Full wwPDB X-ray Structure Validation Report (i)

Feb 24, 2026 – 02:25 PM JST

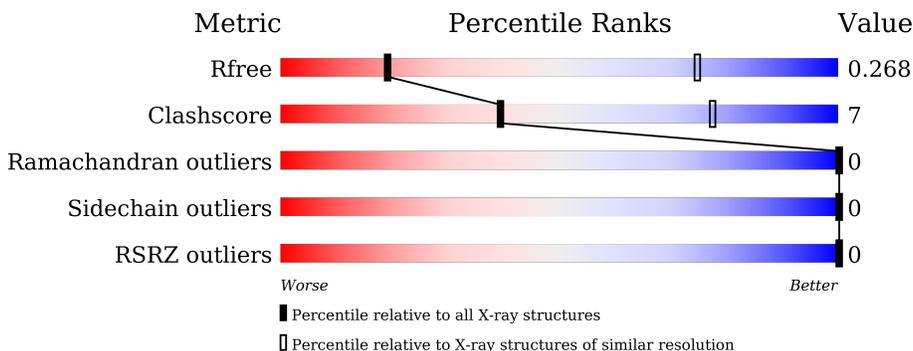|		
PDB ID	:	9UP6 / pdb_00009up6
Title	:	Klebsiella pneumoniae NagA
Authors	:	Lee, S.Y.; Park, H.H.
Deposited on	:	2025-04-27
Resolution	:	3.67 Å(reported)

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 3.67 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	Percentile Ranks	Value
Rfree		0.268
Clashscore		7
Ramachandran outliers		0
Sidechain outliers		0
RSRZ outliers		0

Worse　　　　　　　　　　　　　　　　*Better*

■ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	164625	1132 (3.80-3.56)
Clashscore	180529	1194 (3.80-3.56)
Ramachandran outliers	177936	1173 (3.80-3.56)
Sidechain outliers	177891	1170 (3.80-3.56)
RSRZ outliers	164620	1132 (3.80-3.56)

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 <=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	383	83% · · · 16% ·
1	B	383	85% · · · 15%
1	C	383	83% · · · 17%
1	D	383	86% · · · 14%
1	E	383	79% · · · 17% ·
1	F	383	86% · · · 13%

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Mol	Chain	Length	Quality of chain
1	G	383	83% 16%
1	H	383	81% 18%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 23076 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 N-acetylglucosamine-6-phosphate deacetylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	380	Total 2887	C 1819	N 499	O 551	S 18	0	0	0
1	B	383	Total 2905	C 1830	N 502	O 555	S 18	0	0	0
1	C	382	Total 2897	C 1825	N 501	O 554	S 17	0	0	0
1	D	383	Total 2905	C 1830	N 502	O 555	S 18	0	0	0
1	E	367	Total 2783	C 1756	N 481	O 529	S 17	0	0	0
1	F	382	Total 2901	C 1828	N 501	O 554	S 18	0	0	0
1	G	382	Total 2901	C 1828	N 501	O 554	S 18	0	0	0
1	H	381	Total 2889	C 1818	N 500	O 553	S 18	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	MET	-	initiating methionine	UNP W9B676
B	0	MET	-	initiating methionine	UNP W9B676
C	0	MET	-	initiating methionine	UNP W9B676
D	0	MET	-	initiating methionine	UNP W9B676
E	0	MET	-	initiating methionine	UNP W9B676
F	0	MET	-	initiating methionine	UNP W9B676
G	0	MET	-	initiating methionine	UNP W9B676
H	0	MET	-	initiating methionine	UNP W9B676

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 1	Zn 1	0	0
2	B	1	Total 1	Zn 1	0	0
2	C	1	Total 1	Zn 1	0	0
2	D	1	Total 1	Zn 1	0	0
2	E	1	Total 1	Zn 1	0	0
2	F	1	Total 1	Zn 1	0	0
2	G	1	Total 1	Zn 1	0	0
2	H	1	Total 1	Zn 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: N-acetylglucosamine-6-phosphate deacetylase

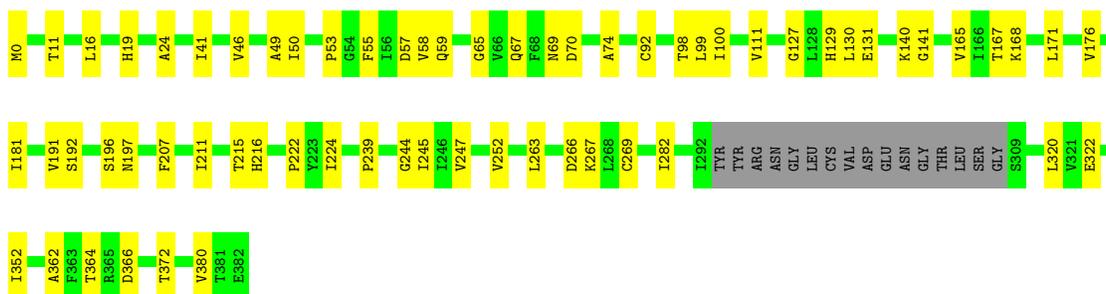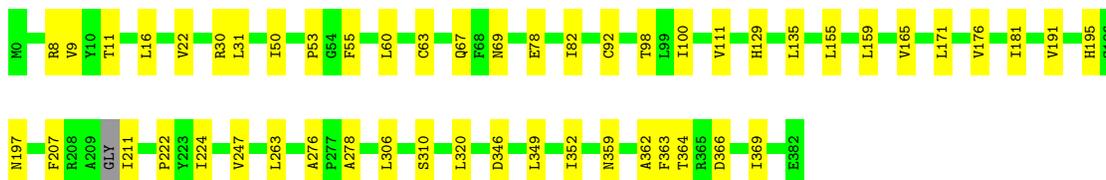Chain A:

- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain B:

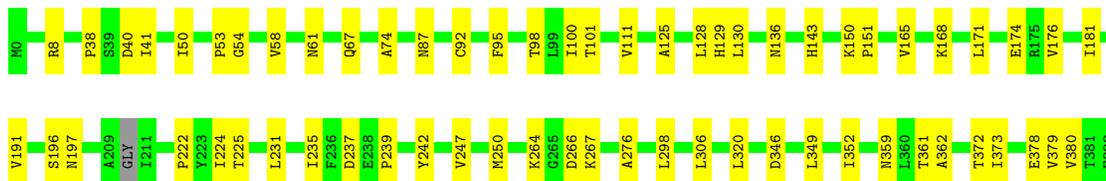- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain C:

- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain D: 86% 14%

M0 L31 P53 G54 F55 N61 Q67 F68 N69 D70 A74 V75 T76 V77 E78 N87 C92 T98 L99 E116 K120 G127 L130 L135 N136 I137 K140 P145 T167 K168 V169 T170 L171 V176 I181 V191 H195 S196 N197

I211 P222 Y242 V247 K267 F287 L320 I343 G344 V345 D346 L349 I352 N359 L360 T361 T364 R365 D366 T370 K371 T372 I373 E378 V379 V380 T381 E382

- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain E: 79% 17%

M0 T11 L16 H19 A24 I41 V46 A49 I50 P53 G54 F55 I56 D57 V58 Q59 G65 V66 Q67 F68 N69 D70 A74 C92 T98 L99 I100 V111 G127 L128 H129 L130 E131 K140 G141 V165 I166 T167 K168 L171 V176

I181 V191 S192 S196 N197 F207 I211 T215 H216 P222 Y223 I224 P239 G244 I245 I246 V247 V252 L263 D266 K267 L268 C269 I282 I292 TYR TYR ARG ASN GLY LEU CYS VAL ASP GLU ASN GLY THR LEU SER GLY S309 L320 V321 E322

I352 A362 F363 T364 R365 D366 T372 V380 T381 E382

- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain F: 86% 13%

M0 R8 V9 Y10 T11 L16 V22 R30 L31 I50 P53 G54 F55 L60 C63 Q67 F68 N69 E78 I82 C92 T98 L99 I100 V111 H129 L135 L155 L159 V165 L171 V176 I181 V191 H195 S196

N197 F207 R208 A209 GLY I211 P222 Y223 I224 V247 L263 A276 P277 A278 L306 S310 L320 D346 L349 I352 N359 A362 F363 T364 R365 D366 I369 E382

- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain G: 83% 16%

M0 R8 P38 S39 D40 I41 I50 P53 G54 V58 N61 Q67 A74 N87 C92 F95 T98 L99 I100 T101 V111 A125 L128 H129 L130 N136 H143 K150 P151 V165 K168 L171 E174 R175 V176 I181

V191 S196 N197 A209 GLY I211 P222 Y223 I224 T225 L231 I235 F236 D237 E238 P239 Y242 V247 M250 K264 G285 D266 K267 A276 L298 L306 L320 D346 L349 I352 N359 L360 T361 A362 T372 I373 E378 V379 V380 T381 E382

