HG13	1.95	0.48
1:G:41:PRO:CD	1:G:86:LEU:CD1	2.89	0.48
1:I:163:LEU:HD11	1:I:196:ASP:O	2.13	0.48
1:E:148:VAL:HG23	1:E:153:THR:HG22	1.94	0.48
1:J:84:GLU:OE2	1:J:131:ARG:NE	2.29	0.48
1:P:8:LEU:CD2	1:P:251:LEU:CD2	2.91	0.48
1:B:94:LEU:CD1	1:B:102:PHE:HB2	2.44	0.48
1:B:288:LEU:HB2	1:B:289:HIS:CE1	2.49	0.48
4:A:594:HOH:O	1:E:259:ARG:HD3	2.12	0.48
1:E:6:HIS:NE2	1:E:8:LEU:CD2	2.77	0.48
1:I:160:ARG:HG2	1:I:160:ARG:NH2	2.28	0.48
1:M:211:ARG:HD2	4:M:543:HOH:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:166:LEU:HD22	1:B:174:LEU:HD13	1.95	0.47
1:C:49:ALA:O	1:C:53:LEU:HG	2.14	0.47
1:F:6:HIS:CD2	1:F:8:LEU:HD22	2.49	0.47
1:H:21:TYR:CE1	1:H:25:LYS:HE2	2.49	0.47
1:C:247:VAL:CG2	1:C:252:SER:HB3	2.44	0.47
1:H:66:LEU:HD21	1:H:87:LEU:HD13	1.97	0.47
1:O:210:HIS:O	1:O:211:ARG:HB2	2.15	0.47
1:H:41:PRO:CD	1:H:86:LEU:HD11	2.44	0.47
1:B:176:ILE:HD12	1:B:197:THR:OG1	2.14	0.47
1:D:70:THR:HB	1:D:83:GLY:HA2	1.97	0.47
1:D:3:ILE:N	1:D:3:ILE:HD12	2.29	0.47
1:D:166:LEU:HD22	1:D:174:LEU:HD13	1.96	0.47
1:F:2:LYS:HE2	3:F:402:PEG:C3	2.43	0.47
1:K:288:LEU:HD12	1:K:289:HIS:HB3	1.97	0.47
1:A:197:THR:HG23	1:A:197:THR:O	2.13	0.47
1:B:75:GLU:CD	1:B:118:THR:HG21	2.35	0.47
1:D:3:ILE:N	1:D:3:ILE:CD1	2.78	0.47
1:D:63:SER:HA	1:D:103:CYS:O	2.15	0.47
1:G:66:LEU:HD21	1:G:87:LEU:HD13	1.95	0.47
1:G:94:LEU:CD1	1:G:102:PHE:HB2	2.44	0.47
1:I:95:ALA:CB	1:I:139:LEU:CD1	2.49	0.47
1:O:63:SER:HA	1:O:103:CYS:O	2.15	0.47
1:F:63:SER:HA	1:F:103:CYS:O	2.15	0.46
1:L:262:TRP:CZ3	1:L:265:ASN:HB3	2.50	0.46
1:M:41:PRO:CD	1:M:86:LEU:CD1	2.92	0.46
1:E:135:ARG:O	1:E:139:LEU:CD1	2.55	0.46
1:F:247:VAL:HG23	1:F:252:SER:HB3	1.96	0.46
1:K:118:THR:HG22	1:K:121:GLY:H	1.79	0.46
1:E:41:PRO:CD	1:E:86:LEU:HD11	2.46	0.46
1:E:100:THR:HA	1:E:141:ILE:HD13	1.97	0.46
1:O:258:TRP:CD1	1:P:154:ASN:HA	2.49	0.46
1:B:171:ARG:HG3	4:B:507:HOH:O	2.15	0.46
1:F:41:PRO:CD	1:F:86:LEU:HD11	2.45	0.46
1:N:239:PHE:CZ	1:N:241:SER:HB2	2.49	0.46
1:J:192:SER:HB2	1:J:193:PRO:HD3	1.98	0.46
1:O:192:SER:HB2	1:O:193:PRO:HD3	1.98	0.46
1:N:146:GLU:HG2	1:N:148:VAL:HG13	1.97	0.46
1:E:66:LEU:HD21	1:E:87:LEU:CD1	2.46	0.46
1:C:6:HIS:NE2	1:C:8:LEU:CD2	2.79	0.46
1:J:41:PRO:CG	1:J:86:LEU:CD1	2.94	0.46
1:N:20:ARG:NH1	1:N:48:THR:HG23	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:6:HIS:CD2	1:E:8:LEU:HD23	2.51	0.46
1:L:6:HIS:CD2	1:L:8:LEU:HD22	2.51	0.46
1:E:20:ARG:NH1	1:E:48:THR:HG23	2.32	0.45
1:J:41:PRO:HD3	1:J:86:LEU:HD11	1.97	0.45
1:O:118:THR:CG2	1:O:121:GLY:H	2.26	0.45
1:B:114:MET:C	1:C:253:ARG:HG2	2.37	0.45
1:F:66:LEU:HD21	1:F:87:LEU:HD13	1.97	0.45
1:L:94:LEU:CD1	1:L:102:PHE:HB2	2.45	0.45
1:M:64:LEU:HD22	1:M:106:ILE:HG22	1.97	0.45
1:O:41:PRO:HD2	1:O:86:LEU:CD1	2.47	0.45
1:E:66:LEU:HD21	1:E:87:LEU:HD13	1.99	0.45
1:B:64:LEU:HD21	1:B:106:ILE:HG22	1.99	0.45
1:H:118:THR:CG2	1:H:121:GLY:H	2.29	0.45
1:O:186:GLU:OE1	1:P:259:ARG:NH1	2.50	0.45
1:A:66:LEU:HD21	1:A:87:LEU:HD13	1.97	0.45
1:C:148:VAL:HG23	1:C:153:THR:HG22	1.97	0.45
1:J:247:VAL:CG2	1:J:252:SER:CB	2.94	0.45
1:A:89:ARG:NH2	4:A:511:HOH:O	2.48	0.45
1:K:64:LEU:HD22	1:K:106:ILE:HG22	1.98	0.45
1:B:63:SER:HA	1:B:103:CYS:O	2.17	0.45
1:D:118:THR:HG23	1:D:121:GLY:H	1.80	0.45
1:D:94:LEU:CD1	1:D:102:PHE:HB2	2.47	0.44
1:I:103:CYS:HB2	1:I:177:HIS:HD1	1.82	0.44
1:J:195:LEU:HD21	1:L:195:LEU:HD21	1.99	0.44
1:K:66:LEU:HD21	1:K:87:LEU:HD13	1.98	0.44
1:N:8:LEU:HD21	1:N:251:LEU:CD2	2.46	0.44
1:K:192:SER:HB2	1:K:193:PRO:HD3	1.99	0.44
1:D:135:ARG:HG2	1:D:135:ARG:NH1	2.33	0.44
1:L:247:VAL:HG23	1:L:252:SER:HB3	1.99	0.44
1:P:262:TRP:CZ3	1:P:265:ASN:HB3	2.52	0.44
1:B:64:LEU:CD2	1:B:106:ILE:HG22	2.47	0.44
1:D:92:ASP:O	1:D:96:GLU:HG3	2.18	0.44
1:I:64:LEU:HD22	1:I:106:ILE:HG22	1.98	0.44
1:P:8:LEU:CD2	1:P:251:LEU:HD23	2.47	0.44
1:N:41:PRO:HD2	1:N:86:LEU:CD1	2.47	0.44
1:A:166:LEU:HD22	1:A:174:LEU:HD13	2.00	0.44
1:C:192:SER:HB2	1:C:193:PRO:HD3	1.98	0.44
1:F:20:ARG:NH1	1:F:48:THR:HG23	2.32	0.44
1:H:70:THR:HB	1:H:83:GLY:HA2	1.99	0.44
1:E:6:HIS:CD2	1:E:8:LEU:CD2	3.01	0.44
1:C:6:HIS:CD2	1:C:8:LEU:CD2	3.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:262:TRP:CE2	1:K:268:LEU:HD22	2.53	0.44
1:B:179:ASP:O	1:B:183:MET:HG3	2.18	0.44
1:K:13:HIS:HD2	4:K:544:HOH:O	2.01	0.44
1:M:66:LEU:HD21	1:M:87:LEU:HD13	1.99	0.44
1:I:95:ALA:CB	1:I:139:LEU:HD21	2.43	0.44
1:K:277:ARG:NH1	4:K:508:HOH:O	2.48	0.44
1:O:64:LEU:HD22	1:O:106:ILE:HG22	2.00	0.44
1:B:192:SER:HB2	1:B:193:PRO:HD3	1.98	0.43
1:B:225:PHE:CD2	1:B:279:LYS:HG2	2.52	0.43
1:G:70:THR:HB	1:G:83:GLY:HA2	2.00	0.43
1:I:94:LEU:CD1	1:I:102:PHE:HB2	2.48	0.43
1:J:136:ALA:HB1	1:J:141:ILE:HB	2.00	0.43
1:L:192:SER:HB2	1:L:193:PRO:HD3	2.00	0.43
1:A:192:SER:N	1:A:193:PRO:CD	2.81	0.43
1:C:86:LEU:HD12	1:C:86:LEU:O	2.17	0.43
1:F:118:THR:CG2	1:F:121:GLY:H	2.30	0.43
1:B:6:HIS:HD2	1:B:8:LEU:HB2	1.82	0.43
1:B:146:GLU:HA	1:B:177:HIS:HB3	2.00	0.43
1:C:32:ASP:CB	3:C:402:PEG:H22	2.33	0.43
1:B:259:ARG:HD3	4:C:572:HOH:O	2.18	0.43
1:C:3:ILE:N	1:C:3:ILE:CD1	2.81	0.43
1:K:70:THR:HB	1:K:83:GLY:HA2	2.01	0.43
1:A:172:PRO:HB2	1:L:263:ALA:CB	2.46	0.43
1:C:20:ARG:CZ	1:C:48:THR:HG23	2.48	0.43
1:C:169:LEU:O	1:C:171:ARG:HD3	2.19	0.43
1:F:41:PRO:CD	1:F:86:LEU:CD1	2.97	0.43
1:I:118:THR:CG2	1:I:121:GLY:H	2.31	0.43
1:A:94:LEU:HD12	1:A:102:PHE:HB2	2.00	0.43
4:I:520:HOH:O	1:J:259:ARG:HD3	2.18	0.43
1:K:211:ARG:HD2	4:K:530:HOH:O	2.18	0.43
1:M:41:PRO:HD2	1:M:86:LEU:CD1	2.49	0.43
1:P:118:THR:CG2	1:P:121:GLY:H	2.32	0.43
1:C:49:ALA:HB3	1:C:97:LEU:HD21	2.00	0.43
1:I:41:PRO:CG	1:I:86:LEU:HD12	2.49	0.43
1:J:64:LEU:C	1:J:64:LEU:HD12	2.39	0.43
1:K:33:LEU:C	1:K:33:LEU:HD23	2.39	0.43
1:N:66:LEU:HD21	1:N:87:LEU:HD13	2.01	0.43
1:E:41:PRO:HD2	1:E:86:LEU:HD11	2.01	0.43
1:G:41:PRO:CG	1:G:86:LEU:HD12	2.49	0.43
1:O:41:PRO:CD	1:O:86:LEU:CD1	2.97	0.43
1:B:3:ILE:N	1:B:3:ILE:HD12	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:192:SER:N	1:C:193:PRO:CD	2.82	0.42
1:D:27:ARG:HD3	4:D:503:HOH:O	2.18	0.42
1:F:243:SER:HB2	1:F:262:TRP:CH2	2.54	0.42
1:G:287:GLU:HB3	1:G:288:LEU:HD23	2.01	0.42
1:J:41:PRO:HG3	1:J:86:LEU:HD12	2.01	0.42
1:D:33:LEU:HD23	1:D:33:LEU:C	2.39	0.42
1:D:41:PRO:HG2	1:D:86:LEU:HD12	2.00	0.42
1:F:92:ASP:CG	1:F:135:ARG:HH12	2.21	0.42
1:I:284:LYS:O	1:I:287:GLU:HG2	2.19	0.42
1:J:6:HIS:NE2	1:J:8:LEU:HD23	2.35	0.42
1:O:70:THR:HB	1:O:83:GLY:HA2	2.00	0.42
1:E:15:ASP:O	1:E:19:ILE:HG13	2.19	0.42
1:L:70:THR:HB	1:L:83:GLY:HA2	2.01	0.42
1:N:146:GLU:HG2	1:N:148:VAL:CG1	2.49	0.42
1:D:41:PRO:CG	1:D:86:LEU:HD11	2.48	0.42
1:G:262:TRP:CZ3	1:G:265:ASN:HB3	2.54	0.42
1:L:118:THR:CG2	1:L:121:GLY:H	2.31	0.42
1:N:41:PRO:HD2	1:N:86:LEU:HD11	2.01	0.42
1:D:81:LYS:HE2	1:D:85:GLU:OE2	2.20	0.42
1:D:192:SER:N	1:D:193:PRO:CD	2.82	0.42
4:I:520:HOH:O	1:J:259:ARG:CD	2.67	0.42
1:E:81:LYS:O	1:E:85:GLU:HG3	2.20	0.42
1:C:66:LEU:HD21	1:C:87:LEU:HD13	2.02	0.42
1:O:135:ARG:HG2	1:O:135:ARG:HH11	1.85	0.42
1:E:260:ASN:O	1:G:289:HIS:HB3	2.20	0.42
1:G:171:ARG:HG3	4:G:531:HOH:O	2.20	0.42
1:I:174:LEU:HD23	1:I:174:LEU:HA	1.92	0.42
1:K:41:PRO:CD	1:K:86:LEU:CD1	2.97	0.42
1:P:66:LEU:HD21	1:P:87:LEU:CD1	2.50	0.42
4:B:568:HOH:O	1:C:259:ARG:HD2	2.16	0.42
1:A:192:SER:HB2	1:A:193:PRO:HD3	2.01	0.41
1:F:174:LEU:HD23	1:F:174:LEU:HA	1.87	0.41
1:F:262:TRP:CZ3	1:F:265:ASN:HB3	2.55	0.41
1:H:103:CYS:HA	1:H:144:SER:O	2.20	0.41
1:I:64:LEU:C	1:I:64:LEU:CD2	2.82	0.41
1:K:260:ASN:ND2	1:K:262:TRP:O	2.53	0.41
4:K:550:HOH:O	1:L:259:ARG:HD3	2.19	0.41
1:D:194:ILE:HD11	1:D:224:PHE:CE1	2.54	0.41
1:J:118:THR:CG2	1:J:121:GLY:H	2.32	0.41
1:B:66:LEU:HD21	1:B:87:LEU:HD13	2.03	0.41
1:C:6:HIS:CD2	1:C:8:LEU:HD23	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:262:TRP:CE2	1:F:268:LEU:HD22	2.56	0.41
1:L:249:PRO:O	1:L:253:ARG:HD2	2.20	0.41
1:M:148:VAL:O	1:M:157:ASN:HA	2.20	0.41
1:A:14:PHE:CE1	1:A:37:PRO:HG2	2.55	0.41
1:A:62:ALA:HB3	1:A:94:LEU:HD21	2.03	0.41
1:D:259:ARG:HD3	4:F:535:HOH:O	2.18	0.41
1:F:94:LEU:CD1	1:F:102:PHE:HB2	2.50	0.41
1:N:103:CYS:HA	1:N:144:SER:O	2.21	0.41
1:O:262:TRP:CE2	1:O:268:LEU:HD22	2.55	0.41
1:P:6:HIS:NE2	1:P:8:LEU:HD22	2.34	0.41
1:I:262:TRP:CE2	1:I:268:LEU:HD22	2.56	0.41
1:E:155:VAL:HG12	1:E:156:LEU:HG	2.02	0.41
1:J:21:TYR:CE1	1:J:25:LYS:HE2	2.54	0.41
1:P:192:SER:HB2	1:P:193:PRO:HD3	2.01	0.41
1:E:25:LYS:NZ	1:E:266:GLU:OE2	2.53	0.41
1:E:62:ALA:HB2	1:E:94:LEU:HD21	2.03	0.41
1:D:262:TRP:CE2	1:D:268:LEU:HD22	2.56	0.41
1:I:41:PRO:CD	1:I:86:LEU:CD1	2.98	0.41
1:P:174:LEU:HD23	1:P:174:LEU:HA	1.90	0.41
1:A:49:ALA:O	1:A:53:LEU:HG	2.19	0.41
1:E:49:ALA:HB3	1:E:97:LEU:HD21	2.01	0.41
1:D:14:PHE:CE1	1:D:37:PRO:HG2	2.55	0.41
1:F:41:PRO:HD2	1:F:86:LEU:CD1	2.50	0.41
1:O:64:LEU:C	1:O:64:LEU:CD2	2.85	0.41
1:D:99:ALA:O	1:D:141:ILE:CD1	2.69	0.41
1:I:66:LEU:HD21	1:I:87:LEU:HD13	2.02	0.41
1:K:289:HIS:ND1	1:K:289:HIS:C	2.75	0.41
1:M:94:LEU:CD1	1:M:102:PHE:HB2	2.50	0.41
1:M:118:THR:CG2	1:M:121:GLY:H	2.32	0.41
1:N:41:PRO:CD	1:N:86:LEU:CD1	2.99	0.41
1:E:194:ILE:HD11	1:E:224:PHE:CE1	2.56	0.40
1:G:27:ARG:HD3	4:G:504:HOH:O	2.22	0.40
1:G:194:ILE:HD11	1:G:224:PHE:CE1	2.56	0.40
1:H:75:GLU:OE1	1:H:118:THR:HG21	2.21	0.40
1:J:243:SER:H	1:J:257:ILE:HG21	1.86	0.40
1:D:66:LEU:HD21	1:D:87:LEU:CD1	2.51	0.40
1:F:2:LYS:HE2	3:F:402:PEG:H32	2.03	0.40
1:G:64:LEU:C	1:G:64:LEU:CD2	2.87	0.40
1:E:230:ARG:HB2	4:E:501:HOH:O	2.20	0.40
1:G:193:PRO:O	1:G:197:THR:HB	2.22	0.40
1:I:139:LEU:HD13	1:I:141:ILE:HG13	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:160:ARG:HG2	1:M:160:ARG:NH2	2.33	0.40
1:A:1:MET:HG3	1:A:235:GLY:O	2.21	0.40
1:J:8:LEU:HD21	1:J:251:LEU:CD2	2.52	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	287/297 (97%)	282 (98%)	5 (2%)	0	100	100
1	B	287/297 (97%)	282 (98%)	5 (2%)	0	100	100
1	C	287/297 (97%)	284 (99%)	3 (1%)	0	100	100
1	D	287/297 (97%)	281 (98%)	6 (2%)	0	100	100
1	E	287/297 (97%)	281 (98%)	6 (2%)	0	100	100
1	F	287/297 (97%)	283 (99%)	4 (1%)	0	100	100
1	G	287/297 (97%)	280 (98%)	7 (2%)	0	100	100
1	H	287/297 (97%)	281 (98%)	6 (2%)	0	100	100
1	I	286/297 (96%)	280 (98%)	6 (2%)	0	100	100
1	J	287/297 (97%)	279 (97%)	8 (3%)	0	100	100
1	K	287/297 (97%)	279 (97%)	8 (3%)	0	100	100
1	L	287/297 (97%)	282 (98%)	5 (2%)	0	100	100
1	M	287/297 (97%)	282 (98%)	5 (2%)	0	100	100
1	N	287/297 (97%)	280 (98%)	7 (2%)	0	100	100
1	O	287/297 (97%)	280 (98%)	7 (2%)	0	100	100
1	P	287/297 (97%)	280 (98%)	7 (2%)	0	100	100
All	All	4591/4752 (97%)	4496 (98%)	95 (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	231/238 (97%)	221 (96%)	10 (4%)	25	32
1	B	231/238 (97%)	219 (95%)	12 (5%)	19	24
1	C	231/238 (97%)	221 (96%)	10 (4%)	25	32
1	D	231/238 (97%)	219 (95%)	12 (5%)	19	24
1	E	231/238 (97%)	224 (97%)	7 (3%)	36	48
1	F	231/238 (97%)	218 (94%)	13 (6%)	17	21
1	G	231/238 (97%)	218 (94%)	13 (6%)	17	21
1	H	231/238 (97%)	222 (96%)	9 (4%)	27	37
1	I	230/238 (97%)	217 (94%)	13 (6%)	17	21
1	J	231/238 (97%)	219 (95%)	12 (5%)	19	24
1	K	231/238 (97%)	216 (94%)	15 (6%)	14	16
1	L	231/238 (97%)	219 (95%)	12 (5%)	19	24
1	M	231/238 (97%)	220 (95%)	11 (5%)	21	28
1	N	231/238 (97%)	220 (95%)	11 (5%)	21	28
1	O	231/238 (97%)	219 (95%)	12 (5%)	19	24
1	P	231/238 (97%)	222 (96%)	9 (4%)	27	37
All	All	3695/3808 (97%)	3514 (95%)	181 (5%)	21	27

