



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 03:02 PM UTC

PDB ID : 9HQK / pdb_00009hqn
Title : Bacteroides fragilis lipoprotein XusB bound to ferrichrome
Authors : Silale, A.; van den Berg, B.
Deposited on : 2024-12-16
Resolution : 3.32 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
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
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

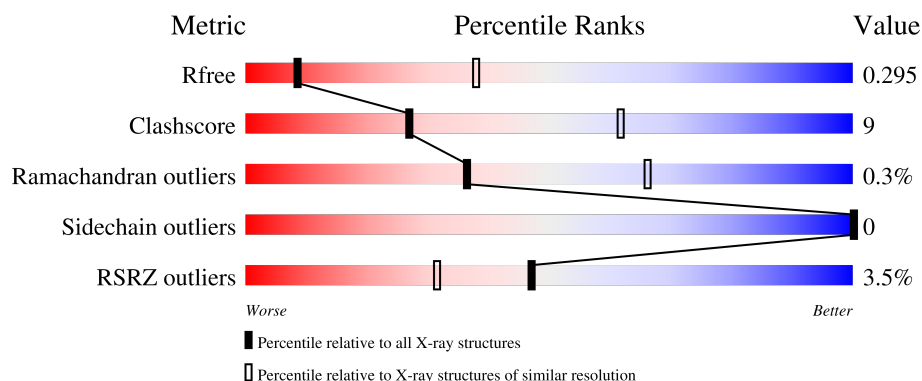
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.32 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	1153 (3.34-3.30)
Clashscore	190562	1193 (3.34-3.30)
Ramachandran outliers	187476	1172 (3.34-3.30)
Sidechain outliers	187428	1171 (3.34-3.30)
RSRZ outliers	180081	1153 (3.34-3.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	414	 2% 74% 16% 9%
1	B	414	 4% 71% 20% 9%
1	C	414	 3% 72% 19% 9%
1	D	414	 5% 72% 19% 8%

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
2	FCE	A	501	X	-	-	-
2	FCE	B	501	X	-	-	-
2	FCE	C	501	X	-	-	-
2	FCE	D	501	X	-	-	-

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11810 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 XusB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	375	Total	C	N	O	S	0	0	0
			2883	1832	470	568	13			
1	B	377	Total	C	N	O	S	0	0	0
			2900	1843	472	572	13			
1	C	376	Total	C	N	O	S	0	0	0
			2892	1837	471	571	13			
1	D	381	Total	C	N	O	S	0	0	0
			2939	1866	482	578	13			

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	407	LEU	-	expression tag	UNP Q5L7E3
A	408	GLU	-	expression tag	UNP Q5L7E3
A	409	HIS	-	expression tag	UNP Q5L7E3
A	410	HIS	-	expression tag	UNP Q5L7E3
A	411	HIS	-	expression tag	UNP Q5L7E3
A	412	HIS	-	expression tag	UNP Q5L7E3
A	413	HIS	-	expression tag	UNP Q5L7E3
A	414	HIS	-	expression tag	UNP Q5L7E3
B	407	LEU	-	expression tag	UNP Q5L7E3
B	408	GLU	-	expression tag	UNP Q5L7E3
B	409	HIS	-	expression tag	UNP Q5L7E3
B	410	HIS	-	expression tag	UNP Q5L7E3
B	411	HIS	-	expression tag	UNP Q5L7E3
B	412	HIS	-	expression tag	UNP Q5L7E3
B	413	HIS	-	expression tag	UNP Q5L7E3
B	414	HIS	-	expression tag	UNP Q5L7E3
C	407	LEU	-	expression tag	UNP Q5L7E3
C	408	GLU	-	expression tag	UNP Q5L7E3
C	409	HIS	-	expression tag	UNP Q5L7E3
C	410	HIS	-	expression tag	UNP Q5L7E3
C	411	HIS	-	expression tag	UNP Q5L7E3

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Chain	Residue	Modelled	Actual	Comment	Reference
C	412	HIS	-	expression tag	UNP Q5L7E3
C	413	HIS	-	expression tag	UNP Q5L7E3
C	414	HIS	-	expression tag	UNP Q5L7E3
D	407	LEU	-	expression tag	UNP Q5L7E3
D	408	GLU	-	expression tag	UNP Q5L7E3
D	409	HIS	-	expression tag	UNP Q5L7E3
D	410	HIS	-	expression tag	UNP Q5L7E3
D	411	HIS	-	expression tag	UNP Q5L7E3
D	412	HIS	-	expression tag	UNP Q5L7E3
D	413	HIS	-	expression tag	UNP Q5L7E3
D	414	HIS	-	expression tag	UNP Q5L7E3

- # FCE

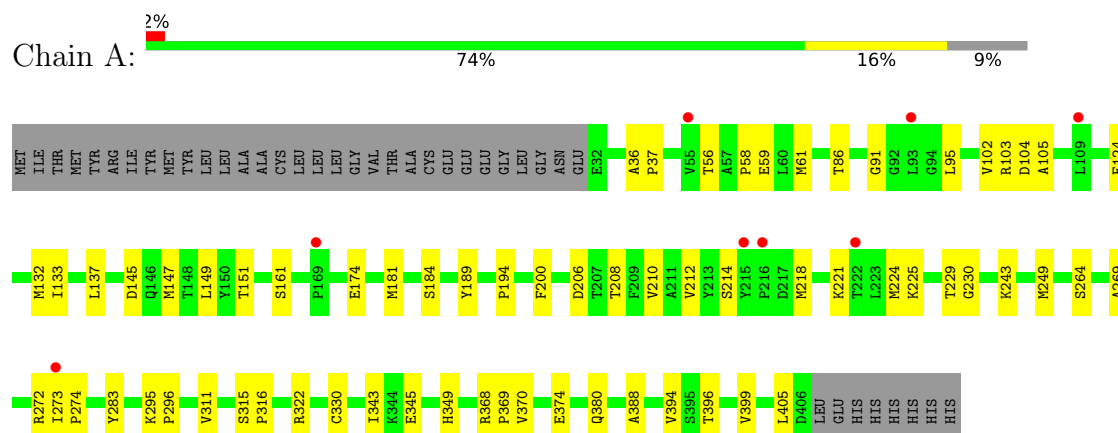
- Molecule 3 is FE (III) ION (CCD ID: FE) (formula: Fe) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total 1	Fe 1	0	0
3	B	1	Total 1	Fe 1	0	0
3	C	1	Total 1	Fe 1	0	0
3	D	1	Total 1	Fe 1	0	0

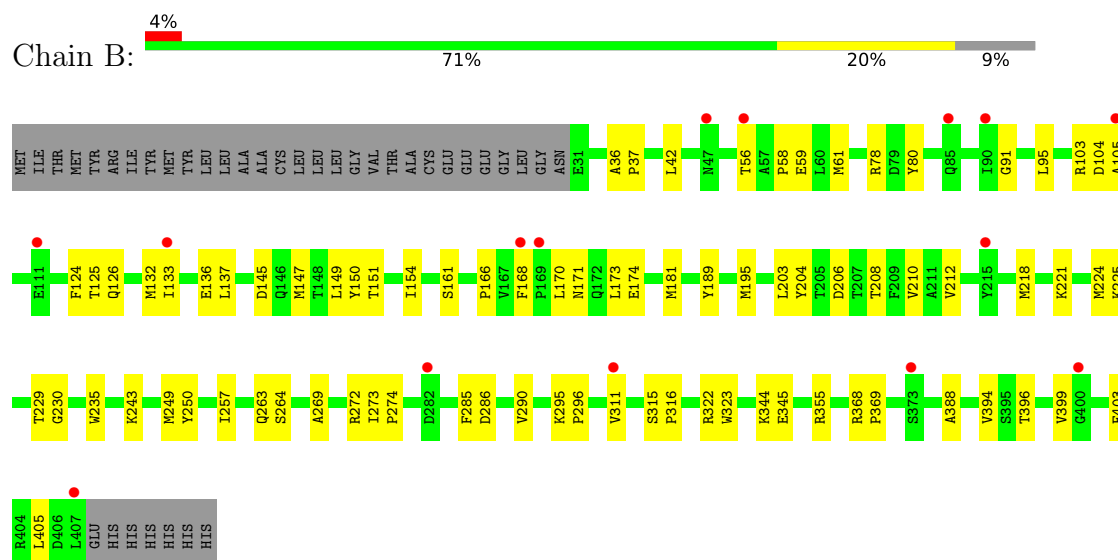
3 Residue-property plots

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.

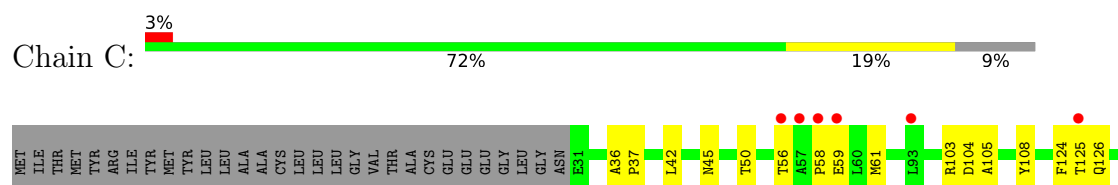
• Molecule 1: XusB

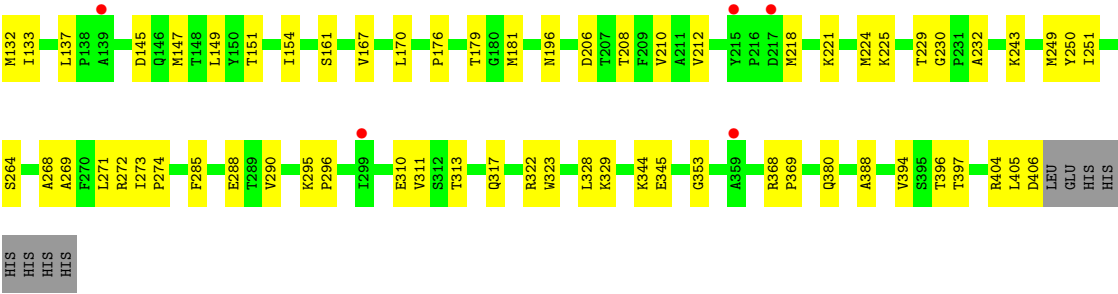


• Molecule 1: XusB

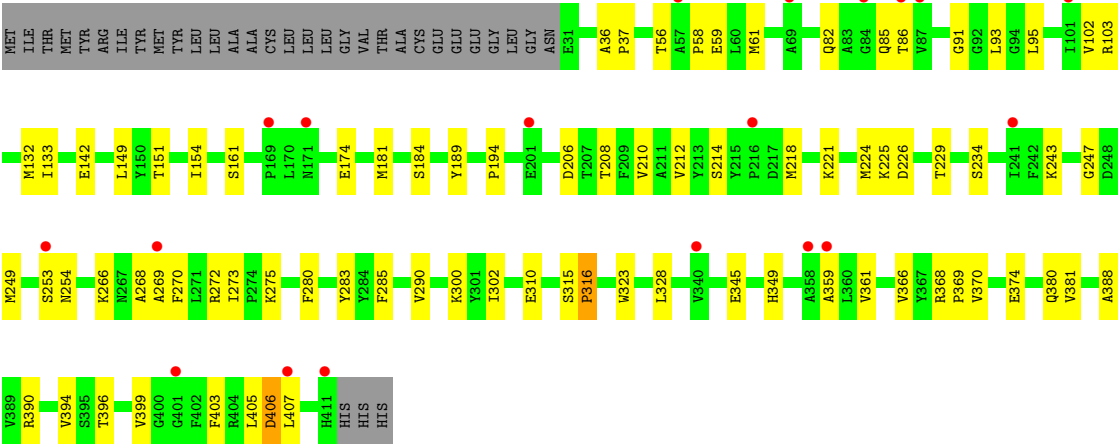


• Molecule 1: XusB





• Molecule 1: XusB



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	57.20Å 155.97Å 89.62Å 90.00° 95.56° 90.00°	Depositor
Resolution (Å)	58.71 – 3.32 58.71 – 3.32	Depositor EDS
% Data completeness (in resolution range)	99.1 (58.71-3.32) 99.1 (58.71-3.32)	Depositor EDS
R_{merge}	0.29	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.69 (at 3.33Å)	Xtriage
Refinement program	PHENIX v1.21	Depositor
R, R_{free}	0.248 , 0.296 0.249 , 0.295	Depositor DCC
R_{free} test set	1148 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å ²)	55.9	Xtriage
Anisotropy	0.334	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 12.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.53$, $\langle L^2 \rangle = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.87	EDS
Total number of atoms	11810	wwPDB-VP
Average B, all atoms (Å ²)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.69% 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: FCE, FE

