



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2026 – 06:37 AM UTC

PDB ID : 8GES / pdb_00008ges
Title : R. hominis 2 beta-glucuronidase bound to UNC10201652-glucuronide
Authors : Simpson, J.B.; Redinbo, M.R.
Deposited on : 2023-03-07
Resolution : 2.70 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

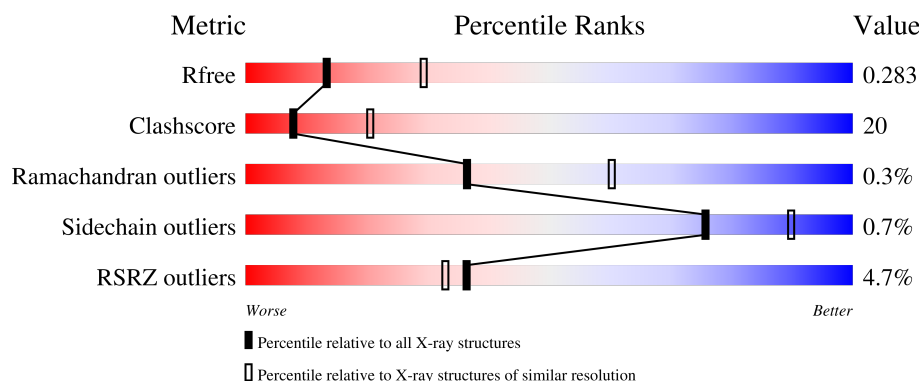
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

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	756	0% 59% 26% 15%
1	B	756	2% 56% 29% 15%
1	C	756	2% 57% 28% 15%
1	D	756	11% 45% 37% 17%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GOL	B	804	-	-	X	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 21102 atoms, of which 241 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.

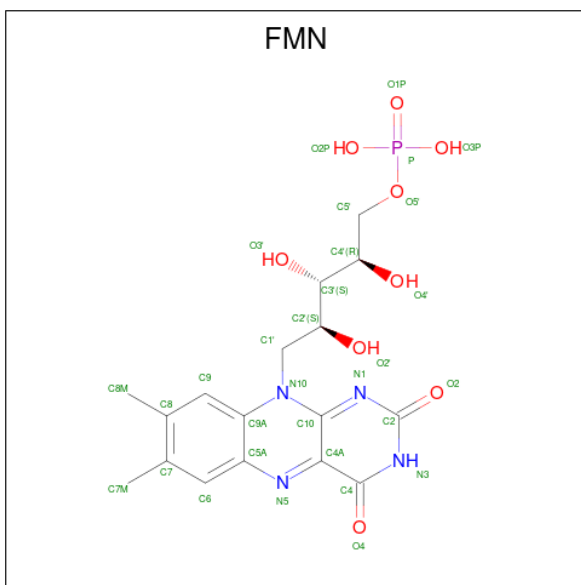
- Molecule 1 is a protein called beta-galactosidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	644	Total	C	N	O	S	0	0	0
			5182	3294	865	1003	20			
1	D	631	Total	C	N	O	S	0	0	0
			4994	3174	835	966	19			
1	C	642	Total	C	N	O	S	0	0	0
			5150	3272	860	997	21			
1	B	643	Total	C	N	O	S	0	0	0
			5168	3285	862	1000	21			

There are 8 discrepancies between the modelled and reference sequences:

