



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2026 – 11:17 AM EDT

PDB ID : 3PQ8 / pdb_00003pq8
Title : Structure of I274C variant of E. coli KatE[] - Images 37-42
Authors : Loewen, P.C.; Jha, V.; Louis, S.; Chelikani, P.; Carpena, X.; Fita, I.
Deposited on : 2010-11-25
Resolution : 1.80 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 : 9.0.015 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

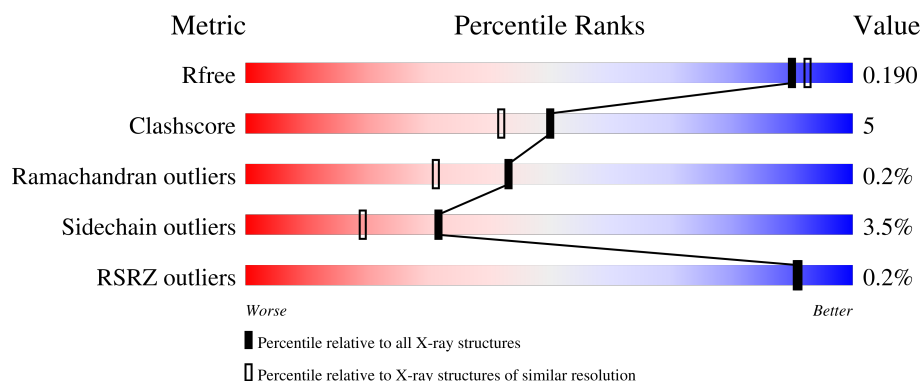
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.80 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	7662 (1.80-1.80)
Clashscore	190562	8479 (1.80-1.80)
Ramachandran outliers	187476	8391 (1.80-1.80)
Sidechain outliers	187428	8390 (1.80-1.80)
RSRZ outliers	180081	7663 (1.80-1.80)

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	753	 86% 9% . .
1	B	753	 85% 10% . .
1	C	753	 85% 10% . .
1	D	753	 84% 11% . .

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	HDD	A	760[A]	X	-	-	-
2	HDD	B	760[A]	X	-	-	-
2	HDD	C	760[A]	X	-	-	-
2	HDD	D	760[A]	X	-	-	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 26810 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.

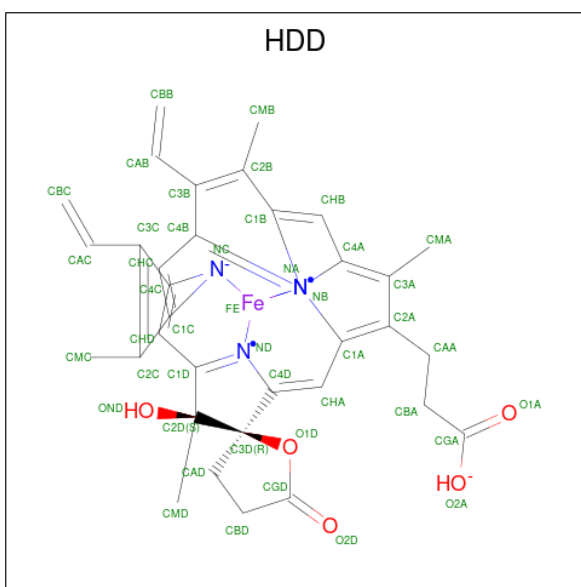
- Molecule 1 is a protein called Catalase HP11.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	726	Total	C	N	O	S	0	5	0
			5755	3652	1009	1083	11			
1	B	726	Total	C	N	O	S	0	5	0
			5757	3654	1009	1083	11			
1	C	726	Total	C	N	O	S	0	2	0
			5747	3649	1007	1080	11			
1	D	726	Total	C	N	O	S	0	9	0
			5771	3662	1013	1085	11			

There are 12 discrepancies between the modelled and reference sequences:

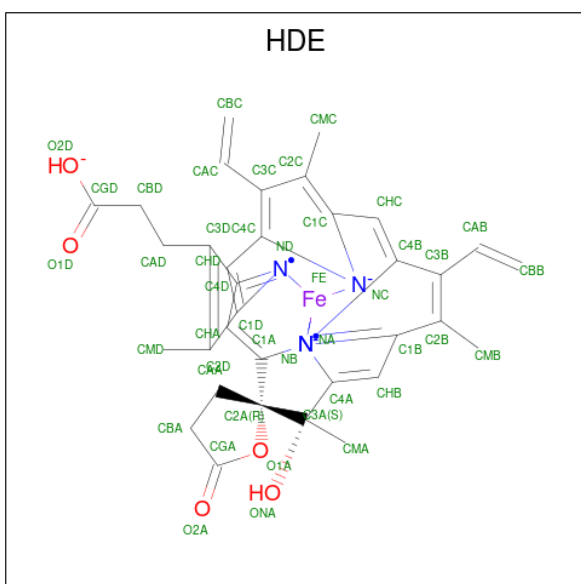
Chain	Residue	Modelled	Actual	Comment	Reference
A	274	CYS	ILE	engineered mutation	UNP P21179
A	438	ALA	CYS	engineered mutation	UNP P21179
A	669	ALA	CYS	engineered mutation	UNP P21179
B	274	CYS	ILE	engineered mutation	UNP P21179
B	438	ALA	CYS	engineered mutation	UNP P21179
B	669	ALA	CYS	engineered mutation	UNP P21179
C	274	CYS	ILE	engineered mutation	UNP P21179
C	438	ALA	CYS	engineered mutation	UNP P21179
C	669	ALA	CYS	engineered mutation	UNP P21179
D	274	CYS	ILE	engineered mutation	UNP P21179
D	438	ALA	CYS	engineered mutation	UNP P21179
D	669	ALA	CYS	engineered mutation	UNP P21179

- Molecule 2 is CIS-HEME D HYDROXYCHLORIN GAMMA-SPIROLACTONE (CCD ID: HDD) (formula: C₃₄H₃₂FeN₄O₅).



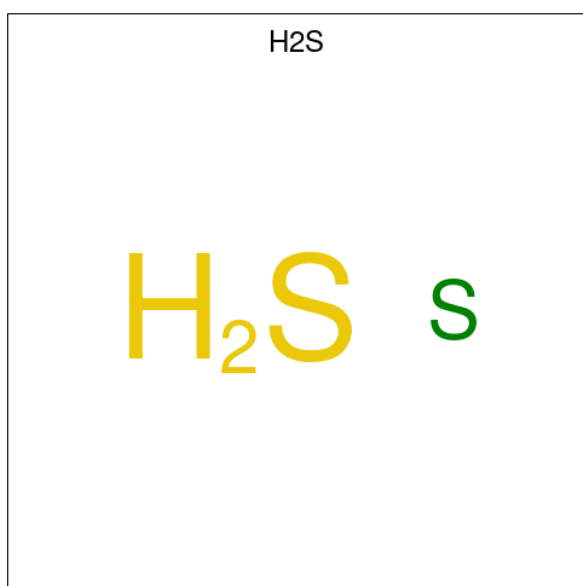
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
2	B	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
2	C	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
2	D	1	Total 44	C 34	Fe 1	N 4	O 5	0	1

- Molecule 3 is CIS-HEME D HYDROXYCHLORIN GAMMA-SPIROLACTONE 17R, 18S (CCD ID: HDE) (formula: $C_{34}H_{32}FeN_4O_5$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
3	B	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
3	C	1	Total 44	C 34	Fe 1	N 4	O 5	0	1
3	D	1	Total 44	C 34	Fe 1	N 4	O 5	0	1

- Molecule 4 is HYDROSULFURIC ACID (CCD ID: H2S) (formula: H₂S).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total 1	S 1	0	0
4	B	1	Total 1	S 1	0	0
4	C	1	Total 1	S 1	0	0
4	D	1	Total 1	S 1	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	897	Total 897	O 897	0	0
5	B	787	Total 787	O 787	0	0

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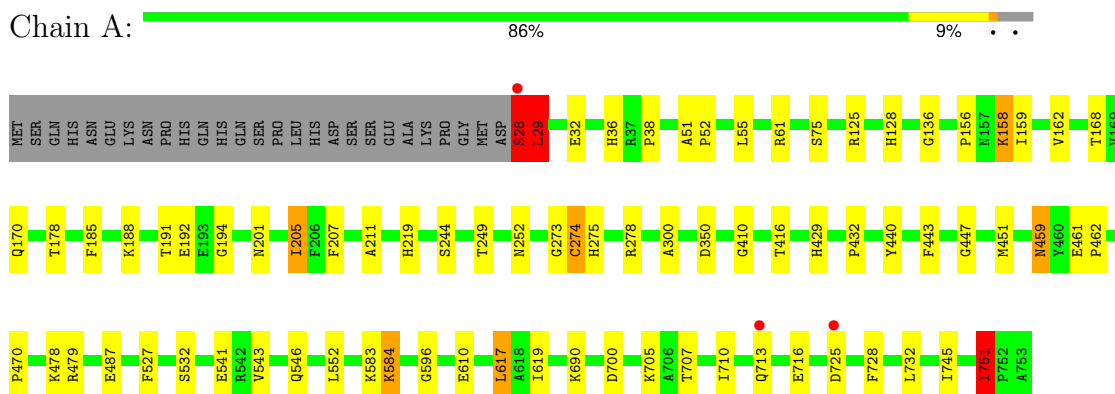
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	C	842	Total 842	O 842	0	0
5	D	898	Total 898	O 898	0	0

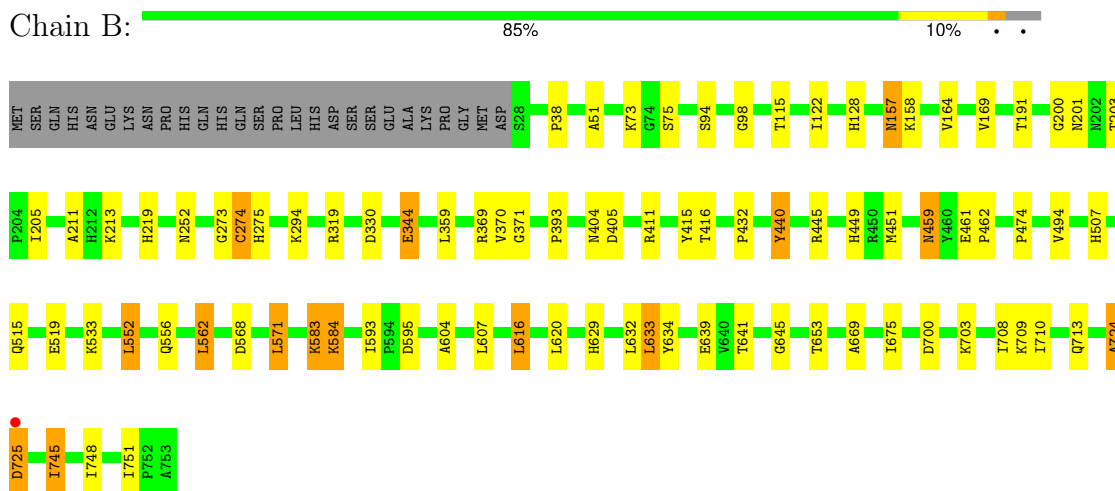
3 Residue-property plots

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.

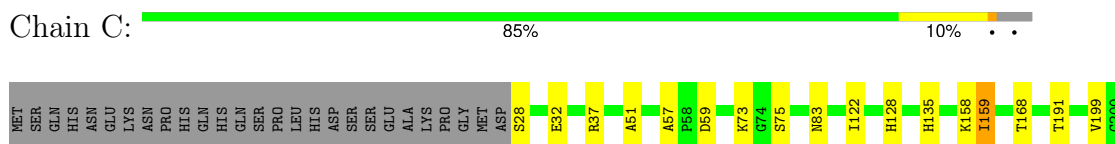
• Molecule 1: Catalase HP1I



• Molecule 1: Catalase HP1I

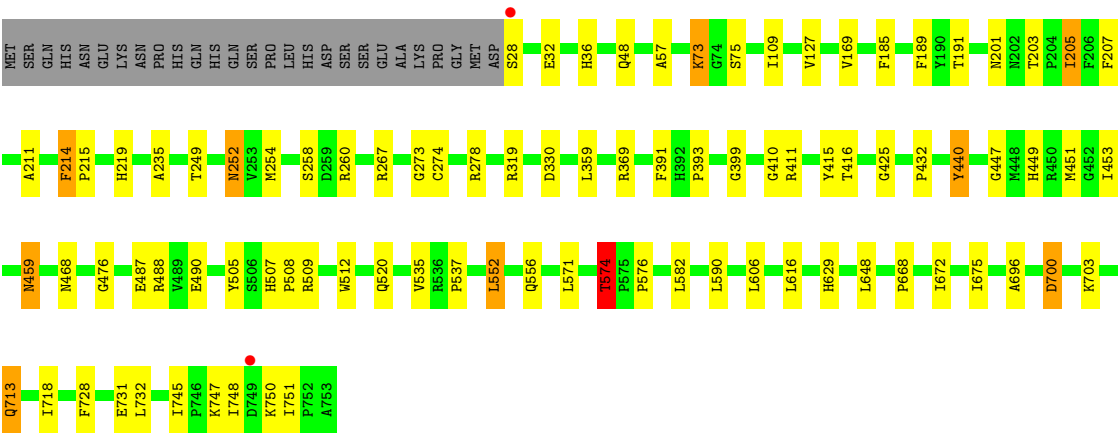
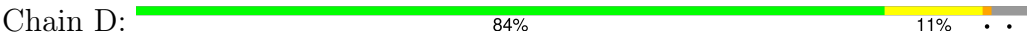


• Molecule 1: Catalase HP1I





● Molecule 1: Catalase HP11



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	93.50Å 133.02Å 122.67Å 90.00° 109.40° 90.00°	Depositor
Resolution (Å)	34.25 – 1.80 34.25 – 1.80	Depositor EDS
% Data completeness (in resolution range)	93.9 (34.25-1.80) 94.4 (34.25-1.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.15	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.30 (at 1.79Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.143 , 0.190 0.143 , 0.190	Depositor DCC
R_{free} test set	12379 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	11.8	Xtriage
Anisotropy	0.010	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 42.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.029 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	26810	wwPDB-VP
Average B, all atoms (Å ²)	14.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.00% 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: HDE, HDD, H2S

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	1.39	11/5932 (0.2%)	1.17	9/8064 (0.1%)
1	B	1.34	14/5931 (0.2%)	1.14	4/8062 (0.0%)
1	C	1.35	11/5908 (0.2%)	1.14	12/8033 (0.1%)
1	D	1.42	19/5966 (0.3%)	1.13	3/8109 (0.0%)
All	All	1.37	55/23737 (0.2%)	1.14	28/32268 (0.1%)