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	0.10	0/2951	0.31	0/4013
1	B	0.10	0/2968	0.31	0/4036
1	C	0.10	0/2960	0.31	0/4025
1	D	0.10	0/3010	0.30	0/4093
All	All	0.10	0/11889	0.31	0/16167

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2883	0	2773	43	0
1	B	2900	0	2790	53	0
1	C	2892	0	2779	51	0
1	D	2939	0	2817	53	0
2	A	48	0	42	5	0
2	B	48	0	42	6	0
2	C	48	0	42	7	0
2	D	48	0	42	3	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
All	All	11810	0	11327	212	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 9.

All (212) 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:A:369:PRO:HG2	1:A:399:VAL:HG21	1.68	0.75
1:B:369:PRO:HG2	1:B:399:VAL:HG21	1.67	0.74
1:B:212:VAL:HG23	1:B:221:LYS:HB2	1.71	0.72
1:D:229:THR:HG21	1:D:269:ALA:HB3	1.71	0.72
1:B:229:THR:HG21	1:B:269:ALA:HB3	1.74	0.70
2:A:501:FCE:N4	2:A:501:FCE:O14	2.25	0.70
1:A:229:THR:HG21	1:A:269:ALA:HB3	1.75	0.69
1:C:229:THR:HG21	1:C:269:ALA:HB3	1.76	0.68
1:C:212:VAL:HG13	1:C:221:LYS:HB3	1.76	0.68
1:C:368:ARG:HH11	1:C:369:PRO:HD2	1.59	0.68
1:D:37:PRO:HD2	1:D:58:PRO:HA	1.75	0.68
1:A:212:VAL:HG23	1:A:221:LYS:HB2	1.75	0.67
1:D:369:PRO:HG2	1:D:399:VAL:HG21	1.77	0.66
1:D:234:SER:HB2	1:D:254:ASN:HD21	1.61	0.66
1:D:214:SER:HB3	1:D:221:LYS:HE3	1.78	0.66
1:A:368:ARG:HH11	1:A:369:PRO:HD2	1.61	0.66
1:B:249:MET:HB2	1:B:273:ILE:HG23	1.79	0.64
1:D:253:SER:O	1:D:268:ALA:HA	1.97	0.64
1:D:36:ALA:HB3	1:D:56:THR:HB	1.80	0.64
1:C:249:MET:HB2	1:C:273:ILE:HG23	1.79	0.62
1:D:345:GLU:HB2	1:D:388:ALA:HB3	1.81	0.62
1:A:249:MET:HB2	1:A:273:ILE:HG23	1.80	0.62
1:C:353:GLY:HA3	2:C:501:FCE:H1	1.64	0.62
1:C:133:ILE:HG23	1:C:181:MET:HE3	1.82	0.62
1:C:210:VAL:HG13	1:C:224:MET:HB2	1.82	0.62
1:B:37:PRO:HD2	1:B:58:PRO:HA	1.81	0.61
1:D:310:GLU:HB3	1:D:328:LEU:HD13	1.80	0.61
2:C:501:FCE:H18	2:C:501:FCE:H26	1.81	0.61
1:C:103:ARG:HH21	1:C:405:LEU:HB2	1.65	0.61
1:D:323:TRP:HB3	2:D:501:FCE:H22	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:243:LYS:HB3	1:B:249:MET:HG2	1.82	0.60
1:B:151:THR:HB	1:B:161:SER:HB3	1.83	0.60
1:B:91:GLY:HA3	1:B:95:LEU:HB3	1.82	0.60
1:D:368:ARG:HH11	1:D:369:PRO:HD2	1.67	0.60
1:C:37:PRO:HD2	1:C:58:PRO:HA	1.84	0.59
1:C:323:TRP:HB3	2:C:501:FCE:H22	1.83	0.59
1:B:78:ARG:O	1:B:355:ARG:NH2	2.36	0.59
1:A:133:ILE:HG23	1:A:181:MET:HE3	1.84	0.59
1:B:59:GLU:HG2	1:B:61:MET:H	1.66	0.58
2:B:501:FCE:H18	2:B:501:FCE:H26	1.84	0.58
1:C:125:THR:HG22	1:C:126:GLN:H	1.68	0.58
1:B:264:SER:OG	1:B:295:LYS:NZ	2.37	0.58
1:D:249:MET:HB2	1:D:273:ILE:HG23	1.85	0.57
2:C:501:FCE:H4	2:C:501:FCE:H10	1.70	0.57
1:D:208:THR:O	1:D:225:LYS:HA	2.05	0.57
1:C:243:LYS:HB3	1:C:249:MET:HG2	1.86	0.57
1:B:103:ARG:HH21	1:B:405:LEU:HB2	1.70	0.57
1:D:61:MET:HE1	1:D:380:GLN:HB2	1.86	0.57
1:A:264:SER:OG	1:A:295:LYS:NZ	2.39	0.56
1:C:264:SER:OG	1:C:295:LYS:NZ	2.38	0.56
1:D:86:THR:HG22	1:D:102:VAL:HG12	1.87	0.56
1:A:208:THR:OG1	1:A:230:GLY:O	2.16	0.56
1:A:214:SER:HB3	1:A:221:LYS:HE3	1.86	0.56
1:C:208:THR:OG1	1:C:230:GLY:O	2.19	0.56
1:A:37:PRO:HD2	1:A:58:PRO:HA	1.87	0.56
1:C:167:VAL:HG12	1:C:170:LEU:HB2	1.87	0.55
1:B:368:ARG:HH11	1:B:369:PRO:HD2	1.71	0.55
1:D:374:GLU:OE1	1:D:390:ARG:NH1	2.36	0.55
1:B:36:ALA:HB3	1:B:56:THR:HB	1.89	0.54
1:C:206:ASP:OD1	1:C:206:ASP:N	2.40	0.54
1:D:243:LYS:HB3	1:D:249:MET:HG2	1.88	0.54
2:B:501:FCE:H4	2:B:501:FCE:H10	1.72	0.54
1:C:296:PRO:HA	1:C:311:VAL:HA	1.90	0.54
1:D:247:GLY:HA3	1:D:275:LYS:HD2	1.90	0.54
1:B:206:ASP:N	1:B:206:ASP:OD1	2.41	0.54
1:B:124:PHE:CE2	1:B:132:MET:HE3	2.43	0.54
1:B:133:ILE:HG23	1:B:181:MET:HE3	1.88	0.54
1:A:91:GLY:HA3	1:A:95:LEU:HB3	1.89	0.53
2:A:501:FCE:H10	2:A:501:FCE:H4	1.72	0.53
1:D:210:VAL:HG13	1:D:224:MET:HB2	1.89	0.53
1:A:104:ASP:OD1	1:A:105:ALA:N	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:501:FCE:H26	2:A:501:FCE:H18	1.90	0.53
1:B:210:VAL:HG13	1:B:224:MET:HB2	1.91	0.52
1:C:61:MET:HE1	1:C:380:GLN:HB2	1.91	0.52
1:A:174:GLU:HB3	1:A:194:PRO:HB2	1.92	0.52
1:A:59:GLU:HG2	1:A:61:MET:H	1.75	0.52
1:A:200:PHE:O	1:A:322:ARG:NH2	2.26	0.52
1:A:243:LYS:HB3	1:A:249:MET:HG2	1.92	0.52
1:A:315:SER:OG	1:A:316:PRO:HD3	2.10	0.52
1:B:104:ASP:OD1	1:B:105:ALA:N	2.42	0.51
1:A:206:ASP:OD1	1:A:206:ASP:N	2.42	0.51
1:A:210:VAL:HG13	1:A:224:MET:HB2	1.92	0.51
1:A:103:ARG:HH21	1:A:405:LEU:HB2	1.75	0.51
1:C:210:VAL:HG13	1:C:224:MET:HE3	1.93	0.51
1:B:132:MET:HG2	1:B:154:ILE:HG12	1.93	0.51
1:B:203:LEU:O	1:B:263:GLN:NE2	2.44	0.51
1:A:61:MET:HE1	1:A:380:GLN:HB2	1.94	0.50
1:A:374:GLU:OE2	1:C:196:ASN:ND2	2.41	0.50
1:D:151:THR:HB	1:D:161:SER:HB3	1.93	0.50
1:B:136:GLU:OE1	1:B:150:TYR:OH	2.27	0.50
1:B:42:LEU:HB3	1:B:396:THR:HB	1.92	0.50
1:A:86:THR:HG22	1:A:102:VAL:HG12	1.94	0.50
1:A:124:PHE:CE2	1:A:132:MET:HE3	2.46	0.49
1:B:210:VAL:HG13	1:B:224:MET:HE3	1.94	0.49
1:C:124:PHE:CE2	1:C:132:MET:HE3	2.46	0.49
1:C:268:ALA:HB3	1:C:288:GLU:HG3	1.93	0.49
2:B:501:FCE:O6	2:B:501:FCE:O8	2.30	0.49
1:C:170:LEU:HB3	1:C:176:PRO:HG3	1.94	0.49
1:A:210:VAL:HG13	1:A:224:MET:HE3	1.94	0.49
1:B:125:THR:HG21	1:B:181:MET:O	2.12	0.49
1:B:345:GLU:HB2	1:B:388:ALA:HB3	1.95	0.49
1:A:296:PRO:HA	1:A:311:VAL:HA	1.94	0.49
1:D:91:GLY:HA3	1:D:95:LEU:HB3	1.95	0.49
1:A:330:CYS:HB3	1:A:343:ILE:HD12	1.93	0.49
1:B:133:ILE:HG13	1:B:149:LEU:HD11	1.94	0.49
1:C:104:ASP:OD1	1:C:105:ALA:N	2.46	0.49
1:A:349:HIS:CG	1:A:370:VAL:HG13	2.48	0.48
1:C:133:ILE:HG13	1:C:149:LEU:HD11	1.95	0.48
1:D:212:VAL:HG23	1:D:221:LYS:HB2	1.95	0.48
1:B:315:SER:HB3	1:B:316:PRO:HD3	1.95	0.48
1:A:36:ALA:HB3	1:A:56:THR:HB	1.94	0.48
1:B:208:THR:O	1:B:225:LYS:HA	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:394:VAL:HG22	1:B:396:THR:HG22	1.96	0.48
1:A:272:ARG:HH21	1:A:283:TYR:HB2	1.78	0.47
1:D:103:ARG:HH21	1:D:405:LEU:HB2	1.79	0.47
1:C:137:LEU:HD13	1:C:147:MET:HB3	1.96	0.47
1:C:273:ILE:HD12	1:C:274:PRO:HD2	1.96	0.47
1:D:394:VAL:HG22	1:D:396:THR:HG22	1.95	0.47
1:D:206:ASP:OD1	1:D:206:ASP:N	2.45	0.47
1:A:133:ILE:HG13	1:A:149:LEU:HD11	1.95	0.47
1:D:93:LEU:HD21	2:D:501:FCE:O3	2.15	0.47
1:C:145:ASP:OD1	1:C:145:ASP:N	2.47	0.47
1:B:355:ARG:NH1	2:B:501:FCE:O5	2.41	0.46
1:C:36:ALA:HB3	1:C:56:THR:HB	1.97	0.46
1:B:137:LEU:HD13	1:B:147:MET:HB3	1.97	0.46
1:B:273:ILE:HD12	1:B:274:PRO:HD2	1.97	0.46
1:D:82:GLN:HB2	1:D:403:PHE:CG	2.50	0.46
1:A:345:GLU:HB2	1:A:388:ALA:HB3	1.97	0.46
1:C:149:LEU:HD22	1:C:218:MET:SD	2.56	0.46
1:A:137:LEU:HD13	1:A:147:MET:HB3	1.98	0.46
1:C:125:THR:OG1	1:C:181:MET:O	2.21	0.46
1:B:285:PHE:HE1	1:B:290:VAL:HG11	1.81	0.45
1:C:285:PHE:CE1	1:C:290:VAL:HG11	2.52	0.45
1:D:210:VAL:HG13	1:D:224:MET:HE3	1.98	0.45
1:D:315:SER:HB3	1:D:316:PRO:HD3	1.97	0.45
1:D:366:VAL:HB	1:D:381:VAL:HB	1.98	0.45
1:A:151:THR:HB	1:A:161:SER:HB3	1.99	0.45
2:C:501:FCE:H10	2:C:501:FCE:N3	2.32	0.45
2:C:501:FCE:O8	2:C:501:FCE:O3	2.35	0.45
1:C:59:GLU:HG2	1:C:61:MET:H	1.82	0.45
1:D:302:ILE:HG22	1:D:361:VAL:HG22	1.98	0.45
1:A:273:ILE:HD12	1:A:274:PRO:HD2	1.98	0.44
1:B:323:TRP:HB3	2:B:501:FCE:H22	1.97	0.44
1:D:103:ARG:NH2	1:D:405:LEU:HB2	2.32	0.44
1:B:80:TYR:HB3	1:B:403:PHE:HE2	1.83	0.44
1:C:404:ARG:NH1	1:C:406:ASP:OD2	2.51	0.44
1:A:145:ASP:OD1	1:A:145:ASP:N	2.50	0.44
1:D:149:LEU:HD22	1:D:218:MET:SD	2.58	0.44
1:D:406:ASP:OD1	1:D:406:ASP:N	2.49	0.44
1:A:208:THR:O	1:A:225:LYS:HA	2.19	0.43
1:B:250:TYR:CZ	1:B:272:ARG:HD3	2.54	0.43
1:C:42:LEU:HB3	1:C:396:THR:HB	2.00	0.43
1:C:45:ASN:HA	1:C:50:THR:HA	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:310:GLU:HB3	1:C:328:LEU:HD13	1.99	0.43
1:C:345:GLU:HB2	1:C:388:ALA:HB3	1.99	0.43
1:D:142:GLU:H	1:D:142:GLU:CD	2.27	0.43
2:A:501:FCE:H26	2:A:501:FCE:C17	2.48	0.43
1:B:126:GLN:HB3	1:B:132:MET:SD	2.58	0.43
1:B:133:ILE:HD12	1:B:133:ILE:HA	1.88	0.43
1:B:166:PRO:HG2	1:C:322:ARG:HB3	2.00	0.43
1:D:368:ARG:NH1	1:D:369:PRO:O	2.51	0.43
1:B:189:TYR:CD2	1:B:212:VAL:HG12	2.54	0.43
1:B:195:MET:HE1	1:B:235:TRP:CD1	2.54	0.43
1:B:208:THR:OG1	1:B:230:GLY:O	2.21	0.43
1:A:189:TYR:CZ	1:A:249:MET:HE1	2.54	0.43
1:D:133:ILE:HG23	1:D:181:MET:HE3	2.01	0.43
1:B:145:ASP:OD1	1:B:145:ASP:N	2.50	0.42
1:B:344:LYS:HE2	1:B:344:LYS:HB2	1.80	0.42
1:D:243:LYS:HA	1:D:249:MET:HA	2.01	0.42
1:C:250:TYR:CZ	1:C:272:ARG:HD3	2.54	0.42
1:C:313:THR:HG22	1:C:329:LYS:HE2	2.00	0.42
1:C:394:VAL:HG22	1:C:396:THR:HG22	2.01	0.42
1:C:132:MET:HG2	1:C:154:ILE:HG12	2.00	0.42
1:A:345:GLU:N	1:A:345:GLU:OE1	2.52	0.42
1:C:251:ILE:HD11	1:C:271:LEU:HD12	2.01	0.42
1:D:270:PHE:HB2	1:D:285:PHE:HB3	2.01	0.42
2:A:501:FCE:H10	2:A:501:FCE:N3	2.34	0.42
1:B:257:ILE:O	1:B:322:ARG:HG3	2.20	0.42
1:C:151:THR:HB	1:C:161:SER:HB3	2.02	0.42
1:D:189:TYR:CZ	1:D:249:MET:HE1	2.54	0.42
1:D:132:MET:HG2	1:D:154:ILE:HG12	2.01	0.42
1:D:349:HIS:CG	1:D:370:VAL:HG13	2.55	0.42
2:B:501:FCE:H10	2:B:501:FCE:N3	2.35	0.42
1:A:380:GLN:O	1:A:388:ALA:HA	2.20	0.41
1:B:171:ASN:HD21	2:C:501:FCE:H23	1.84	0.41
1:D:59:GLU:HG2	1:D:61:MET:H	1.84	0.41
1:B:296:PRO:HA	1:B:311:VAL:HA	2.03	0.41
1:C:45:ASN:OD1	1:C:397:THR:HG21	2.20	0.41
1:D:133:ILE:HG13	1:D:149:LEU:HD11	2.01	0.41
1:D:226:ASP:HB2	1:D:280:PHE:CD2	2.56	0.41
1:D:272:ARG:HB3	1:D:283:TYR:HB3	2.03	0.41
1:A:184:SER:HB3	1:A:189:TYR:CE1	2.55	0.41
1:B:171:ASN:HA	1:B:174:GLU:O	2.21	0.41
1:D:85:GLN:HA	1:D:405:LEU:HD22	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:149:LEU:HD22	1:B:218:MET:SD	2.60	0.41
1:A:149:LEU:HD22	1:A:218:MET:SD	2.61	0.41
1:A:394:VAL:HG22	1:A:396:THR:HG22	2.03	0.41
1:B:168:PHE:C	1:B:170:LEU:H	2.29	0.41
1:B:189:TYR:CZ	1:B:249:MET:HE1	2.56	0.41
1:C:179:THR:OG1	1:C:232:ALA:O	2.33	0.41
1:D:174:GLU:HB3	1:D:194:PRO:HB2	2.03	0.41
1:D:206:ASP:O	1:D:266:LYS:NZ	2.37	0.41
1:D:406:ASP:HB2	1:D:407:LEU:H	1.61	0.41
1:B:173:LEU:HD13	1:B:204:TYR:CG	2.57	0.41
1:C:208:THR:O	1:C:225:LYS:HA	2.20	0.41
1:C:104:ASP:N	1:C:108:TYR:O	2.28	0.40
1:C:344:LYS:HE2	1:C:344:LYS:HB2	1.83	0.40
2:D:501:FCE:H26	2:D:501:FCE:H18	2.04	0.40
1:C:296:PRO:HB3	1:C:311:VAL:HG12	2.03	0.40
1:D:285:PHE:CE1	1:D:290:VAL:HG11	2.56	0.40
1:D:184:SER:HB3	1:D:189:TYR:CE1	2.56	0.40
1:D:300:LYS:NZ	1:D:359:ALA:O	2.51	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	373/414 (90%)	354 (95%)	19 (5%)	0	100	100
1	B	375/414 (91%)	355 (95%)	19 (5%)	1 (0%)	36	66
1	C	374/414 (90%)	353 (94%)	20 (5%)	1 (0%)	36	66
1	D	379/414 (92%)	349 (92%)	28 (7%)	2 (0%)	24	56
All	All	1501/1656 (91%)	1411 (94%)	86 (6%)	4 (0%)	36	66