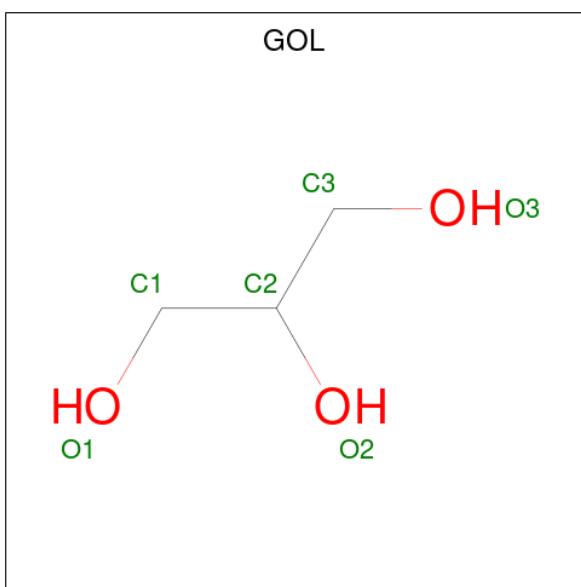
Chain	Residue	Modelled	Actual	Comment	Reference
A	248	ALA	THR	conflict	UNP A0A395V8I7
A	735	ALA	LYS	conflict	UNP A0A395V8I7
D	248	ALA	THR	conflict	UNP A0A395V8I7
D	735	ALA	LYS	conflict	UNP A0A395V8I7
C	248	ALA	THR	conflict	UNP A0A395V8I7
C	735	ALA	LYS	conflict	UNP A0A395V8I7
B	248	ALA	THR	conflict	UNP A0A395V8I7
B	735	ALA	LYS	conflict	UNP A0A395V8I7

- Molecule 2 is FLAVIN MONONUCLEOTIDE (CCD ID: FMN) (formula: C₁₇H₂₁N₄O₉P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
2	A	1	Total 50	C 17	H 19	N 4	O 9	P 1	0	0
2	C	1	Total 50	C 17	H 19	N 4	O 9	P 1	0	0
2	B	1	Total 50	C 17	H 19	N 4	O 9	P 1	0	0

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula: $\text{C}_3\text{H}_8\text{O}_3$).



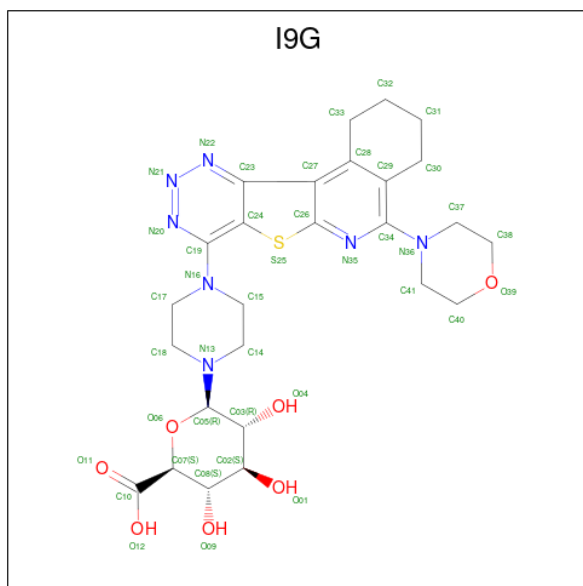
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	0	0
			14	3	8	3		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	0	0
			14	3	8	3		
3	A	1	Total	C	H	O	0	0
			14	3	8	3		
3	C	1	Total	C	H	O	0	0
			14	3	8	3		
3	B	1	Total	C	H	O	0	0
			14	3	8	3		
3	B	1	Total	C	H	O	0	0
			14	3	8	3		
3	B	1	Total	C	H	O	0	0
			14	3	8	3		

- Molecule 4 is 8-(4-beta-D-glucopyranuronosylpiperazin-1-yl)-5-(morpholin-4-yl)-1,2,3,4-tetrahydro[1,2,3]triazino[4',5':4,5]thieno[2,3 -c]isoquinoline (CCD ID: I9G) (formula: C₂₆H₃₃N₇O₇S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
4	A	1	Total 73	C 26	H 32	N 7	O 7	S 1	0	0
4	D	1	Total 73	C 26	H 32	N 7	O 7	S 1	0	0
4	C	1	Total 73	C 26	H 32	N 7	O 7	S 1	0	0
4	B	1	Total 73	C 26	H 32	N 7	O 7	S 1	0	0