All (181) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	LEU
1	A	64	LEU
1	A	87	LEU
1	A	160	ARG
1	A	167	GLU
1	A	171	ARG

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Mol	Chain	Res	Type
1	A	174	LEU
1	A	195	LEU
1	A	197	THR
1	A	210	HIS
1	E	8	LEU
1	E	87	LEU
1	E	171	ARG
1	E	174	LEU
1	E	210	HIS
1	E	211	ARG
1	E	259	ARG
1	B	8	LEU
1	B	27	ARG
1	B	64	LEU
1	B	87	LEU
1	B	118	THR
1	B	139	LEU
1	B	160	ARG
1	B	171	ARG
1	B	174	LEU
1	B	195	LEU
1	B	197	THR
1	B	210	HIS
1	C	8	LEU
1	C	87	LEU
1	C	171	ARG
1	C	174	LEU
1	C	195	LEU
1	C	202	ARG
1	C	210	HIS
1	C	211	ARG
1	C	253	ARG
1	C	259	ARG
1	D	3	ILE
1	D	8	LEU
1	D	33	LEU
1	D	64	LEU
1	D	118	THR
1	D	139	LEU
1	D	160	ARG
1	D	167	GLU
1	D	174	LEU

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Mol	Chain	Res	Type
1	D	199	GLU
1	D	202	ARG
1	D	210	HIS
1	F	8	LEU
1	F	20	ARG
1	F	87	LEU
1	F	112	LYS
1	F	118	THR
1	F	139	LEU
1	F	171	ARG
1	F	174	LEU
1	F	199	GLU
1	F	202	ARG
1	F	210	HIS
1	F	211	ARG
1	F	260	ASN
1	G	8	LEU
1	G	64	LEU
1	G	87	LEU
1	G	112	LYS
1	G	118	THR
1	G	139	LEU
1	G	160	ARG
1	G	167	GLU
1	G	171	ARG
1	G	174	LEU
1	G	197	THR
1	G	210	HIS
1	G	289	HIS
1	H	8	LEU
1	H	87	LEU
1	H	112	LYS
1	H	171	ARG
1	H	174	LEU
1	H	199	GLU
1	H	202	ARG
1	H	210	HIS
1	H	247	VAL
1	I	8	LEU
1	I	27	ARG
1	I	64	LEU
1	I	87	LEU

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Mol	Chain	Res	Type
1	I	118	THR
1	I	139	LEU
1	I	160	ARG
1	I	167	GLU
1	I	174	LEU
1	I	197	THR
1	I	202	ARG
1	I	210	HIS
1	I	211	ARG
1	J	8	LEU
1	J	87	LEU
1	J	139	LEU
1	J	167	GLU
1	J	171	ARG
1	J	174	LEU
1	J	202	ARG
1	J	210	HIS
1	J	211	ARG
1	J	243	SER
1	J	245	SER
1	J	260	ASN
1	K	8	LEU
1	K	20	ARG
1	K	64	LEU
1	K	87	LEU
1	K	112	LYS
1	K	118	THR
1	K	139	LEU
1	K	160	ARG
1	K	167	GLU
1	K	174	LEU
1	K	195	LEU
1	K	197	THR
1	K	202	ARG
1	K	210	HIS
1	K	289	HIS
1	L	8	LEU
1	L	87	LEU
1	L	118	THR
1	L	139	LEU
1	L	174	LEU
1	L	199	GLU

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Mol	Chain	Res	Type
1	L	202	ARG
1	L	210	HIS
1	L	211	ARG
1	L	253	ARG
1	L	260	ASN
1	L	283	ILE
1	M	8	LEU
1	M	64	LEU
1	M	87	LEU
1	M	139	LEU
1	M	160	ARG
1	M	167	GLU
1	M	171	ARG
1	M	174	LEU
1	M	197	THR
1	M	202	ARG
1	M	211	ARG
1	N	8	LEU
1	N	85	GLU
1	N	87	LEU
1	N	112	LYS
1	N	118	THR
1	N	139	LEU
1	N	174	LEU
1	N	199	GLU
1	N	202	ARG
1	N	211	ARG
1	N	252	SER
1	O	8	LEU
1	O	64	LEU
1	O	87	LEU
1	O	118	THR
1	O	139	LEU
1	O	160	ARG
1	O	167	GLU
1	O	171	ARG
1	O	174	LEU
1	O	197	THR
1	O	202	ARG
1	O	210	HIS
1	P	8	LEU
1	P	87	LEU

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Mol	Chain	Res	Type
1	P	118	THR
1	P	139	LEU
1	P	174	LEU
1	P	199	GLU
1	P	202	ARG
1	P	210	HIS
1	P	211	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	142	ASN
1	A	260	ASN
1	E	6	HIS
1	E	142	ASN
1	B	6	HIS
1	B	47	GLN
1	B	260	ASN
1	C	6	HIS
1	C	24	GLN
1	D	6	HIS
1	D	13	HIS
1	D	260	ASN
1	F	142	ASN
1	F	260	ASN
1	G	6	HIS
1	G	13	HIS
1	G	260	ASN
1	H	6	HIS
1	H	260	ASN
1	I	6	HIS
1	I	260	ASN
1	J	260	ASN
1	K	6	HIS
1	K	170	ASN
1	K	260	ASN
1	L	6	HIS
1	M	6	HIS
1	M	260	ASN
1	N	6	HIS
1	N	260	ASN
1	O	6	HIS

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Mol	Chain	Res	Type
1	O	13	HIS
1	O	260	ASN
1	P	260	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 16 are monoatomic - leaving 4 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	$\# Z > 2$
3	PEG	F	402	-	6,6,6	0.36	0	5,5,5	0.71	0
3	PEG	G	402	-	6,6,6	0.26	0	5,5,5	0.20	0
3	PEG	C	402	-	6,6,6	0.36	0	5,5,5	0.52	0
3	PEG	E	402	-	6,6,6	0.49	0	5,5,5	0.32	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PEG	F	402	-	-	3/4/4/4	-
3	PEG	G	402	-	-	3/4/4/4	-
3	PEG	C	402	-	-	3/4/4/4	-
3	PEG	E	402	-	-	1/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (10) torsion outliers are listed below:

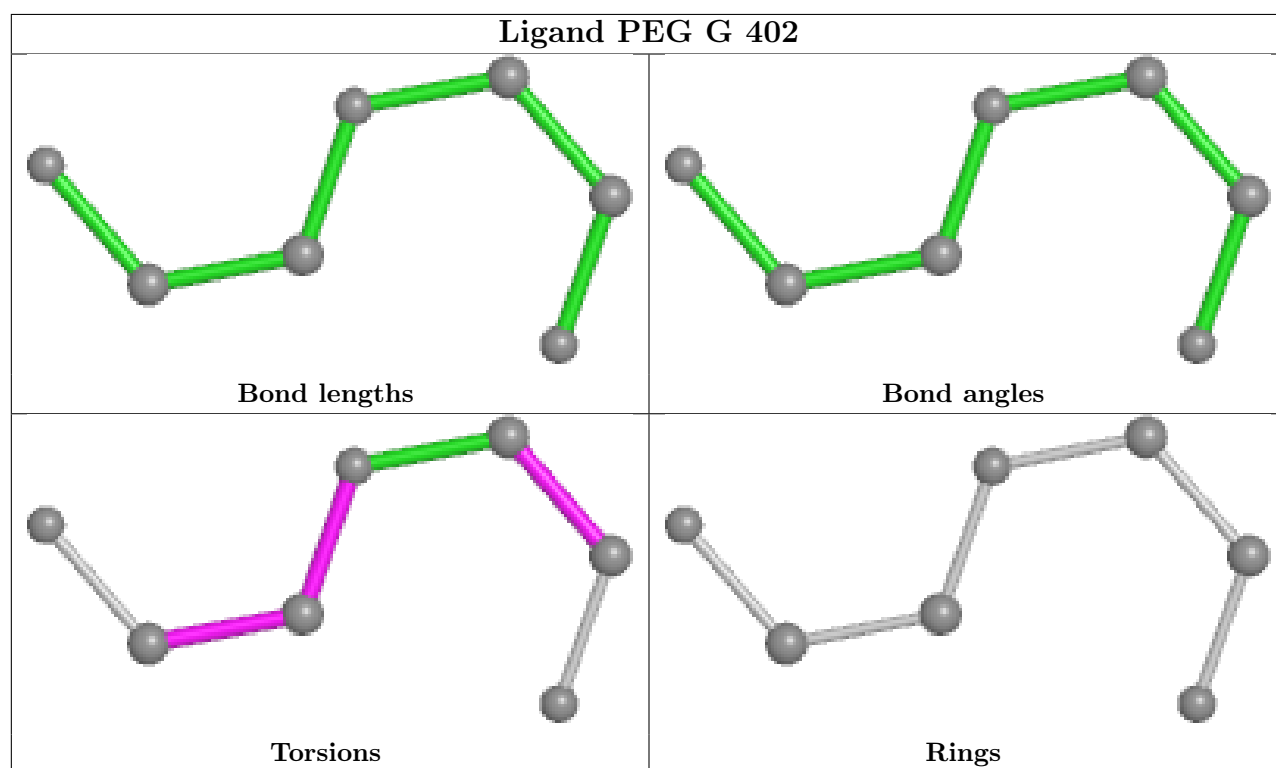
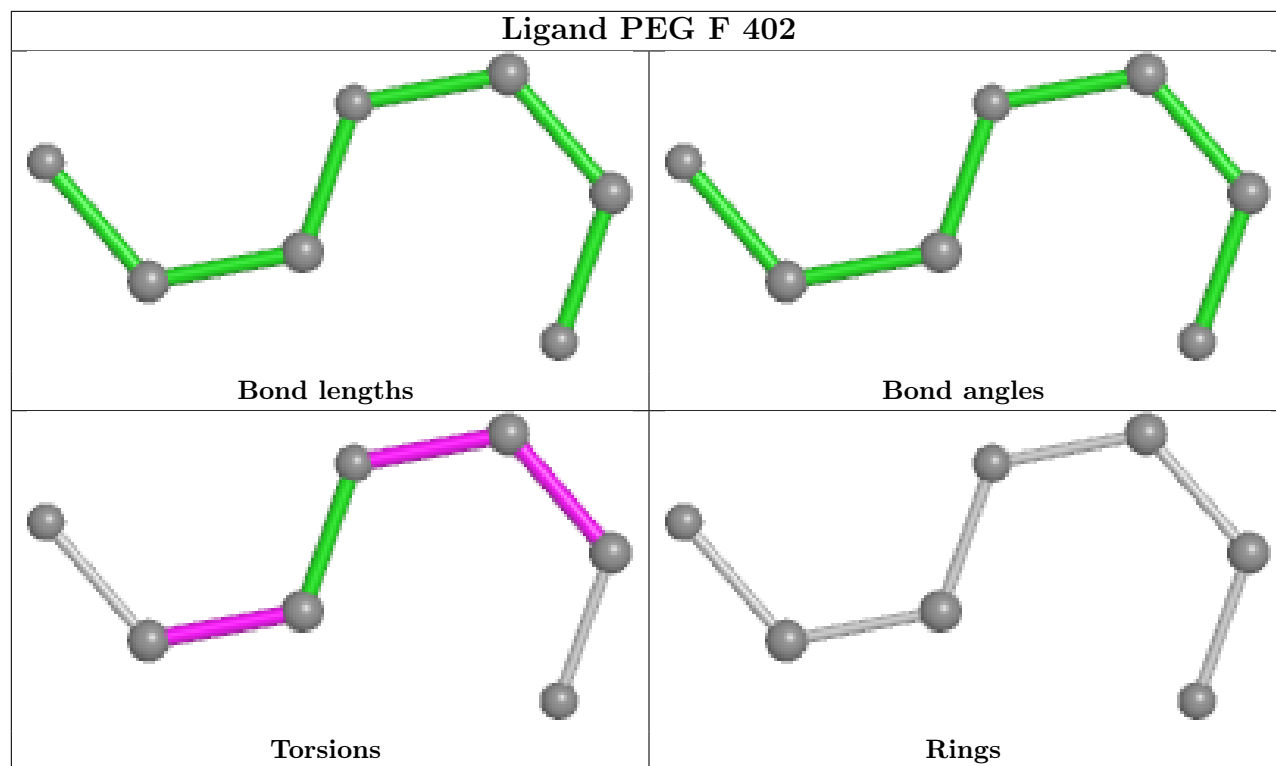
Mol	Chain	Res	Type	Atoms
3	F	402	PEG	O2-C3-C4-O4
3	G	402	PEG	O1-C1-C2-O2
3	G	402	PEG	O2-C3-C4-O4
3	C	402	PEG	O1-C1-C2-O2
3	G	402	PEG	C1-C2-O2-C3
3	F	402	PEG	O1-C1-C2-O2
3	C	402	PEG	O2-C3-C4-O4
3	E	402	PEG	O2-C3-C4-O4
3	F	402	PEG	C4-C3-O2-C2
3	C	402	PEG	C4-C3-O2-C2

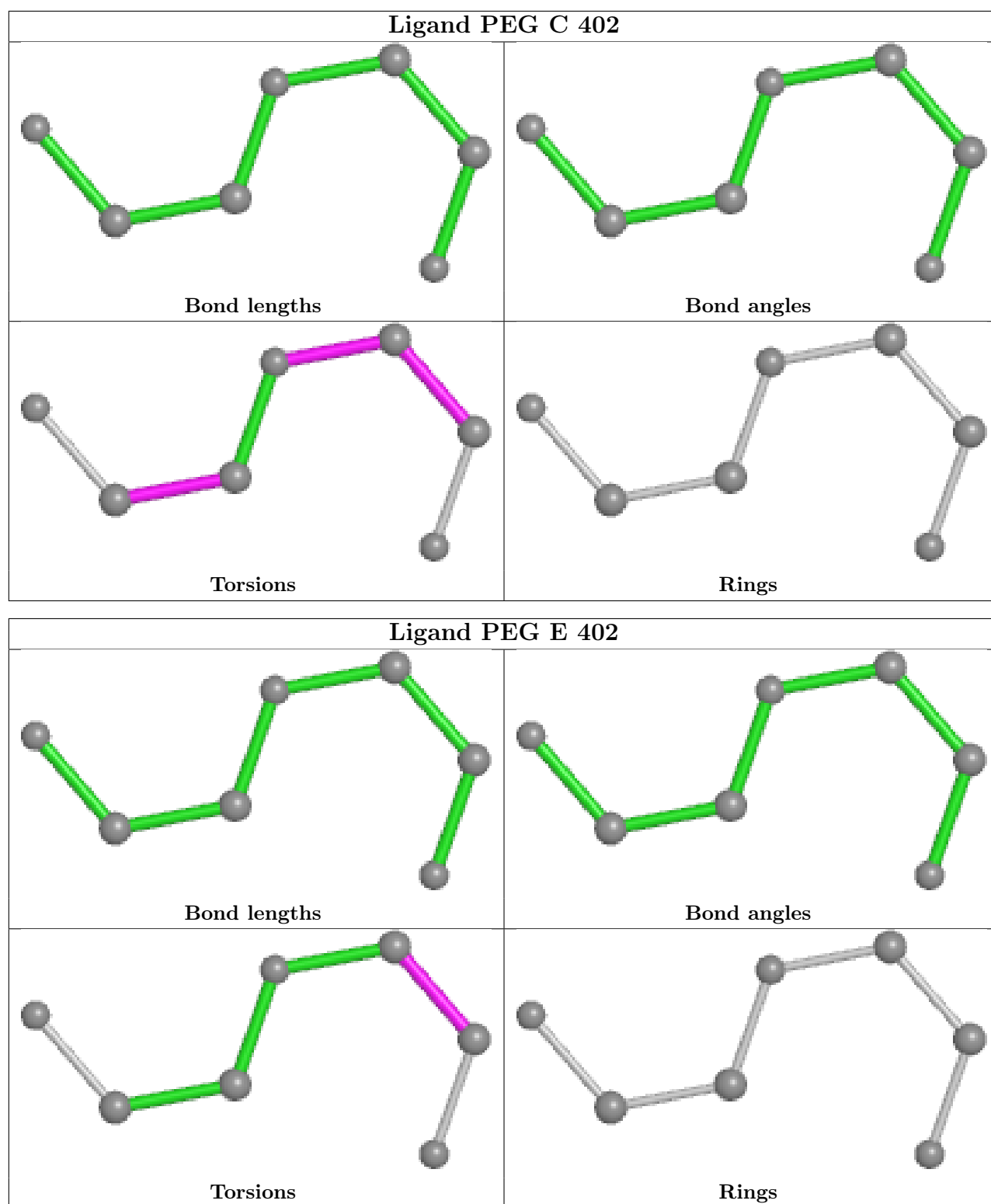
There are no ring outliers.

2 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	402	PEG	13	0
3	C	402	PEG	12	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





5.7 Other polymers [\(i\)](#)

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	289/297 (97%)	-0.33	1 (0%) 90 89	21, 30, 49, 73	0
1	B	289/297 (97%)	-0.18	4 (1%) 73 70	24, 34, 53, 120	0
1	C	289/297 (97%)	0.06	5 (1%) 69 65	23, 39, 65, 80	0
1	D	289/297 (97%)	-0.11	7 (2%) 59 56	22, 35, 59, 110	0
1	E	289/297 (97%)	-0.10	3 (1%) 79 76	22, 36, 59, 71	0
1	F	289/297 (97%)	0.09	2 (0%) 84 82	24, 42, 71, 79	0
1	G	289/297 (97%)	-0.42	2 (0%) 84 82	19, 30, 53, 96	0
1	H	289/297 (97%)	0.08	2 (0%) 84 82	24, 41, 62, 83	0
1	I	288/297 (96%)	0.67	22 (7%) 21 19	30, 56, 85, 105	0
1	J	289/297 (97%)	0.44	19 (6%) 26 23	30, 51, 89, 118	0
1	K	289/297 (97%)	0.11	2 (0%) 84 82	27, 44, 67, 106	0
1	L	289/297 (97%)	0.35	11 (3%) 44 41	25, 49, 81, 116	0
1	M	289/297 (97%)	0.17	4 (1%) 73 70	28, 45, 72, 78	0
1	N	289/297 (97%)	0.43	9 (3%) 51 48	30, 50, 80, 92	0
1	O	289/297 (97%)	0.66	12 (4%) 41 37	35, 57, 80, 101	0
1	P	289/297 (97%)	1.28	70 (24%) 2 2	36, 65, 96, 110	0
All	All	4623/4752 (97%)	0.20	175 (3%) 44 41	19, 44, 78, 120	0

All (175) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	288	LEU	6.2
1	G	288	LEU	6.0
1	I	288	LEU	4.7
1	P	38	LEU	4.6
1	B	288	LEU	4.3

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Mol	Chain	Res	Type	RSRZ
1	O	288	LEU	4.3
1	P	94	LEU	4.3
1	P	69	ALA	4.1
1	I	139	LEU	3.8
1	P	289	HIS	3.8
1	K	288	LEU	3.7
1	P	288	LEU	3.7
1	P	247	VAL	3.6
1	P	41	PRO	3.6
1	J	247	VAL	3.6
1	P	95	ALA	3.6
1	P	46	VAL	3.6
1	P	42	PHE	3.4
1	J	243	SER	3.4
1	C	42	PHE	3.4
1	D	168	GLU	3.3
1	P	117	ALA	3.3
1	P	49	ALA	3.3
1	K	289	HIS	3.2
1	L	39	MET	3.2
1	P	79	VAL	3.2
1	A	289	HIS	3.2
1	P	127	ALA	3.2
1	N	247	VAL	3.1
1	P	129	VAL	3.1
1	J	249	PRO	3.1
1	J	245	SER	3.1
1	P	72	VAL	3.1
1	P	107	TYR	3.1
1	P	132	VAL	3.0
1	N	248	ALA	3.0
1	P	82	ALA	3.0
1	I	39	MET	3.0
1	L	42	PHE	3.0
1	H	249	PRO	3.0
1	P	248	ALA	3.0
1	P	11	THR	2.9
1	P	106	ILE	2.9
1	P	90	ALA	2.8
1	P	64	LEU	2.8
1	P	142	ASN	2.8
1	L	13	HIS	2.8

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Mol	Chain	Res	Type	RSRZ
1	P	44	PHE	2.8
1	C	95	ALA	2.8
1	P	8	LEU	2.8
1	P	141	ILE	2.8
1	P	249	PRO	2.8
1	I	118	THR	2.8
1	D	289	HIS	2.8
1	J	39	MET	2.7
1	J	246	VAL	2.7
1	O	289	HIS	2.7
1	P	87	LEU	2.7
1	B	289	HIS	2.7
1	I	122	LEU	2.7
1	P	122	LEU	2.7
1	P	39	MET	2.7
1	P	73	SER	2.7
1	P	14	PHE	2.7
1	P	18	GLY	2.7
1	P	175	GLY	2.7
1	P	86	LEU	2.7
1	P	80	VAL	2.7
1	D	197	THR	2.6
1	I	8	LEU	2.6
1	P	37	PRO	2.6
1	P	102	PHE	2.6
1	E	245	SER	2.6
1	P	130	GLY	2.6
1	P	140	GLY	2.6
1	F	51	SER	2.6
1	P	22	SER	2.6
1	P	123	ALA	2.6
1	P	174	LEU	2.6
1	D	39	MET	2.5
1	P	250	ASP	2.5
1	J	251	LEU	2.5
1	P	66	LEU	2.5
1	P	139	LEU	2.5
1	P	169	LEU	2.5
1	P	251	LEU	2.5
1	J	248	ALA	2.5
1	I	97	LEU	2.5
1	J	58	LEU	2.5