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	317	GLN
1	B	286	ASP
1	D	316	PRO
1	D	406	ASP

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	311/344 (90%)	311 (100%)	0	100	100
1	B	313/344 (91%)	313 (100%)	0	100	100
1	C	312/344 (91%)	312 (100%)	0	100	100
1	D	317/344 (92%)	317 (100%)	0	100	100
All	All	1253/1376 (91%)	1253 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	85	GLN
1	D	263	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 8 ligands modelled in this entry, 4 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
2	FCE	B	501	3	45,48,54	2.34	13 (28%)	51,63,84	2.02	15 (29%)
2	FCE	A	501	3	45,48,54	2.57	18 (40%)	51,63,84	1.86	15 (29%)
2	FCE	C	501	3	45,48,54	2.37	14 (31%)	51,63,84	1.82	13 (25%)
2	FCE	D	501	3	45,48,54	2.21	13 (28%)	51,63,84	1.52	7 (13%)

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
2	FCE	B	501	3	4/4/15/22	24/69/69/111	0/1/1/6
2	FCE	A	501	3	5/5/15/22	22/69/69/111	1/1/1/6
2	FCE	C	501	3	4/4/15/22	25/69/69/111	0/1/1/6
2	FCE	D	501	3	3/3/15/22	23/69/69/111	0/1/1/6