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	C	0	2

All (55) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	474	PRO	CA-C	11.83	1.58	1.51
1	C	235	ALA	CA-CB	8.04	1.62	1.52
1	A	745	ILE	CA-CB	7.68	1.57	1.54
1	A	29	LEU	N-CA	-7.34	1.35	1.46
1	D	203	THR	N-CA	7.16	1.51	1.45
1	B	474	PRO	CA-C	7.15	1.55	1.51
1	D	169	VAL	N-CA	6.98	1.52	1.46
1	D	205	ILE	CA-CB	6.96	1.63	1.54
1	D	235	ALA	CA-CB	6.75	1.61	1.52
1	D	214	PHE	C-O	-6.75	1.18	1.24
1	D	109	ILE	C-O	6.54	1.31	1.24
1	C	122	ILE	CA-CB	6.37	1.60	1.55
1	B	98	GLY	N-CA	6.33	1.52	1.45
1	C	625	ALA	CA-CB	6.30	1.63	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	745	ILE	CA-CB	6.10	1.57	1.54
1	A	447	GLY	N-CA	6.09	1.51	1.45
1	D	447	GLY	N-CA	6.05	1.52	1.45
1	C	57	ALA	CA-CB	6.03	1.60	1.53
1	D	718	ILE	CA-CB	5.88	1.61	1.54
1	B	200	GLY	N-CA	5.87	1.49	1.44
1	B	122	ILE	N-CA	5.86	1.51	1.46
1	D	57	ALA	CA-CB	5.81	1.60	1.53
1	A	527	PHE	N-CA	5.77	1.53	1.46
1	A	194	GLY	C-O	5.75	1.28	1.23
1	B	445	ARG	N-CA	5.67	1.53	1.45
1	D	675	ILE	N-CA	5.65	1.51	1.46
1	B	275	HIS	N-CA	5.60	1.52	1.45
1	D	214	PHE	CA-C	5.60	1.59	1.52
1	C	314	ASP	CA-CB	5.59	1.59	1.53
1	B	203	THR	CA-CB	5.59	1.60	1.53
1	A	275	HIS	N-CA	5.58	1.52	1.45
1	C	526	GLY	N-CA	5.49	1.52	1.45
1	D	319	ARG	C-O	5.43	1.30	1.24
1	B	371	GLY	N-CA	5.41	1.51	1.45
1	A	159	ILE	CA-CB	-5.40	1.47	1.54
1	A	205	ILE	CA-CB	5.38	1.61	1.54
1	D	425	GLY	N-CA	5.38	1.52	1.44
1	C	446	ASP	N-CA	5.30	1.53	1.46
1	A	178	THR	N-CA	5.23	1.53	1.46
1	A	300	ALA	N-CA	5.22	1.52	1.46
1	C	135	HIS	CA-C	5.21	1.59	1.52
1	B	94	SER	N-CA	5.18	1.52	1.45
1	D	254	MET	N-CA	5.16	1.52	1.46
1	C	51	ALA	CA-CB	5.12	1.60	1.53
1	D	189	PHE	C-O	5.12	1.30	1.24
1	B	164	VAL	CA-CB	5.11	1.61	1.54
1	C	509	ARG	N-CA	5.11	1.52	1.46
1	D	399	GLY	N-CA	5.11	1.52	1.45
1	D	391	PHE	N-CA	5.11	1.51	1.45
1	B	745	ILE	CA-CB	5.10	1.56	1.54
1	B	675	ILE	N-CA	5.09	1.50	1.46
1	D	453	ILE	CA-CB	5.08	1.59	1.53
1	B	203	THR	N-CA	5.04	1.50	1.45
1	B	494	VAL	C-O	5.04	1.29	1.23
1	A	170	GLN	CA-CB	5.03	1.61	1.53

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	159	ILE	CB-CG1-CD1	-8.14	96.70	113.80
1	C	725	ASP	N-CA-C	7.68	127.15	110.80
1	C	550	ILE	N-CA-C	-7.60	104.33	111.48
1	C	657	ALA	CA-C-N	6.40	126.77	119.92
1	C	657	ALA	C-N-CA	6.40	126.77	119.92
1	D	574	THR	CB-CA-C	6.28	118.49	109.26
1	D	258	SER	N-CA-C	-6.28	102.43	110.53
1	C	159	ILE	CA-CB-CG2	6.11	120.89	110.50
1	C	158	LYS	CA-C-N	-6.07	115.66	123.19
1	C	158	LYS	C-N-CA	-6.07	115.66	123.19
1	A	751	ILE	N-CA-CB	5.92	115.59	110.08
1	C	237	ASP	N-CA-C	5.90	117.71	111.28
1	A	619	ILE	N-CA-C	-5.67	105.20	110.53
1	C	355	ASP	CB-CA-C	5.51	116.42	110.08
1	A	596	GLY	N-CA-C	5.50	117.79	111.36
1	A	350	ASP	CB-CA-C	5.49	120.15	110.37
1	B	724	ALA	N-CA-C	5.36	119.37	113.21
1	C	745	ILE	CA-C-N	-5.28	113.48	119.28
1	C	745	ILE	C-N-CA	-5.28	113.48	119.28
1	D	468	ASN	N-CA-C	5.22	119.23	112.86
1	B	595	ASP	N-CA-C	-5.16	105.99	113.21
1	A	275	HIS	N-CA-C	5.15	118.13	110.14
1	B	593	ILE	CA-C-N	5.12	125.12	119.90
1	B	593	ILE	C-N-CA	5.12	125.12	119.90
1	A	158[A]	LYS	CB-CA-C	5.09	118.72	110.22
1	A	158[B]	LYS	CB-CA-C	5.09	118.72	110.22
1	A	28	SER	CA-C-N	-5.09	114.34	122.53
1	A	28	SER	C-N-CA	-5.09	114.34	122.53

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	724	ALA	Peptide
1	C	725	ASP	Peptide

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	5755	0	5582	60	0
1	B	5757	0	5587	59	0
1	C	5747	0	5577	51	2
1	D	5771	0	5598	51	0
2	A	44	0	31	3	0
2	B	44	0	31	5	0
2	C	44	0	30	10	0
2	D	44	0	31	3	0
3	A	44	0	36	7	0
3	B	44	0	36	11	0
3	C	44	0	36	10	0
3	D	44	0	36	11	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	1	0
4	D	1	0	0	0	0
5	A	897	0	0	16	2
5	B	787	0	0	13	1
5	C	842	0	0	21	0
5	D	898	0	0	21	2
All	All	26810	0	22611	246	4

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 5.

All (246) 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:716:GLU:HG2	5:A:3090:HOH:O	1.31	1.28
1:C:578:ASP:HB3	5:C:2919:HOH:O	1.32	1.28
1:B:416:THR:HG21	5:D:2464:HOH:O	1.43	1.18
1:A:29:LEU:HD22	5:C:2405:HOH:O	1.48	1.12
3:C:761[B]:HDE:CBC	3:C:761[B]:HDE:HMCB	1.79	1.11
1:A:451:MET:HE2	1:C:451:MET:HE2	1.17	1.10
1:C:451:MET:SD	5:C:3612:HOH:O	2.10	1.09
3:B:761[B]:HDE:HBCA	3:B:761[B]:HDE:CMC	1.78	1.08
1:D:451:MET:SD	5:D:3617:HOH:O	2.12	1.07
1:B:451:MET:HE2	1:D:451:MET:HE2	1.10	1.07
3:C:761[B]:HDE:CMC	3:C:761[B]:HDE:HBCB	1.83	1.05
1:B:451:MET:SD	5:B:3614:HOH:O	2.12	1.03
3:B:761[B]:HDE:HBCA	3:B:761[B]:HDE:HMCB	1.06	1.03
1:A:201:ASN:ND2	2:A:760[A]:HDD:HMB2	1.75	1.01