- Molecule 1: N-acetylglucosamine-6-phosphate deacetylase

Chain H: 81% 18%

M0 P53 G54 F55 L60 V66 T76 V77 E78 T79 I82 M83 N87 C92 L99 I100 T101 S102 L106 V111 R112 V113 H129 L130 L135 N136 I137 K140 H143 V165 I166 T167 K168 V169 T170 L171 V176 I181 V191 H195 S196

N197 L200 V205 R208 I211 A220 M221 P222 Y223 I224 A234 V247 M250 R262 D266 A274 I286 PHE ALA G289 L298 C299 V300 L306 L320 V321 E322 P339 I343 G344 V345 D346 I352 T361 A362 F363 K368 I369 T372

I373 E378 V379 V380 T381 E382

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	73.52Å　73.70Å　157.07Å 83.70°　88.96°　82.69°	Depositor
Resolution (Å)	29.44　–　3.67 29.44　–　3.67	Depositor EDS
% Data completeness (in resolution range)	97.2 (29.44-3.67) 97.0 (29.44-3.67)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.21 (at 3.65Å)	Xtriage
Refinement program	PHENIX 1.19.1_4122, PHENIX 1.19.1_4122	Depositor
R, R_{free}	0.221　,　0.268 0.223　,　0.268	Depositor DCC
R_{free} test set	1726 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å^2)	108.4	Xtriage
Anisotropy	0.321	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 64.4	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	23076	wwPDB-VP
Average B, all atoms (Å^2)	109.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.92% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ZN

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	0.14	0/2936	0.39	0/3986
1	B	0.14	0/2955	0.39	0/4013
1	C	0.14	0/2947	0.39	0/4003
1	D	0.15	0/2955	0.38	0/4013
1	E	0.14	0/2830	0.39	0/3842
1	F	0.14	0/2950	0.36	0/4005
1	G	0.14	0/2950	0.38	0/4005
1	H	0.13	0/2937	0.36	0/3987
All	All	0.14	0/23460	0.38	0/31854

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 ⓘ

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	2887	0	2897	38	1
1	B	2905	0	2917	36	1
1	C	2897	0	2908	42	0
1	D	2905	0	2917	31	0
1	E	2783	0	2806	42	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2901	0	2913	31	0
1	G	2901	0	2913	47	0
1	H	2889	0	2902	46	1
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
All	All	23076	0	23173	303	2