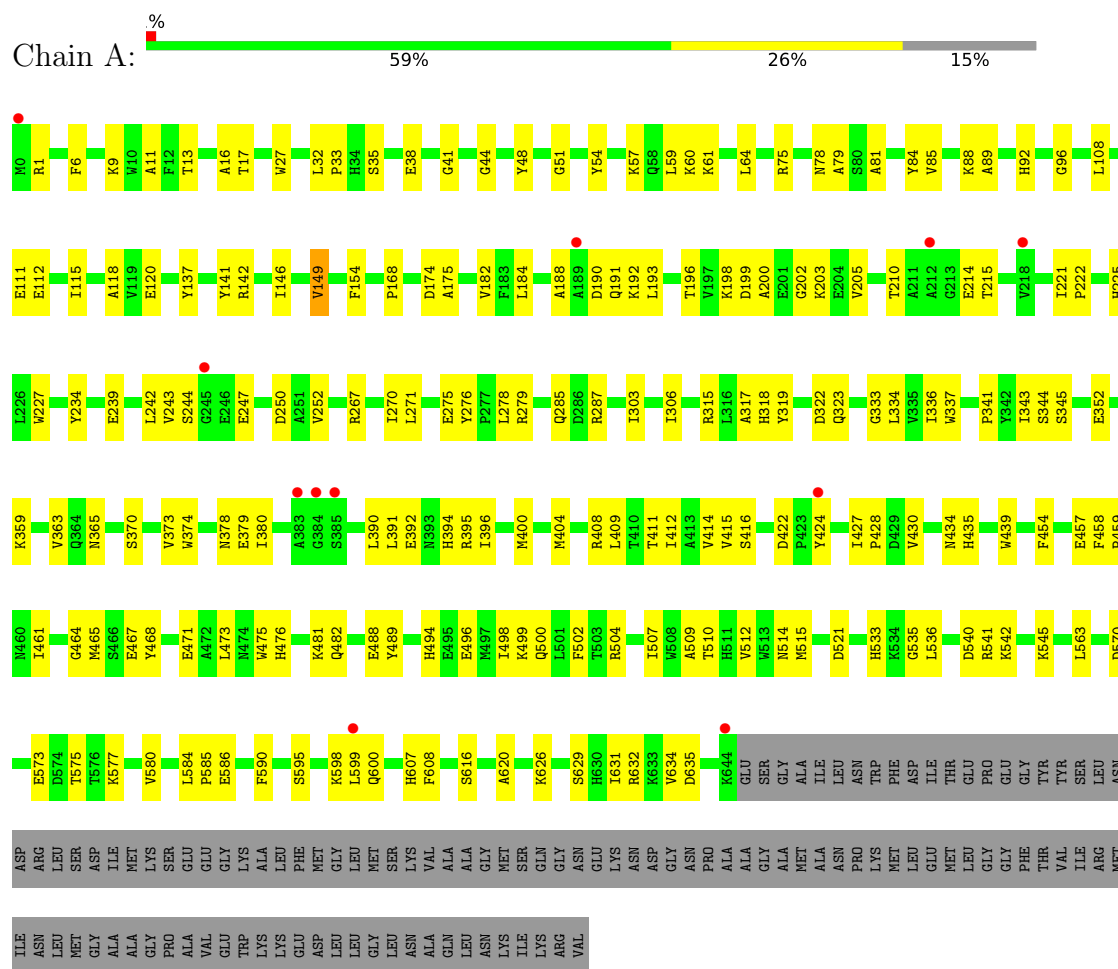
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	19	Total	O	0	0
			19	19		
5	D	14	Total	O	0	0
			14	14		
5	C	18	Total	O	0	0
			18	18		
5	B	17	Total	O	0	0
			17	17		