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:761[B]:HDE:CBC	3:D:761[B]:HDE:HMCB	1.90	1.01
1:A:201:ASN:CG	2:A:760[A]:HDD:HMB2	1.85	1.00
3:C:761[B]:HDE:HMCB	3:C:761[B]:HDE:HBCB	1.34	1.00
3:B:761[B]:HDE:CMC	3:B:761[B]:HDE:CBC	2.44	0.96
1:A:416[A]:THR:HG21	5:C:3313:HOH:O	1.64	0.95
3:B:761[B]:HDE:HMCB	3:B:761[B]:HDE:CBC	1.95	0.95
3:D:761[B]:HDE:HBCB	3:D:761[B]:HDE:CMC	2.01	0.91
1:C:440:TYR:HD1	5:C:3454:HOH:O	1.53	0.90
3:C:761[B]:HDE:CBC	3:C:761[B]:HDE:CMC	2.44	0.87
3:D:761[B]:HDE:HMCB	3:D:761[B]:HDE:HBCB	1.55	0.87
1:A:451:MET:SD	5:A:3609:HOH:O	2.32	0.87
1:B:440:TYR:O	1:D:73[B]:LYS:HE3	1.72	0.86
1:C:267:ARG:HG3	5:C:2916:HOH:O	1.75	0.86
3:D:761[B]:HDE:HMCB	3:D:761[B]:HDE:HBCA	1.56	0.86
1:C:201:ASN:CG	2:C:760[A]:HDD:HMB1	2.00	0.84
2:C:760[A]:HDD:HBB1	2:C:760[A]:HDD:CMB	2.06	0.84
3:C:761[B]:HDE:HMCB	3:C:761[B]:HDE:HBCA	1.58	0.84
3:A:761[B]:HDE:HBCB	3:A:761[B]:HDE:HMC	1.60	0.83
1:A:28:SER:O	1:A:28:SER:OG	1.94	0.82
1:A:541:GLU:OE2	5:A:2550:HOH:O	1.98	0.82
1:A:610:GLU:HG2	5:A:3555:HOH:O	1.81	0.81
3:D:761[B]:HDE:HBBA	3:D:761[B]:HDE:HMBB	1.63	0.80
3:D:761[B]:HDE:CBC	3:D:761[B]:HDE:CMC	2.54	0.80
1:D:201:ASN:CG	2:D:760[A]:HDD:HMB1	2.07	0.79
1:B:748:ILE:O	1:B:751:ILE:HG22	1.83	0.77
3:B:761[B]:HDE:HMBB	3:B:761[B]:HDE:HBBA	1.67	0.77
1:B:115:THR:HG21	5:B:3420:HOH:O	1.84	0.76
1:D:700:ASP:OD1	5:D:3236:HOH:O	2.04	0.76
1:A:61:ARG:HD2	5:A:3208:HOH:O	1.85	0.75
1:B:449[B]:HIS:HE1	5:D:1789:HOH:O	1.70	0.75
1:C:28:SER:N	5:C:2523:HOH:O	2.19	0.73
1:C:725:ASP:O	5:C:2403:HOH:O	2.06	0.73
1:B:583:LYS:O	1:B:584:LYS:HB3	1.88	0.73
3:D:761[B]:HDE:HMBB	3:D:761[B]:HDE:CBB	2.19	0.73
1:B:724:ALA:O	1:B:725:ASP:O	2.07	0.73
1:B:451:MET:HE2	1:D:451:MET:CE	2.06	0.72
1:B:201:ASN:CG	2:B:760[A]:HDD:HMB1	2.15	0.71
1:C:708:ILE:HG13	1:C:710:ILE:HG12	1.71	0.71
1:D:28:SER:HA	5:D:2467:HOH:O	1.91	0.71
1:C:578:ASP:HB2	1:C:582:LEU:O	1.90	0.70
3:B:761[B]:HDE:HMBB	3:B:761[B]:HDE:CBB	2.21	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:267:ARG:HG3	5:D:1920:HOH:O	1.93	0.69
2:C:760[A]:HDD:HBB1	2:C:760[A]:HDD:HMB3	1.73	0.68
1:A:201:ASN:CG	2:A:760[A]:HDD:CMB	2.64	0.68
1:B:330:ASP:OD1	1:B:629:HIS:HE1	1.77	0.68
1:D:440:TYR:CZ	5:D:3517:HOH:O	2.47	0.68
1:A:690:LYS:HG3	1:A:751:ILE:HD11	1.76	0.68
1:A:278:ARG:HH12	1:A:487:GLU:CD	2.01	0.68
1:A:244:SER:HA	1:A:546[B]:GLN:NE2	2.12	0.65
1:A:416[B]:THR:HG22	5:A:908:HOH:O	1.98	0.63
1:D:731:GLU:OE2	5:D:3028:HOH:O	2.14	0.63
1:A:610:GLU:CG	5:A:3555:HOH:O	2.41	0.62
2:C:760[A]:HDD:HMB3	2:C:760[A]:HDD:CBB	2.30	0.62
1:D:330:ASP:OD1	1:D:629:HIS:HE1	1.82	0.61
1:C:201:ASN:ND2	2:C:760[A]:HDD:CMB	2.63	0.61
1:D:713:GLN:HG2	1:D:713:GLN:O	1.99	0.61
1:B:552:LEU:HD21	1:B:571:LEU:HD12	1.82	0.60
1:C:488:ARG:HD2	5:C:2379:HOH:O	2.00	0.60
1:D:748:ILE:O	1:D:751:ILE:HG22	2.00	0.60
1:A:443:PHE:CZ	1:A:470:PRO:HD2	2.36	0.60
1:C:440:TYR:CD1	5:C:3454:HOH:O	2.39	0.60
1:B:583:LYS:NZ	1:B:583:LYS:H	1.99	0.60
1:A:751:ILE:O	1:A:751:ILE:CD1	2.50	0.60
3:A:761[B]:HDE:HBCB	3:A:761[B]:HDE:CMC	2.31	0.60
1:A:61:ARG:HG2	1:A:61:ARG:HH11	1.65	0.60
1:C:629:HIS:HD2	5:C:1129:HOH:O	1.83	0.60
1:D:449[A]:HIS:HE1	5:D:1789:HOH:O	1.85	0.59
3:D:761[B]:HDE:CBB	3:D:761[B]:HDE:CMB	2.79	0.59
1:C:583:LYS:O	1:C:584:LYS:HB3	2.00	0.59
1:A:610:GLU:CD	5:A:3555:HOH:O	2.45	0.59
1:C:330:ASP:OD1	1:C:629:HIS:HE1	1.86	0.58
3:C:761[B]:HDE:HBBA	3:C:761[B]:HDE:HMBB	1.84	0.58
1:D:629:HIS:HD2	5:D:1554:HOH:O	1.85	0.58
1:A:211:ALA:CB	1:A:410:GLY:HA3	2.33	0.57
1:B:700:ASP:HB2	5:B:3595:HOH:O	2.04	0.57
1:B:708:ILE:HG13	1:B:710:ILE:HG12	1.86	0.57
1:A:532:SER:OG	5:A:2410:HOH:O	2.16	0.57
1:B:583:LYS:H	1:B:583:LYS:HZ3	1.53	0.57
1:C:273:GLY:C	1:C:274:CYS:SG	2.88	0.57
1:B:73:LYS:HE3	5:D:3517:HOH:O	2.03	0.56
1:B:634:TYR:O	1:B:653:THR:HA	2.04	0.56
1:B:201:ASN:CG	2:B:760[A]:HDD:CMB	2.78	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:751:ILE:O	1:A:751:ILE:HD12	2.06	0.56
1:B:411:ARG:HG2	3:B:761[B]:HDE:C3B	2.36	0.56
1:A:36:HIS:CD2	1:A:36:HIS:H	2.24	0.56
1:C:201:ASN:CG	2:C:760[A]:HDD:CMB	2.78	0.55
3:B:761[B]:HDE:CBB	3:B:761[B]:HDE:CMB	2.84	0.55
1:A:29:LEU:HD23	5:C:3144:HOH:O	2.06	0.55
1:B:629:HIS:HD2	5:B:1054:HOH:O	1.89	0.54
1:C:634:TYR:O	1:C:653:THR:HA	2.07	0.54
1:B:115:THR:CG2	5:B:3420:HOH:O	2.48	0.54
1:A:125:ARG:HB3	3:A:761[B]:HDE:HBA	1.90	0.53
1:A:36:HIS:HE1	5:A:1872:HOH:O	1.91	0.53
2:B:760[A]:HDD:HBC1	2:B:760[A]:HDD:CMC	2.39	0.53
3:B:761[B]:HDE:CMC	3:B:761[B]:HDE:HBCB	2.38	0.53
1:A:273:GLY:C	1:A:274:CYS:SG	2.91	0.53
3:A:761[B]:HDE:CMC	3:A:761[B]:HDE:CBC	2.87	0.53
1:B:533[A]:LYS:HE2	5:B:3100:HOH:O	2.09	0.53
1:B:639:GLU:HB3	5:B:2558:HOH:O	2.09	0.53
1:A:700:ASP:HB2	5:A:3594:HOH:O	2.09	0.52
3:A:761[B]:HDE:HMB	3:A:761[B]:HDE:HBBB	1.91	0.51
1:C:274:CYS:CA	4:C:754:H2S:S	2.96	0.51
1:C:713:GLN:HB3	5:C:3004:HOH:O	2.10	0.51
3:C:761[B]:HDE:HMBB	3:C:761[B]:HDE:CBB	2.41	0.50
1:B:359:LEU:H	1:B:507:HIS:HD2	1.59	0.50
1:D:696:ALA:HB1	1:D:728:PHE:CZ	2.46	0.50
1:A:543:VAL:HA	1:A:546[B]:GLN:HE21	1.76	0.50
1:D:556:GLN:NE2	5:D:2773:HOH:O	2.45	0.50
1:A:219:HIS:HB3	1:B:459:ASN:ND2	2.27	0.50
1:B:73:LYS:CE	5:D:3517:HOH:O	2.60	0.50
1:A:478:LYS:HG2	5:A:1955:HOH:O	2.10	0.50
5:A:1788:HOH:O	1:C:449[A]:HIS:HE1	1.93	0.50
1:A:61:ARG:HG2	1:A:61:ARG:NH1	2.26	0.49
1:B:38:PRO:HG2	1:B:51:ALA:HB2	1.94	0.49
1:D:201:ASN:CG	2:D:760[A]:HDD:CMB	2.81	0.49
1:D:509:ARG:HD2	1:D:576:PRO:HD2	1.94	0.49
1:B:393:PRO:HD2	1:B:415:TYR:CG	2.48	0.49
3:C:761[B]:HDE:CMC	3:C:761[B]:HDE:HBCA	2.31	0.49
1:D:369:ARG:CG	5:D:3574:HOH:O	2.60	0.49
2:C:760[A]:HDD:HBB1	2:C:760[A]:HDD:HMB2	1.94	0.48
3:D:761[B]:HDE:CMB	3:D:761[B]:HDE:HBBB	2.43	0.48
1:A:725:ASP:H	1:A:728:PHE:HB3	1.76	0.48
1:D:211:ALA:CB	1:D:410:GLY:HA3	2.43	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:672:ILE:HG12	1:D:700:ASP:OD2	2.12	0.48
1:B:157:ASN:C	1:B:157:ASN:HD22	2.21	0.48
1:A:705:LYS:HE2	5:A:3467:HOH:O	2.13	0.47
1:C:459:ASN:ND2	1:D:219:HIS:HB3	2.29	0.47
3:A:761[B]:HDE:HMB	3:A:761[B]:HDE:CBB	2.44	0.47
1:B:344:GLU:CD	1:B:344:GLU:H	2.22	0.47
2:B:760[A]:HDD:CMB	2:B:760[A]:HDD:HBB1	2.45	0.47
2:C:760[A]:HDD:HAD2	2:C:760[A]:HDD:HMD2	1.69	0.47
1:B:669:ALA:HB1	5:B:3595:HOH:O	2.15	0.47
1:C:37:ARG:HD3	5:C:2621:HOH:O	2.14	0.47
1:B:73:LYS:CD	5:D:3517:HOH:O	2.62	0.47
1:B:294:LYS:NZ	5:B:2778:HOH:O	2.41	0.47
1:C:359:LEU:H	1:C:507:HIS:HD2	1.63	0.47
1:A:459:ASN:ND2	1:B:219:HIS:HB3	2.31	0.46
1:A:751:ILE:CD1	1:A:751:ILE:C	2.88	0.46
1:D:359:LEU:H	1:D:507:HIS:HD2	1.63	0.46
1:B:273:GLY:C	1:B:274:CYS:SG	2.98	0.46
1:D:393:PRO:HD2	1:D:415:TYR:CG	2.50	0.46
1:B:128:HIS:CE1	1:B:169:VAL:HG22	2.51	0.46
1:C:128:HIS:HA	1:C:168:THR:O	2.15	0.46
1:D:369:ARG:HD3	5:D:3574:HOH:O	2.15	0.46
1:D:476:GLY:HA3	5:D:1112:HOH:O	2.14	0.46
1:A:751:ILE:O	1:A:751:ILE:HD13	2.16	0.46
1:C:490:GLU:CD	1:D:488[B]:ARG:HH22	2.21	0.46
1:A:207:PHE:O	1:A:249:THR:HA	2.15	0.45
1:D:535:VAL:O	1:D:537:PRO:HD3	2.16	0.45
1:A:583:LYS:O	1:A:584:LYS:HB3	2.16	0.45
1:D:574:THR:HG23	5:D:1614:HOH:O	2.15	0.45
1:D:713:GLN:HB3	5:D:2646:HOH:O	2.17	0.45
1:B:552:LEU:HD22	1:B:556:GLN:HG3	1.98	0.45
1:C:583:LYS:HB2	1:C:583:LYS:HE2	1.85	0.45
1:B:616:LEU:HD22	1:B:620:LEU:HG	1.98	0.44
1:C:219:HIS:HB3	1:D:459:ASN:ND2	2.32	0.44
1:C:368:GLN:NE2	5:C:1787:HOH:O	2.22	0.44
1:C:556:GLN:NE2	5:C:2533:HOH:O	2.49	0.44
5:B:982:HOH:O	1:D:73[B]:LYS:HD3	2.17	0.44
1:C:199:VAL:HG12	3:C:761[B]:HDE:HHDA	2.00	0.44
1:D:207:PHE:O	1:D:249:THR:HA	2.16	0.44
1:A:617:LEU:HD13	5:A:3081:HOH:O	2.16	0.44
1:D:505:TYR:C	1:D:508:PRO:HD2	2.42	0.44
1:C:59:ASP:OD2	5:C:2529:HOH:O	2.21	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:214:PHE:CD1	2:C:760[A]:HDD:CAC	3.01	0.44
1:D:273:GLY:C	1:D:274:CYS:SG	3.01	0.44
1:D:278:ARG:HH12	1:D:487:GLU:CD	2.26	0.44
1:A:38:PRO:HG2	1:A:51:ALA:HB2	1.99	0.44
1:A:429:HIS:CG	1:C:83:ASN:HB3	2.52	0.44
1:D:260:ARG:HD3	1:D:590:LEU:HD21	2.00	0.44
1:A:192:GLU:OE1	1:A:479:ARG:NH2	2.51	0.44
1:C:443:PHE:CZ	1:C:470:PRO:HD2	2.53	0.44
1:D:127:VAL:HG22	3:D:761[B]:HDE:HMAB	1.99	0.43
1:C:201:ASN:ND2	2:C:760[A]:HDD:HMB3	2.33	0.43
1:D:449[A]:HIS:CE1	5:D:1789:HOH:O	2.65	0.43
1:A:52:PRO:HG2	1:A:55:LEU:HD12	1.99	0.43
1:B:604:ALA:HB1	1:B:633:LEU:HD22	1.99	0.43
1:C:440:TYR:HB3	5:C:3454:HOH:O	2.19	0.43
1:B:201:ASN:OD1	2:B:760[A]:HDD:HMB1	2.18	0.43
1:D:606:LEU:O	1:D:668:PRO:HD2	2.18	0.43
1:D:252:ASN:HD22	1:D:252:ASN:HA	1.68	0.43
1:A:244:SER:HA	1:A:546[B]:GLN:HE22	1.84	0.43
1:B:745:ILE:O	1:B:748:ILE:HG12	2.18	0.43
1:C:393:PRO:HD2	1:C:415:TYR:CG	2.53	0.43
1:B:369:ARG:HG2	5:B:1639:HOH:O	2.18	0.43
1:B:515:GLN:HB3	1:B:519:GLU:HB2	2.00	0.43
1:B:157:ASN:C	1:B:157:ASN:ND2	2.77	0.43
1:B:562:LEU:HA	1:C:637:MET:HB2	2.01	0.43
1:B:319:ARG:HD3	1:C:227:TRP:O	2.19	0.43
1:C:73:LYS:NZ	5:C:2682:HOH:O	2.51	0.42
1:A:705:LYS:HE3	1:A:710:ILE:CG2	2.48	0.42
1:B:211:ALA:CB	3:B:761[B]:HDE:HBB	2.48	0.42
1:D:512:TRP:CH2	1:D:520:GLN:HB3	2.53	0.42
1:C:207:PHE:O	1:C:249:THR:HA	2.19	0.42
1:A:156:PRO:HD2	5:A:3378:HOH:O	2.18	0.42
1:C:411:ARG:HG2	3:C:761[B]:HDE:C3B	2.49	0.42
1:B:639:GLU:HG3	5:B:2790:HOH:O	2.20	0.42
1:C:685:LEU:N	1:C:685:LEU:HD22	2.34	0.42
1:A:201:ASN:CG	3:A:761[B]:HDE:HAC	2.45	0.42
1:B:725:ASP:OD2	1:B:725:ASP:C	2.63	0.42
1:C:359:LEU:H	1:C:507:HIS:CD2	2.38	0.42
1:D:703:LYS:NZ	5:D:2744:HOH:O	2.41	0.42
1:A:136:GLY:C	1:A:162:VAL:HG22	2.45	0.41
1:A:443:PHE:CE2	1:A:470:PRO:HD2	2.54	0.41
1:B:607:LEU:HD11	1:B:632:LEU:HB3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:709:LYS:HA	1:B:709:LYS:HD3	1.89	0.41
1:C:28:SER:CA	5:C:2523:HOH:O	2.67	0.41
1:D:214:PHE:HB3	1:D:215:PRO:HD3	2.02	0.41
1:A:128:HIS:HA	1:A:168:THR:O	2.20	0.41
1:A:188:LYS:HE2	1:A:188:LYS:HB2	1.87	0.41
1:B:213:LYS:HB3	1:B:213:LYS:HE3	1.75	0.41
1:C:28:SER:HA	5:C:2523:HOH:O	2.20	0.41
1:B:319:ARG:HG2	1:C:229:ILE:HD11	2.03	0.41
1:C:73:LYS:HB3	1:C:73:LYS:HE3	1.91	0.41
1:D:552:LEU:HD11	1:D:571:LEU:HA	2.02	0.41
3:B:761[B]:HDE:CMB	3:B:761[B]:HDE:HBBB	2.51	0.41
1:B:461:GLU:HA	1:B:462:PRO:C	2.45	0.40
1:D:36:HIS:HD1	1:D:36:HIS:H	1.69	0.40
1:B:507:HIS:HE1	5:B:895:HOH:O	2.03	0.40
1:D:214:PHE:CD1	2:D:760[A]:HDD:CAC	3.04	0.40
1:D:552:LEU:HD22	1:D:552:LEU:HA	1.92	0.40
1:A:461:GLU:HA	1:A:462:PRO:C	2.46	0.40
1:D:411:ARG:HG2	3:D:761[B]:HDE:C3B	2.52	0.40
1:B:641:THR:CG2	1:B:645:GLY:HA2	2.52	0.40
1:B:404:ASN:O	1:B:405:ASP:C	2.65	0.40
1:C:252:ASN:HD22	1:C:252:ASN:HA	1.69	0.40

All (4) 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)
5:A:3241:HOH:O	5:D:2457:HOH:O[2_646]	1.98	0.22
1:C:584:LYS:NZ	5:A:1624:HOH:O[1_554]	1.99	0.21
1:C:59:ASP:CB	5:B:3206:HOH:O[2_545]	2.11	0.09
5:D:2178:HOH:O	5:D:2976:HOH:O[1_655]	2.12	0.08

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	729/753 (97%)	707 (97%)	21 (3%)	1 (0%)	48	34
1	B	729/753 (97%)	704 (97%)	22 (3%)	3 (0%)	30	19
1	C	726/753 (96%)	709 (98%)	16 (2%)	1 (0%)	48	34
1	D	733/753 (97%)	714 (97%)	18 (2%)	1 (0%)	48	34
All	All	2917/3012 (97%)	2834 (97%)	77 (3%)	6 (0%)	43	31

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	725	ASP
1	B	584	LYS
1	C	75	SER
1	A	75	SER
1	B	75	SER
1	D	75	SER

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	614/634 (97%)	596 (97%)	18 (3%)	37	25
1	B	614/634 (97%)	594 (97%)	20 (3%)	33	21
1	C	611/634 (96%)	585 (96%)	26 (4%)	26	13
1	D	618/634 (98%)	594 (96%)	24 (4%)	28	16
All	All	2457/2536 (97%)	2369 (96%)	88 (4%)	32	18

All (88) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	SER
1	A	29	LEU
1	A	32	GLU

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Mol	Chain	Res	Type
1	A	185	PHE
1	A	191	THR
1	A	205	ILE
1	A	252	ASN
1	A	274	CYS
1	A	432	PRO
1	A	440	TYR
1	A	459	ASN
1	A	552	LEU
1	A	584	LYS
1	A	617	LEU
1	A	707	THR
1	A	713	GLN
1	A	732	LEU
1	A	751	ILE
1	B	157	ASN
1	B	158	LYS
1	B	191	THR
1	B	205	ILE
1	B	252	ASN
1	B	274	CYS
1	B	344	GLU
1	B	370	VAL
1	B	432	PRO
1	B	440	TYR
1	B	459	ASN
1	B	552	LEU
1	B	562	LEU
1	B	568	ASP
1	B	571	LEU
1	B	583	LYS
1	B	616	LEU
1	B	633	LEU
1	B	703	LYS
1	B	713	GLN
1	C	32	GLU
1	C	159	ILE
1	C	191	THR
1	C	205	ILE
1	C	252	ASN
1	C	274	CYS
1	C	285	LYS

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Mol	Chain	Res	Type
1	C	377	ARG
1	C	440	TYR
1	C	459	ASN
1	C	552	LEU
1	C	571	LEU
1	C	583	LYS
1	C	606	LEU
1	C	616	LEU
1	C	617	LEU
1	C	626	LYS
1	C	633	LEU
1	C	648	LEU
1	C	707	THR
1	C	713	GLN
1	C	725	ASP
1	C	732	LEU
1	C	733	LEU
1	C	750	LYS
1	C	751	ILE
1	D	32	GLU
1	D	48	GLN
1	D	73[A]	LYS
1	D	73[B]	LYS
1	D	185	PHE
1	D	191	THR
1	D	205	ILE
1	D	252	ASN
1	D	416[A]	THR
1	D	416[B]	THR
1	D	432	PRO
1	D	440	TYR
1	D	459	ASN
1	D	490	GLU
1	D	552	LEU
1	D	574	THR
1	D	582	LEU
1	D	616	LEU
1	D	648	LEU
1	D	700	ASP
1	D	713	GLN
1	D	732	LEU
1	D	747	LYS

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Mol	Chain	Res	Type
1	D	750	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	36	HIS
1	A	139	GLN
1	A	201	ASN
1	A	246	GLN
1	A	252	ASN
1	A	459	ASN
1	A	556	GLN
1	B	157	ASN
1	B	252	ASN
1	B	459	ASN
1	B	507	HIS
1	B	629	HIS
1	B	713	GLN
1	C	139	GLN
1	C	252	ASN
1	C	459	ASN
1	C	486	GLN
1	C	507	HIS
1	C	546	GLN
1	C	556	GLN
1	C	629	HIS
1	C	671	ASN
1	C	682	ASN
1	D	48	GLN
1	D	252	ASN
1	D	459	ASN
1	D	507	HIS
1	D	556	GLN
1	D	629	HIS
1	D	671	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 4 are modelled with single atom - leaving 8 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	HDE	C	761[B]	5,1	50,52,52	2.56	22 (44%)	60,89,89	2.58	25 (41%)
2	HDD	C	760[A]	5,1	49,52,52	1.96	8 (16%)	62,89,89	1.98	16 (25%)
3	HDE	D	761[B]	5,1	50,52,52	2.53	20 (40%)	60,89,89	2.52	24 (40%)
2	HDD	B	760[A]	5,1	49,52,52	1.93	11 (22%)	62,89,89	2.21	16 (25%)
2	HDD	A	760[A]	5,1	49,52,52	2.24	14 (28%)	62,89,89	2.30	21 (33%)
3	HDE	B	761[B]	5,1	50,52,52	2.51	25 (50%)	60,89,89	2.50	25 (41%)
3	HDE	A	761[B]	5,1	50,52,52	2.59	23 (46%)	60,89,89	2.16	20 (33%)
2	HDD	D	760[A]	5,1	49,52,52	2.32	11 (22%)	62,89,89	2.30	23 (37%)