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 (303) 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:G:224:ILE:HB	1:H:224:ILE:HB	1.63	0.79
1:G:111:VAL:HG13	1:G:165:VAL:HG21	1.69	0.73
1:F:111:VAL:HG13	1:F:165:VAL:HG21	1.69	0.73
1:C:150:LYS:HG2	1:C:151:PRO:HD2	1.72	0.71
1:F:69:ASN:HD22	1:F:100:ILE:HG12	1.55	0.71
1:A:171:LEU:HD13	1:A:176:VAL:HG21	1.71	0.71
1:B:171:LEU:HD13	1:B:176:VAL:HG21	1.73	0.71
1:E:171:LEU:HD13	1:E:176:VAL:HG21	1.73	0.70
1:G:128:LEU:HD22	1:G:130:LEU:HG	1.73	0.69
1:E:111:VAL:HG13	1:E:165:VAL:HG21	1.73	0.68
1:C:135:LEU:HD22	1:C:195:HIS:HB2	1.76	0.67
1:C:247:VAL:HG11	1:C:320:LEU:HG	1.76	0.67
1:D:247:VAL:HG11	1:D:320:LEU:HG	1.77	0.66
1:E:58:VAL:HG12	1:E:168:LYS:HZ1	1.60	0.66
1:F:67:GLN:HG2	1:F:276:ALA:HB2	1.77	0.66
1:G:197:ASN:HA	1:G:222:PRO:HG3	1.77	0.66
1:E:181:ILE:HG23	1:E:191:VAL:HG11	1.78	0.65
1:A:56:ILE:HD11	1:A:349:LEU:HD22	1.77	0.64
1:B:135:LEU:HD22	1:B:195:HIS:HB2	1.79	0.64
1:B:372:THR:HB	1:B:380:VAL:HB	1.77	0.64
1:A:135:LEU:HD22	1:A:195:HIS:HB2	1.80	0.64
1:F:363:PHE:HB3	1:F:369:ILE:HD13	1.79	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:364:THR:HG23	1:E:366:ASP:OD1	1.98	0.62
1:F:60:LEU:HD11	1:F:63:CYS:HB3	1.81	0.62
1:D:116:GLU:HG2	1:D:120:LYS:HE3	1.82	0.62
1:E:58:VAL:HG12	1:E:168:LYS:NZ	2.14	0.62
1:G:373:ILE:HG12	1:G:378:GLU:HG2	1.83	0.61
1:G:372:THR:HB	1:G:380:VAL:HB	1.82	0.60
1:H:76:THR:HG22	1:H:78:GLU:H	1.66	0.60
1:A:197:ASN:HA	1:A:222:PRO:HG3	1.84	0.59
1:F:247:VAL:HG11	1:F:320:LEU:HG	1.85	0.59
1:A:8:ARG:HH12	1:C:322:GLU:HB3	1.67	0.59
1:C:55:PHE:HB2	1:C:92:CYS:HA	1.84	0.59
1:H:87:ASN:HB3	1:H:92:CYS:HB3	1.85	0.59
1:H:373:ILE:HG12	1:H:378:GLU:HG2	1.85	0.58
1:E:50:ILE:O	1:E:362:ALA:HA	2.03	0.58
1:B:60:LEU:HD22	1:B:87:ASN:HD21	1.69	0.57
1:H:197:ASN:HA	1:H:222:PRO:HG3	1.86	0.57
1:C:197:ASN:HA	1:C:222:PRO:HG3	1.86	0.57
1:D:31:LEU:HD11	1:D:352:ILE:HG22	1.84	0.57
1:B:67:GLN:HG2	1:B:276:ALA:HB2	1.85	0.57
1:F:55:PHE:HB2	1:F:92:CYS:HA	1.87	0.57
1:F:11:THR:HA	1:F:352:ILE:HB	1.85	0.57
1:G:150:LYS:HD3	1:G:151:PRO:HD2	1.86	0.56
1:F:171:LEU:HD13	1:F:176:VAL:HG21	1.88	0.56
1:F:207:PHE:HD1	1:F:211:ILE:HB	1.71	0.56
1:B:250:MET:HG2	1:B:298:LEU:HD11	1.87	0.56
1:B:275:THR:HG22	1:B:276:ALA:H	1.71	0.56
1:D:349:LEU:HD21	1:D:359:ASN:HB2	1.87	0.56
1:B:197:ASN:HA	1:B:222:PRO:HG3	1.88	0.56
1:C:373:ILE:HG12	1:C:378:GLU:HG2	1.88	0.55
1:C:129:HIS:CD2	1:C:168:LYS:HE3	2.42	0.55
1:C:171:LEU:HD13	1:C:176:VAL:HG21	1.89	0.55
1:F:197:ASN:HA	1:F:222:PRO:HG3	1.88	0.55
1:D:364:THR:OG1	1:D:366:ASP:OD1	2.18	0.55
1:H:171:LEU:HD13	1:H:176:VAL:HG21	1.89	0.55
1:A:67:GLN:HG2	1:A:276:ALA:HB2	1.89	0.55
1:E:322:GLU:HB3	1:G:8:ARG:HH12	1.71	0.55
1:G:128:LEU:CD2	1:G:130:LEU:HG	2.36	0.55
1:D:87:ASN:HB3	1:D:92:CYS:HB3	1.88	0.54
1:B:11:THR:HA	1:B:352:ILE:HB	1.90	0.54
1:E:197:ASN:HA	1:E:222:PRO:HG3	1.89	0.54
1:G:349:LEU:HD21	1:G:359:ASN:HB2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:373:ILE:HG12	1:D:378:GLU:HG2	1.90	0.54
1:E:57:ASP:HB2	1:E:92:CYS:SG	2.47	0.54
1:B:339:PRO:O	1:B:343:ILE:HG12	2.08	0.54
1:A:364:THR:HG23	1:A:366:ASP:OD1	2.08	0.53
1:E:191:VAL:HG12	1:E:211:ILE:HG12	1.89	0.53
1:C:349:LEU:HG	1:C:357:VAL:HB	1.89	0.53
1:A:295:ARG:HD3	1:A:298:LEU:HD13	1.91	0.53
1:A:300:VAL:HB	1:A:304:GLY:HA2	1.90	0.53
1:G:58:VAL:HG12	1:G:168:LYS:HZ1	1.73	0.53
1:A:247:VAL:HG11	1:A:320:LEU:HG	1.89	0.53
1:D:197:ASN:HA	1:D:222:PRO:HG3	1.89	0.53
1:A:87:ASN:HB3	1:A:92:CYS:HB3	1.90	0.53
1:E:171:LEU:HD21	1:E:191:VAL:HG13	1.90	0.53
1:C:181:ILE:HG23	1:C:191:VAL:HG11	1.91	0.53
1:G:181:ILE:HG23	1:G:191:VAL:HG11	1.91	0.53
1:B:275:THR:HG22	1:B:276:ALA:N	2.24	0.52
1:E:98:THR:HG23	1:E:129:HIS:CE1	2.43	0.52
1:A:76:THR:HG23	1:A:79:THR:H	1.74	0.52
1:D:137:ILE:HD12	1:D:140:LYS:HD3	1.90	0.52
1:G:239:PRO:O	1:G:267:LYS:HG3	2.08	0.52
1:H:78:GLU:O	1:H:82:ILE:HG13	2.10	0.52
1:C:349:LEU:HD21	1:C:359:ASN:HB2	1.90	0.52
1:E:247:VAL:HG11	1:E:320:LEU:HG	1.90	0.52
1:D:242:TYR:HA	1:D:267:LYS:HB3	1.91	0.52
1:E:245:ILE:HD11	1:E:252:VAL:HG11	1.91	0.52
1:F:278:ALA:HB2	1:F:310:SER:HA	1.91	0.52
1:G:171:LEU:HD13	1:G:176:VAL:HG21	1.91	0.52
1:C:67:GLN:O	1:C:74:ALA:HB1	2.10	0.52
1:H:102:SER:HB3	1:H:106:LEU:HB3	1.92	0.51
1:A:116:GLU:HG2	1:A:120:LYS:HE3	1.91	0.51
1:G:95:PHE:O	1:G:125:ALA:HA	2.10	0.51
1:H:363:PHE:HB3	1:H:369:ILE:HD13	1.93	0.51
1:D:127:GLY:HA3	1:D:167:THR:OG1	2.11	0.51
1:D:181:ILE:HG23	1:D:191:VAL:HG11	1.93	0.51
1:F:100:ILE:HG13	1:F:100:ILE:O	2.10	0.51
1:F:16:LEU:HD12	1:F:31:LEU:HD23	1.91	0.51
1:G:129:HIS:CD2	1:G:168:LYS:HE3	2.46	0.51
1:C:274:ALA:HA	1:C:309:SER:O	2.11	0.51
1:D:171:LEU:HD13	1:D:176:VAL:HG21	1.93	0.51
1:E:65:GLY:HA2	1:E:282:ILE:HD13	1.93	0.51
1:B:53:PRO:HG3	1:B:352:ILE:HG13	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:53:PRO:HG3	1:D:352:ILE:HG13	1.93	0.51
1:E:11:THR:HA	1:E:352:ILE:HB	1.92	0.51
1:H:181:ILE:HG23	1:H:191:VAL:HG11	1.93	0.51
1:H:111:VAL:HG13	1:H:165:VAL:HG21	1.93	0.50
1:E:0:MET:O	1:E:24:ALA:HA	2.12	0.50
1:F:135:LEU:HD22	1:F:195:HIS:HB2	1.94	0.50
1:B:181:ILE:HG23	1:B:191:VAL:HG11	1.92	0.50
1:E:67:GLN:O	1:E:74:ALA:HB1	2.12	0.50
1:H:343:ILE:HG13	1:H:345:VAL:HG22	1.93	0.50
1:C:58:VAL:HG12	1:C:168:LYS:HZ1	1.77	0.50
1:C:111:VAL:HG13	1:C:165:VAL:HG21	1.94	0.50
1:B:69:ASN:HB3	1:B:99:LEU:HD12	1.94	0.49
1:A:126:LEU:HD13	1:A:345:VAL:HG11	1.94	0.49
1:B:9:VAL:HB	1:B:16:LEU:HB2	1.94	0.49
1:G:58:VAL:HG12	1:G:168:LYS:NZ	2.27	0.49
1:A:114:MET:HG2	1:A:128:LEU:HB2	1.94	0.49
1:G:225:THR:HG22	1:H:223:TYR:HD1	1.77	0.49
1:A:107:MET:HE3	1:A:130:LEU:HD22	1.95	0.49
1:A:100:ILE:HG13	1:A:100:ILE:O	2.13	0.49
1:H:200:LEU:HD12	1:H:234:ALA:HB2	1.93	0.49
1:H:77:VAL:HG22	1:H:113:VAL:HG13	1.95	0.49
1:H:247:VAL:HG12	1:H:247:VAL:O	2.13	0.49
1:D:372:THR:HB	1:D:380:VAL:HB	1.95	0.49
1:G:87:ASN:HB3	1:G:92:CYS:HB3	1.94	0.48
1:B:247:VAL:HG12	1:B:247:VAL:O	2.13	0.48
1:C:100:ILE:O	1:C:100:ILE:HG13	2.12	0.48
1:D:130:LEU:HB2	1:D:169:VAL:HG22	1.95	0.48
1:C:191:VAL:HG12	1:C:211:ILE:HG12	1.94	0.48
1:E:192:SER:OG	1:E:215:THR:HG23	2.13	0.48
1:E:207:PHE:HD1	1:E:211:ILE:HB	1.77	0.48
1:G:298:LEU:HD22	1:G:306:LEU:HD22	1.95	0.48
1:A:181:ILE:HG23	1:A:191:VAL:HG11	1.95	0.48
1:D:70:ASP:OD2	1:D:287:PHE:HA	2.13	0.48
1:H:54:GLY:HA2	1:H:361:THR:HG22	1.95	0.48
1:C:101:THR:HG21	1:C:143:HIS:HB3	1.96	0.48
1:D:69:ASN:HB3	1:D:99:LEU:HD12	1.96	0.48
1:A:349:LEU:HD23	1:A:350:GLY:H	1.78	0.48
1:E:129:HIS:CD2	1:E:168:LYS:HE3	2.49	0.48
1:H:60:LEU:HD12	1:H:274:ALA:HB3	1.95	0.48
1:D:55:PHE:HB2	1:D:92:CYS:HA	1.95	0.48
1:E:59:GLN:HE22	1:E:216:HIS:CE1	2.31	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:247:VAL:HG12	1:F:247:VAL:O	2.14	0.47
1:G:100:ILE:HG13	1:G:100:ILE:O	2.12	0.47
1:G:237:ASP:HA	1:H:262:ARG:HH12	1.79	0.47
1:G:38:PRO:HB2	1:G:40:ASP:OD1	2.15	0.47
1:B:285:PHE:CZ	1:B:292:ILE:HB	2.48	0.47