All (58) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	501	FCE	O14-N8	-8.11	1.34	1.40
2	B	501	FCE	O14-N8	-7.58	1.34	1.40
2	A	501	FCE	O14-N8	-7.40	1.34	1.40
2	D	501	FCE	O14-N8	-6.98	1.35	1.40
2	D	501	FCE	O11-N6	-6.20	1.35	1.40
2	A	501	FCE	O11-N6	-6.09	1.35	1.40
2	C	501	FCE	O10-N5	-5.97	1.35	1.40
2	B	501	FCE	O11-N6	-5.97	1.35	1.40
2	A	501	FCE	O10-N5	-5.75	1.35	1.40
2	C	501	FCE	O11-N6	-5.64	1.36	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501	FCE	O10-N5	-5.64	1.36	1.40
2	D	501	FCE	O10-N5	-5.39	1.36	1.40
2	A	501	FCE	C13-C4	3.85	1.62	1.52
2	A	501	FCE	C30-N5	3.78	1.53	1.46
2	A	501	FCE	C8-N4	3.61	1.41	1.34
2	B	501	FCE	C13-C4	3.54	1.61	1.52
2	A	501	FCE	C7-N3	3.46	1.41	1.34
2	B	501	FCE	C7-N3	3.41	1.41	1.34
2	B	501	FCE	C4-N1	3.40	1.41	1.34
2	A	501	FCE	C32-N6	3.39	1.52	1.46
2	C	501	FCE	C7-N3	3.36	1.41	1.34
2	B	501	FCE	C1-N7	3.36	1.41	1.33
2	A	501	FCE	C4-N1	3.29	1.41	1.34
2	D	501	FCE	C30-N5	3.29	1.52	1.46
2	A	501	FCE	C34-N8	3.22	1.52	1.46
2	C	501	FCE	C13-C4	3.16	1.60	1.52
2	A	501	FCE	C24-C16	3.15	1.60	1.53
2	C	501	FCE	C4-N1	3.15	1.40	1.34
2	A	501	FCE	C1-N7	3.13	1.41	1.33
2	C	501	FCE	C32-N6	3.11	1.52	1.46
2	A	501	FCE	C16-C7	3.10	1.60	1.52
2	D	501	FCE	C4-N1	3.05	1.40	1.34
2	C	501	FCE	C1-N7	3.03	1.40	1.33
2	C	501	FCE	C16-C7	3.02	1.60	1.52
2	B	501	FCE	C16-C7	2.96	1.60	1.52
2	D	501	FCE	C8-N4	2.93	1.40	1.34
2	D	501	FCE	C1-N7	2.91	1.40	1.33
2	C	501	FCE	C2-N9	2.89	1.40	1.33
2	A	501	FCE	C13-N3	2.83	1.51	1.45
2	A	501	FCE	C2-N9	2.83	1.40	1.33
2	D	501	FCE	C7-N3	2.79	1.40	1.34
2	B	501	FCE	C30-N5	2.79	1.51	1.46
2	A	501	FCE	C16-N4	2.77	1.51	1.45
2	D	501	FCE	C2-N9	2.77	1.39	1.33
2	C	501	FCE	C8-N4	2.73	1.39	1.34
2	B	501	FCE	C13-N3	2.68	1.51	1.45
2	B	501	FCE	C32-N6	2.60	1.51	1.46
2	B	501	FCE	C2-N9	2.58	1.39	1.33
2	D	501	FCE	C32-N6	2.53	1.51	1.46
2	B	501	FCE	C24-C16	2.51	1.59	1.53
2	D	501	FCE	C5-N2	2.43	1.39	1.33
2	C	501	FCE	C30-N5	2.43	1.50	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	501	FCE	C13-N3	2.41	1.50	1.45
2	D	501	FCE	C13-C4	2.34	1.58	1.52
2	A	501	FCE	C5-N2	2.31	1.38	1.33
2	C	501	FCE	C5-N2	2.16	1.38	1.33
2	D	501	FCE	C16-C7	2.14	1.58	1.52
2	A	501	FCE	C10-C1	2.11	1.58	1.52

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	FCE	C13-C4-N1	6.47	130.42	116.63
2	C	501	FCE	C13-C4-N1	6.38	130.23	116.63
2	A	501	FCE	C13-C4-N1	6.30	130.06	116.63
2	B	501	FCE	C29-C34-N8	5.53	122.50	111.11
2	B	501	FCE	O4-C4-N1	-4.10	115.61	122.96
2	C	501	FCE	O4-C4-N1	-4.02	115.76	122.96
2	A	501	FCE	O4-C4-N1	-3.93	115.92	122.96
2	D	501	FCE	C13-C4-N1	3.84	124.81	116.63
2	B	501	FCE	C25-C30-N5	3.72	118.76	111.11
2	A	501	FCE	C29-C34-N8	3.64	118.61	111.11
2	D	501	FCE	C29-C34-N8	3.60	118.51	111.11
2	D	501	FCE	C25-C30-N5	3.47	118.25	111.11
2	A	501	FCE	C10-C1-N7	3.42	123.87	116.54
2	C	501	FCE	C25-C30-N5	3.21	117.72	111.11
2	B	501	FCE	O4-C4-C13	-3.11	113.96	120.48
2	C	501	FCE	C29-C34-N8	3.10	117.49	111.11
2	C	501	FCE	O4-C4-C13	-3.09	114.01	120.48
2	A	501	FCE	O4-C4-C13	-3.08	114.02	120.48
2	A	501	FCE	C25-C30-N5	3.02	117.32	111.11
2	B	501	FCE	C16-C7-N3	2.94	122.91	116.63
2	A	501	FCE	C4-C13-N3	2.87	118.88	111.11
2	D	501	FCE	C10-C1-N7	2.87	122.70	116.54
2	B	501	FCE	O7-C7-N3	-2.86	117.84	122.96
2	C	501	FCE	C10-C1-N7	2.70	122.34	116.54
2	B	501	FCE	C10-N1-C4	2.68	127.40	121.65
2	D	501	FCE	O4-C4-N1	-2.67	118.17	122.96
2	C	501	FCE	C10-N1-C4	2.66	127.37	121.65
2	C	501	FCE	O7-C7-N3	-2.66	118.19	122.96
2	A	501	FCE	C18-C10-C1	2.59	116.45	110.11
2	B	501	FCE	C10-C1-N7	2.59	122.09	116.54
2	B	501	FCE	C2-C11-N2	-2.49	105.79	113.04
2	A	501	FCE	O7-C7-N3	-2.45	118.57	122.96

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	FCE	C16-C7-N3	2.44	121.83	116.63
2	A	501	FCE	C24-C16-C7	2.42	116.04	110.11
2	A	501	FCE	C16-C7-N3	2.32	121.58	116.63
2	C	501	FCE	C4-C13-N3	2.29	117.30	111.11
2	B	501	FCE	C24-C16-C7	2.26	115.65	110.11
2	C	501	FCE	C5-C14-N7	-2.21	106.61	113.04
2	B	501	FCE	C4-C13-N3	2.20	117.05	111.11
2	C	501	FCE	C17-C8-N4	2.19	121.36	116.16
2	A	501	FCE	C1-C10-N1	-2.10	105.43	111.11
2	A	501	FCE	O1-C1-N7	-2.09	118.56	122.98
2	C	501	FCE	C2-C11-N2	-2.09	106.96	113.04
2	B	501	FCE	C5-C14-N7	-2.07	107.00	113.04
2	A	501	FCE	C2-C11-N2	-2.07	107.00	113.04
2	D	501	FCE	C7-C16-N4	-2.07	105.52	111.11
2	D	501	FCE	O10-N5-C30	2.05	118.56	113.76
2	B	501	FCE	O10-N5-C30	2.04	118.55	113.76
2	B	501	FCE	C8-C17-N9	-2.04	107.10	113.04
2	A	501	FCE	C16-N4-C8	2.00	126.70	121.68

All (16) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	501	FCE	C16
2	A	501	FCE	N6
2	A	501	FCE	N5
2	A	501	FCE	N8
2	A	501	FCE	C10
2	B	501	FCE	N8
2	B	501	FCE	C10
2	B	501	FCE	N6
2	B	501	FCE	N5
2	C	501	FCE	N8
2	C	501	FCE	C10
2	C	501	FCE	N6
2	C	501	FCE	N5
2	D	501	FCE	N8
2	D	501	FCE	N6
2	D	501	FCE	N5

All (94) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	FCE	C25-C30-N5-C3
2	A	501	FCE	C25-C30-N5-O10
2	A	501	FCE	C29-C34-N8-O14
2	A	501	FCE	C21-C27-C32-N6
2	B	501	FCE	C25-C30-N5-C3
2	B	501	FCE	C25-C30-N5-O10
2	B	501	FCE	C29-C34-N8-O14
2	B	501	FCE	C21-C27-C32-N6
2	B	501	FCE	C24-C29-C34-N8
2	C	501	FCE	C25-C30-N5-C3
2	C	501	FCE	C25-C30-N5-O10
2	C	501	FCE	C29-C34-N8-O14
2	C	501	FCE	C21-C27-C32-N6
2	D	501	FCE	C25-C30-N5-C3
2	D	501	FCE	C25-C30-N5-O10
2	D	501	FCE	C27-C32-N6-O11
2	D	501	FCE	C29-C34-N8-C9
2	D	501	FCE	C29-C34-N8-O14
2	D	501	FCE	C18-C25-C30-N5
2	D	501	FCE	C21-C27-C32-N6
2	A	501	FCE	C24-C16-N4-C8
2	B	501	FCE	C13-C4-N1-C10
2	C	501	FCE	C13-C4-N1-C10
2	A	501	FCE	O4-C4-N1-C10
2	B	501	FCE	O4-C4-N1-C10
2	C	501	FCE	O4-C4-N1-C10
2	A	501	FCE	C13-C4-N1-C10
2	A	501	FCE	O1-C1-C10-C18
2	B	501	FCE	N7-C14-C5-O5
2	B	501	FCE	N7-C14-C5-N2
2	B	501	FCE	C16-C24-C29-C34
2	D	501	FCE	C16-C24-C29-C34
2	A	501	FCE	N7-C1-C10-C18
2	C	501	FCE	N7-C14-C5-N2
2	A	501	FCE	C13-C21-C27-C32
2	B	501	FCE	C13-C21-C27-C32
2	C	501	FCE	C13-C21-C27-C32
2	C	501	FCE	N7-C14-C5-O5
2	D	501	FCE	C13-C21-C27-C32
2	C	501	FCE	N4-C16-C24-C29
2	C	501	FCE	C24-C29-C34-N8
2	A	501	FCE	C10-C18-C25-C30
2	C	501	FCE	C10-C18-C25-C30

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Mol	Chain	Res	Type	Atoms
2	A	501	FCE	N7-C1-C10-N1
2	A	501	FCE	O1-C1-C10-N1
2	D	501	FCE	C10-C18-C25-C30
2	B	501	FCE	C10-C18-C25-C30
2	B	501	FCE	O1-C1-C10-N1
2	C	501	FCE	O1-C1-C10-N1
2	C	501	FCE	N7-C1-C10-N1
2	B	501	FCE	N7-C1-C10-N1
2	B	501	FCE	C29-C34-N8-C9
2	C	501	FCE	C29-C34-N8-C9
2	D	501	FCE	C27-C32-N6-C6
2	B	501	FCE	O1-C1-C10-C18
2	B	501	FCE	N7-C1-C10-C18
2	C	501	FCE	O1-C1-C10-C18
2	C	501	FCE	N7-C1-C10-C18
2	C	501	FCE	C16-C24-C29-C34
2	D	501	FCE	O1-C1-C10-N1
2	A	501	FCE	C16-C24-C29-C34
2	D	501	FCE	N7-C14-C5-N2
2	D	501	FCE	N7-C1-C10-N1
2	A	501	FCE	C36-C3-N5-O10
2	A	501	FCE	C35-C6-N6-O11
2	A	501	FCE	C37-C9-N8-O14
2	B	501	FCE	C36-C3-N5-O10
2	B	501	FCE	C35-C6-N6-O11
2	B	501	FCE	C37-C9-N8-O14
2	C	501	FCE	C36-C3-N5-O10
2	C	501	FCE	C35-C6-N6-O11
2	C	501	FCE	C37-C9-N8-O14
2	D	501	FCE	C36-C3-N5-O10
2	D	501	FCE	C35-C6-N6-O11
2	D	501	FCE	C37-C9-N8-O14
2	A	501	FCE	C4-C13-C21-C27
2	B	501	FCE	C8-C17-N9-C2
2	C	501	FCE	C8-C17-N9-C2
2	A	501	FCE	C8-C17-N9-C2
2	A	501	FCE	O3-C3-N5-O10
2	A	501	FCE	O6-C6-N6-O11
2	A	501	FCE	O8-C9-N8-O14
2	B	501	FCE	O3-C3-N5-O10
2	B	501	FCE	O6-C6-N6-O11
2	B	501	FCE	O8-C9-N8-O14