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
3	HDE	C	761[B]	5,1	-	2/9/89/89	0/1/9/9
2	HDD	C	760[A]	5,1	1/1/8/14	4/9/89/89	0/1/9/9
3	HDE	D	761[B]	5,1	-	2/9/89/89	0/1/9/9

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HDD	B	760[A]	5,1	1/1/8/14	2/9/89/89	0/1/9/9
2	HDD	A	760[A]	5,1	1/1/8/14	6/9/89/89	0/1/9/9
3	HDE	B	761[B]	5,1	-	2/9/89/89	0/1/9/9
3	HDE	A	761[B]	5,1	-	2/9/89/89	0/1/9/9
2	HDD	D	760[A]	5,1	1/1/8/14	6/9/89/89	0/1/9/9

All (134) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	760[A]	HDD	FE-ND	9.88	2.25	1.94
2	A	760[A]	HDD	C1D-ND	8.49	1.40	1.35
2	C	760[A]	HDD	C1D-ND	7.24	1.40	1.35
2	C	760[A]	HDD	FE-ND	6.77	2.15	1.94
3	C	761[B]	HDE	C3B-C2B	6.76	1.50	1.37
3	A	761[B]	HDE	C3B-C2B	6.48	1.50	1.37
3	D	761[B]	HDE	C3B-C2B	6.15	1.49	1.37
2	B	760[A]	HDD	C1D-ND	6.11	1.39	1.35
2	A	760[A]	HDD	FE-ND	6.06	2.13	1.94
3	C	761[B]	HDE	O1A-CGA	5.98	1.45	1.35
2	D	760[A]	HDD	C1D-ND	5.92	1.39	1.35
3	A	761[B]	HDE	O1A-CGA	5.68	1.44	1.35
3	B	761[B]	HDE	O1A-CGA	5.62	1.44	1.35
2	A	760[A]	HDD	O1D-C3D	-5.54	1.37	1.46
2	B	760[A]	HDD	FE-ND	5.43	2.11	1.94
3	D	761[B]	HDE	O1A-CGA	5.28	1.43	1.35
3	C	761[B]	HDE	C3D-C2D	5.27	1.48	1.36
3	D	761[B]	HDE	FE-ND	5.22	2.11	1.94
3	B	761[B]	HDE	FE-ND	5.20	2.10	1.94
3	A	761[B]	HDE	C3D-C2D	5.14	1.47	1.36
3	B	761[B]	HDE	C3B-C2B	4.90	1.47	1.37
3	C	761[B]	HDE	FE-ND	4.90	2.10	1.94
3	D	761[B]	HDE	C3D-C2D	4.89	1.47	1.36
3	B	761[B]	HDE	C3D-C2D	4.67	1.46	1.36
3	A	761[B]	HDE	FE-ND	4.38	2.08	1.94
3	D	761[B]	HDE	CBC-CAC	4.34	1.51	1.30
2	D	760[A]	HDD	O1D-C3D	-4.25	1.39	1.46
3	D	761[B]	HDE	C3B-C4B	-4.20	1.36	1.44
3	C	761[B]	HDE	CHD-C1D	4.18	1.46	1.38
3	B	761[B]	HDE	CHD-C1D	4.17	1.46	1.38
2	B	760[A]	HDD	FE-NB	4.14	2.07	1.94
3	A	761[B]	HDE	CHD-C1D	4.08	1.46	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	761[B]	HDE	CHA-C4D	4.06	1.48	1.39
3	A	761[B]	HDE	CHB-C1B	4.05	1.48	1.39
2	A	760[A]	HDD	FE-NB	4.03	2.07	1.94
2	C	760[A]	HDD	FE-NB	4.02	2.07	1.94
3	A	761[B]	HDE	CBC-CAC	3.90	1.49	1.30
3	B	761[B]	HDE	CBC-CAC	3.89	1.49	1.30
3	C	761[B]	HDE	CBB-CAB	3.88	1.49	1.30
3	D	761[B]	HDE	C1A-NA	3.77	1.44	1.37
2	B	760[A]	HDD	FE-NC	3.77	2.07	1.95
3	A	761[B]	HDE	C3B-C4B	-3.74	1.37	1.44
3	B	761[B]	HDE	C1A-NA	3.73	1.44	1.37
3	D	761[B]	HDE	CHA-C4D	3.71	1.47	1.39
3	D	761[B]	HDE	CBB-CAB	3.70	1.48	1.30
3	A	761[B]	HDE	CBB-CAB	3.70	1.48	1.30
3	B	761[B]	HDE	CHA-C4D	3.69	1.47	1.39
3	B	761[B]	HDE	CBB-CAB	3.66	1.48	1.30
3	D	761[B]	HDE	C1D-ND	-3.64	1.33	1.40
2	D	760[A]	HDD	FE-NA	3.55	2.06	1.95
3	D	761[B]	HDE	C4A-NA	3.54	1.43	1.37
3	C	761[B]	HDE	CBC-CAC	3.52	1.47	1.30
2	C	760[A]	HDD	O1D-C3D	-3.49	1.41	1.46
2	B	760[A]	HDD	O1D-C3D	-3.44	1.41	1.46
3	B	761[B]	HDE	CHD-C4C	3.43	1.47	1.39
3	A	761[B]	HDE	CHC-C4B	3.43	1.45	1.38
2	D	760[A]	HDD	FE-NB	3.42	2.05	1.94
3	C	761[B]	HDE	CHC-C1C	3.40	1.47	1.39
3	C	761[B]	HDE	CHA-C4D	3.38	1.46	1.39
3	D	761[B]	HDE	CHD-C4C	3.36	1.47	1.39
2	D	760[A]	HDD	CMD-C2D	3.36	1.57	1.53
2	D	760[A]	HDD	CAC-C3C	3.36	1.56	1.47
3	C	761[B]	HDE	C3B-C4B	-3.35	1.38	1.44
3	A	761[B]	HDE	C1A-NA	3.33	1.43	1.37
3	C	761[B]	HDE	CHC-C4B	3.31	1.45	1.38
3	B	761[B]	HDE	CHC-C1C	3.30	1.46	1.39
3	D	761[B]	HDE	CHD-C1D	3.25	1.45	1.38
2	B	760[A]	HDD	CAB-C3B	3.17	1.55	1.47
3	A	761[B]	HDE	C4A-NA	3.06	1.42	1.37
3	C	761[B]	HDE	C4A-NA	3.05	1.42	1.37
3	B	761[B]	HDE	C4A-NA	3.00	1.42	1.37
3	C	761[B]	HDE	CHD-C4C	2.99	1.46	1.39
2	B	760[A]	HDD	CMA-C3A	2.98	1.56	1.50
3	B	761[B]	HDE	C3B-C4B	-2.96	1.39	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	761[B]	HDE	C1D-C2D	-2.95	1.38	1.44
2	A	760[A]	HDD	OND-C2D	2.95	1.48	1.42
3	D	761[B]	HDE	CHC-C4B	2.94	1.44	1.38
3	B	761[B]	HDE	CHC-C4B	2.92	1.44	1.38
3	D	761[B]	HDE	C1B-C2B	-2.89	1.38	1.44
2	C	760[A]	HDD	CAB-C3B	2.88	1.55	1.47
3	A	761[B]	HDE	CHD-C4C	2.88	1.45	1.39
2	D	760[A]	HDD	CAB-C3B	2.86	1.55	1.47
2	A	760[A]	HDD	CMC-C2C	2.84	1.56	1.50
3	B	761[B]	HDE	CHB-C1B	2.84	1.45	1.39
3	B	761[B]	HDE	C1C-NC	2.82	1.44	1.39
3	C	761[B]	HDE	C1D-ND	-2.74	1.35	1.40
2	A	760[A]	HDD	CAC-C3C	2.69	1.54	1.47
3	C	761[B]	HDE	C1D-C2D	-2.69	1.39	1.44
3	D	761[B]	HDE	C1D-C2D	-2.69	1.39	1.44
3	B	761[B]	HDE	C1D-ND	-2.67	1.35	1.40
3	A	761[B]	HDE	C4D-ND	-2.65	1.33	1.38
3	C	761[B]	HDE	CHB-C1B	2.64	1.45	1.39
3	B	761[B]	HDE	FE-NC	2.61	2.03	1.95
3	C	761[B]	HDE	C1C-NC	2.56	1.44	1.39
3	C	761[B]	HDE	C1B-C2B	-2.55	1.39	1.44
3	D	761[B]	HDE	CHC-C1C	2.50	1.45	1.39
3	C	761[B]	HDE	C1A-NA	2.48	1.41	1.37
2	D	760[A]	HDD	CMB-C2B	2.47	1.55	1.50
2	A	760[A]	HDD	FE-NC	2.45	2.03	1.95
2	B	760[A]	HDD	CMD-C2D	2.43	1.56	1.53
3	D	761[B]	HDE	CHB-C1B	2.43	1.44	1.39
2	C	760[A]	HDD	CMC-C2C	2.39	1.55	1.50
2	B	760[A]	HDD	CAC-C3C	2.38	1.53	1.47
2	D	760[A]	HDD	FE-NC	2.37	2.03	1.95
2	D	760[A]	HDD	CMC-C2C	2.36	1.55	1.50
2	A	760[A]	HDD	CAB-C3B	2.31	1.53	1.47
2	A	760[A]	HDD	C3B-C4B	2.31	1.49	1.44
3	D	761[B]	HDE	C4D-C3D	2.29	1.48	1.45
3	A	761[B]	HDE	FE-NC	2.28	2.02	1.95
2	B	760[A]	HDD	CMC-C2C	2.24	1.55	1.50
3	B	761[B]	HDE	FE-NB	2.23	2.01	1.94
2	A	760[A]	HDD	C3B-C2B	-2.22	1.32	1.37
2	A	760[A]	HDD	CAA-C2A	2.19	1.57	1.51
3	A	761[B]	HDE	C1B-NB	2.16	1.43	1.38
3	B	761[B]	HDE	C1B-C2B	-2.16	1.40	1.44
2	A	760[A]	HDD	CMB-C2B	2.15	1.55	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	761[B]	HDE	C3C-C2C	2.15	1.48	1.41
3	A	761[B]	HDE	C1D-ND	-2.11	1.36	1.40
3	A	761[B]	HDE	C1C-NC	2.10	1.43	1.39
3	B	761[B]	HDE	C1D-C2D	-2.09	1.40	1.44
2	C	760[A]	HDD	CMB-C2B	2.08	1.55	1.50
3	A	761[B]	HDE	CAB-C3B	2.06	1.52	1.47
2	B	760[A]	HDD	C2A-C3A	-2.05	1.33	1.38
3	B	761[B]	HDE	C3C-C2C	2.05	1.48	1.41
3	C	761[B]	HDE	FE-NB	2.05	2.01	1.94
3	A	761[B]	HDE	C3C-C4C	2.05	1.48	1.42
2	C	760[A]	HDD	CAC-C3C	2.04	1.52	1.47
3	C	761[B]	HDE	C4D-ND	-2.04	1.34	1.38
3	B	761[B]	HDE	C4D-C3D	2.02	1.48	1.45
3	B	761[B]	HDE	CHB-C4A	-2.01	1.31	1.37
3	B	761[B]	HDE	C3C-C4C	2.01	1.48	1.42
2	A	760[A]	HDD	O2D-CGD	2.00	1.28	1.22
3	D	761[B]	HDE	FE-NB	2.00	2.01	1.94
3	C	761[B]	HDE	FE-NC	2.00	2.01	1.95