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Mol	Chain	Res	Type	RSRZ
1	P	58	LEU	2.5
1	J	118	THR	2.5
1	C	39	MET	2.5
1	J	13	HIS	2.5
1	D	42	PHE	2.4
1	I	123	ALA	2.4
1	P	34	VAL	2.4
1	P	143	VAL	2.4
1	E	39	MET	2.4
1	P	50	LYS	2.4
1	I	119	ALA	2.4
1	J	261	LEU	2.4
1	P	164	ALA	2.4
1	L	79	VAL	2.4
1	I	77	PRO	2.4
1	N	249	PRO	2.4
1	I	125	SER	2.4
1	J	244	SER	2.4
1	D	120	ALA	2.4
1	I	166	LEU	2.4
1	J	242	PHE	2.3
1	N	246	VAL	2.3
1	P	19	ILE	2.3
1	I	38	LEU	2.3
1	O	69	ALA	2.3
1	M	118	THR	2.3
1	O	118	THR	2.3
1	O	174	LEU	2.3
1	I	128	ALA	2.3
1	M	119	ALA	2.3
1	J	255	LEU	2.3
1	O	139	LEU	2.2
1	N	16	ALA	2.2
1	C	77	PRO	2.2
1	O	38	LEU	2.2
1	L	119	ALA	2.2
1	P	62	ALA	2.2
1	P	91	VAL	2.2
1	P	194	ILE	2.2
1	J	115	GLU	2.2
1	I	169	LEU	2.2
1	M	288	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	P	202	ARG	2.2
1	I	99	ALA	2.2
1	L	284	LYS	2.2
1	L	288	LEU	2.2
1	L	289	HIS	2.2
1	P	133	ALA	2.2
1	H	118	THR	2.2
1	P	70	THR	2.2
1	O	46	VAL	2.2
1	O	135	ARG	2.1
1	I	94	LEU	2.1
1	O	86	LEU	2.1
1	I	138	ASP	2.1
1	N	244	SER	2.1
1	G	289	HIS	2.1
1	L	172	PRO	2.1
1	I	248	ALA	2.1
1	L	52	ALA	2.1
1	P	60	ALA	2.1
1	P	23	VAL	2.1
1	P	246	VAL	2.1
1	N	42	PHE	2.1
1	O	42	PHE	2.1
1	J	250	ASP	2.1
1	P	103	CYS	2.1
1	I	64	LEU	2.1
1	B	197	THR	2.1
1	P	109	ALA	2.1
1	I	137	SER	2.1
1	P	83	GLY	2.1
1	N	13	HIS	2.1
1	O	56	HIS	2.1
1	P	2	LYS	2.1
1	B	141	ILE	2.0
1	J	139	LEU	2.0
1	E	248	ALA	2.0
1	C	99	ALA	2.0
1	F	46	VAL	2.0
1	I	121	GLY	2.0
1	P	244	SER	2.0
1	J	38	LEU	2.0
1	L	77	PRO	2.0

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Mol	Chain	Res	Type	RSRZ
1	M	8	LEU	2.0
1	N	58	LEU	2.0

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](#)

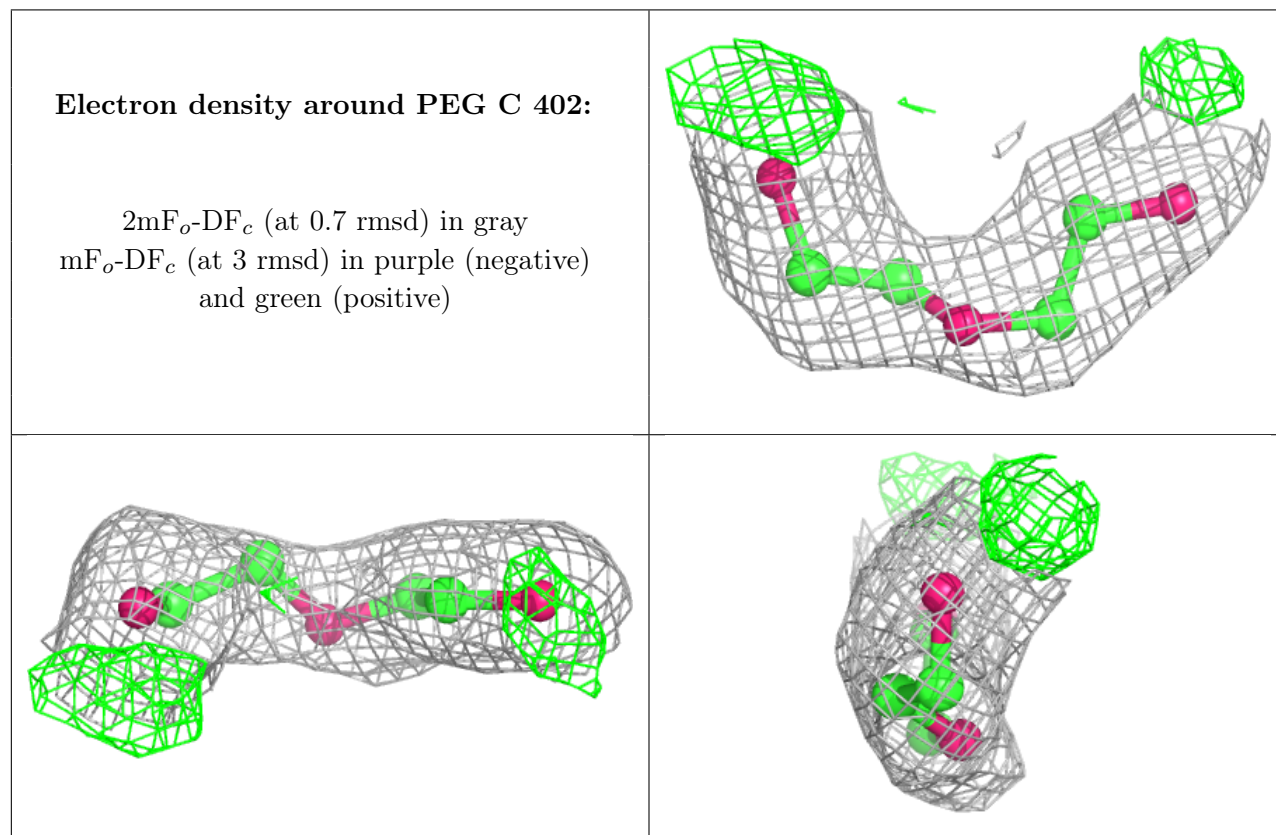
There are no monosaccharides in this entry.

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.

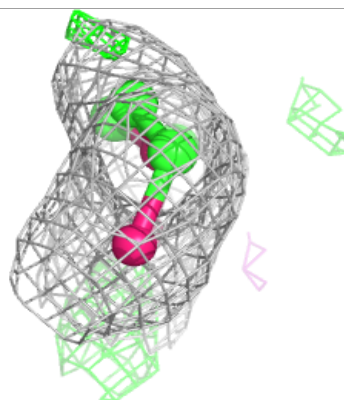
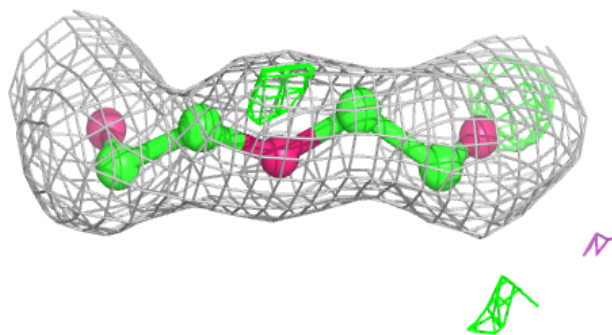
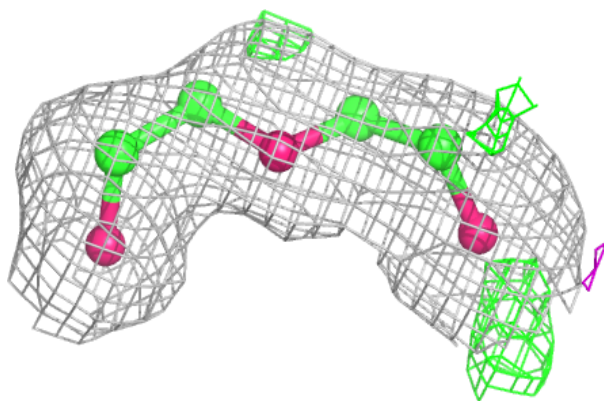
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	PEG	C	402	7/7	0.83	0.14	43,49,52,58	0
3	PEG	E	402	7/7	0.85	0.16	50,55,59,60	0
3	PEG	F	402	7/7	0.89	0.12	50,52,58,58	0
3	PEG	G	402	7/7	0.90	0.10	47,47,50,50	0
2	MG	D	401	1/1	0.96	0.13	8,8,8,8	0
2	MG	J	401	1/1	0.96	0.14	18,18,18,18	0
2	MG	G	401	1/1	0.98	0.09	8,8,8,8	0
2	MG	P	401	1/1	0.98	0.10	35,35,35,35	0
2	MG	I	401	1/1	0.99	0.07	22,22,22,22	0
2	MG	B	401	1/1	0.99	0.14	10,10,10,10	0
2	MG	K	401	1/1	0.99	0.09	13,13,13,13	0
2	MG	L	401	1/1	0.99	0.11	14,14,14,14	0
2	MG	O	401	1/1	0.99	0.09	26,26,26,26	0
2	MG	C	401	1/1	0.99	0.18	9,9,9,9	0
2	MG	A	401	1/1	0.99	0.15	7,7,7,7	0
2	MG	F	401	1/1	0.99	0.10	11,11,11,11	0
2	MG	E	401	1/1	0.99	0.18	9,9,9,9	0
2	MG	H	401	1/1	0.99	0.09	9,9,9,9	0
2	MG	M	401	1/1	1.00	0.06	11,11,11,11	0
2	MG	N	401	1/1	1.00	0.12	19,19,19,19	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.

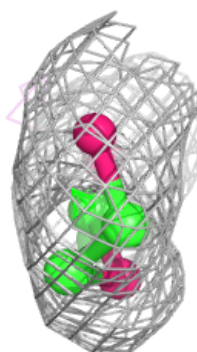
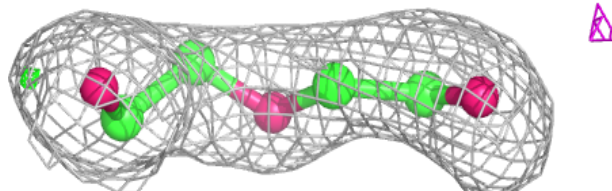
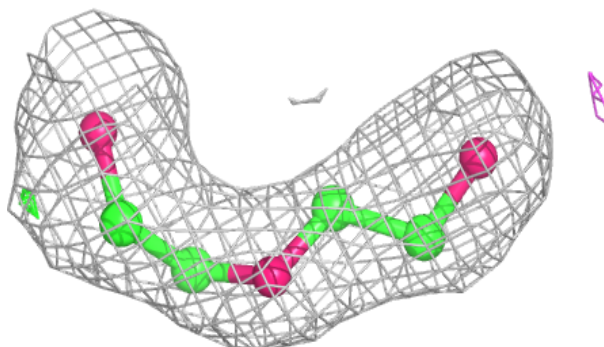


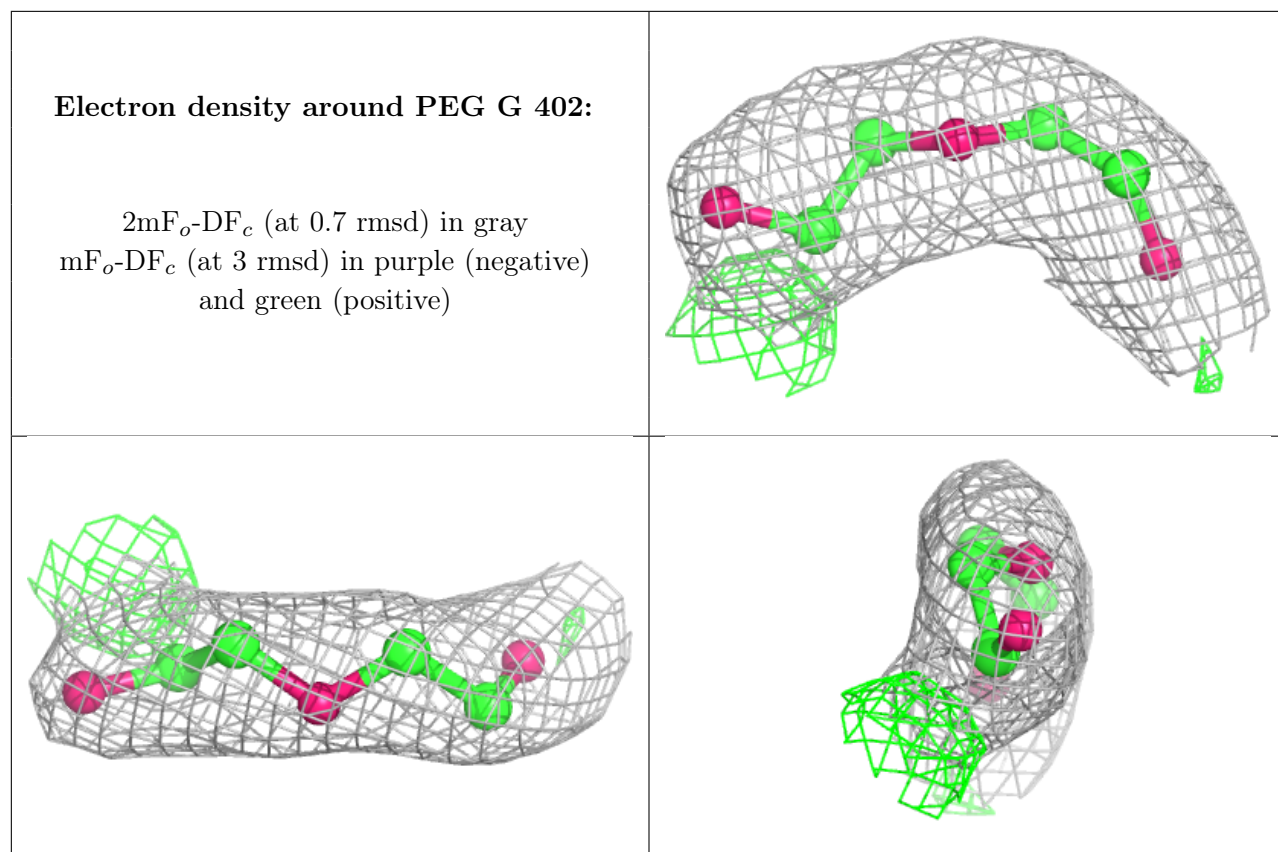
Electron density around PEG E 402:

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

**Electron density around PEG F 402:**

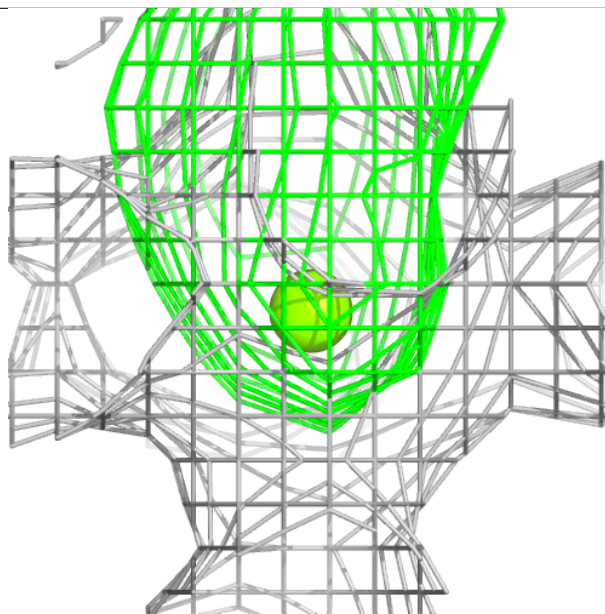
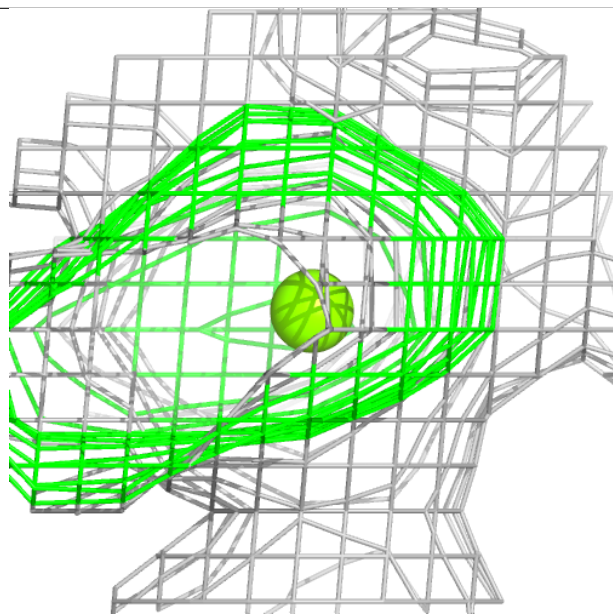
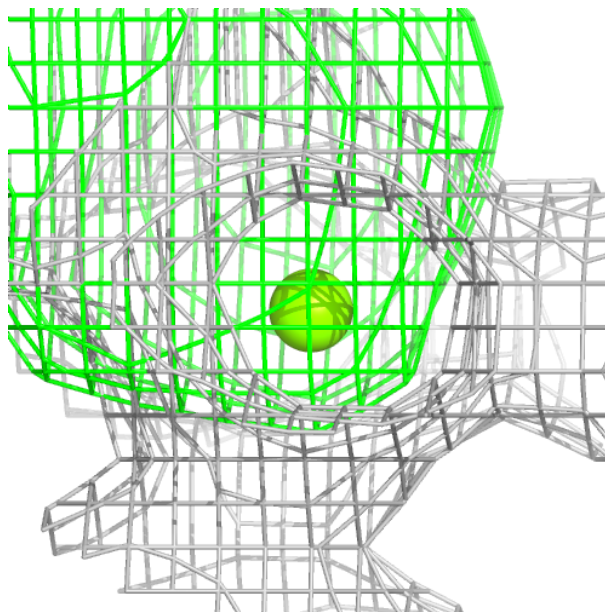
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





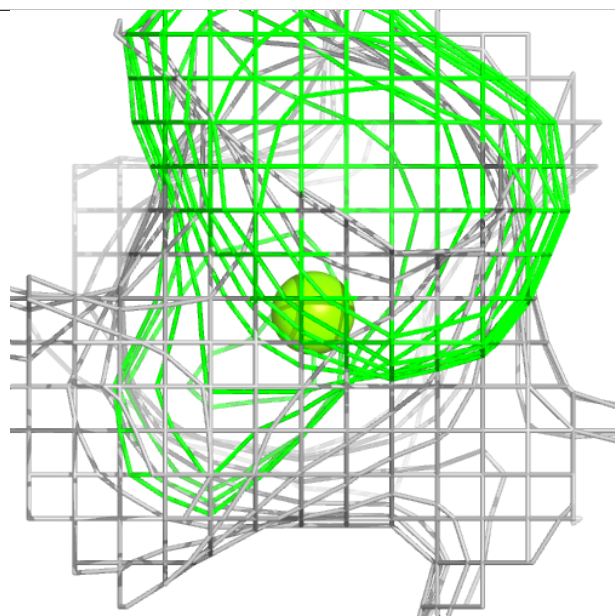
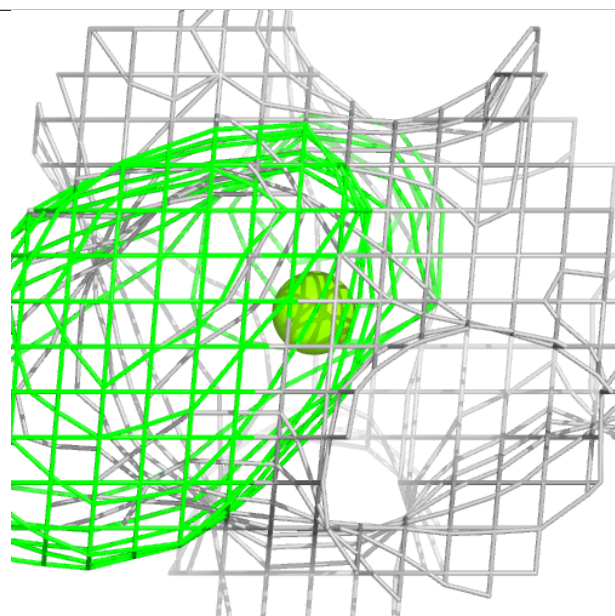
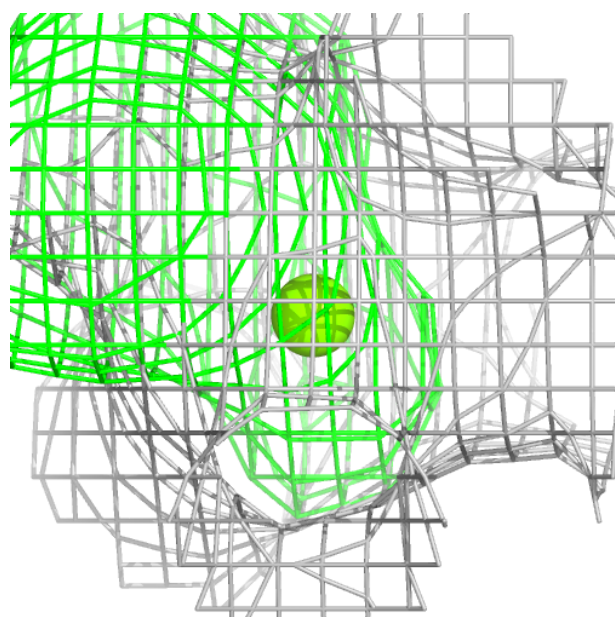
Electron density around MG D 401:

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



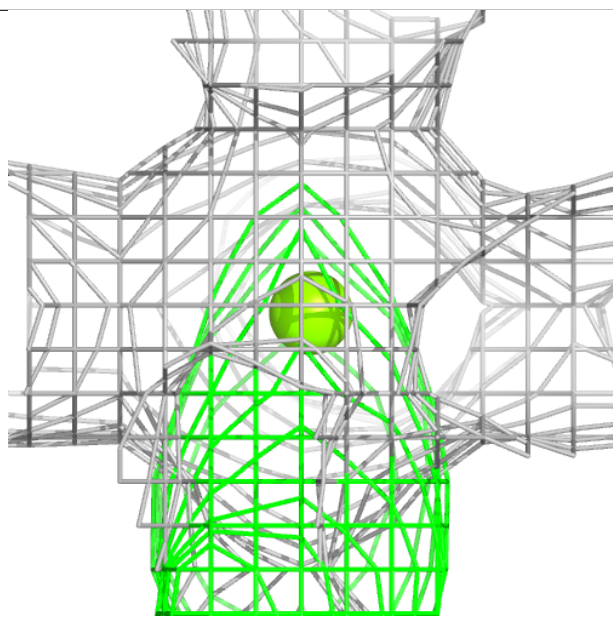
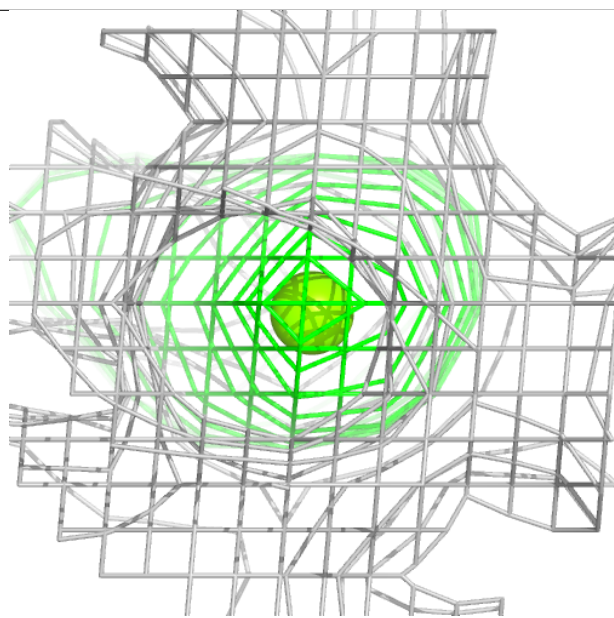
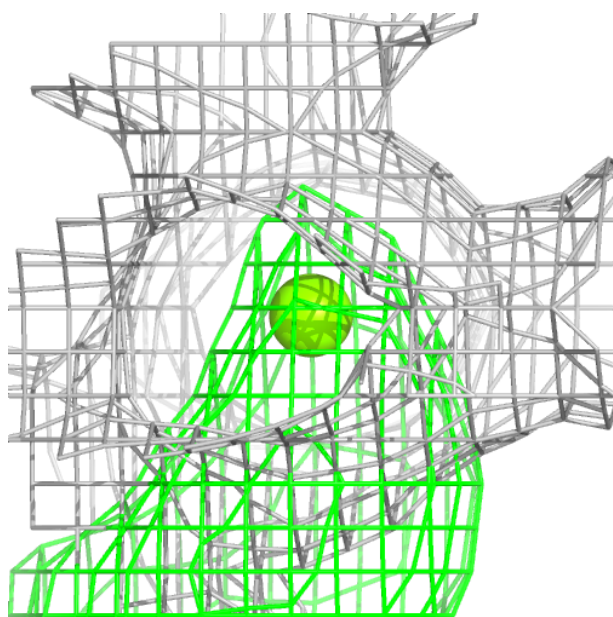
Electron density around MG J 401:

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



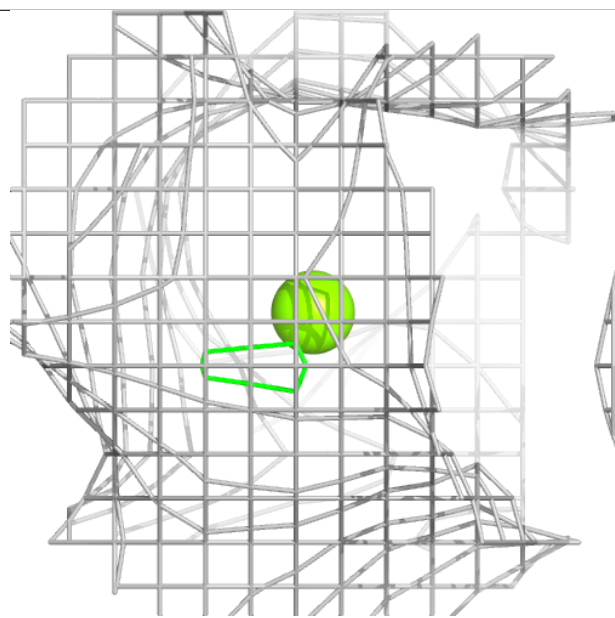
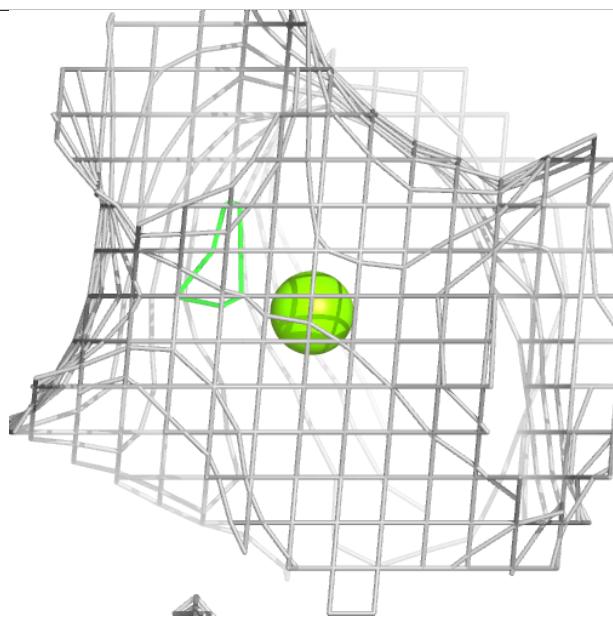
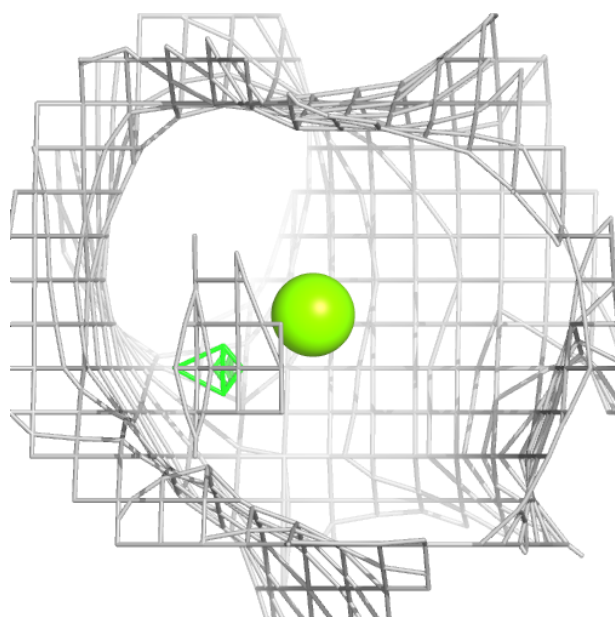
Electron density around MG G 401:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