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Mol	Chain	Res	Type	Atoms
2	C	501	FCE	O3-C3-N5-O10
2	C	501	FCE	O6-C6-N6-O11
2	C	501	FCE	O8-C9-N8-O14
2	D	501	FCE	O3-C3-N5-O10
2	D	501	FCE	O6-C6-N6-O11
2	D	501	FCE	O8-C9-N8-O14
2	D	501	FCE	C8-C17-N9-C2
2	D	501	FCE	N7-C14-C5-O5
2	D	501	FCE	C21-C13-C4-O4

All (1) ring outliers are listed below:

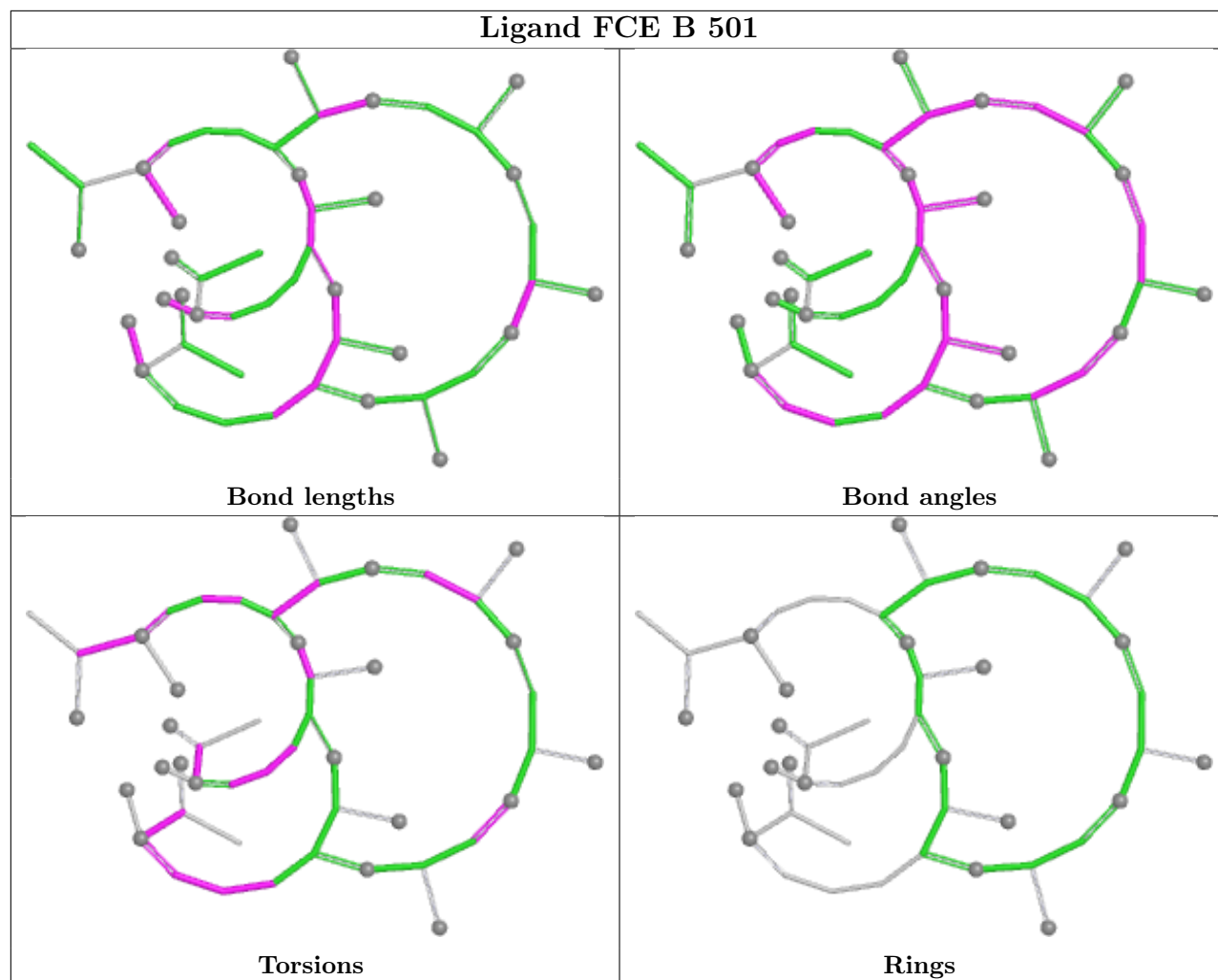
Mol	Chain	Res	Type	Atoms
2	A	501	FCE	C1-C10-C11-C13-C14-C16-C17-C2-C4-C5-C7-C8-N1-N2-N3-N4-N7-N9

4 monomers are involved in 21 short contacts:

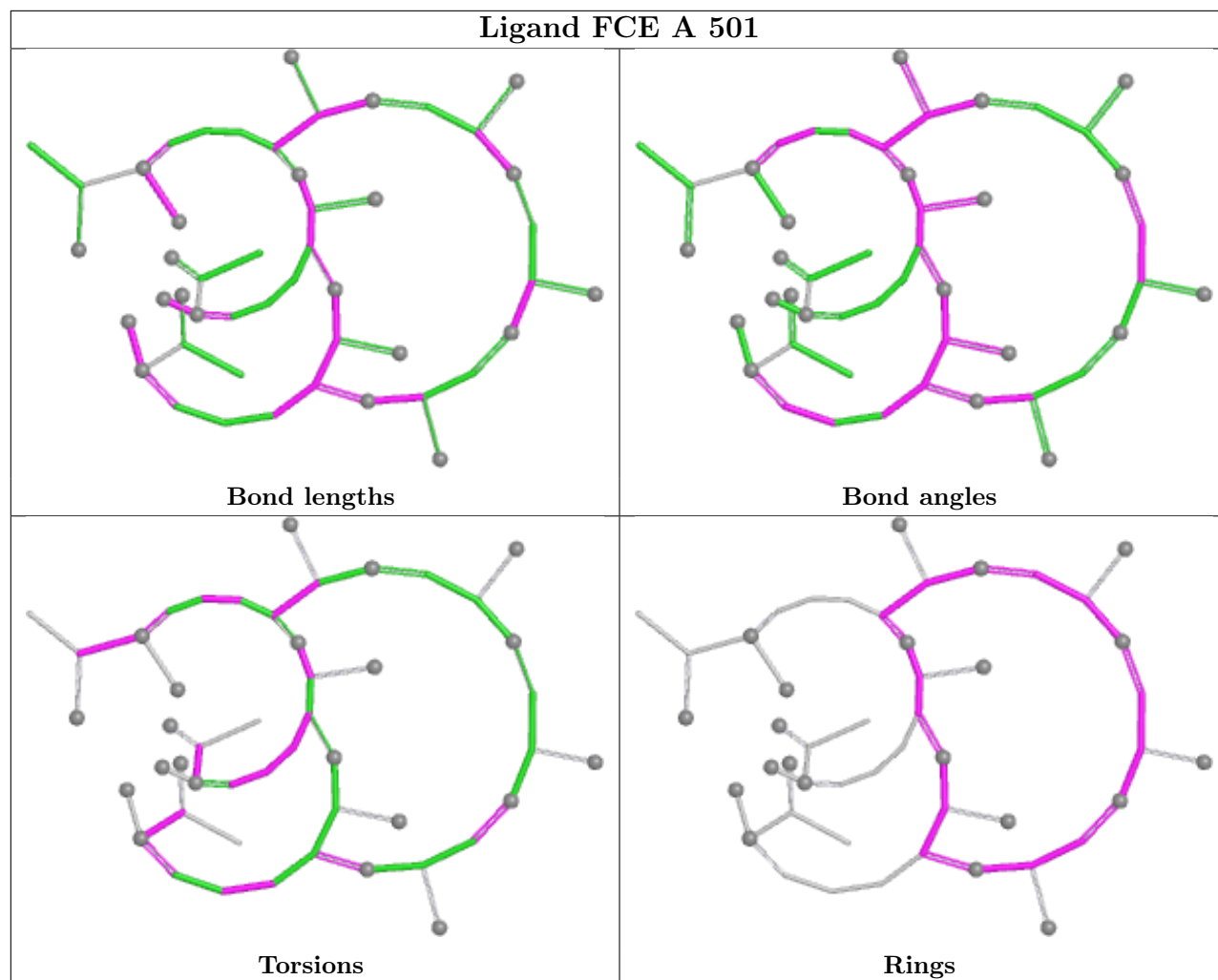
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	501	FCE	6	0
2	A	501	FCE	5	0
2	C	501	FCE	7	0
2	D	501	FCE	3	0

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.