All (170) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	760[A]	HDD	O1D-CGD-O2D	9.48	128.79	120.81
2	A	760[A]	HDD	O1D-CGD-CBD	-8.46	102.46	110.17
2	B	760[A]	HDD	O1D-CGD-CBD	-7.51	103.33	110.17
2	D	760[A]	HDD	O1D-CGD-O2D	6.74	126.49	120.81
3	C	761[B]	HDE	C2D-C1D-ND	6.68	117.52	109.84
2	C	760[A]	HDD	O1D-CGD-O2D	6.61	126.38	120.81
2	D	760[A]	HDD	O1D-CGD-CBD	-6.59	104.16	110.17
2	D	760[A]	HDD	C3D-O1D-CGD	6.53	117.23	111.14
3	D	761[B]	HDE	C2D-C1D-ND	6.50	117.32	109.84
3	A	761[B]	HDE	C2D-C1D-ND	6.17	116.94	109.84
2	A	760[A]	HDD	CAD-CBD-CGD	-5.97	95.61	104.48
3	C	761[B]	HDE	CBC-CAC-C3C	-5.79	98.59	127.53
3	C	761[B]	HDE	CMA-C3A-C4A	-5.77	102.91	112.68
3	B	761[B]	HDE	C2D-C1D-ND	5.73	116.43	109.84
3	C	761[B]	HDE	C3C-C2C-C1C	-5.56	100.62	107.17
3	B	761[B]	HDE	C3C-C2C-C1C	-5.50	100.68	107.17
3	D	761[B]	HDE	O1A-CGA-O2A	5.48	125.43	120.81
3	D	761[B]	HDE	CBC-CAC-C3C	-5.39	100.62	127.53
3	B	761[B]	HDE	CBC-CAC-C3C	-5.38	100.66	127.53
2	A	760[A]	HDD	C3B-C4B-NB	-4.89	105.95	109.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	761[B]	HDE	CAD-CBD-CGD	-4.71	101.18	113.67
3	A	761[B]	HDE	CBA-CAA-C2A	4.70	110.68	103.98
3	D	761[B]	HDE	CMA-C3A-C4A	-4.69	104.74	112.68
2	D	760[A]	HDD	C4D-ND-C1D	4.60	110.67	105.27
3	D	761[B]	HDE	CAD-CBD-CGD	-4.54	101.61	113.67
3	A	761[B]	HDE	CAD-CBD-CGD	-4.49	101.75	113.67
3	D	761[B]	HDE	CBB-CAB-C3B	-4.48	105.16	127.53
2	C	760[A]	HDD	OND-C2D-CMD	-4.41	100.92	109.45
3	B	761[B]	HDE	C2C-C1C-NC	4.34	117.10	110.14
2	A	760[A]	HDD	C3D-O1D-CGD	4.32	115.17	111.14
2	A	760[A]	HDD	C4D-ND-C1D	4.31	110.33	105.27
2	B	760[A]	HDD	C4D-ND-C1D	4.27	110.28	105.27
3	B	761[B]	HDE	CMA-C3A-C4A	-4.25	105.49	112.68
3	B	761[B]	HDE	CBA-CAA-C2A	4.21	109.98	103.98
3	B	761[B]	HDE	C2B-C1B-NB	4.20	114.76	109.90
3	A	761[B]	HDE	C2C-C1C-NC	4.19	116.86	110.14
3	C	761[B]	HDE	C3A-C4A-CHB	-4.18	117.77	124.27
3	D	761[B]	HDE	C2C-C1C-NC	4.14	116.78	110.14
2	D	760[A]	HDD	C2D-C1D-CHD	4.08	129.71	123.28
3	B	761[B]	HDE	C4B-NB-C1B	-4.08	100.38	105.21
3	D	761[B]	HDE	C3C-C2C-C1C	-4.06	102.39	107.17
3	B	761[B]	HDE	O1A-CGA-O2A	4.03	124.20	120.81
3	C	761[B]	HDE	CAD-CBD-CGD	-3.98	103.11	113.67
3	C	761[B]	HDE	C3D-C4D-ND	3.95	114.17	110.35
2	C	760[A]	HDD	C4D-ND-C1D	3.92	109.87	105.27
3	D	761[B]	HDE	C3A-C4A-CHB	-3.92	118.17	124.27
3	C	761[B]	HDE	C2C-C1C-NC	3.91	116.41	110.14
3	D	761[B]	HDE	CAD-C3D-C4D	3.90	131.49	124.70
3	A	761[B]	HDE	CBC-CAC-C3C	-3.88	108.11	127.53
2	D	760[A]	HDD	C2A-C1A-NA	-3.85	105.88	110.15
3	A	761[B]	HDE	C3C-C2C-C1C	-3.85	102.64	107.17
3	A	761[B]	HDE	CBB-CAB-C3B	-3.80	108.55	127.53
3	C	761[B]	HDE	O1A-CGA-O2A	3.77	123.98	120.81
3	D	761[B]	HDE	CBA-CAA-C2A	3.74	109.32	103.98
3	D	761[B]	HDE	C4D-C3D-C2D	-3.68	101.54	106.89
2	C	760[A]	HDD	C4C-C3C-C2C	3.68	110.00	106.81
3	B	761[B]	HDE	C3A-C4A-CHB	-3.62	118.64	124.27
2	D	760[A]	HDD	CAA-CBA-CGA	-3.57	104.20	113.67
3	D	761[B]	HDE	C3B-C2B-C1B	-3.56	103.74	106.41
2	D	760[A]	HDD	CHA-C1A-NA	3.54	130.28	123.86
3	B	761[B]	HDE	CBB-CAB-C3B	-3.54	109.86	127.53
2	C	760[A]	HDD	CAA-CBA-CGA	-3.52	104.33	113.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	761[B]	HDE	C3D-C4D-ND	3.52	113.75	110.35
3	C	761[B]	HDE	C4D-C3D-C2D	-3.50	101.79	106.89
3	B	761[B]	HDE	CMC-C2C-C1C	3.48	130.72	125.42
2	D	760[A]	HDD	CHD-C4C-NC	3.48	128.24	124.45
2	C	760[A]	HDD	O1D-CGD-CBD	-3.46	107.02	110.17
3	D	761[B]	HDE	C2B-C1B-NB	3.44	113.88	109.90
3	C	761[B]	HDE	C2B-C1B-NB	3.43	113.87	109.90
3	C	761[B]	HDE	C4B-C3B-C2B	-3.40	104.15	107.28
3	C	761[B]	HDE	CBB-CAB-C3B	-3.36	110.76	127.53
3	C	761[B]	HDE	CMC-C2C-C1C	3.35	130.52	125.42
2	B	760[A]	HDD	CAA-CBA-CGA	-3.35	104.79	113.67
3	A	761[B]	HDE	C1D-C2D-C3D	-3.30	103.50	106.98
2	C	760[A]	HDD	CHD-C4C-NC	3.26	128.00	124.45
2	A	760[A]	HDD	CMC-C2C-C3C	-3.24	120.58	128.43
3	C	761[B]	HDE	C1D-C2D-C3D	-3.24	103.58	106.98
3	A	761[B]	HDE	C2A-O1A-CGA	3.21	114.14	111.14
2	B	760[A]	HDD	OND-C2D-CMD	-3.20	103.26	109.45
2	A	760[A]	HDD	CBD-CAD-C3D	-3.18	99.45	103.98
3	A	761[B]	HDE	C4D-C3D-C2D	-3.18	102.26	106.89
2	C	760[A]	HDD	CHC-C1C-NC	3.14	127.87	124.45
2	A	760[A]	HDD	CAA-CBA-CGA	-3.13	105.37	113.67
3	B	761[B]	HDE	CAD-C3D-C4D	3.10	130.10	124.70
3	A	761[B]	HDE	C3B-C2B-C1B	-3.05	104.12	106.41
3	B	761[B]	HDE	C3B-C2B-C1B	-3.04	104.13	106.41
2	A	760[A]	HDD	CAB-C3B-C2B	-3.03	118.58	128.43
2	C	760[A]	HDD	C3B-C4B-NB	-3.01	107.30	109.47
2	D	760[A]	HDD	CBD-CAD-C3D	-2.99	99.72	103.98
3	D	761[B]	HDE	C3D-C4D-ND	2.97	113.22	110.35
3	D	761[B]	HDE	CHC-C4B-NB	-2.97	120.70	124.37
2	A	760[A]	HDD	OND-C2D-CMD	-2.94	103.77	109.45
2	B	760[A]	HDD	CBD-CAD-C3D	-2.94	99.80	103.98
2	B	760[A]	HDD	CAD-CBD-CGD	-2.93	100.13	104.48
3	C	761[B]	HDE	C1C-CHC-C4B	-2.92	119.39	126.25
2	A	760[A]	HDD	C4B-C3B-C2B	2.88	109.93	107.28
3	B	761[B]	HDE	C4D-C3D-C2D	-2.88	102.70	106.89
2	C	760[A]	HDD	CBC-CAC-C3C	-2.88	113.14	127.53
2	D	760[A]	HDD	C3B-C4B-NB	-2.86	107.42	109.47
3	D	761[B]	HDE	CHB-C4A-NA	2.85	128.22	124.28
2	C	760[A]	HDD	CBB-CAB-C3B	-2.82	113.43	127.53
3	B	761[B]	HDE	C4B-C3B-C2B	-2.81	104.69	107.28
3	B	761[B]	HDE	C1C-CHC-C4B	-2.80	119.66	126.25
2	A	760[A]	HDD	CHB-C4A-NA	2.78	128.90	123.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	760[A]	HDD	C4B-C3B-C2B	2.74	109.80	107.28
3	D	761[B]	HDE	C4B-NB-C1B	-2.73	101.98	105.21
2	A	760[A]	HDD	CHA-C1A-NA	2.71	128.77	123.86
2	B	760[A]	HDD	C2A-C1A-NA	-2.70	107.16	110.15
3	B	761[B]	HDE	C1D-C2D-C3D	-2.67	104.17	106.98
3	C	761[B]	HDE	C4B-NB-C1B	-2.67	102.05	105.21
3	A	761[B]	HDE	CHD-C1D-C2D	-2.65	119.43	126.95
3	C	761[B]	HDE	C4C-C3C-C2C	2.64	110.59	107.30
3	B	761[B]	HDE	C3D-C4D-ND	2.62	112.88	110.35
3	A	761[B]	HDE	CMC-C2C-C1C	2.60	129.38	125.42
3	D	761[B]	HDE	C1C-CHC-C4B	-2.58	120.17	126.25
2	D	760[A]	HDD	OND-C2D-CMD	-2.57	104.47	109.45
2	A	760[A]	HDD	O1D-CGD-O2D	2.56	122.97	120.81
3	A	761[B]	HDE	CHC-C1C-NC	-2.56	119.21	123.86
2	A	760[A]	HDD	CMB-C2B-C1B	2.56	129.03	125.03
2	D	760[A]	HDD	C4A-NA-C1A	2.56	109.99	105.82
2	D	760[A]	HDD	CBB-CAB-C3B	-2.55	114.78	127.53
2	C	760[A]	HDD	C1B-NB-C4B	2.54	108.21	105.21
3	C	761[B]	HDE	CHD-C1D-C2D	-2.53	119.76	126.95
2	B	760[A]	HDD	CBC-CAC-C3C	-2.52	114.92	127.53
3	C	761[B]	HDE	CHB-C1B-C2B	-2.51	121.06	125.03
2	C	760[A]	HDD	C2A-C1A-NA	-2.51	107.37	110.15
2	A	760[A]	HDD	CHD-C4C-NC	2.48	127.15	124.45
3	D	761[B]	HDE	CHC-C1C-NC	-2.48	119.37	123.86
2	D	760[A]	HDD	C4C-NC-C1C	2.48	109.86	105.82
2	C	760[A]	HDD	C2D-C1D-CHD	2.46	127.16	123.28
3	A	761[B]	HDE	C4C-CHD-C1D	-2.46	120.47	126.25
2	B	760[A]	HDD	C3B-C4B-NB	-2.45	107.71	109.47
3	B	761[B]	HDE	CHC-C4B-NB	-2.44	121.36	124.37
2	C	760[A]	HDD	C3D-O1D-CGD	2.43	113.41	111.14
2	B	760[A]	HDD	CHA-C1A-NA	2.41	128.23	123.86
2	C	760[A]	HDD	CHA-C1A-NA	2.40	128.21	123.86
2	B	760[A]	HDD	CHD-C4C-NC	2.39	127.06	124.45
2	B	760[A]	HDD	CHB-C4A-NA	2.39	128.19	123.86
2	D	760[A]	HDD	C3A-C4A-NA	-2.34	106.39	110.14
3	D	761[B]	HDE	C4B-C3B-C2B	-2.34	105.13	107.28
3	B	761[B]	HDE	C4C-C3C-C2C	2.33	110.20	107.30
3	C	761[B]	HDE	CHD-C4C-NC	2.31	128.06	123.86
2	A	760[A]	HDD	C1B-NB-C4B	2.30	107.93	105.21
3	D	761[B]	HDE	CHD-C1D-ND	-2.29	121.53	124.37
3	D	761[B]	HDE	C1D-C2D-C3D	-2.27	104.59	106.98
2	D	760[A]	HDD	C4A-C3A-C2A	2.24	109.39	106.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	760[A]	HDD	C4C-CHD-C1D	2.22	129.57	125.99
2	D	760[A]	HDD	OND-C2D-C3D	-2.21	105.27	110.46
2	B	760[A]	HDD	C4C-NC-C1C	2.21	109.42	105.82
2	A	760[A]	HDD	C2A-C1A-NA	-2.20	107.71	110.15
2	B	760[A]	HDD	CBB-CAB-C3B	-2.20	116.54	127.53
3	C	761[B]	HDE	C3B-C2B-C1B	-2.19	104.76	106.41
3	C	761[B]	HDE	C4C-CHD-C1D	-2.17	121.13	126.25
3	B	761[B]	HDE	CHC-C1C-NC	-2.16	119.95	123.86
3	B	761[B]	HDE	CHB-C1B-C2B	-2.15	121.64	125.03
3	A	761[B]	HDE	C1C-CHC-C4B	-2.15	121.20	126.25
2	D	760[A]	HDD	CBC-CAC-C3C	-2.13	116.86	127.53
3	C	761[B]	HDE	O1A-C2A-CAA	2.13	107.00	103.06
2	D	760[A]	HDD	CHB-C4A-NA	2.12	127.71	123.86
2	A	760[A]	HDD	C4A-C3A-C2A	2.12	109.25	106.82
2	A	760[A]	HDD	CMB-C2B-C3B	-2.12	123.30	128.43
3	C	761[B]	HDE	CBA-CAA-C2A	2.11	106.99	103.98
3	A	761[B]	HDE	C4C-NC-C1C	-2.08	102.42	105.82
3	A	761[B]	HDE	ONA-C3A-CMA	-2.06	105.46	109.45
3	D	761[B]	HDE	CHD-C1D-C2D	-2.06	121.09	126.95
2	D	760[A]	HDD	C4C-CHD-C1D	2.05	129.31	125.99
2	D	760[A]	HDD	CMB-C2B-C1B	2.05	128.24	125.03
2	A	760[A]	HDD	CBB-CAB-C3B	-2.04	117.33	127.53
3	B	761[B]	HDE	CHD-C1D-C2D	-2.03	121.18	126.95
3	A	761[B]	HDE	CHA-C4D-C3D	-2.01	121.85	124.77

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	760[A]	HDD	NC
2	B	760[A]	HDD	NC
2	C	760[A]	HDD	NC
2	D	760[A]	HDD	NC

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	760[A]	HDD	C2B-C3B-CAB-CBB
2	D	760[A]	HDD	C2B-C3B-CAB-CBB
2	D	760[A]	HDD	C4B-C3B-CAB-CBB
2	A	760[A]	HDD	C2C-C3C-CAC-CBC
2	A	760[A]	HDD	C4B-C3B-CAB-CBB
2	D	760[A]	HDD	C2C-C3C-CAC-CBC

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Mol	Chain	Res	Type	Atoms
2	C	760[A]	HDD	CAA-CBA-CGA-O1A
3	A	761[B]	HDE	CAD-CBD-CGD-O1D
3	D	761[B]	HDE	CAD-CBD-CGD-O2D
2	C	760[A]	HDD	CAA-CBA-CGA-O2A
2	D	760[A]	HDD	CAA-CBA-CGA-O1A
2	B	760[A]	HDD	CAA-CBA-CGA-O1A
2	A	760[A]	HDD	CAA-CBA-CGA-O2A
3	D	761[B]	HDE	CAD-CBD-CGD-O1D
3	A	761[B]	HDE	CAD-CBD-CGD-O2D
3	C	761[B]	HDE	CAD-CBD-CGD-O1D
2	D	760[A]	HDD	CAA-CBA-CGA-O2A
3	C	761[B]	HDE	CAD-CBD-CGD-O2D
2	A	760[A]	HDD	CAA-CBA-CGA-O1A
2	B	760[A]	HDD	CAA-CBA-CGA-O2A
3	B	761[B]	HDE	CAD-CBD-CGD-O2D
2	A	760[A]	HDD	C4C-C3C-CAC-CBC
2	C	760[A]	HDD	C4C-C3C-CAC-CBC
2	D	760[A]	HDD	C4C-C3C-CAC-CBC
3	B	761[B]	HDE	CAD-CBD-CGD-O1D
2	C	760[A]	HDD	C2C-C3C-CAC-CBC

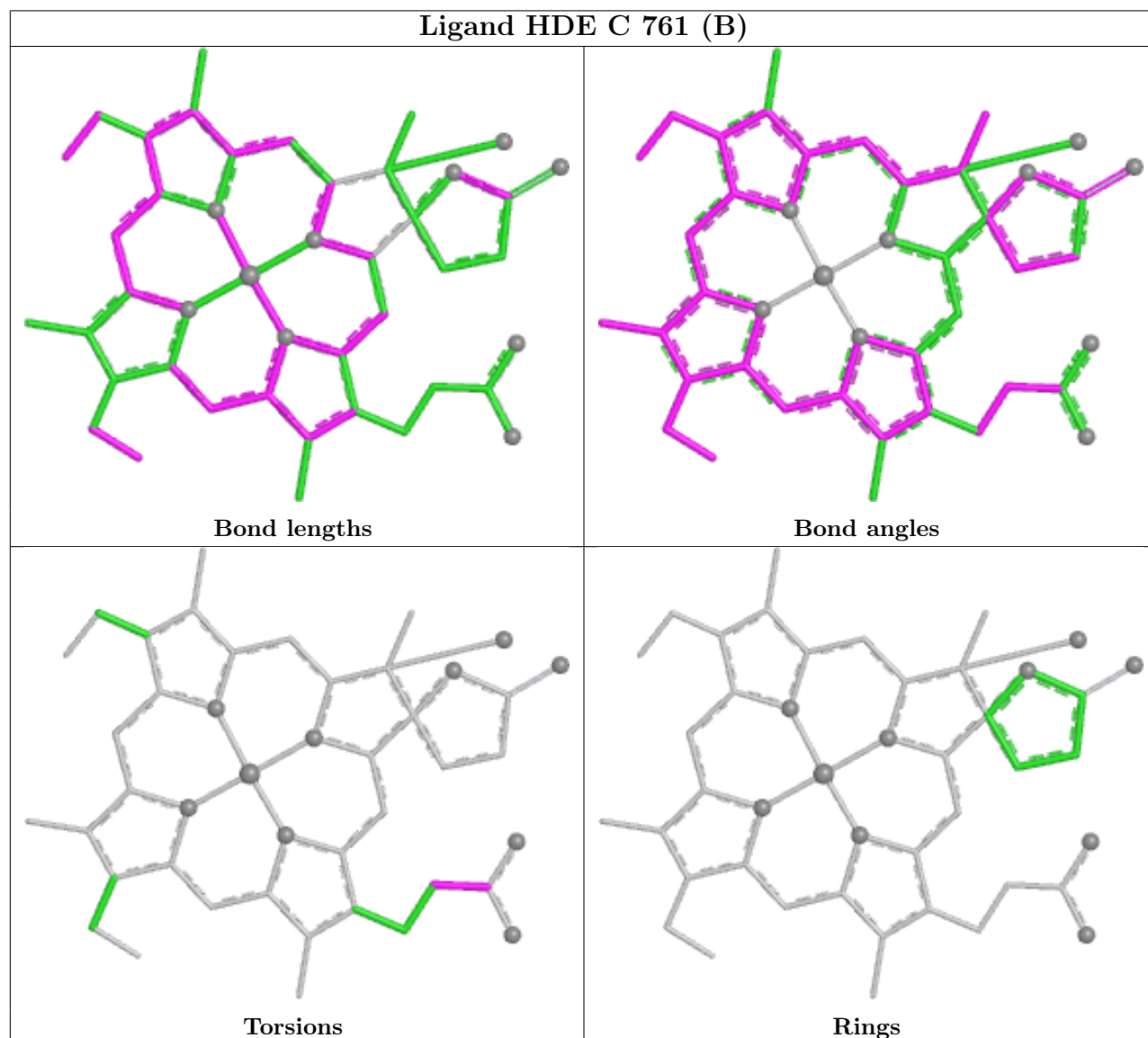
There are no ring outliers.