1:F:22:VAL:HB	1:F:30:ARG:HG2	1.96	0.47
1:C:130:LEU:HB2	1:C:169:VAL:HG22	1.97	0.47
1:E:263:LEU:HG	1:F:263:LEU:HD21	1.97	0.47
1:G:247:VAL:HG12	1:G:247:VAL:O	2.14	0.47
1:A:274:ALA:HA	1:A:309:SER:O	2.15	0.47
1:B:22:VAL:HB	1:B:30:ARG:HG2	1.97	0.47
1:D:247:VAL:HG12	1:D:247:VAL:O	2.14	0.47
1:G:247:VAL:HG11	1:G:320:LEU:HG	1.96	0.47
1:H:346:ASP:OD1	1:H:346:ASP:N	2.47	0.47
1:C:151:PRO:HG3	1:C:176:VAL:HG12	1.96	0.47
1:H:205:VAL:HG22	1:H:208:ARG:HH21	1.79	0.47
1:F:53:PRO:HG3	1:F:352:ILE:HG13	1.97	0.46
1:A:295:ARG:HG2	1:A:296:ASN:H	1.81	0.46
1:D:76:THR:HG22	1:D:78:GLU:H	1.80	0.46
1:F:306:LEU:HD23	1:F:306:LEU:H	1.80	0.46
1:A:50:ILE:O	1:A:362:ALA:HA	2.16	0.46
1:D:135:LEU:HD22	1:D:195:HIS:HB2	1.98	0.46
1:F:181:ILE:HG23	1:F:191:VAL:HG11	1.97	0.46
1:A:46:VAL:HG21	1:A:51:ILE:HD11	1.98	0.46
1:H:99:LEU:HB3	1:H:130:LEU:HD23	1.97	0.46
1:A:291:THR:C	1:A:292:ILE:HD13	2.41	0.46
1:E:372:THR:HB	1:E:380:VAL:HB	1.97	0.46
1:G:379:VAL:HG23	1:G:380:VAL:HG23	1.97	0.45
1:H:300:VAL:HB	1:H:306:LEU:HD23	1.97	0.45
1:C:343:ILE:HG13	1:C:345:VAL:HG22	1.96	0.45
1:E:247:VAL:HG12	1:E:247:VAL:O	2.15	0.45
1:D:61:ASN:HA	1:D:98:THR:HB	1.99	0.45
1:G:128:LEU:HD23	1:G:129:HIS:N	2.31	0.45
1:H:135:LEU:HD22	1:H:195:HIS:HB2	1.97	0.45
1:B:78:GLU:O	1:B:82:ILE:HG13	2.17	0.45
1:B:275:THR:CG2	1:B:276:ALA:H	2.29	0.45
1:C:282:ILE:HD12	1:C:285:PHE:HB3	1.99	0.45
1:G:225:THR:HG22	1:H:223:TYR:CD1	2.51	0.45
1:D:54:GLY:HA2	1:D:361:THR:HG22	1.98	0.45
1:G:53:PRO:HG3	1:G:352:ILE:HG13	1.98	0.45
1:A:191:VAL:HG12	1:A:211:ILE:HG12	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:247:VAL:HG12	1:A:247:VAL:O	2.16	0.45
1:C:78:GLU:O	1:C:82:ILE:HG13	2.16	0.45
1:C:100:ILE:HG22	1:C:131:GLU:HB3	1.99	0.45
1:H:66:VAL:HB	1:H:79:THR:HG23	1.97	0.45
1:B:100:ILE:O	1:B:100:ILE:HD12	2.17	0.45
1:B:247:VAL:HG11	1:B:320:LEU:HG	1.98	0.45
1:D:140:LYS:HE2	1:D:145:PRO:HB3	1.98	0.45
1:H:66:VAL:HG23	1:H:83:MET:HG3	1.99	0.45
1:G:100:ILE:HB	1:G:143:HIS:CD2	2.52	0.45
1:G:171:LEU:HD22	1:G:176:VAL:HG11	1.98	0.44
1:H:137:ILE:HD12	1:H:140:LYS:HD3	1.97	0.44
1:A:295:ARG:N	1:A:298:LEU:O	2.49	0.44
1:C:364:THR:HG23	1:C:366:ASP:OD1	2.16	0.44
1:H:250:MET:HG2	1:H:298:LEU:HD11	1.99	0.44
1:H:266:ASP:N	1:H:266:ASP:OD1	2.47	0.44
1:G:101:THR:HG21	1:G:143:HIS:HB3	1.98	0.44
1:G:174:GLU:OE1	1:G:196:SER:OG	2.32	0.44
1:C:247:VAL:HG12	1:C:247:VAL:O	2.16	0.44
1:D:171:LEU:HD22	1:D:176:VAL:HG11	1.99	0.44
1:C:128:LEU:HD23	1:C:129:HIS:N	2.32	0.44
1:G:67:GLN:O	1:G:74:ALA:HB1	2.17	0.44
1:B:174:GLU:HG2	1:B:175:ARG:N	2.33	0.44
1:F:155:LEU:O	1:F:159:LEU:HG	2.18	0.44
1:H:298:LEU:HD22	1:H:306:LEU:HD22	2.00	0.44
1:B:343:ILE:HG13	1:B:345:VAL:HG22	1.99	0.44
1:D:67:GLN:O	1:D:74:ALA:HB1	2.18	0.44
1:E:98:THR:HG23	1:E:129:HIS:ND1	2.33	0.44
1:F:8:ARG:HH22	1:H:322:GLU:HB3	1.83	0.44
1:G:346:ASP:OD1	1:G:346:ASP:N	2.51	0.44
1:H:191:VAL:HG12	1:H:211:ILE:HG12	2.00	0.44
1:F:98:THR:HA	1:F:129:HIS:O	2.18	0.43
1:G:266:ASP:OD1	1:G:266:ASP:N	2.50	0.43
1:B:317:VAL:HG22	1:B:331:VAL:HG12	2.00	0.43
1:G:61:ASN:HA	1:G:98:THR:HB	2.00	0.43
1:G:264:LYS:HE3	1:G:264:LYS:HB3	1.78	0.43
1:C:150:LYS:HG2	1:C:151:PRO:CD	2.46	0.43
1:C:69:ASN:HD21	1:C:99:LEU:HA	1.84	0.43
1:F:9:VAL:HB	1:F:16:LEU:HB2	2.01	0.43
1:B:364:THR:HG23	1:B:370:THR:CG2	2.49	0.43
1:E:16:LEU:HD23	1:E:16:LEU:HA	1.84	0.43
1:B:58:VAL:HG23	1:B:271:VAL:HG12	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:339:PRO:O	1:C:343:ILE:HG12	2.19	0.43
1:B:171:LEU:HD13	1:B:176:VAL:CG2	2.47	0.42
1:H:129:HIS:HA	1:H:168:LYS:O	2.19	0.42
1:E:239:PRO:O	1:E:267:LYS:HG3	2.19	0.42
1:F:364:THR:OG1	1:F:366:ASP:OD1	2.37	0.42
1:G:136:ASN:ND2	1:G:174:GLU:OE2	2.47	0.42
1:H:339:PRO:O	1:H:343:ILE:HG12	2.19	0.42
1:A:58:VAL:HG22	1:A:271:VAL:HG12	1.99	0.42
1:C:53:PRO:HG3	1:C:352:ILE:HG13	2.01	0.42
1:C:69:ASN:ND2	1:C:99:LEU:HA	2.35	0.42
1:A:58:VAL:O	1:A:96:LEU:HB2	2.19	0.42
1:C:285:PHE:CE2	1:C:287:PHE:HB2	2.54	0.42
1:E:53:PRO:HG3	1:E:352:ILE:HG13	2.01	0.42
1:B:111:VAL:HG13	1:B:165:VAL:HG21	2.01	0.42
1:C:174:GLU:HG2	1:C:175:ARG:HD2	2.00	0.42
1:E:46:VAL:HB	1:E:49:ALA:HB3	2.00	0.42
1:G:250:MET:HG2	1:G:298:LEU:HD11	2.01	0.42
1:B:192:SER:OG	1:B:215:THR:HG23	2.20	0.42
1:E:266:ASP:N	1:E:266:ASP:OD1	2.53	0.42
1:G:67:GLN:HG2	1:G:276:ALA:HB2	2.02	0.42
1:A:347:LYS:H	1:A:347:LYS:HD2	1.85	0.42
1:D:191:VAL:HG12	1:D:211:ILE:HG12	2.02	0.42
1:H:53:PRO:HG3	1:H:352:ILE:HG13	2.02	0.42
1:E:16:LEU:HD22	1:E:19:HIS:CD2	2.55	0.41
1:G:54:GLY:HA2	1:G:361:THR:HG22	2.02	0.41
1:C:44:ARG:HH11	1:C:378:GLU:CD	2.28	0.41
1:C:87:ASN:HB3	1:C:92:CYS:HB3	2.02	0.41
1:G:242:TYR:HA	1:G:267:LYS:HB3	2.01	0.41
1:A:212:THR:HG22	1:A:212:THR:O	2.20	0.41
1:D:346:ASP:OD1	1:D:346:ASP:N	2.53	0.41
1:D:364:THR:HG23	1:D:370:THR:CG2	2.50	0.41
1:F:78:GLU:O	1:F:82:ILE:HG13	2.20	0.41
1:H:55:PHE:O	1:H:92:CYS:HA	2.20	0.41
1:B:217:LEU:HD23	1:B:245:ILE:HD12	2.02	0.41
1:E:99:LEU:HB3	1:E:130:LEU:HD23	2.02	0.41
1:E:127:GLY:HA3	1:E:167:THR:OG1	2.20	0.41
1:H:165:VAL:HG23	1:H:166:ILE:HG13	2.02	0.41
1:B:60:LEU:HD12	1:B:274:ALA:HB3	2.03	0.41
1:A:225:THR:HG22	1:B:223:TYR:CD1	2.55	0.41
1:B:54:GLY:HA2	1:B:361:THR:HG22	2.01	0.41
1:B:131:GLU:HA	1:B:170:THR:HB	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:10:TYR:O	1:C:53:PRO:HD3	2.20	0.41
1:C:372:THR:HB	1:C:380:VAL:HB	2.03	0.41
1:E:55:PHE:HB2	1:E:92:CYS:HA	2.02	0.41
1:E:69:ASN:CG	1:E:70:ASP:N	2.79	0.41
1:E:244:GLY:HA2	1:E:269:CYS:O	2.20	0.41
1:D:343:ILE:HG13	1:D:345:VAL:HG22	2.03	0.41
1:F:50:ILE:O	1:F:362:ALA:HA	2.21	0.41
1:G:40:ASP:OD1	1:G:41:ILE:N	2.53	0.41
1:H:100:ILE:O	1:H:100:ILE:HG13	2.19	0.41
1:A:155:LEU:O	1:A:159:LEU:HG	2.21	0.41
1:G:50:ILE:O	1:G:362:ALA:HA	2.21	0.41
1:A:373:ILE:HG12	1:A:378:GLU:HG2	2.03	0.41
1:E:196:SER:O	1:E:222:PRO:HD3	2.21	0.41
1:E:224:ILE:HB	1:F:224:ILE:HB	2.03	0.41
1:H:60:LEU:HD22	1:H:87:ASN:HD21	1.85	0.41
1:H:247:VAL:HG11	1:H:320:LEU:HG	2.02	0.41
1:C:242:TYR:HA	1:C:267:LYS:HB3	2.02	0.41
1:A:258:ARG:O	1:A:262:ARG:HG3	2.21	0.40
1:B:16:LEU:HD12	1:B:31:LEU:HD23	2.02	0.40
1:E:140:LYS:HG3	1:E:141:GLY:N	2.36	0.40
1:G:196:SER:O	1:G:222:PRO:HD3	2.22	0.40
1:H:130:LEU:HB2	1:H:169:VAL:HG22	2.04	0.40
1:H:195:HIS:HA	1:H:220:ALA:HB1	2.03	0.40
1:H:196:SER:O	1:H:222:PRO:HD3	2.21	0.40
1:A:245:ILE:HD13	1:A:257:VAL:HG22	2.03	0.40
1:E:100:ILE:HG22	1:E:131:GLU:HB3	2.03	0.40
1:F:349:LEU:HD21	1:F:359:ASN:HB2	2.03	0.40
1:H:101:THR:HG21	1:H:143:HIS:HB3	2.03	0.40
1:C:298:LEU:HD22	1:C:306:LEU:HD21	2.04	0.40
1:F:346:ASP:OD1	1:F:346:ASP:N	2.55	0.40
1:A:140:LYS:HG3	1:A:141:GLY:N	2.36	0.40
1:A:264:LYS:HB3	1:A:264:LYS:HE3	1.92	0.40
1:C:192:SER:HB2	1:C:213:PHE:HB3	2.03	0.40
1:G:231:LEU:O	1:G:235:ILE:HG13	2.22	0.40
1:H:372:THR:HB	1:H:380:VAL:HB	2.03	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:47:ASN:ND2	1:B:366:ASP:OD2[1_545]	2.06	0.14