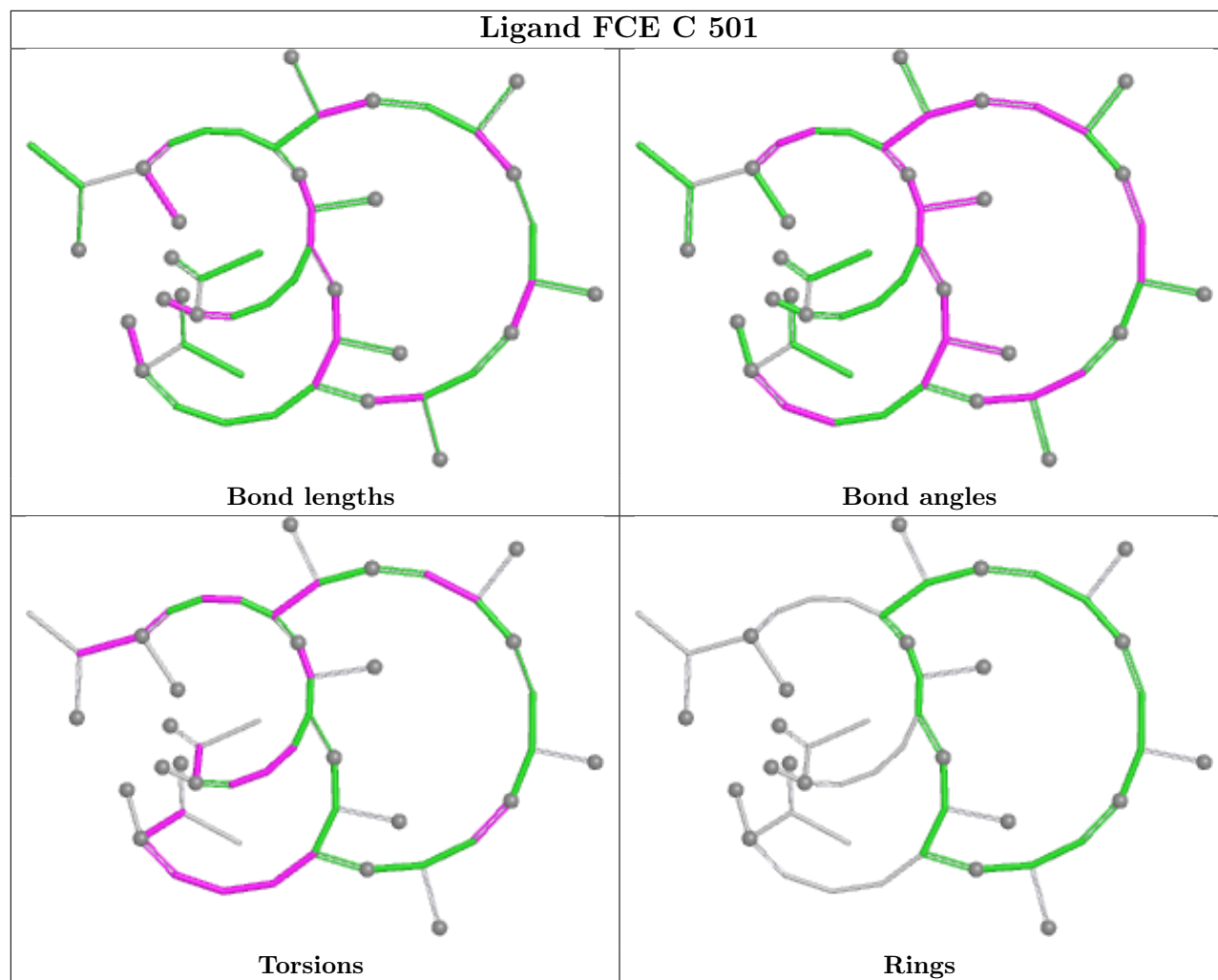
Ligand FCE B 501

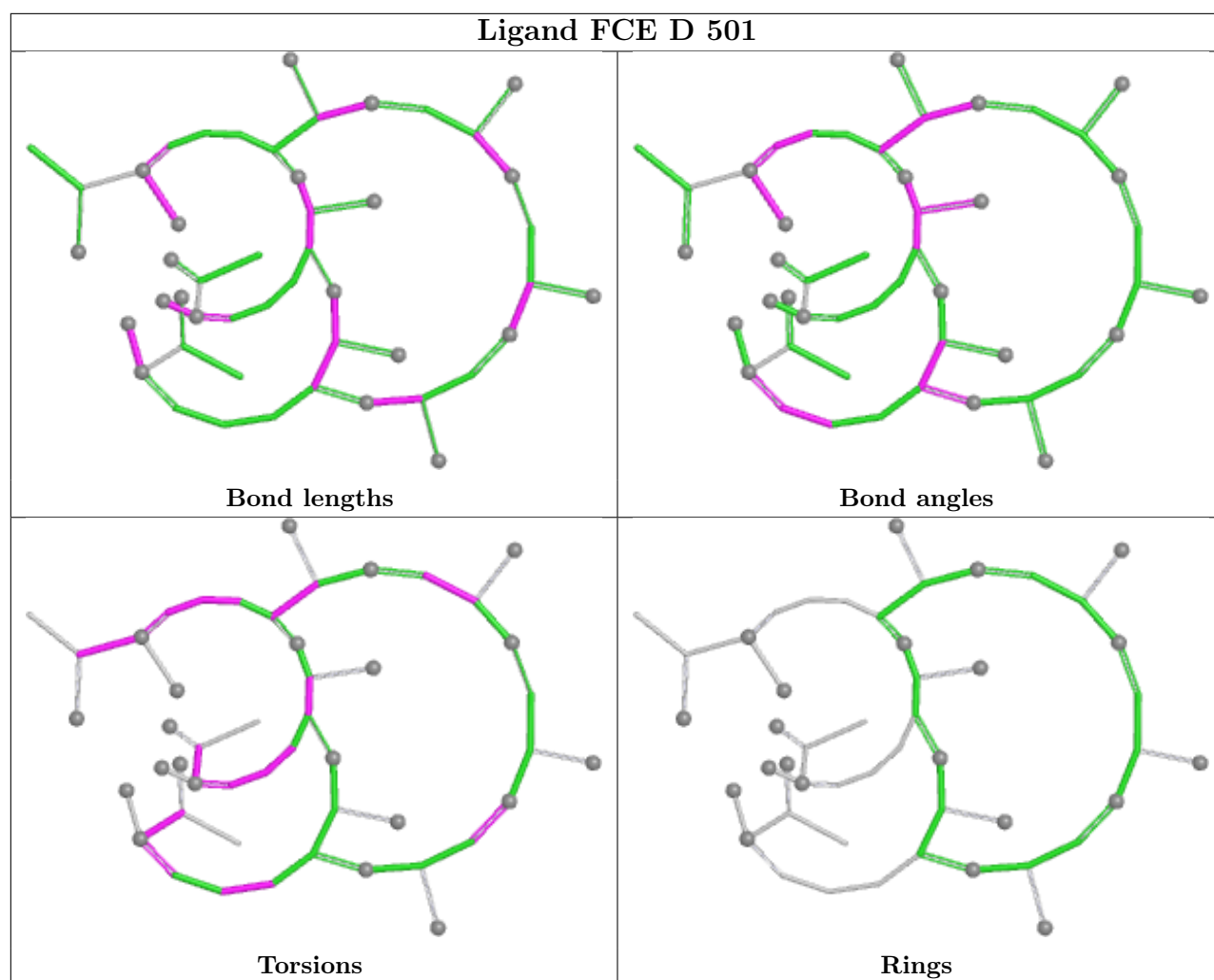


Ligand FCE A 501



Ligand FCE C 501





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	375/414 (90%)	0.67	8 (2%) 63 44	34, 48, 68, 95	0
1	B	377/414 (91%)	0.72	15 (3%) 42 28	33, 52, 71, 94	0
1	C	376/414 (90%)	0.79	11 (2%) 53 35	32, 49, 71, 100	0
1	D	381/414 (92%)	0.70	19 (4%) 34 23	32, 47, 71, 87	0
All	All	1509/1656 (91%)	0.72	53 (3%) 47 31	32, 49, 71, 100	0

All (53) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	169	PRO	3.9
1	A	93	LEU	3.3
1	C	125	THR	3.3
1	D	216	PRO	3.1
1	D	269	ALA	2.9
1	A	169	PRO	2.8
1	D	359	ALA	2.8
1	C	56	THR	2.8
1	D	57	ALA	2.7
1	B	373	SER	2.7
1	D	253	SER	2.5
1	D	87	VAL	2.5
1	A	216	PRO	2.5
1	C	59	GLU	2.5
1	A	273	ILE	2.5
1	D	411	HIS	2.5
1	C	299	ILE	2.5
1	D	407	LEU	2.4
1	D	358	ALA	2.4
1	D	401	GLY	2.4
1	D	171	ASN	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	47	ASN	2.4
1	B	400	GLY	2.3
1	B	282	ASP	2.3
1	B	311	VAL	2.3
1	D	169	PRO	2.3
1	A	222	THR	2.3
1	D	86	THR	2.3
1	B	215	TYR	2.3
1	B	90	ILE	2.3
1	D	340	VAL	2.3
1	C	359	ALA	2.3
1	A	109	LEU	2.2
1	C	217	ASP	2.2
1	A	55	VAL	2.2
1	D	101	ILE	2.2
1	B	105	ALA	2.2
1	B	85	GLN	2.1
1	C	57	ALA	2.1
1	A	215	TYR	2.1
1	D	69	ALA	2.1
1	C	139	ALA	2.1
1	D	84	GLY	2.1
1	B	168	PHE	2.1
1	B	133	ILE	2.1
1	C	215	TYR	2.1
1	B	111	GLU	2.1
1	D	201	GLU	2.1
1	C	93	LEU	2.0
1	B	56	THR	2.0
1	C	58	PRO	2.0
1	B	407	LEU	2.0
1	D	241	ILE	2.0

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

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

6.3 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands

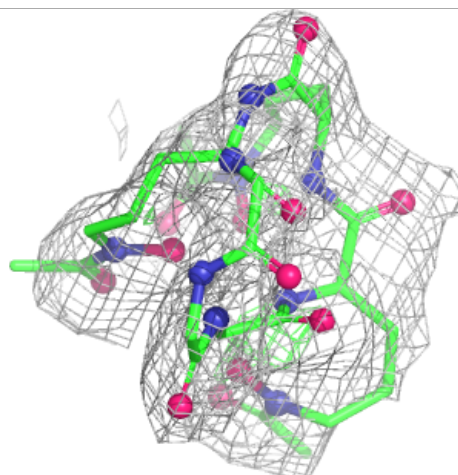
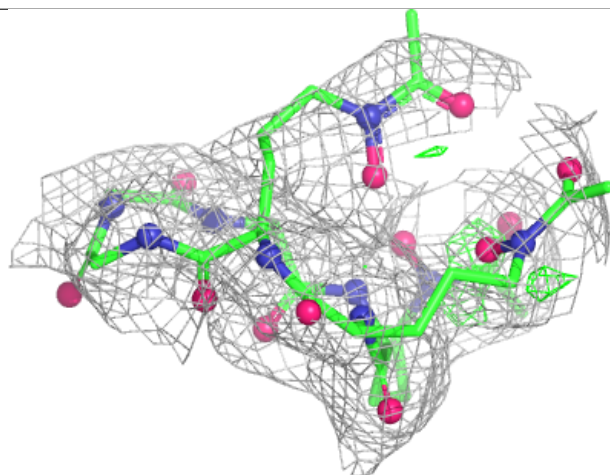
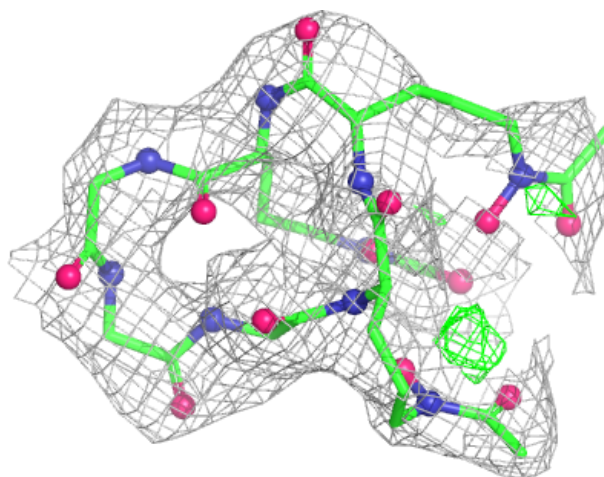
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	FCE	A	501	48/49	0.82	0.16	34,48,57,66	0
2	FCE	B	501	48/49	0.82	0.16	45,53,64,71	0
2	FCE	D	501	48/49	0.84	0.16	34,41,53,66	0
2	FCE	C	501	48/49	0.85	0.16	30,43,58,65	0
3	FE	A	502	1/1	0.99	0.08	37,37,37,37	0
3	FE	B	502	1/1	0.99	0.03	53,53,53,53	0
3	FE	C	502	1/1	0.99	0.04	48,48,48,48	0
3	FE	D	502	1/1	0.99	0.03	35,35,35,35	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.