8 monomers are involved in 60 short contacts:

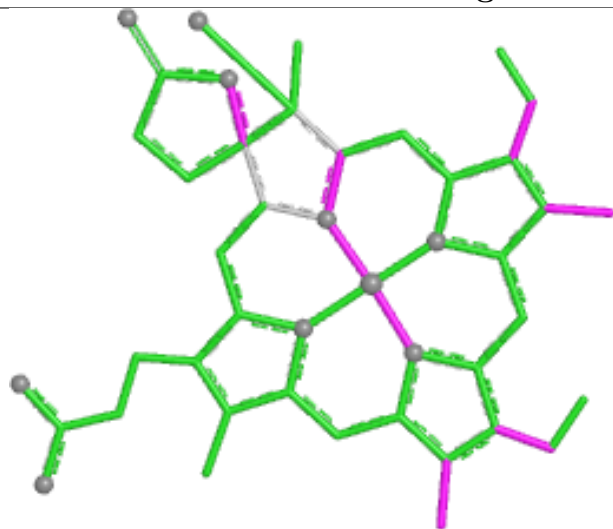
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	761[B]	HDE	10	0
2	C	760[A]	HDD	10	0
3	D	761[B]	HDE	11	0
2	B	760[A]	HDD	5	0
2	A	760[A]	HDD	3	0
3	B	761[B]	HDE	11	0
3	A	761[B]	HDE	7	0
2	D	760[A]	HDD	3	0

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

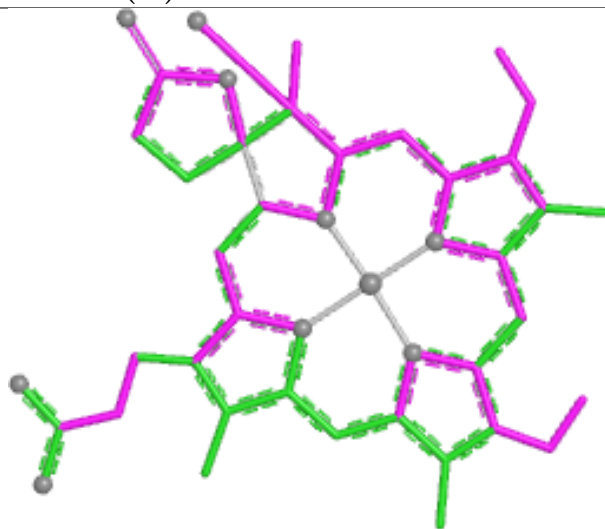
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



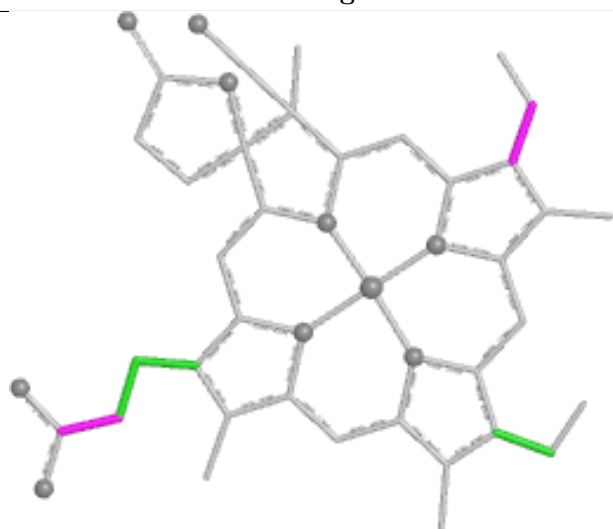
Ligand HDD C 760 (A)



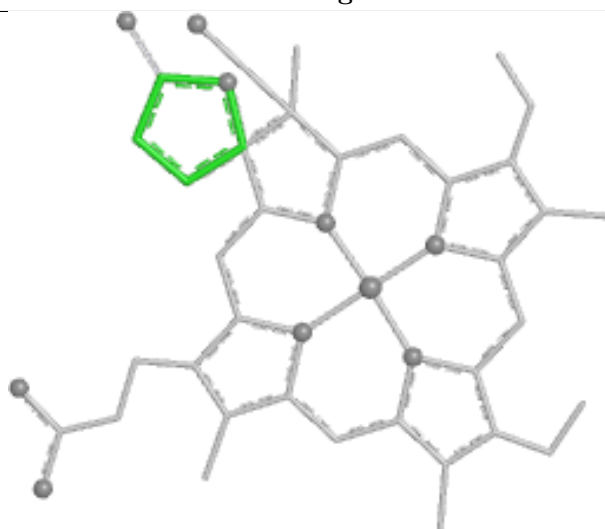
Bond lengths



Bond angles

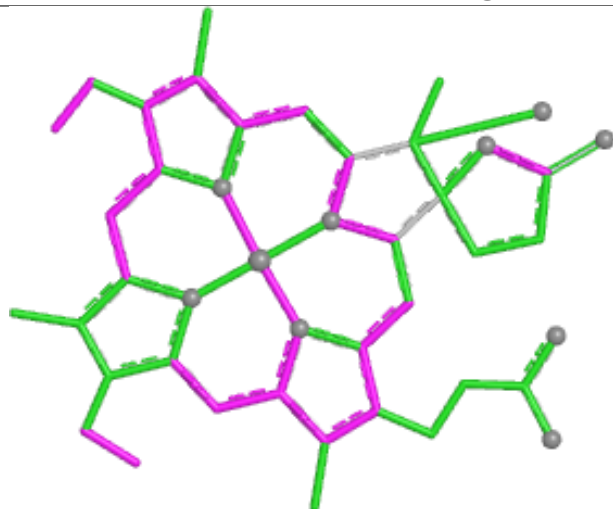


Torsions

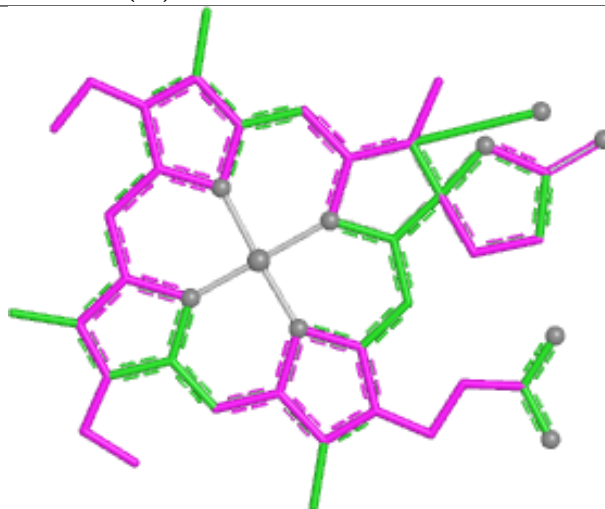


Rings

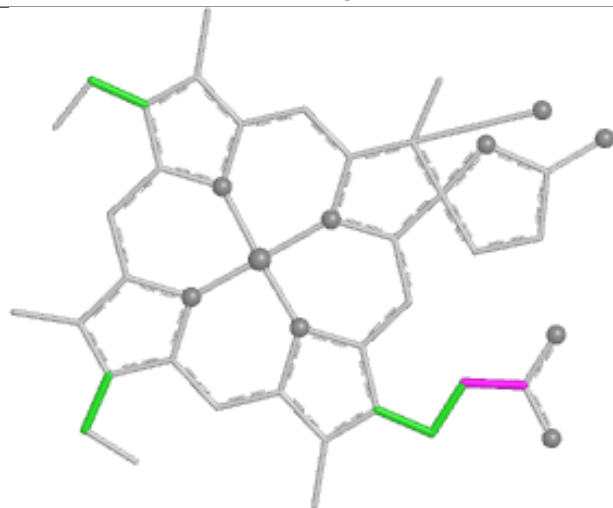
Ligand HDE D 761 (B)



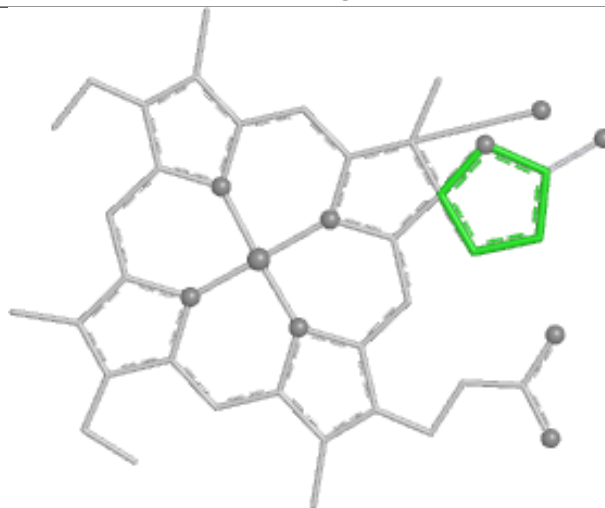
Bond lengths



Bond angles

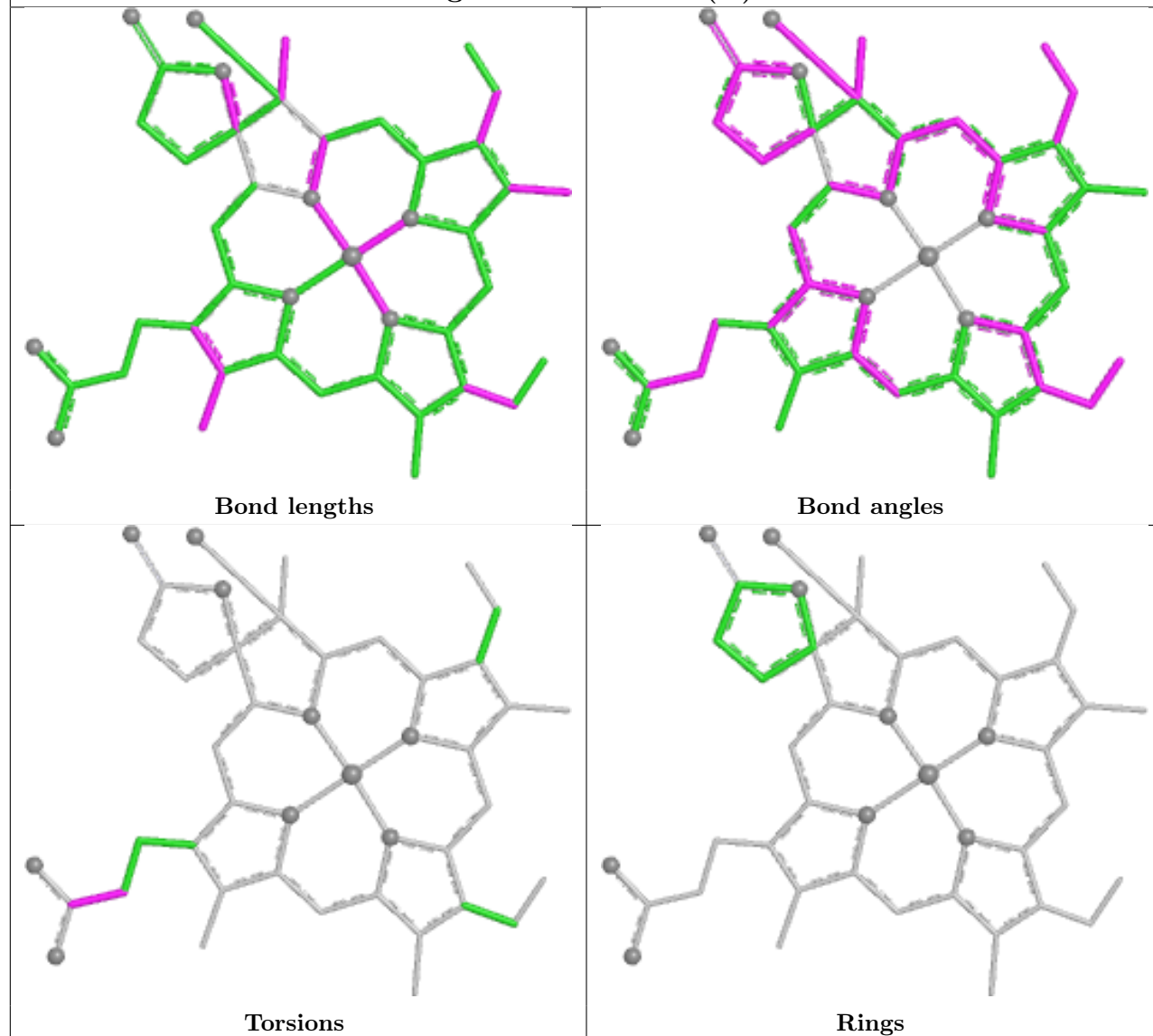


Torsions

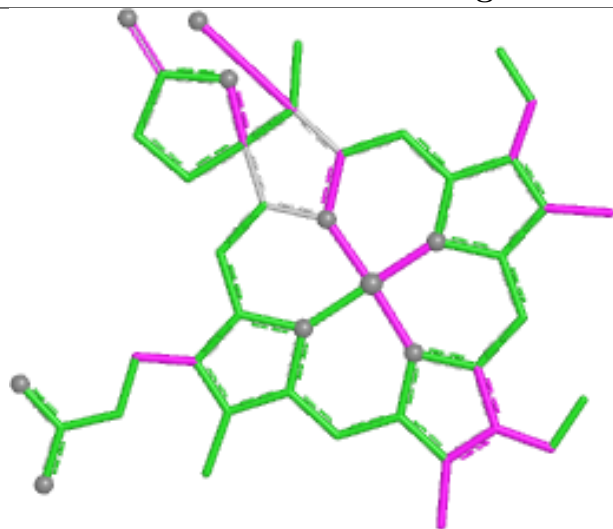


Rings

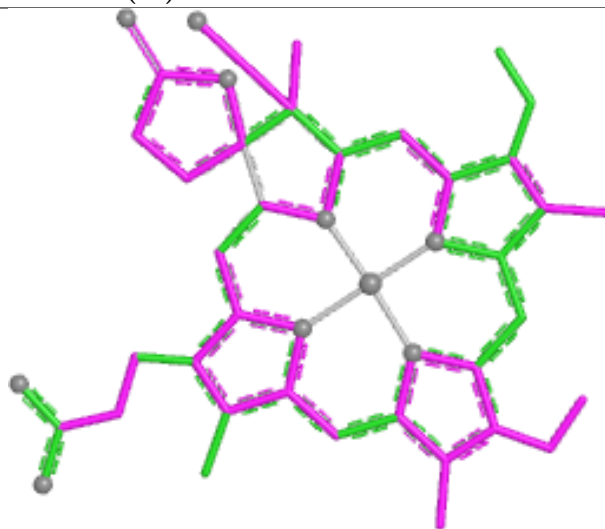
Ligand HDD B 760 (A)