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:41:ILE:O	1:H:368:LYS:NZ[1_655]	2.17	0.03

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	376/383 (98%)	366 (97%)	10 (3%)	0	100	100
1	B	381/383 (100%)	373 (98%)	8 (2%)	0	100	100
1	C	380/383 (99%)	375 (99%)	5 (1%)	0	100	100
1	D	381/383 (100%)	372 (98%)	9 (2%)	0	100	100
1	E	363/383 (95%)	357 (98%)	6 (2%)	0	100	100
1	F	378/383 (99%)	374 (99%)	4 (1%)	0	100	100
1	G	378/383 (99%)	372 (98%)	6 (2%)	0	100	100
1	H	377/383 (98%)	370 (98%)	7 (2%)	0	100	100
All	All	3014/3064 (98%)	2959 (98%)	55 (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	310/312 (99%)	310 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	312/312 (100%)	312 (100%)	0	100	100
1	C	311/312 (100%)	311 (100%)	0	100	100
1	D	312/312 (100%)	312 (100%)	0	100	100
1	E	299/312 (96%)	299 (100%)	0	100	100
1	F	312/312 (100%)	312 (100%)	0	100	100
1	G	312/312 (100%)	312 (100%)	0	100	100
1	H	311/312 (100%)	311 (100%)	0	100	100
All	All	2479/2496 (99%)	2479 (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 (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	144	ASN
1	B	59	GLN
1	B	84	GLN
1	B	123	ASN
1	B	377	ASN
1	C	129	HIS
1	C	144	ASN
1	D	144	ASN
1	E	13	HIS
1	E	129	HIS
1	E	144	ASN
1	E	216	HIS
1	E	219	ASN
1	F	61	ASN
1	F	67	GLN
1	F	69	ASN
1	F	144	ASN
1	F	323	HIS
1	G	61	ASN
1	G	195	HIS
1	G	216	HIS
1	H	13	HIS
1	H	195	HIS
1	H	303	ASN

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, 8 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

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	380/383 (99%)	-0.45	0	100	100	67, 109, 149, 174	0
1	B	383/383 (100%)	-0.36	0	100	100	71, 104, 145, 184	0
1	C	382/383 (99%)	-0.41	0	100	100	67, 102, 137, 166	0
1	D	383/383 (100%)	-0.36	0	100	100	72, 108, 153, 182	0
1	E	367/383 (95%)	-0.38	0	100	100	77, 107, 140, 178	0
1	F	382/383 (99%)	-0.39	0	100	100	75, 106, 144, 176	0
1	G	382/383 (99%)	-0.34	0	100	100	72, 102, 135, 172	0
1	H	381/383 (99%)	-0.45	0	100	100	76, 112, 154, 187	0
All	All	3040/3064 (99%)	-0.39	0	100	100	67, 106, 147, 187	0

There are no RSRZ outliers to report.

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	ZN	E	400	1/1	0.82	0.11	164,164,164,164	0
2	ZN	G	400	1/1	0.86	0.09	172,172,172,172	0
2	ZN	H	400	1/1	0.86	0.08	170,170,170,170	0
2	ZN	C	400	1/1	0.87	0.11	175,175,175,175	0
2	ZN	A	400	1/1	0.90	0.06	153,153,153,153	0
2	ZN	F	400	1/1	0.90	0.08	157,157,157,157	0
2	ZN	B	400	1/1	0.91	0.06	156,156,156,156	0
2	ZN	D	400	1/1	0.93	0.07	173,173,173,173	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.
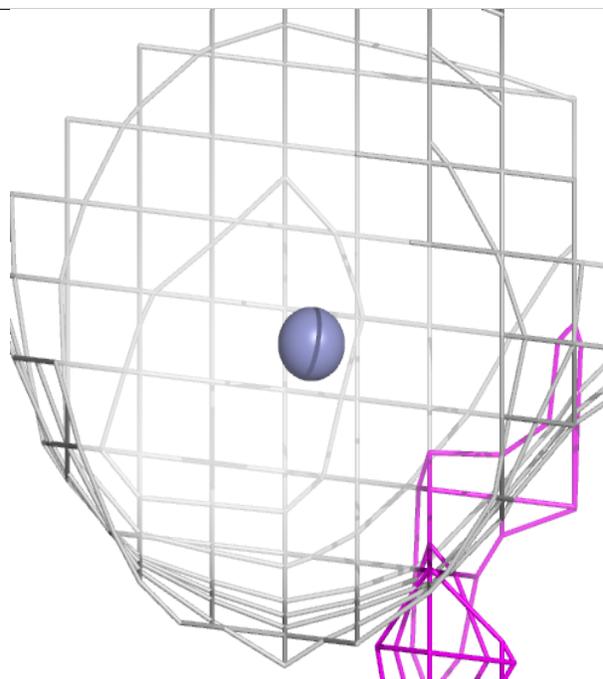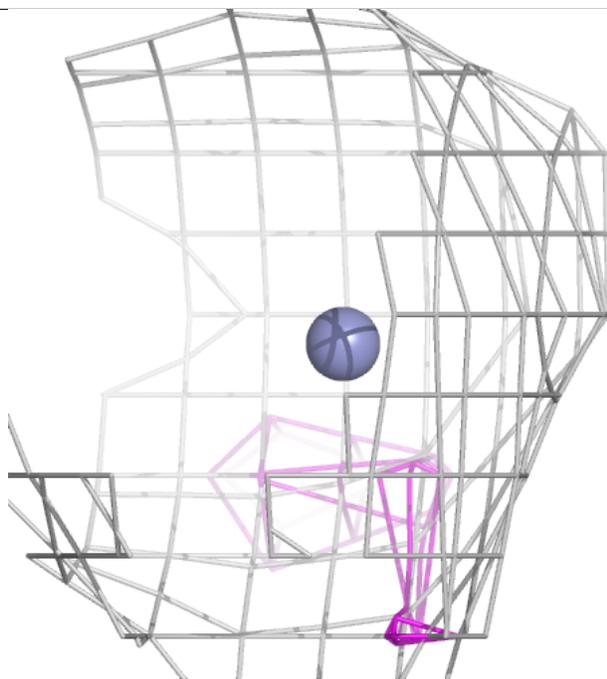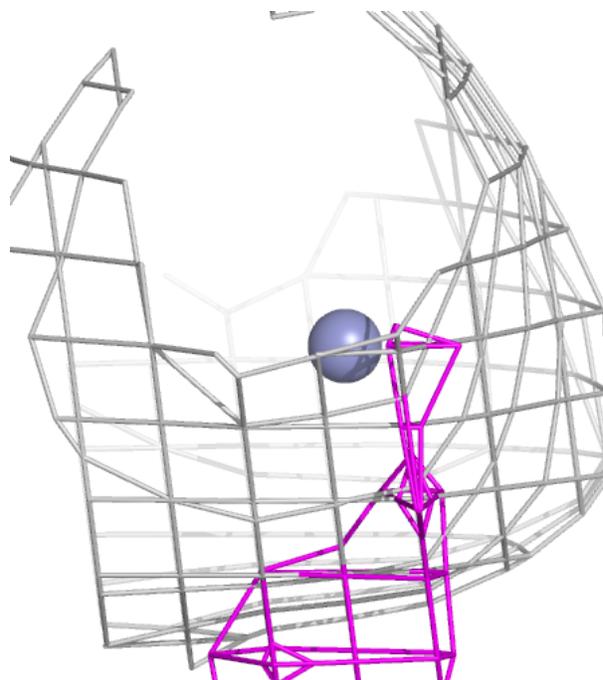