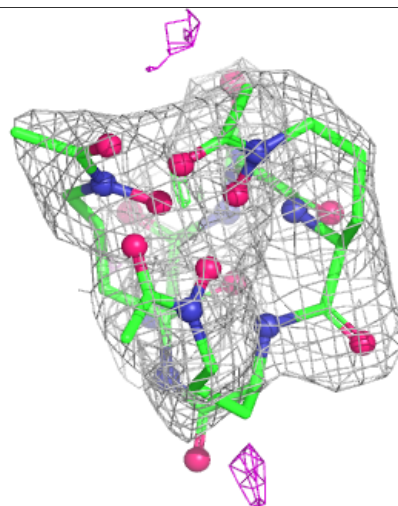
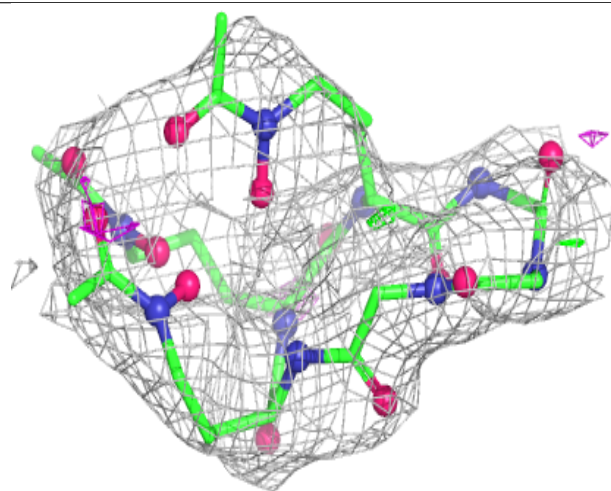
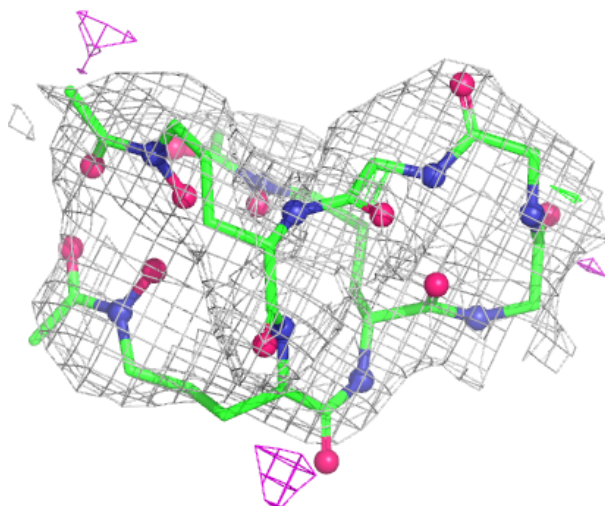
Electron density around FCE A 501:

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



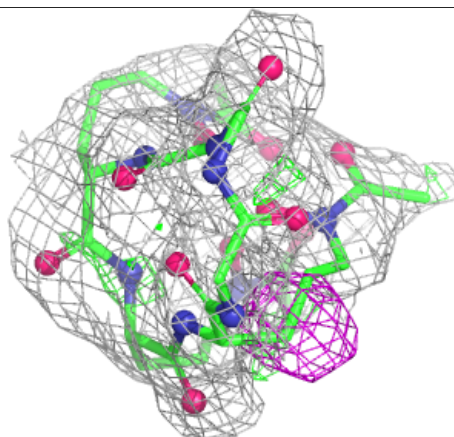
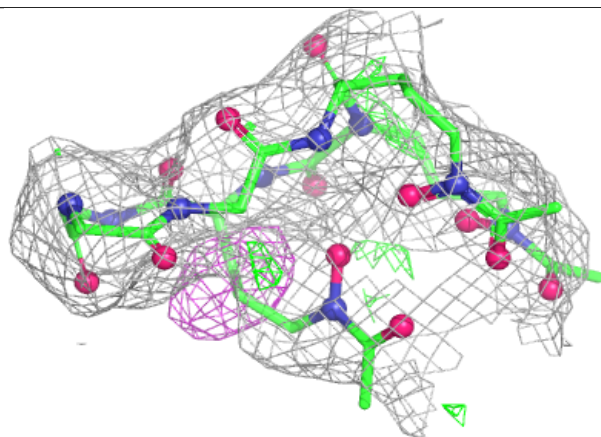
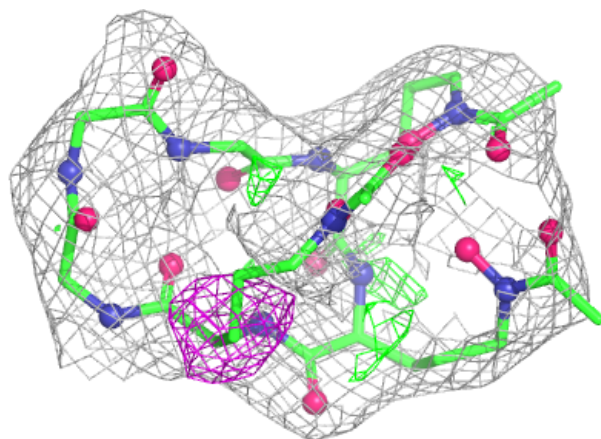
Electron density around FCE B 501:

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



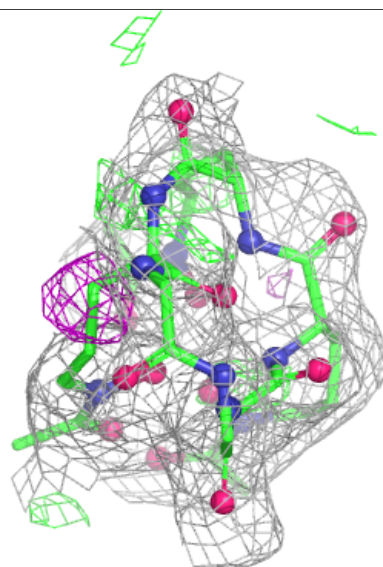
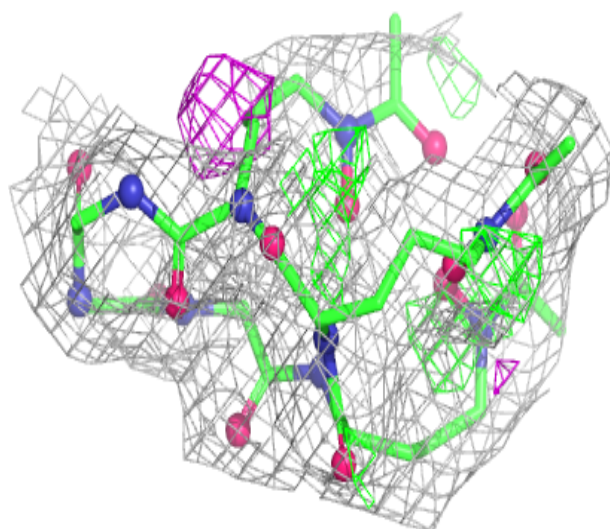
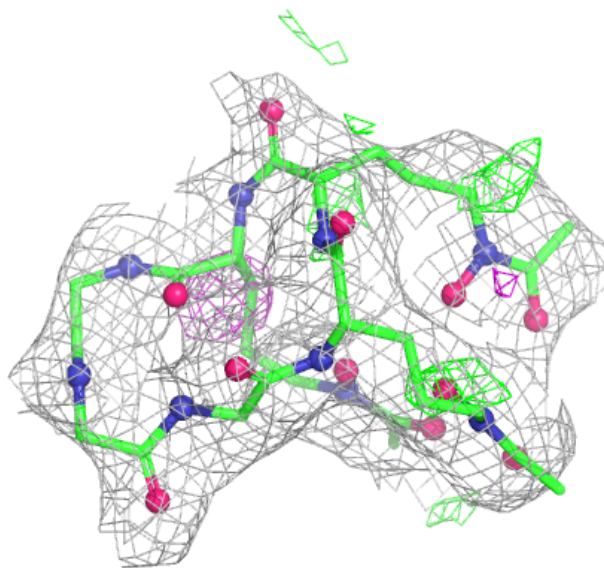
Electron density around FCE D 501:

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



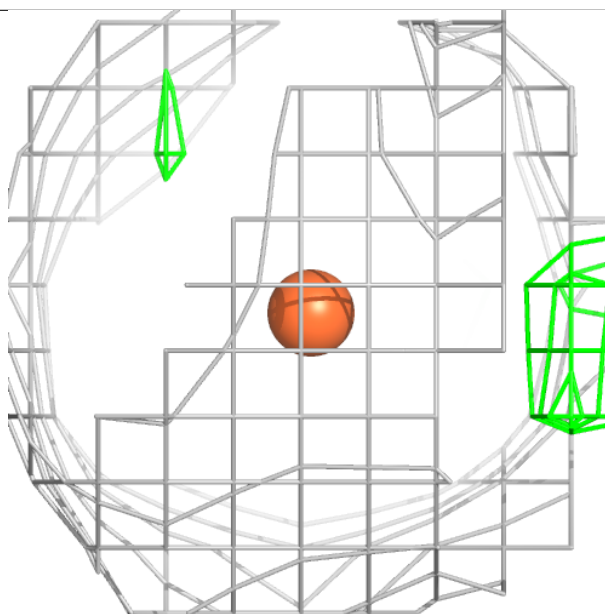
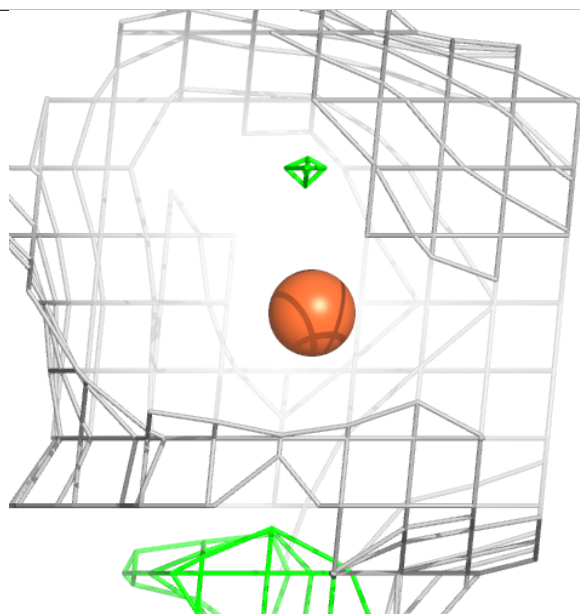
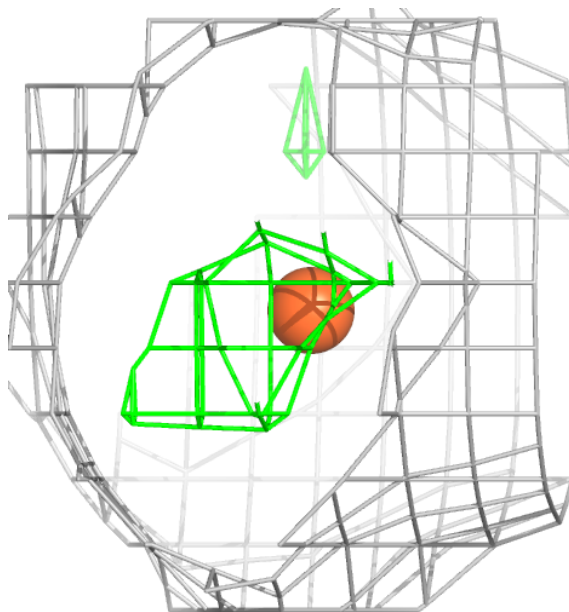
Electron density around FCE C 501:

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



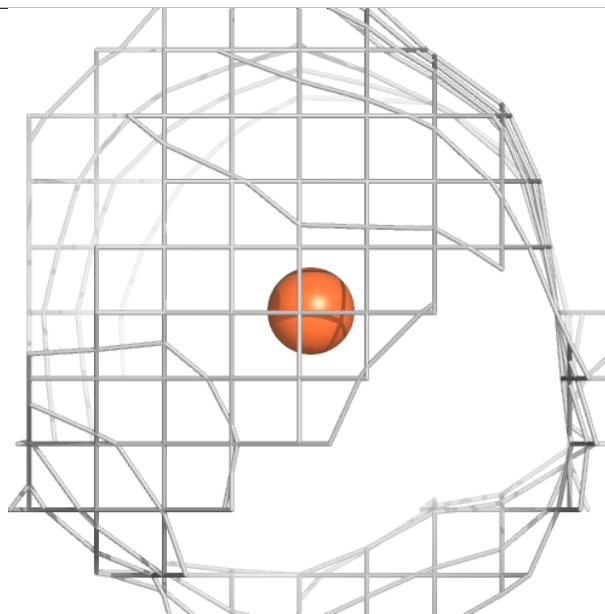
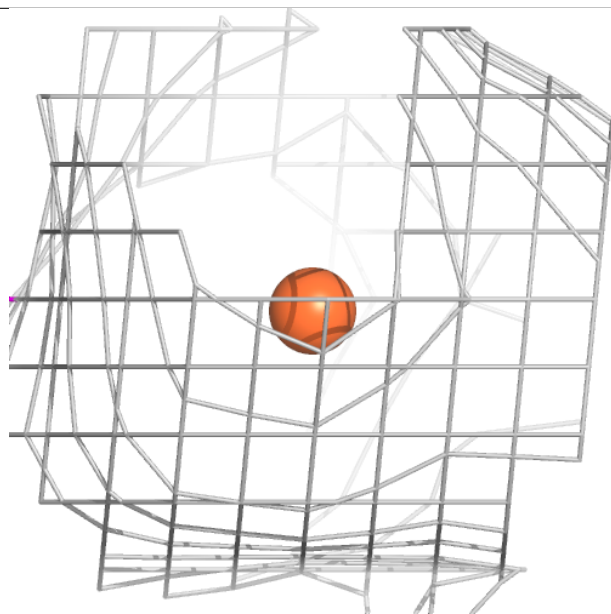
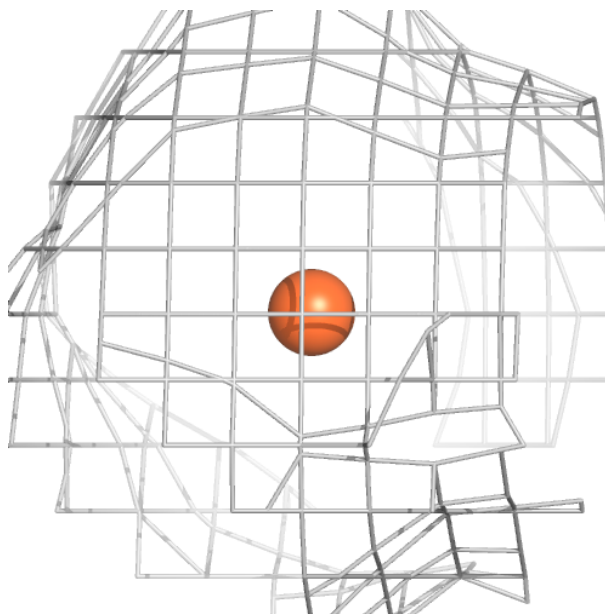
Electron density around FE A 502:

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



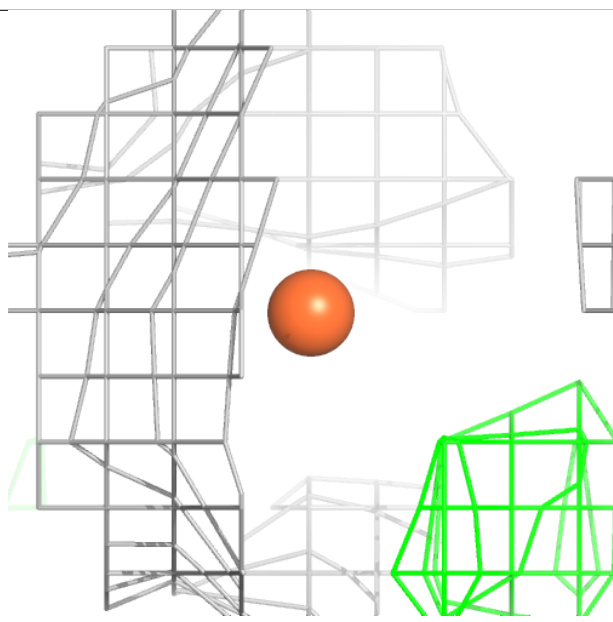
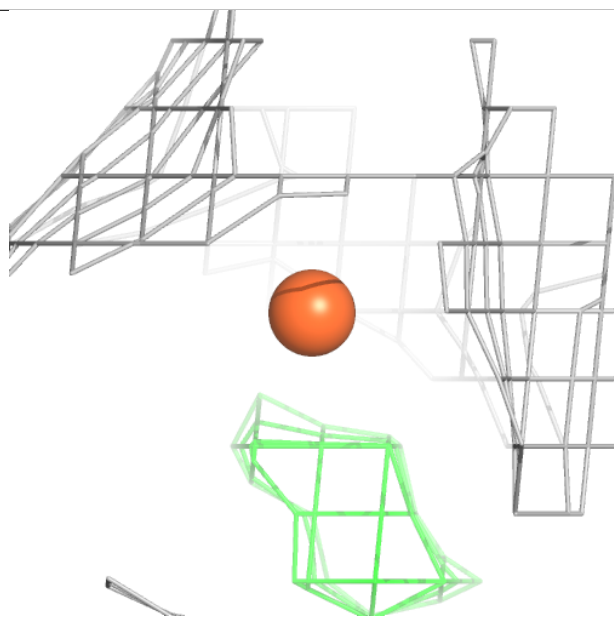
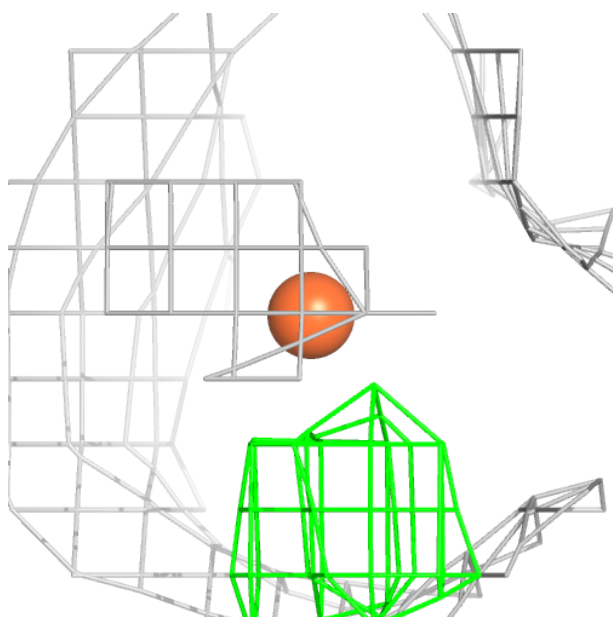
Electron density around FE B 502:

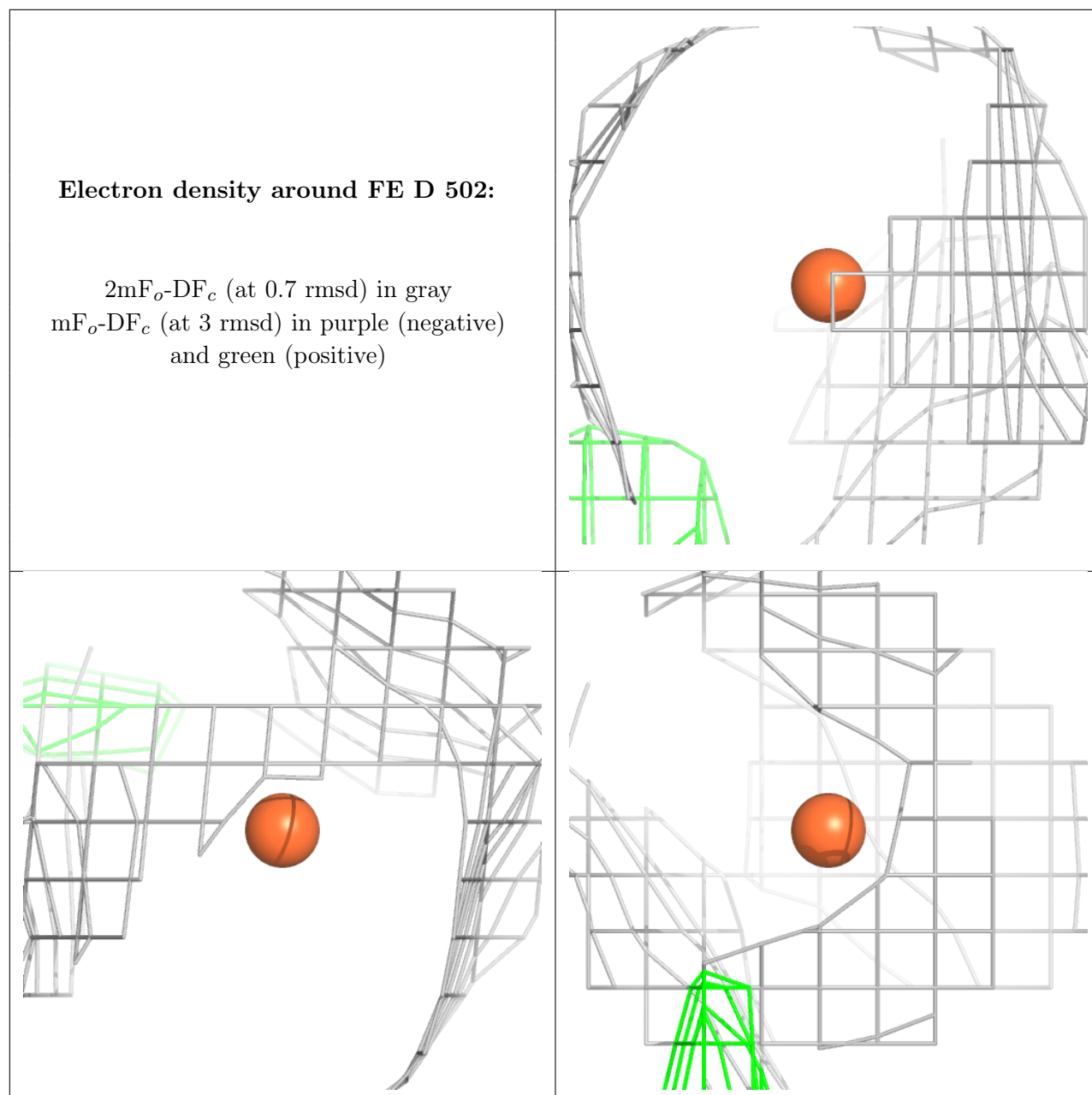
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around FE C 502:

$2mF_o-DF_c$ (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.