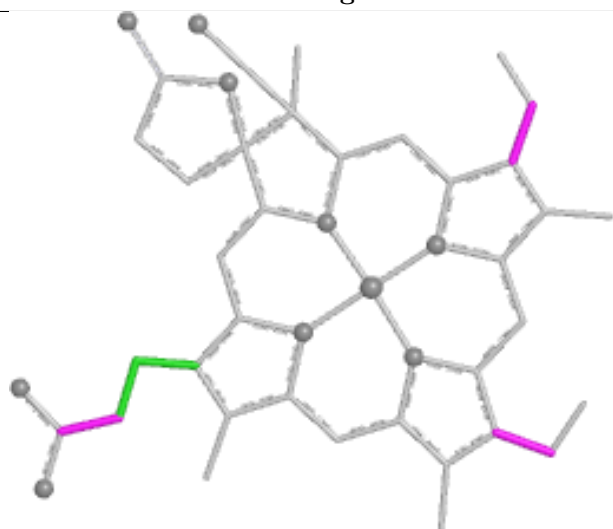
Ligand HDD A 760 (A)



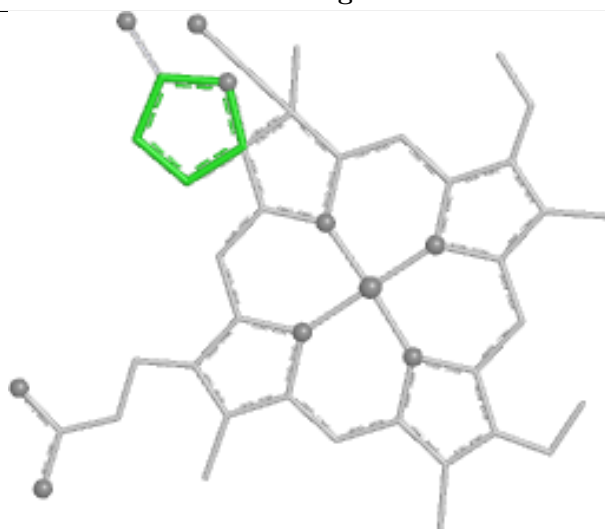
Bond lengths



Bond angles

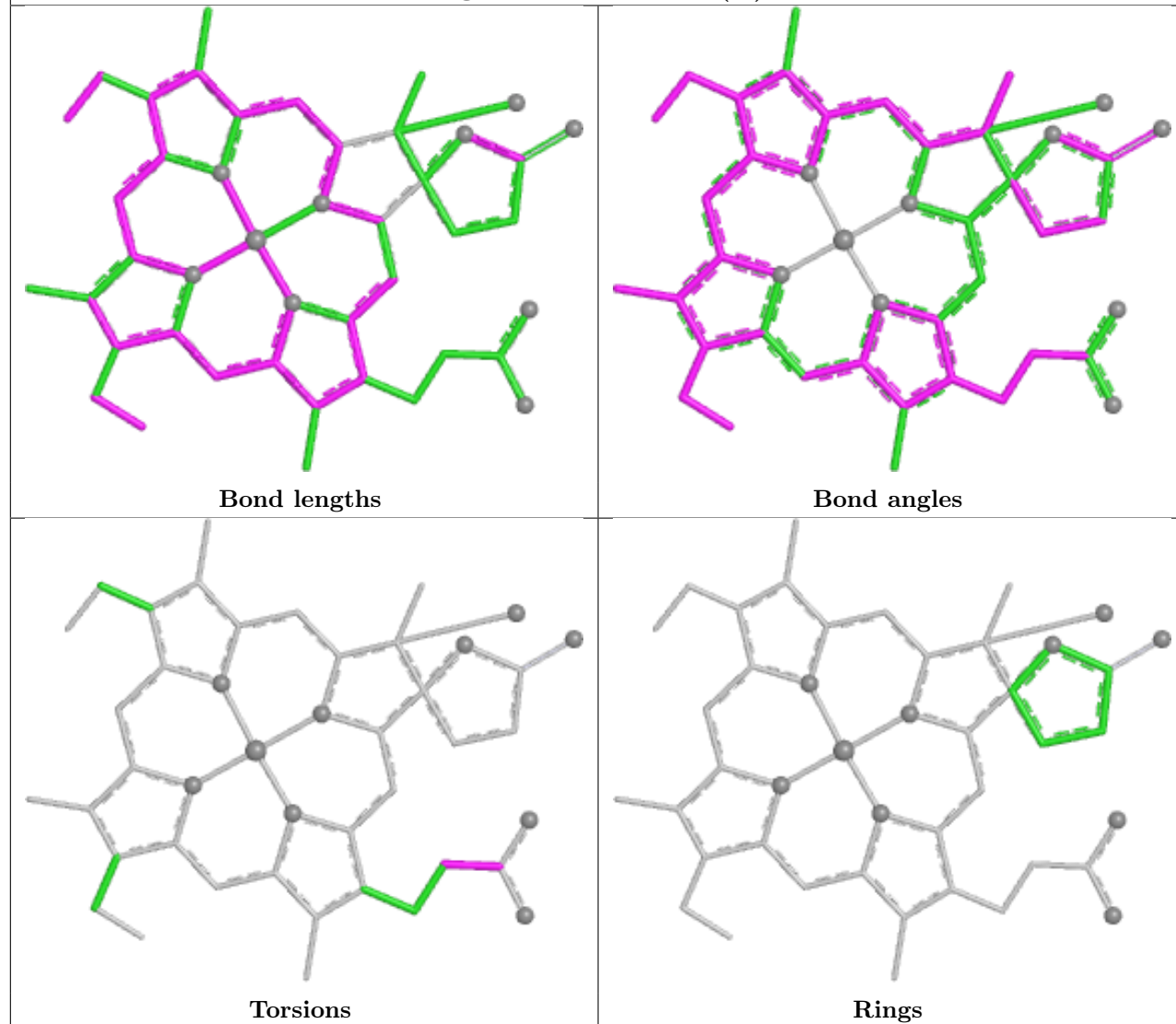


Torsions

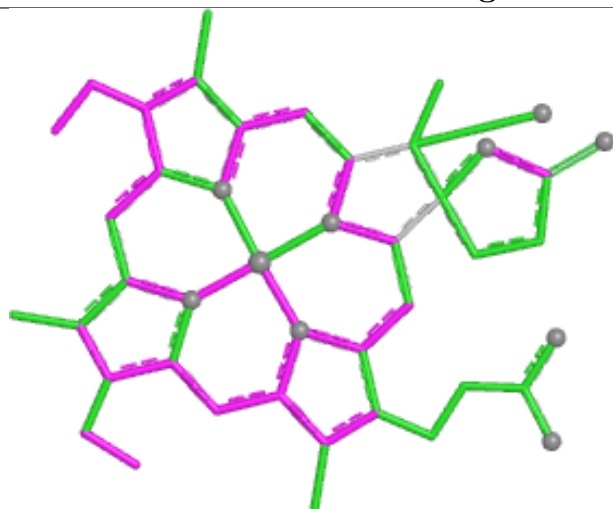


Rings

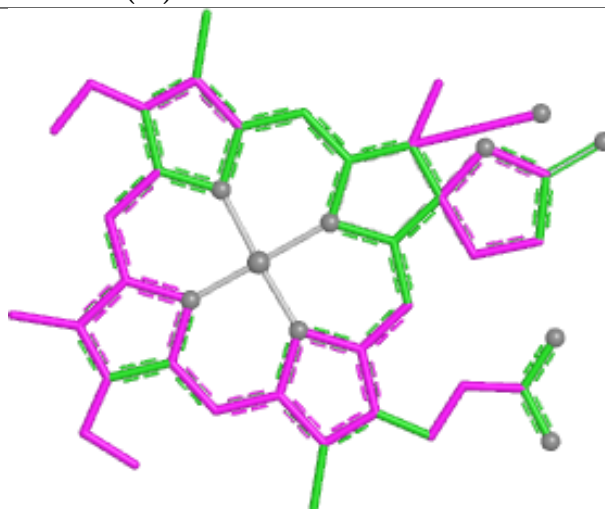
Ligand HDE B 761 (B)



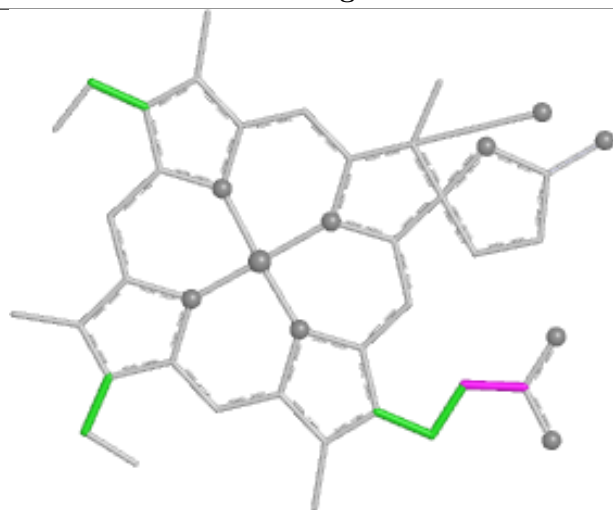
Ligand HDE A 761 (B)



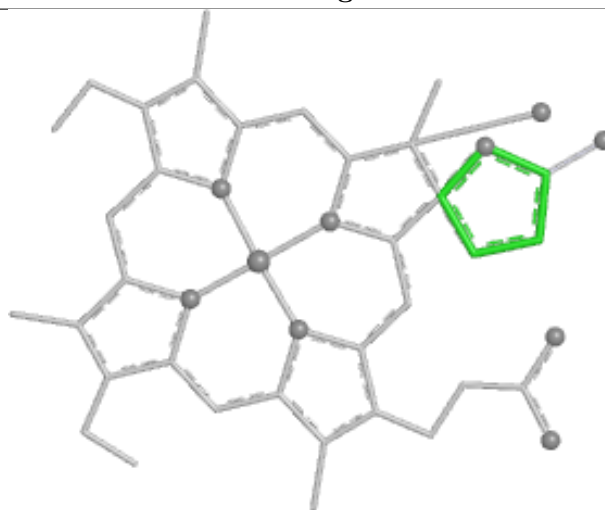
Bond lengths



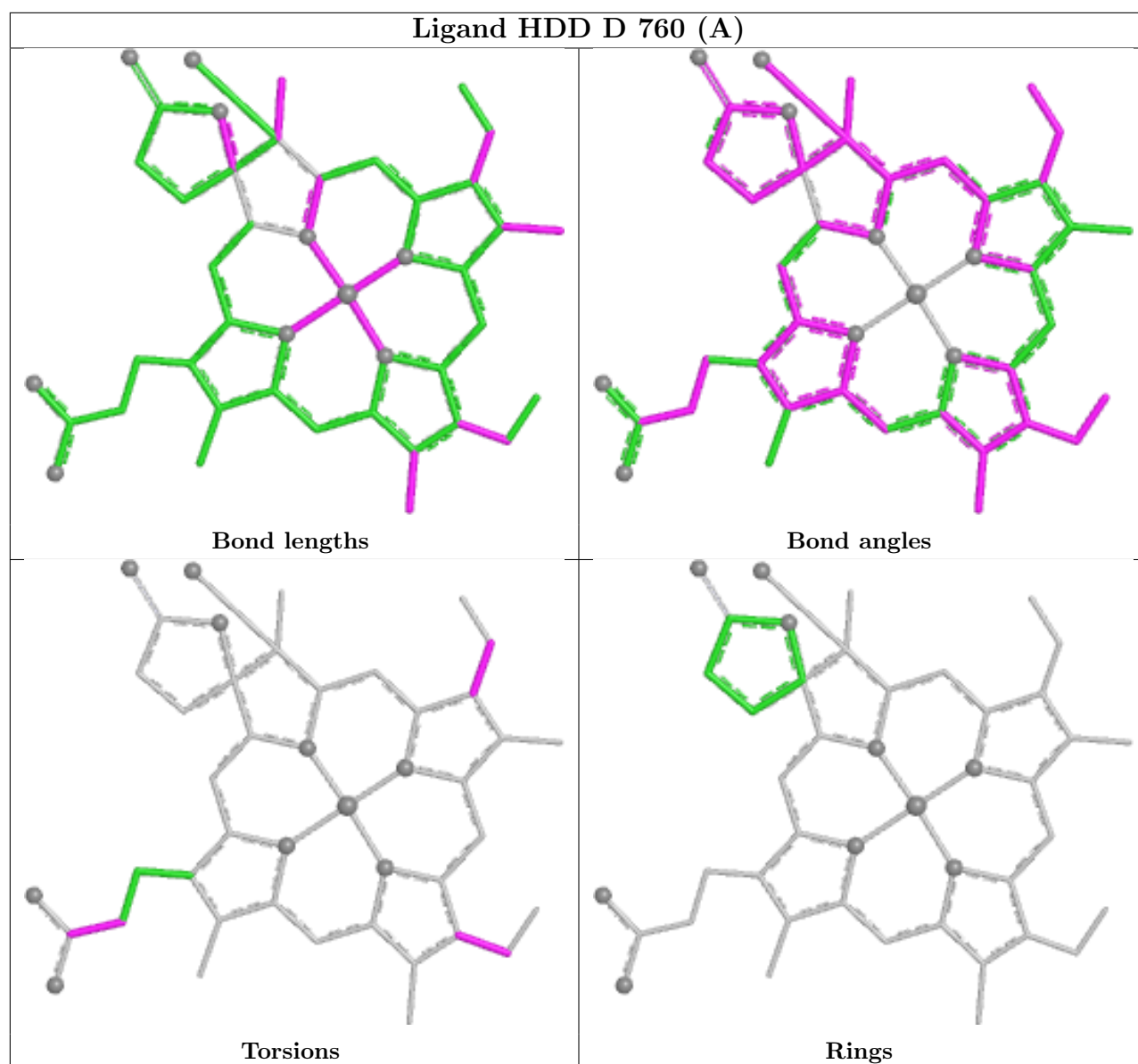
Bond angles



Torsions



Rings



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	726/753 (96%)	-0.81	3 (0%) 88 89	3, 10, 28, 45	7 (0%)
1	B	726/753 (96%)	-0.68	1 (0%) 92 91	3, 12, 33, 47	7 (0%)
1	C	726/753 (96%)	-0.71	1 (0%) 92 91	2, 12, 32, 46	4 (0%)
1	D	726/753 (96%)	-0.80	2 (0%) 90 90	3, 10, 28, 43	10 (1%)
All	All	2904/3012 (96%)	-0.75	7 (0%) 91 91	2, 11, 31, 47	28 (0%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	28	SER	3.7
1	A	28	SER	3.2
1	A	713	GLN	2.6
1	C	750	LYS	2.2
1	D	749	ASP	2.1
1	A	725	ASP	2.1
1	B	725	ASP	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 oligosaccharides in this entry.