Electron density around ZN E 400:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)
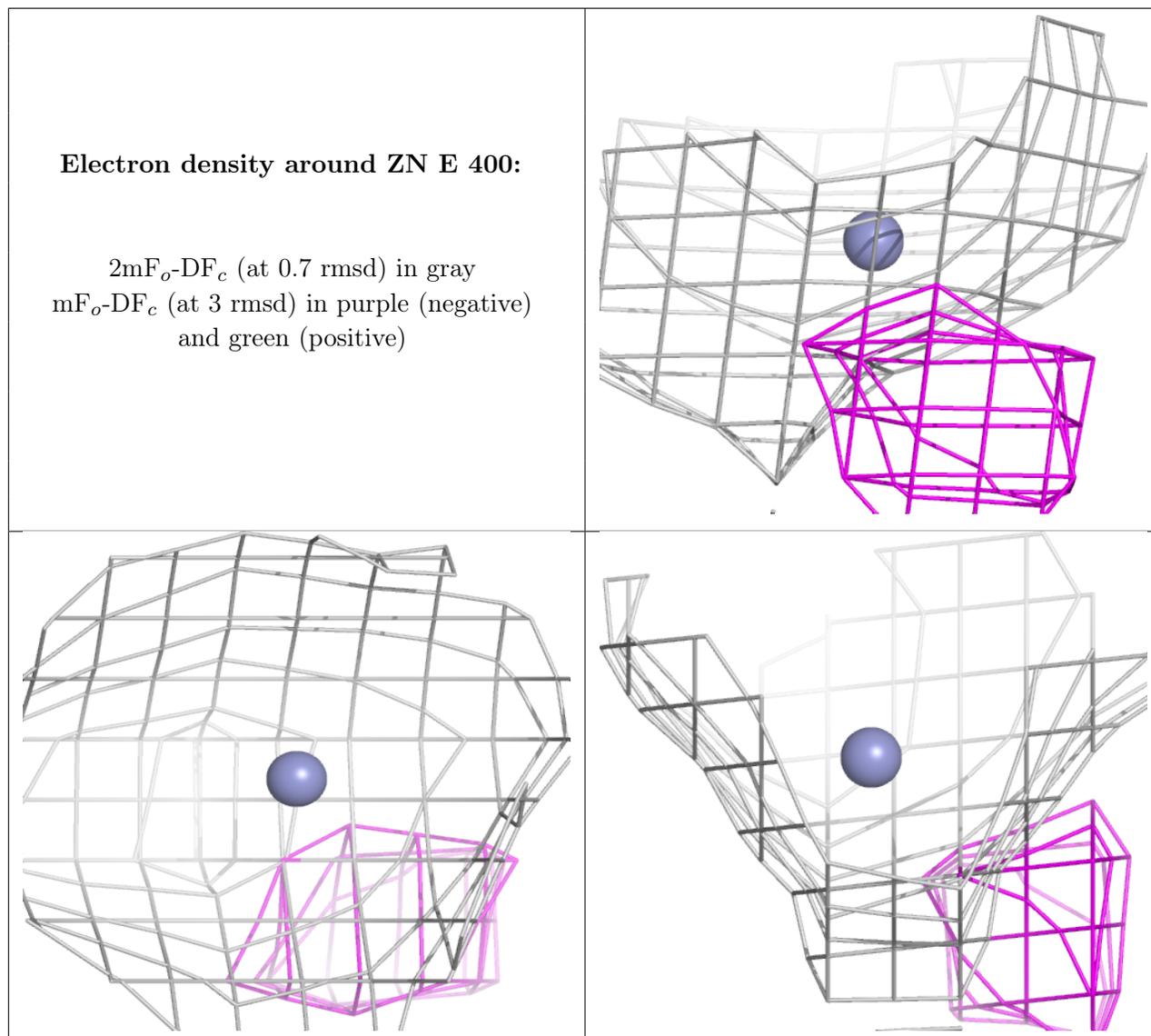
Electron density around ZN G 400:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
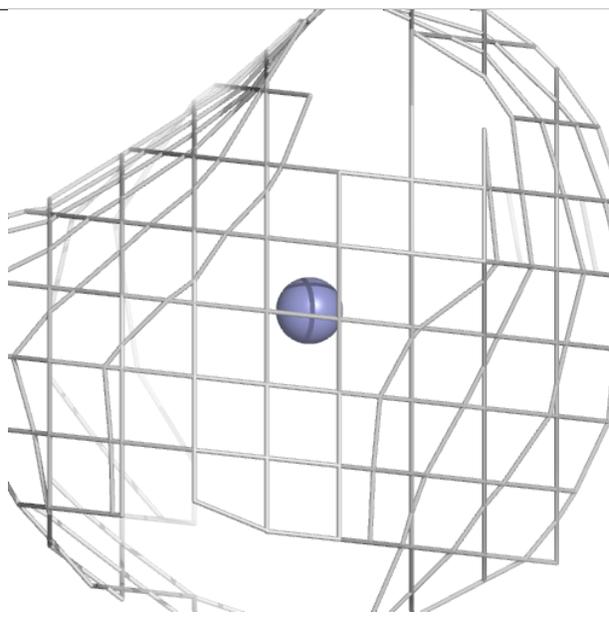mF_o-DF_c (at 3 rmsd) in purple (negative)
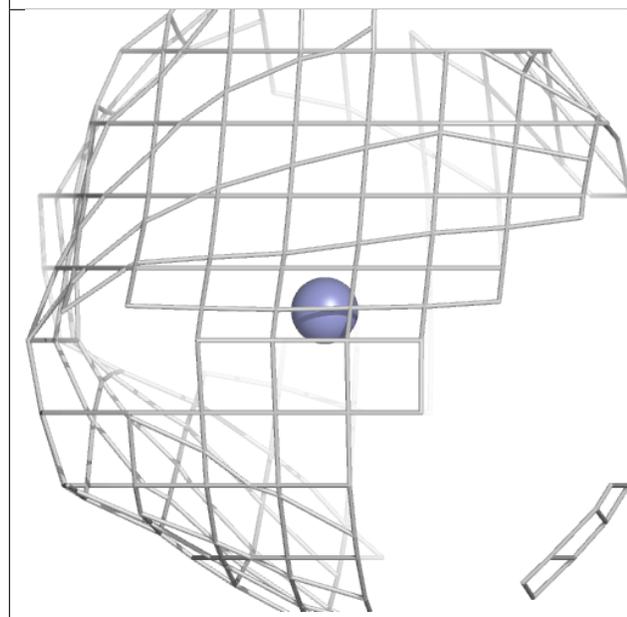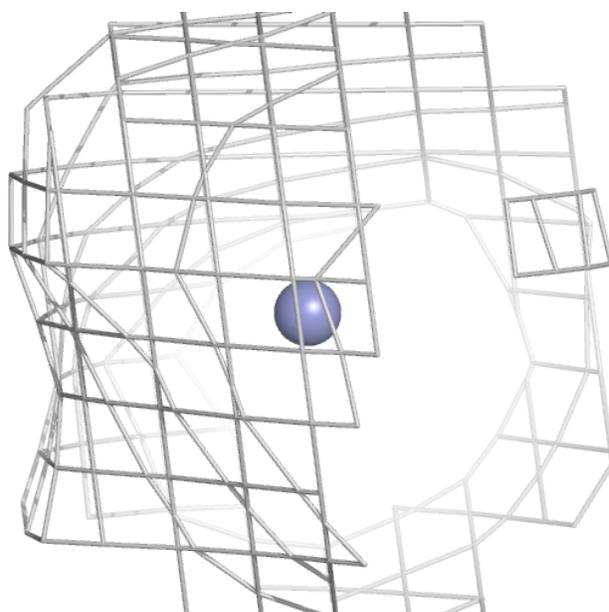and green (positive)
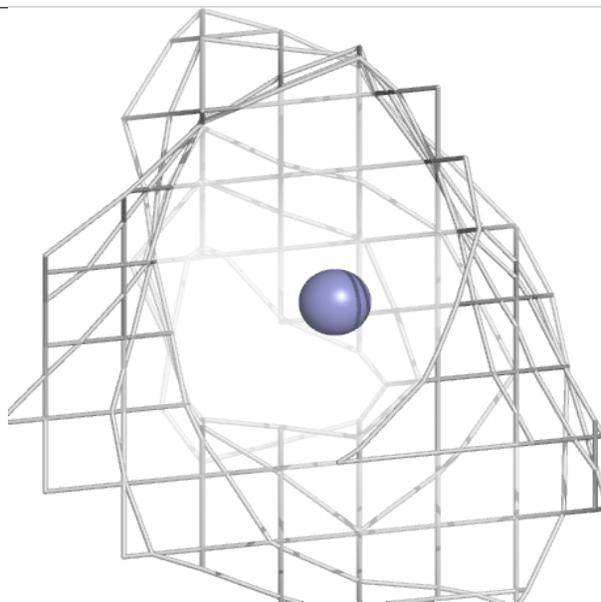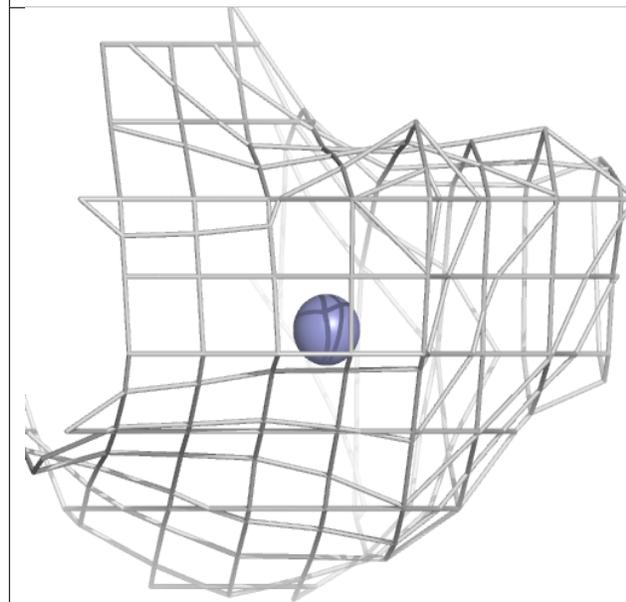
Electron density around ZN H 400:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
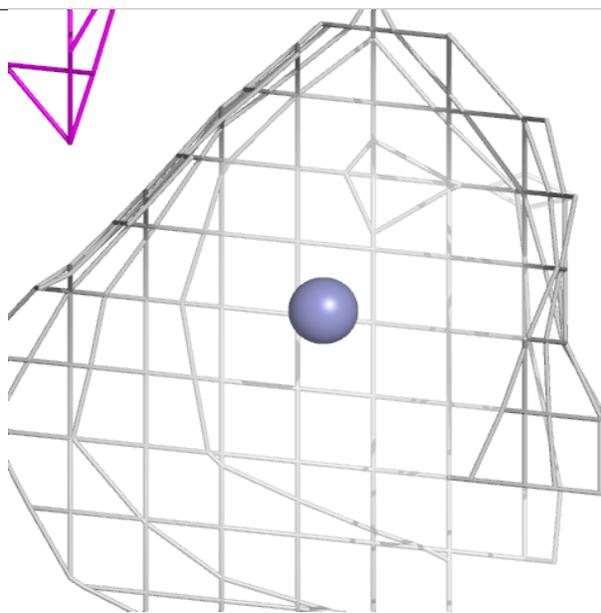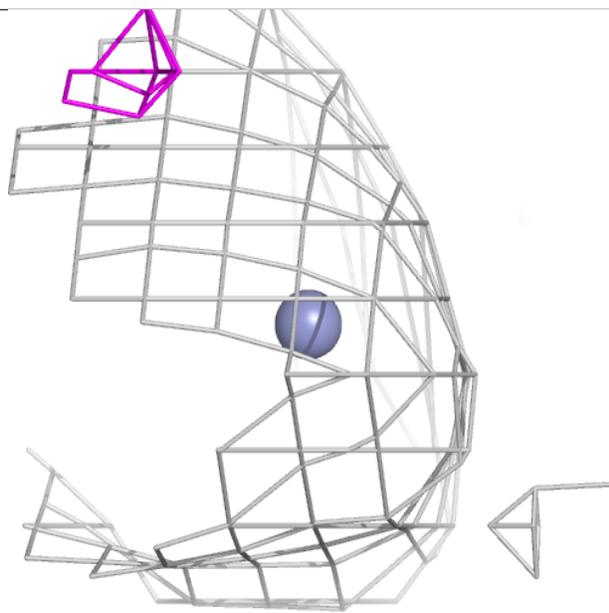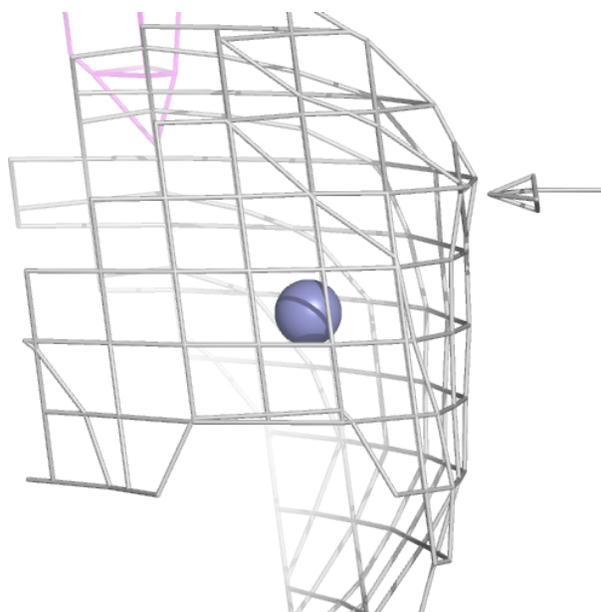
Electron density around ZN C 400:

$2mF_o$-DF_c (at 0.7 rmsd) in gray

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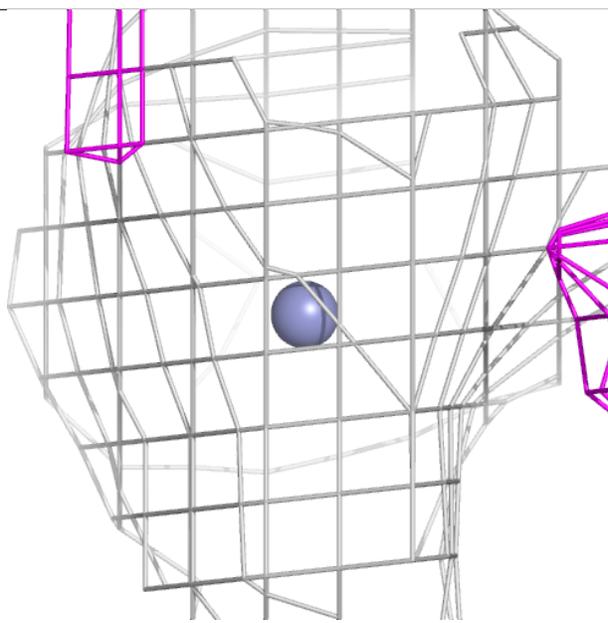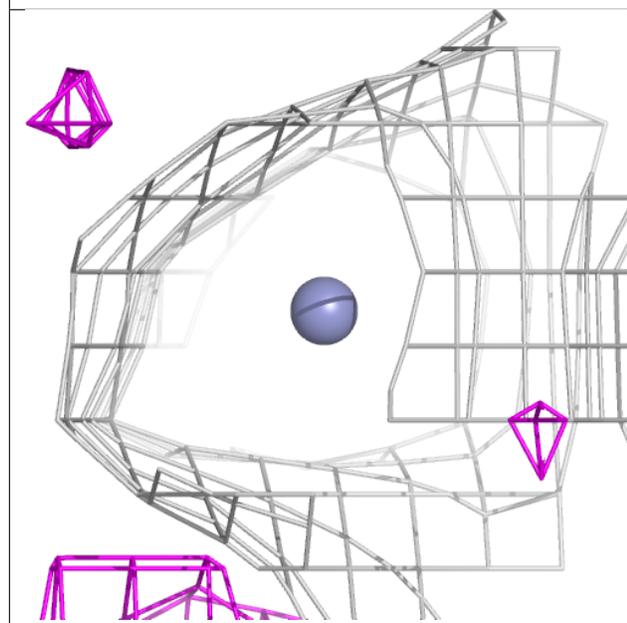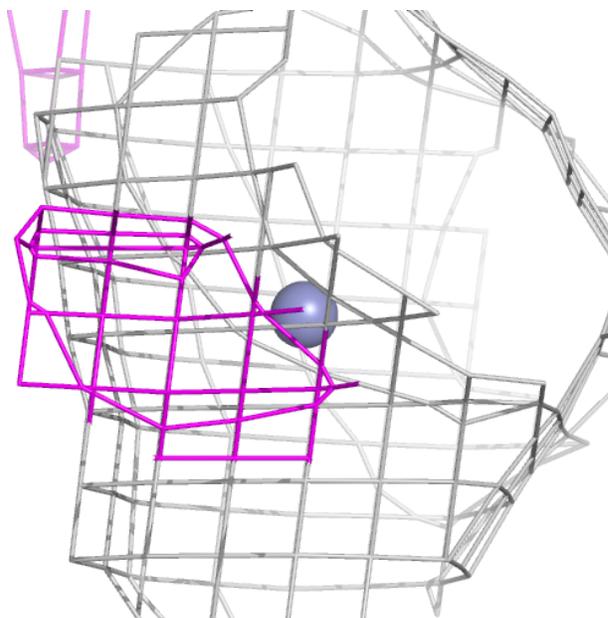
and green (positive)