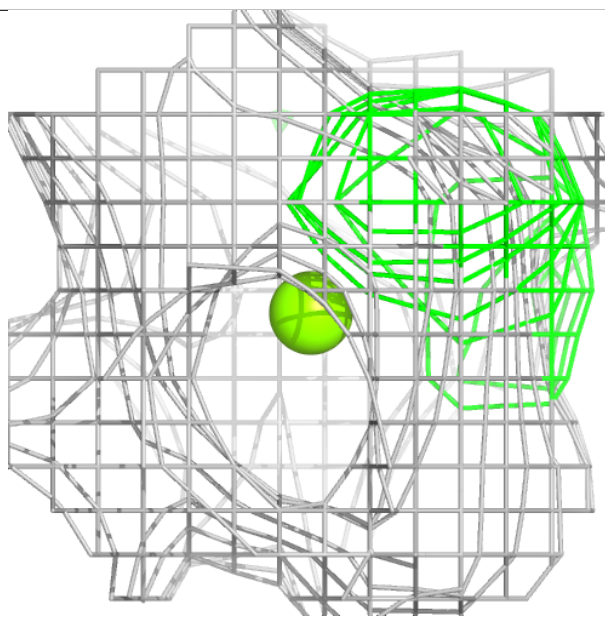
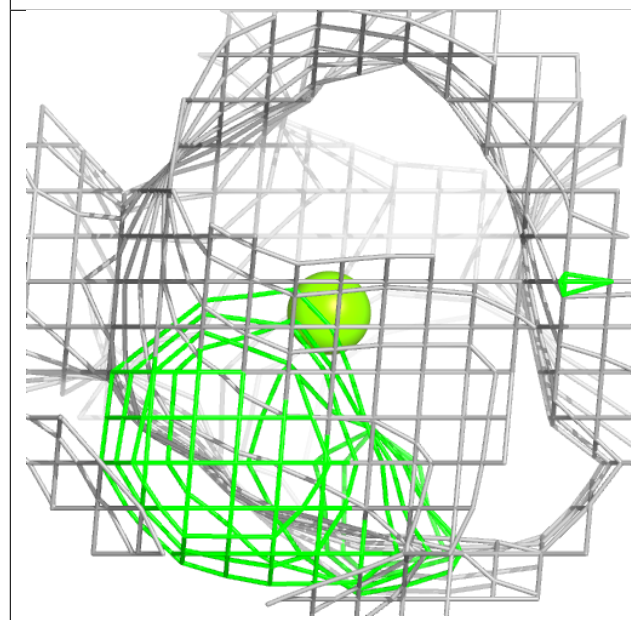
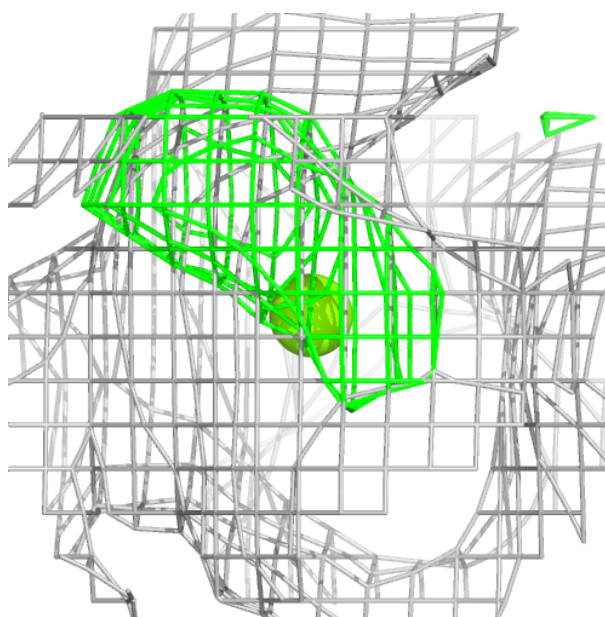
Electron density around MG P 401:

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



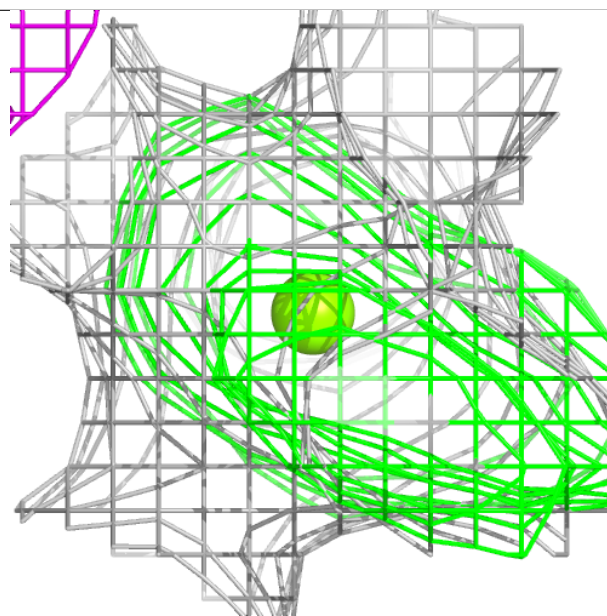
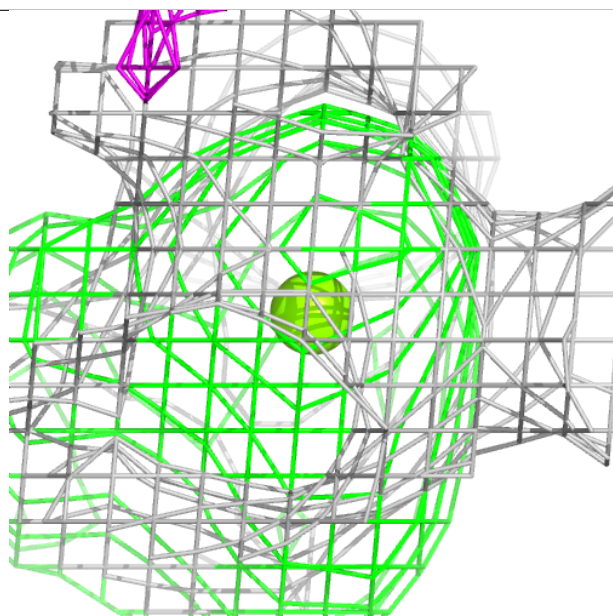
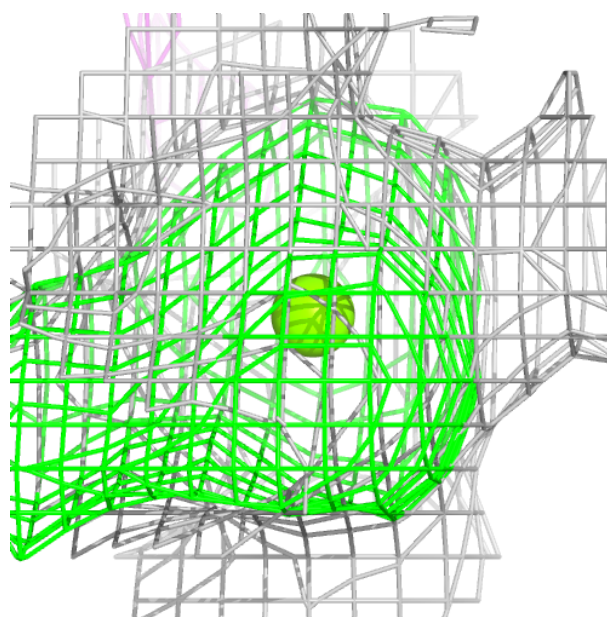
Electron density around MG I 401:

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



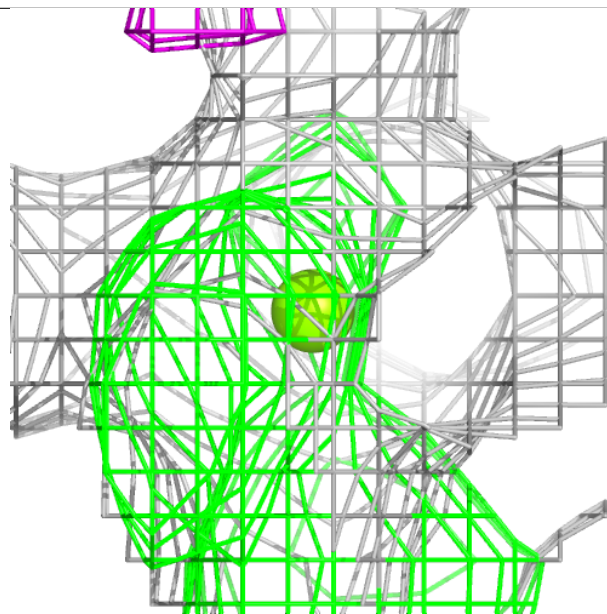
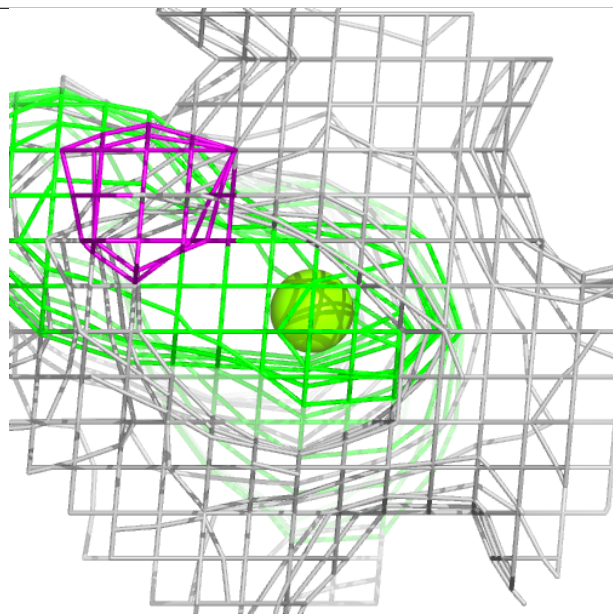
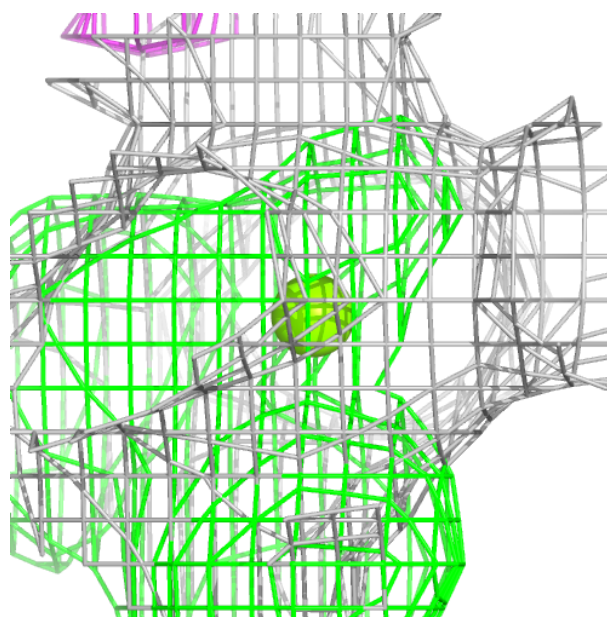
Electron density around MG B 401:

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



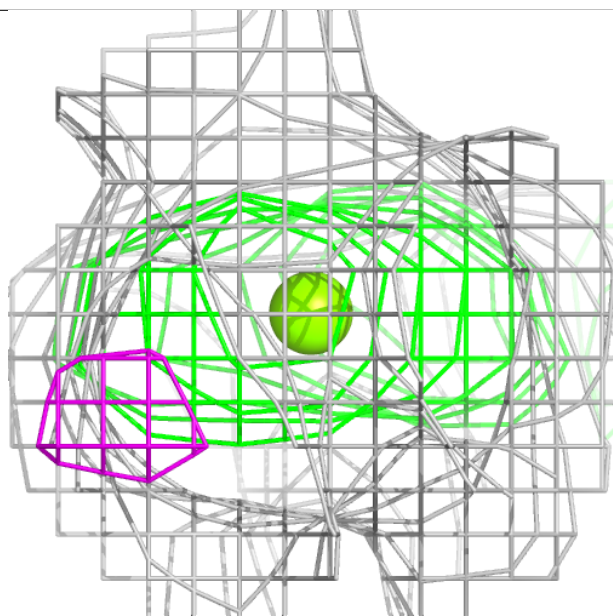
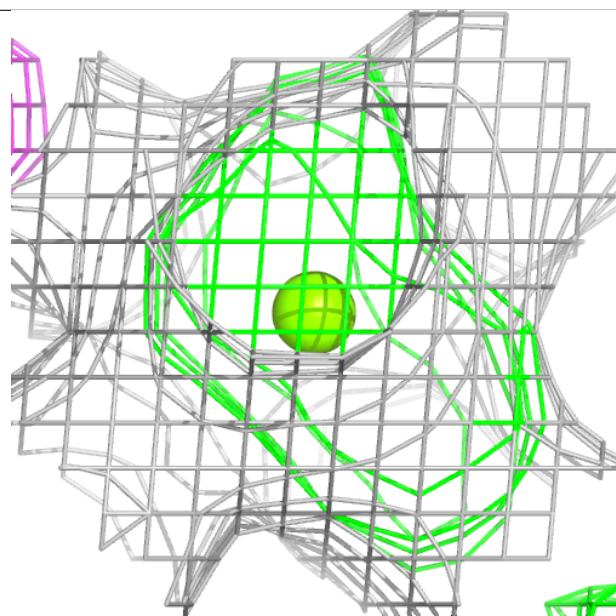
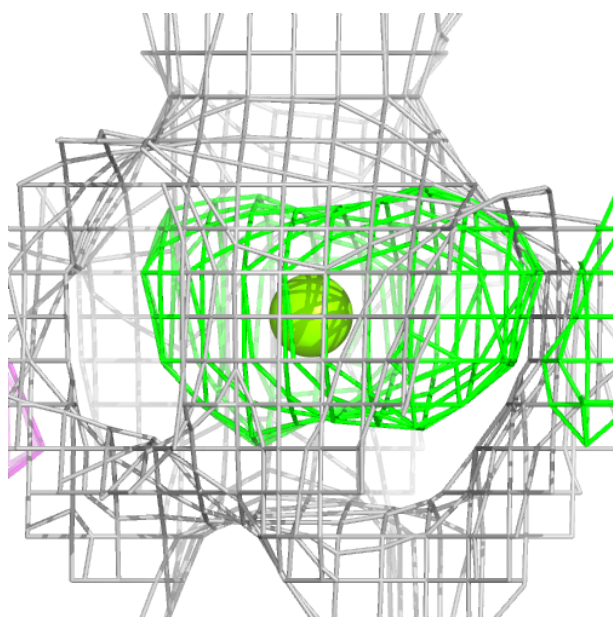
Electron density around MG K 401:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