6.4 Ligands ⓘ

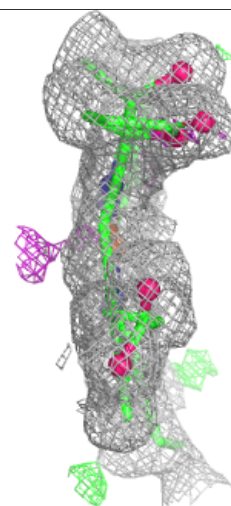
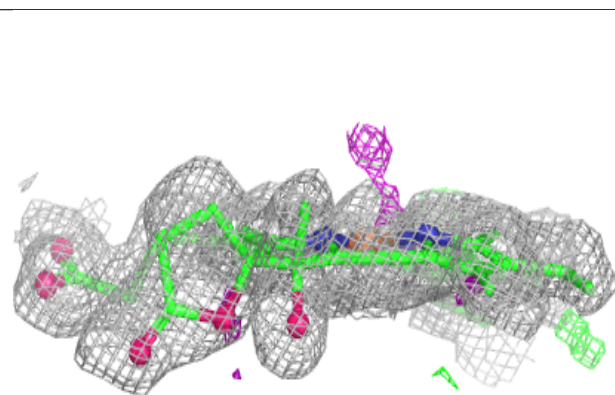
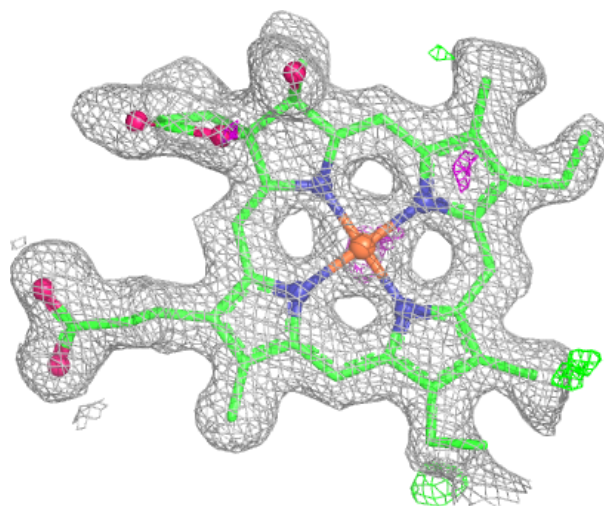
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	H2S	D	754	1/1	0.87	0.12	25,25,25,25	1
4	H2S	B	754	1/1	0.94	0.06	18,18,18,18	1
4	H2S	A	754	1/1	0.95	0.11	26,26,26,26	1
4	H2S	C	754	1/1	0.96	0.11	20,20,20,20	1
3	HDE	C	761[B]	44/44	0.98	0.06	4,10,13,16	44
3	HDE	D	761[B]	44/44	0.98	0.05	2,8,14,16	44
3	HDE	B	761[B]	44/44	0.98	0.06	3,12,15,16	44
2	HDD	C	760[A]	44/44	0.99	0.05	2,5,8,11	44
2	HDD	D	760[A]	44/44	0.99	0.04	2,3,7,15	44
3	HDE	A	761[B]	44/44	0.99	0.05	2,7,10,14	44
2	HDD	A	760[A]	44/44	0.99	0.05	2,3,9,16	44
2	HDD	B	760[A]	44/44	0.99	0.05	3,4,8,11	44

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.

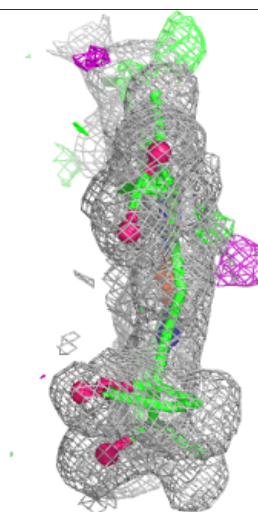
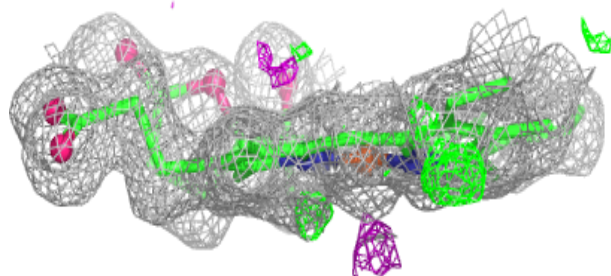
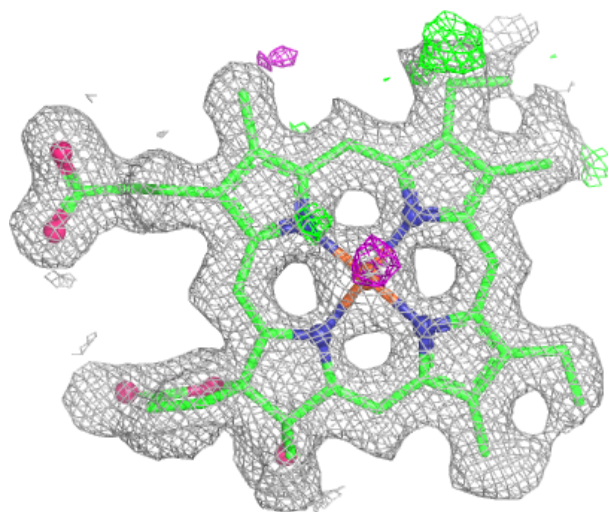
Electron density around HDE C 761 (B):

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



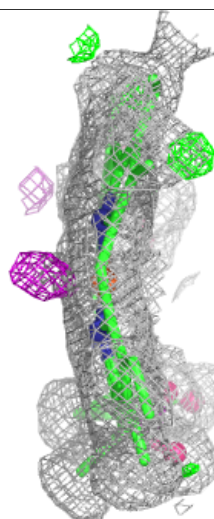
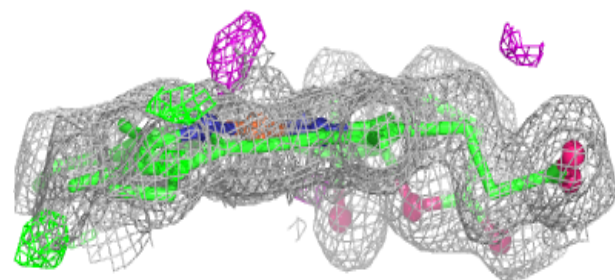
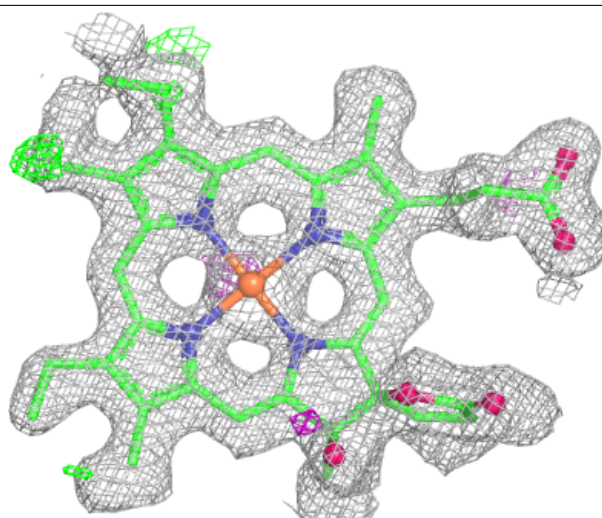
Electron density around HDE D 761 (B):

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



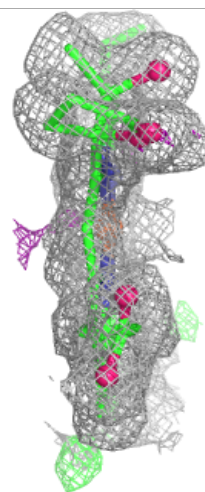
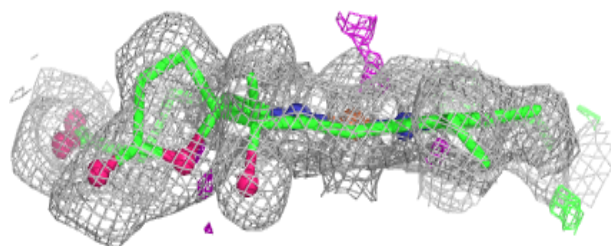
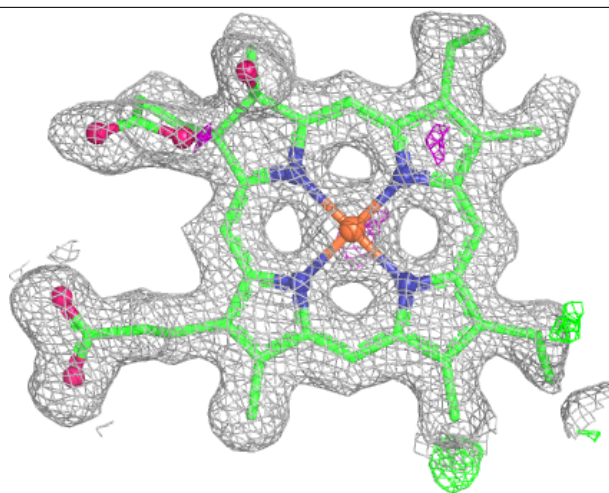
Electron density around HDE B 761 (B):

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



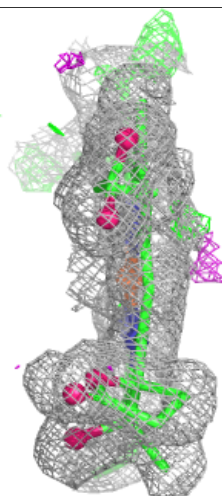
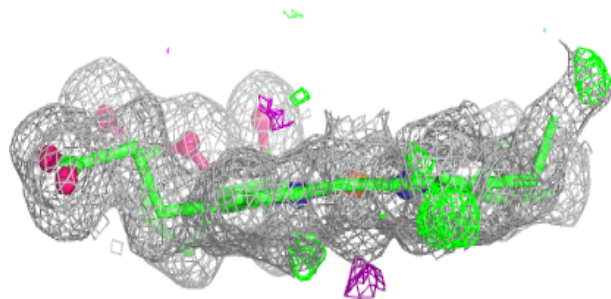
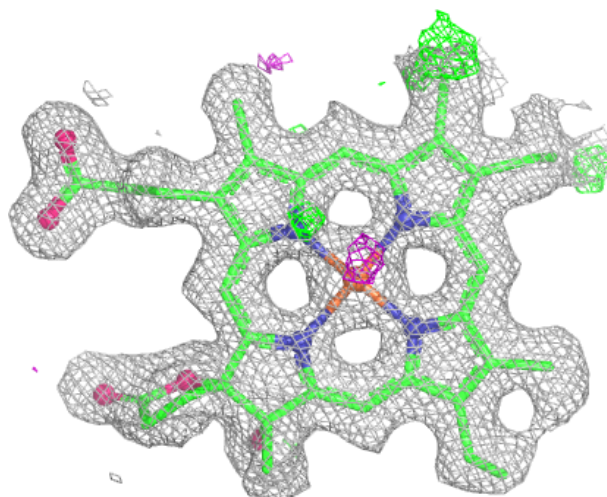
Electron density around HDD C 760 (A):

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



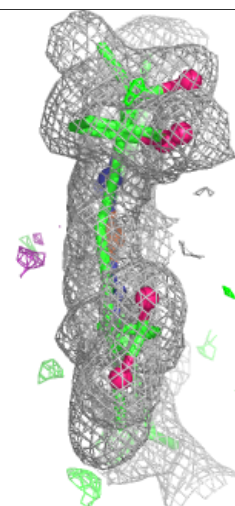
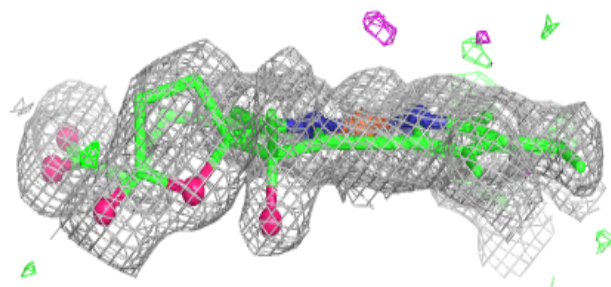
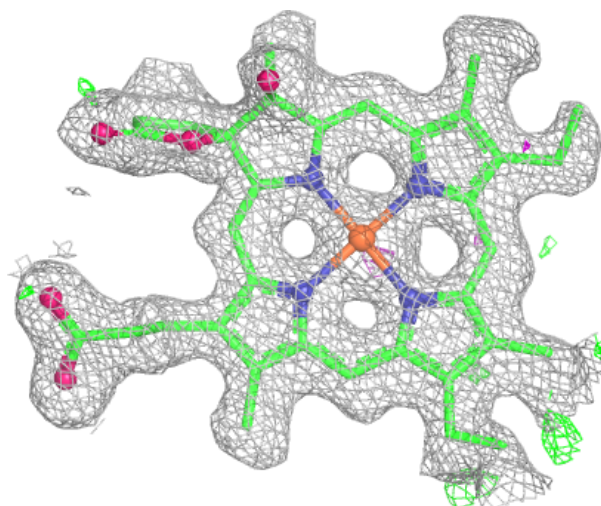
Electron density around HDD D 760 (A):

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



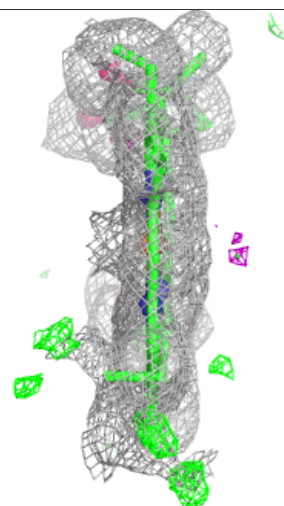
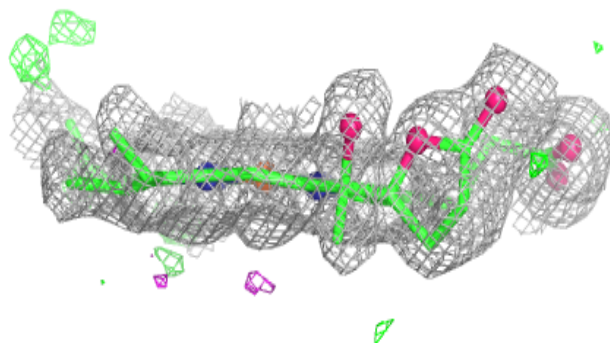
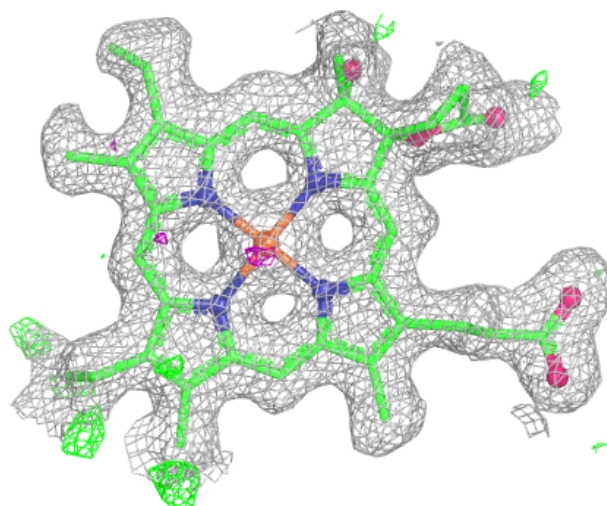
Electron density around HDE A 761 (B):

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



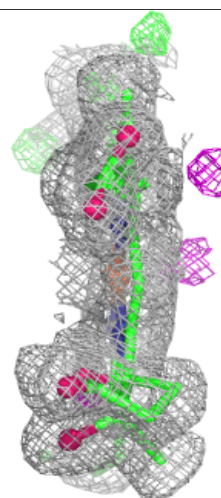
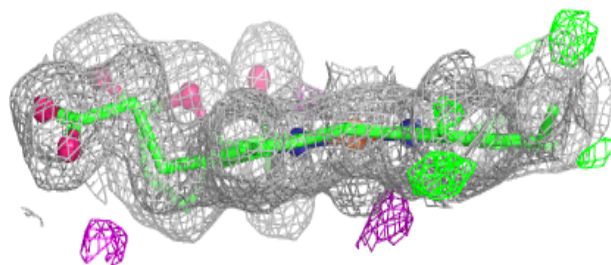
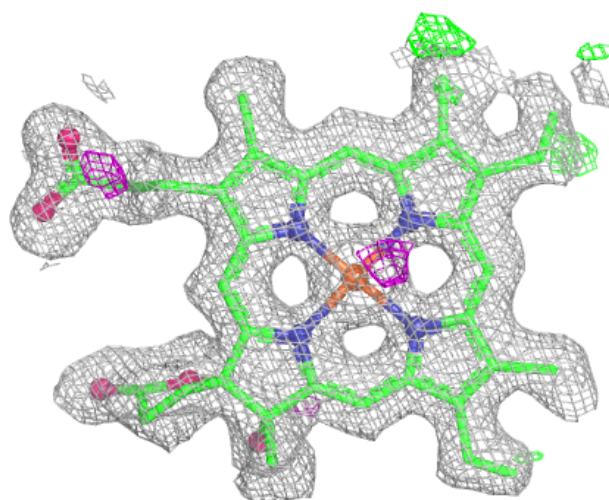
Electron density around HDD A 760 (A):

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



Electron density around HDD B 760 (A):

$2mF_o-DF_c$ (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.