Electron density around ZN A 400:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
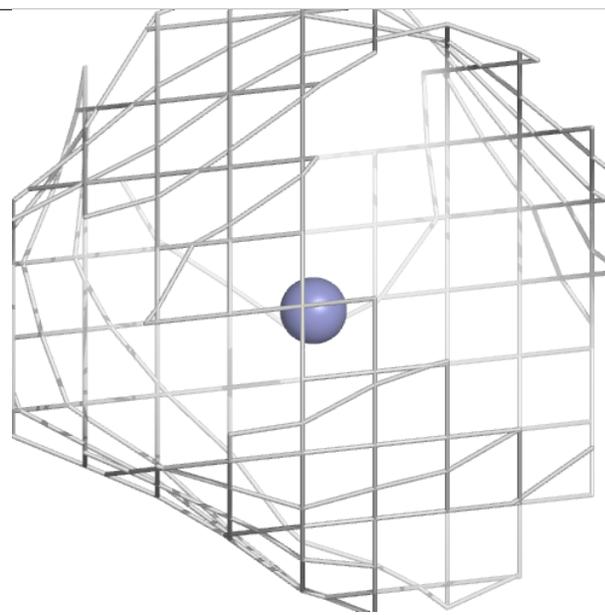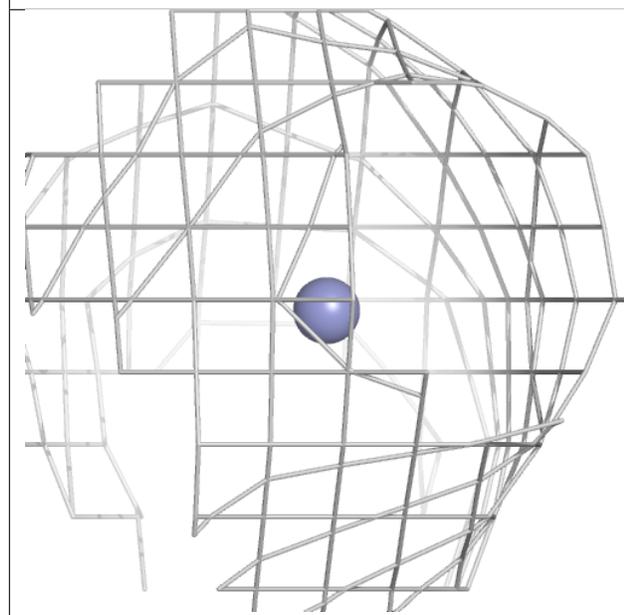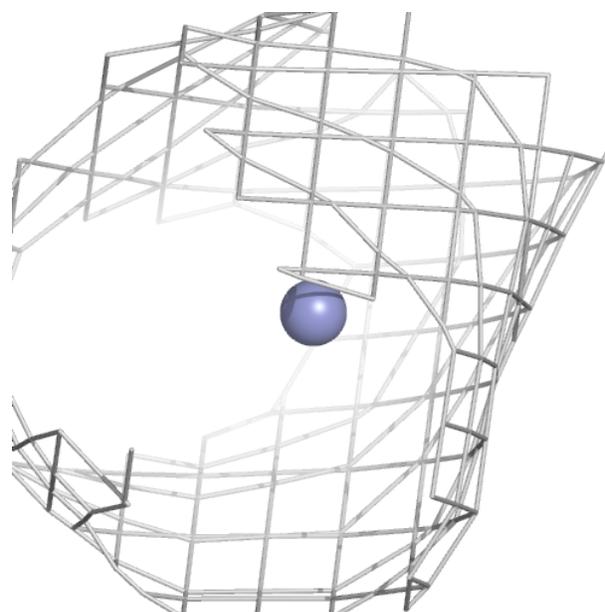
Electron density around ZN F 400:

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

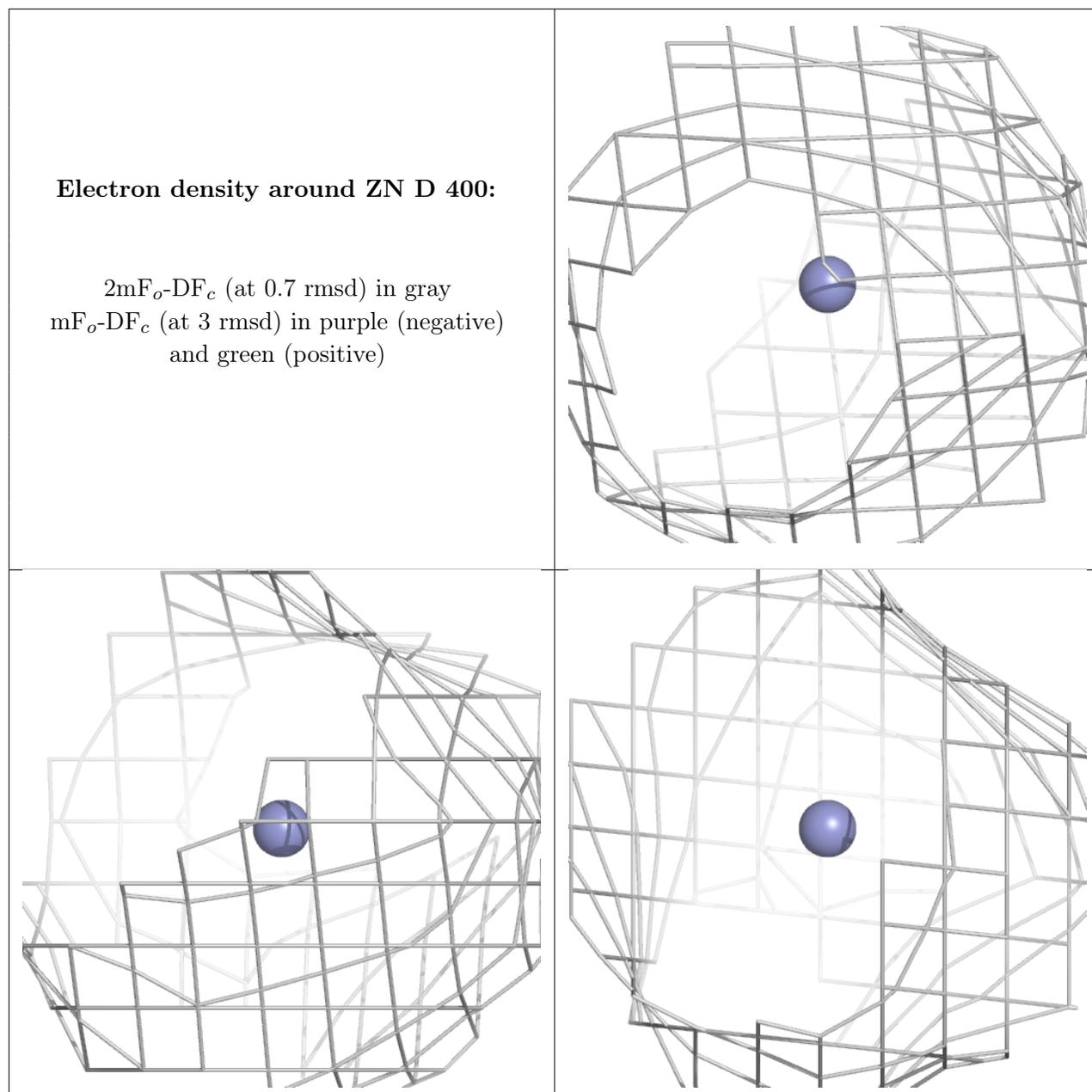**Electron density around ZN B 400:**

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

Electron density around ZN D 400:

$2mF_o$-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.