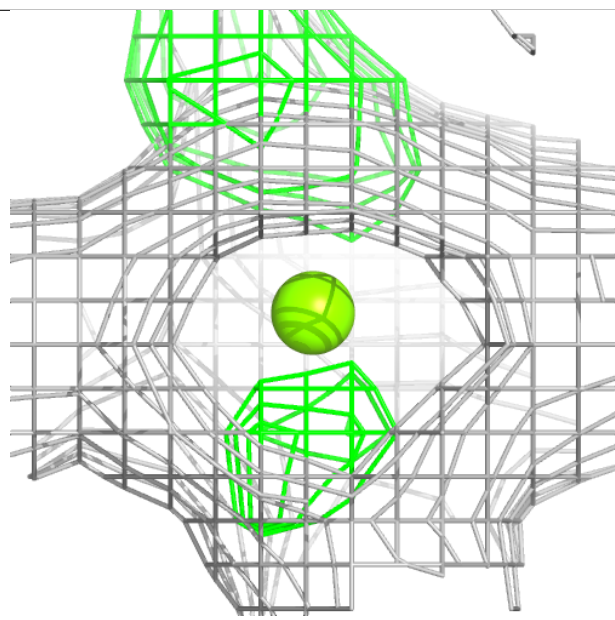
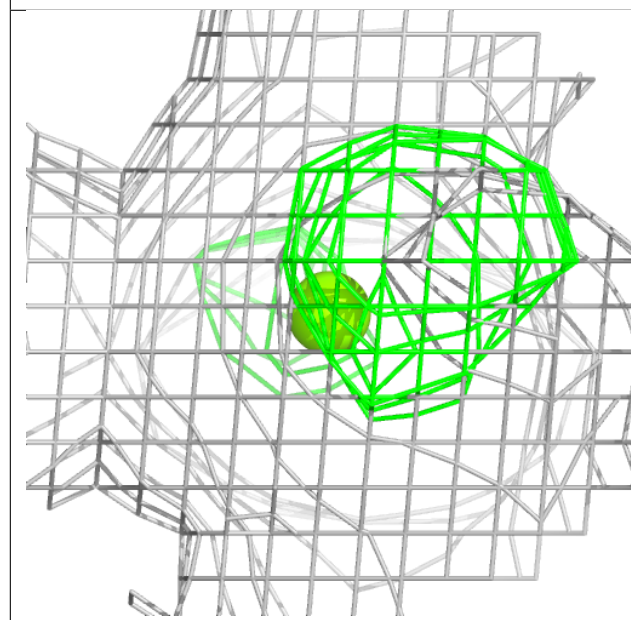
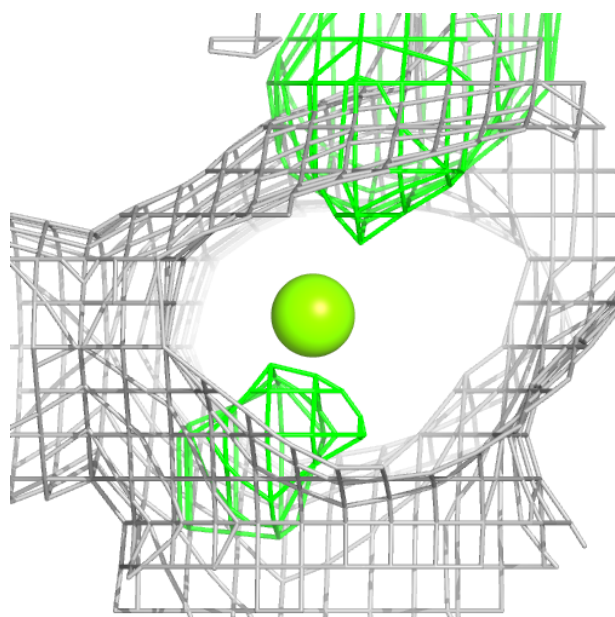
Electron density around MG L 401:

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



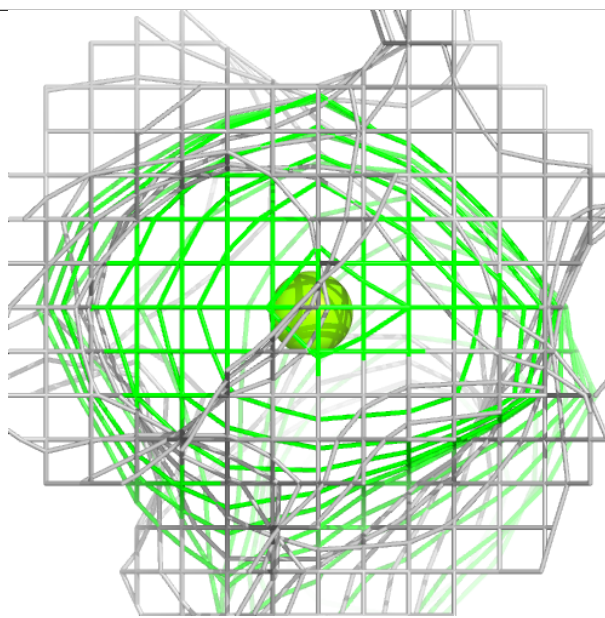
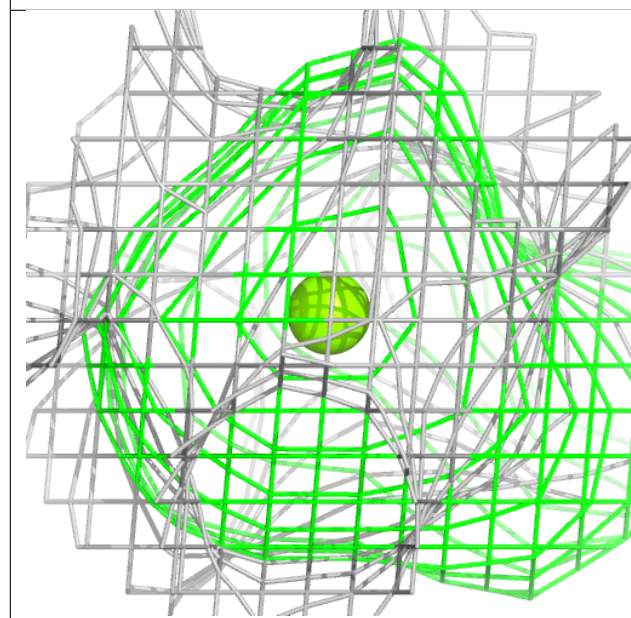
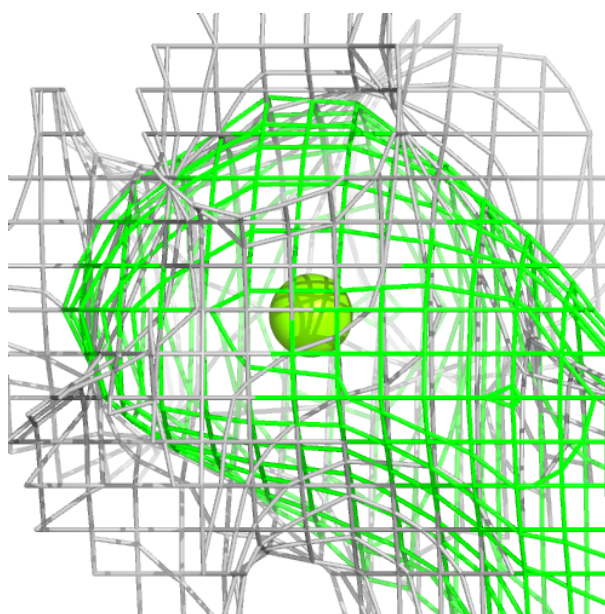
Electron density around MG O 401:

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



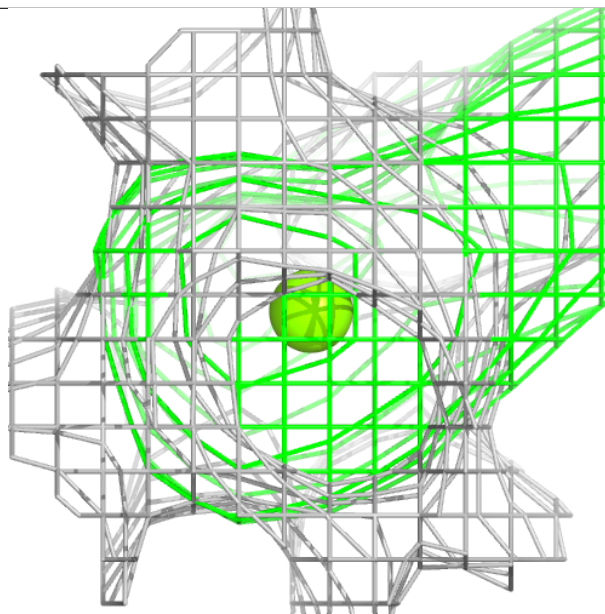
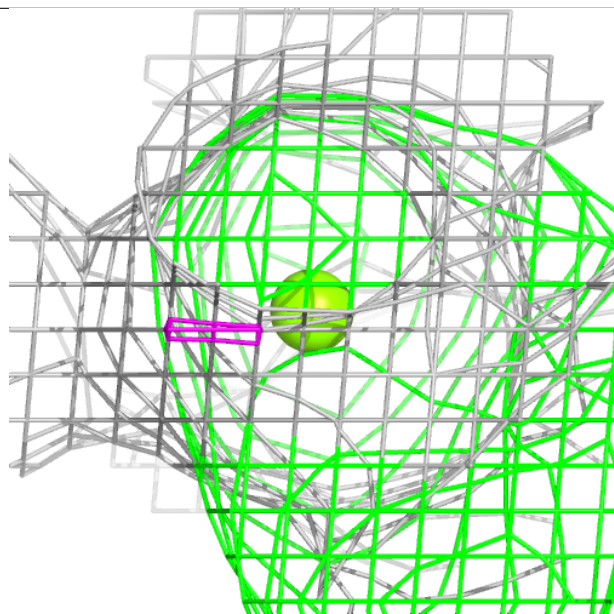
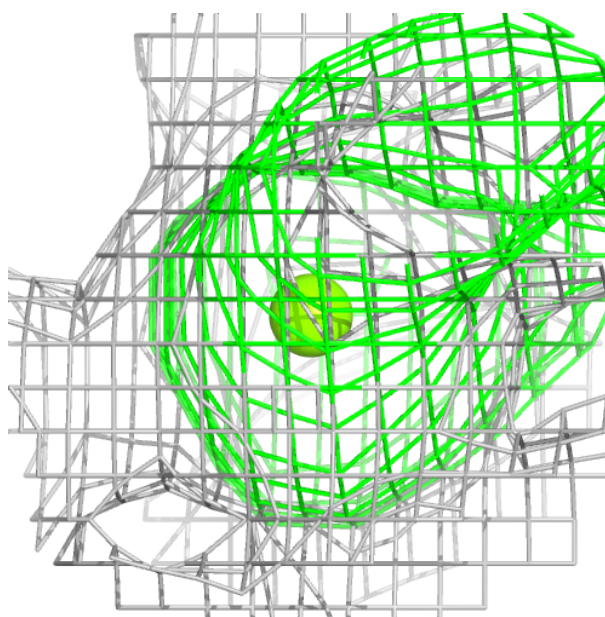
Electron density around MG C 401:

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



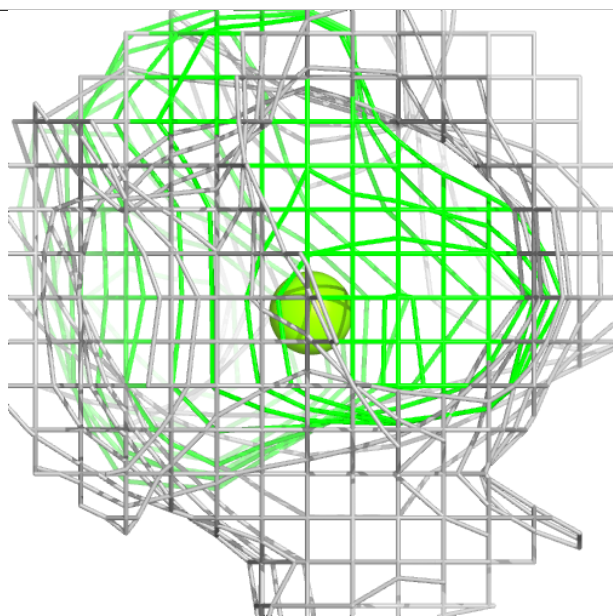
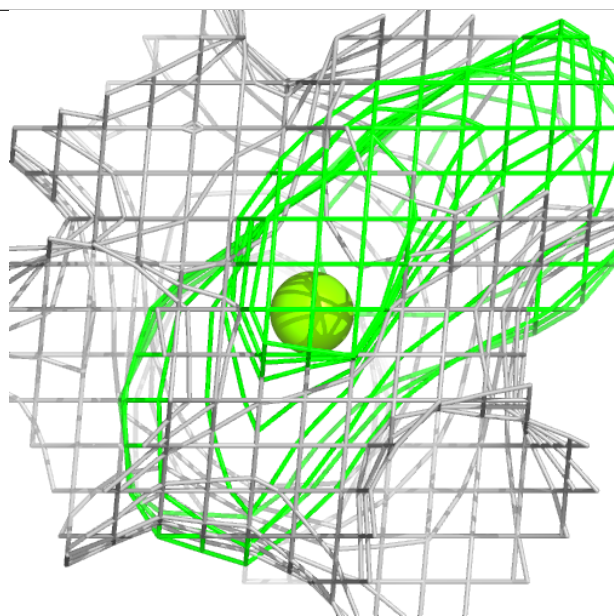
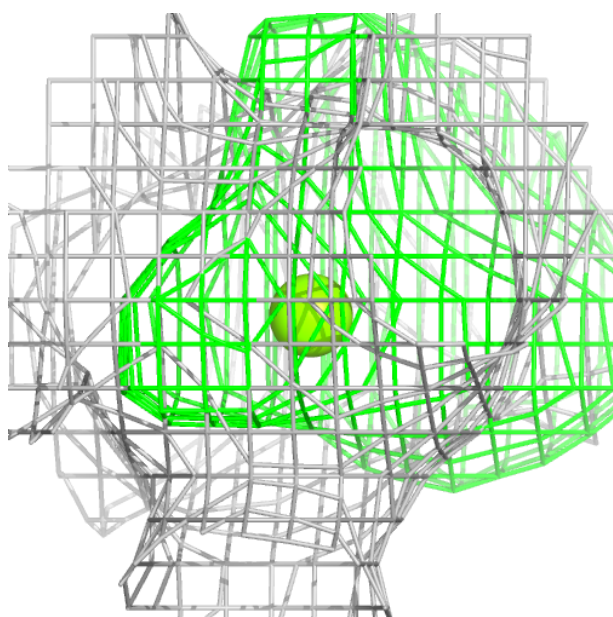
Electron density around MG A 401:

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



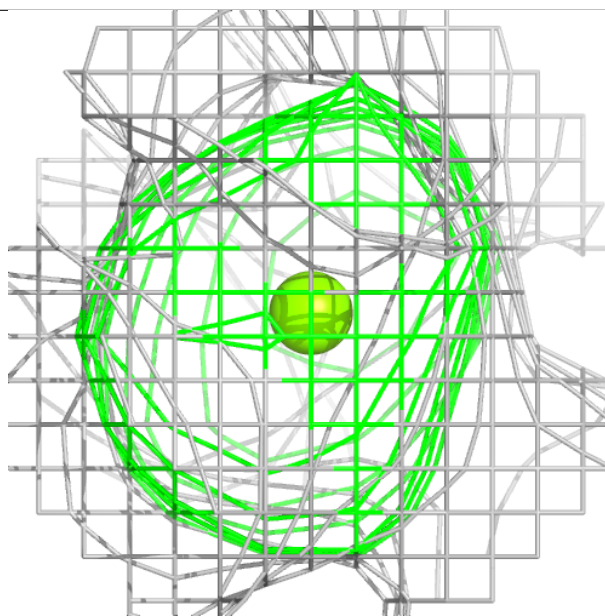
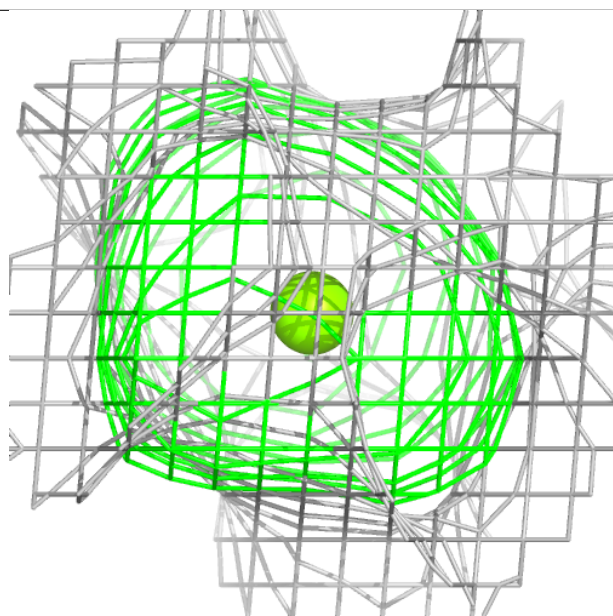
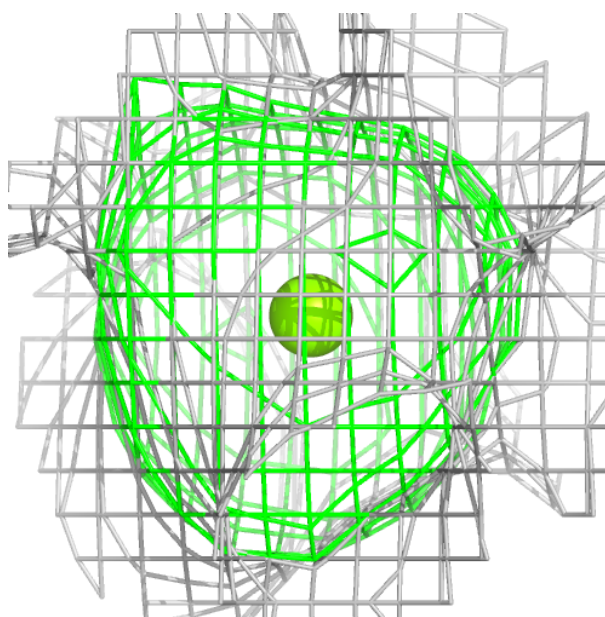
Electron density around MG F 401:

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



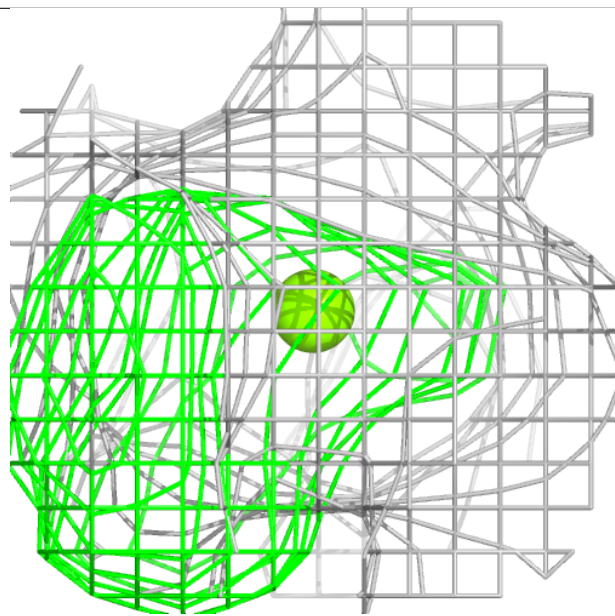
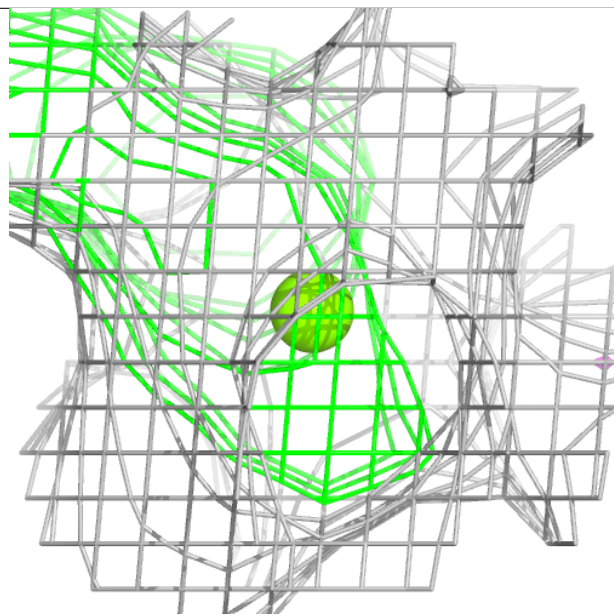
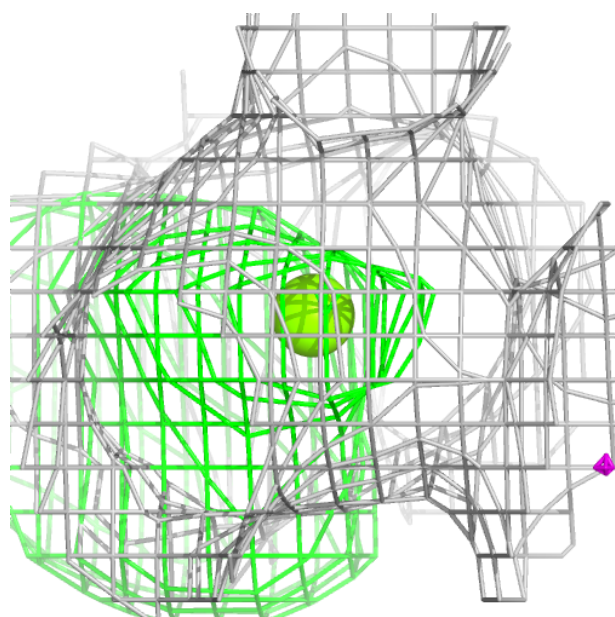
Electron density around MG E 401:

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



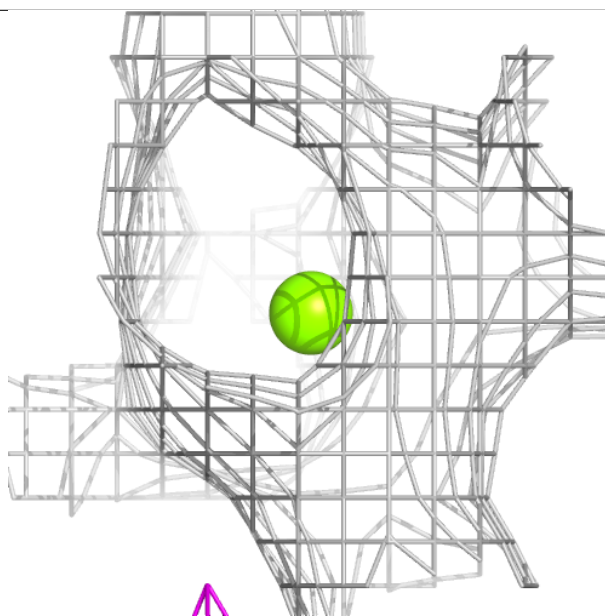
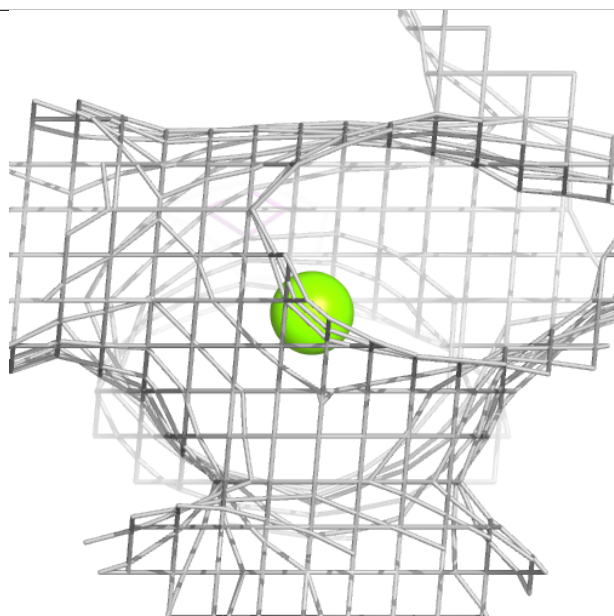
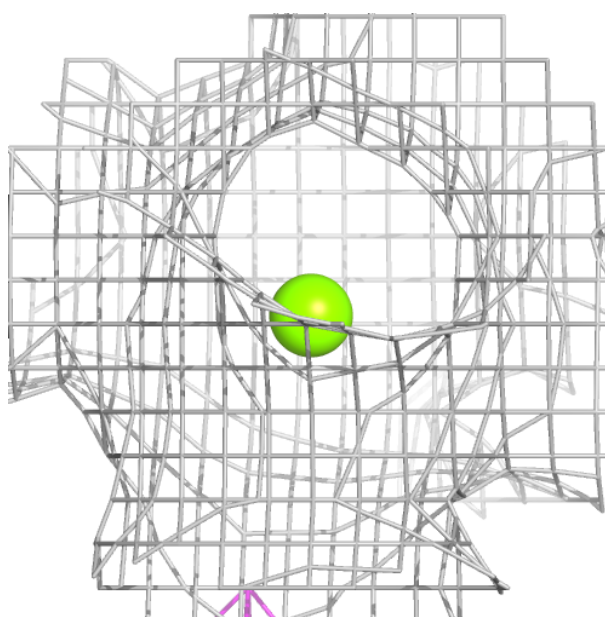
Electron density around MG H 401:

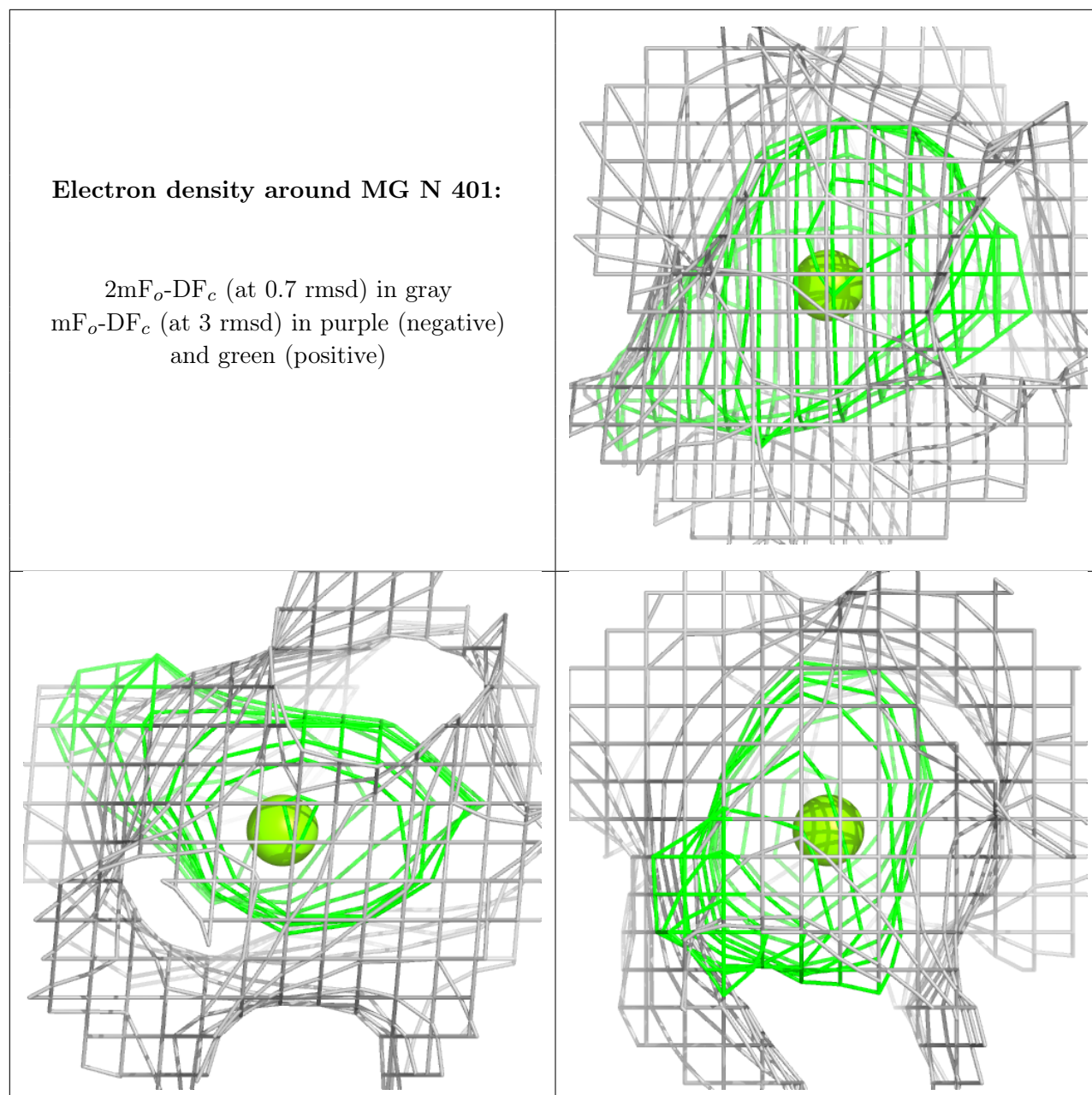
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around MG M 401:

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





6.5 Other polymers ⓘ

There are no such residues in this entry.