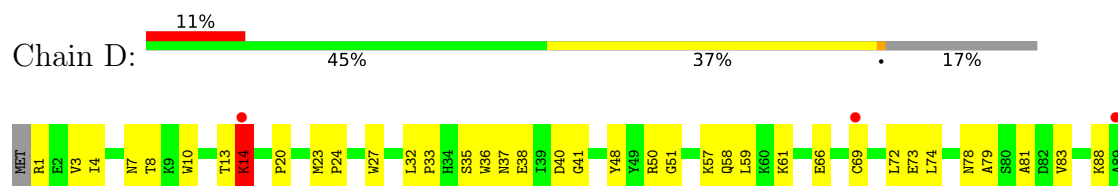
3 Residue-property plots

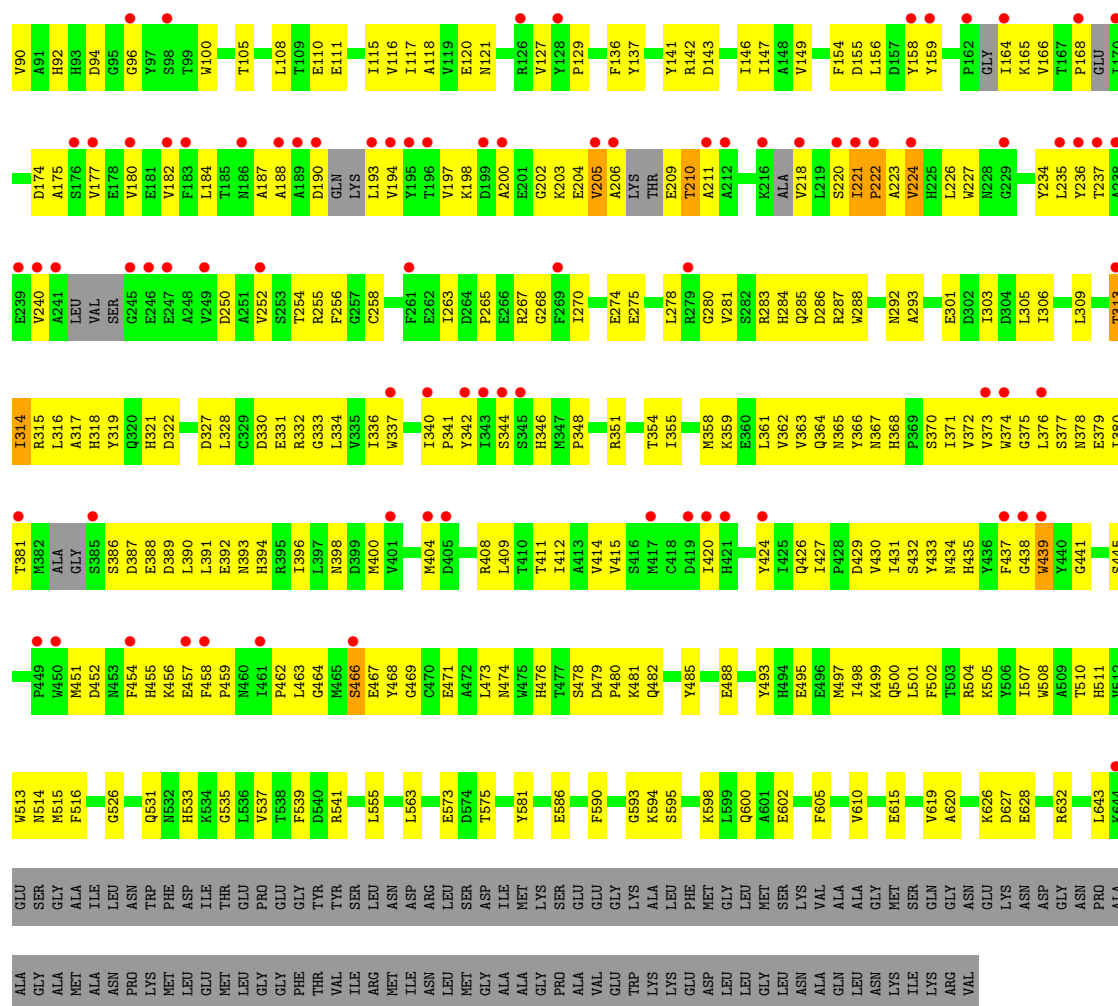
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: beta-galactosidase

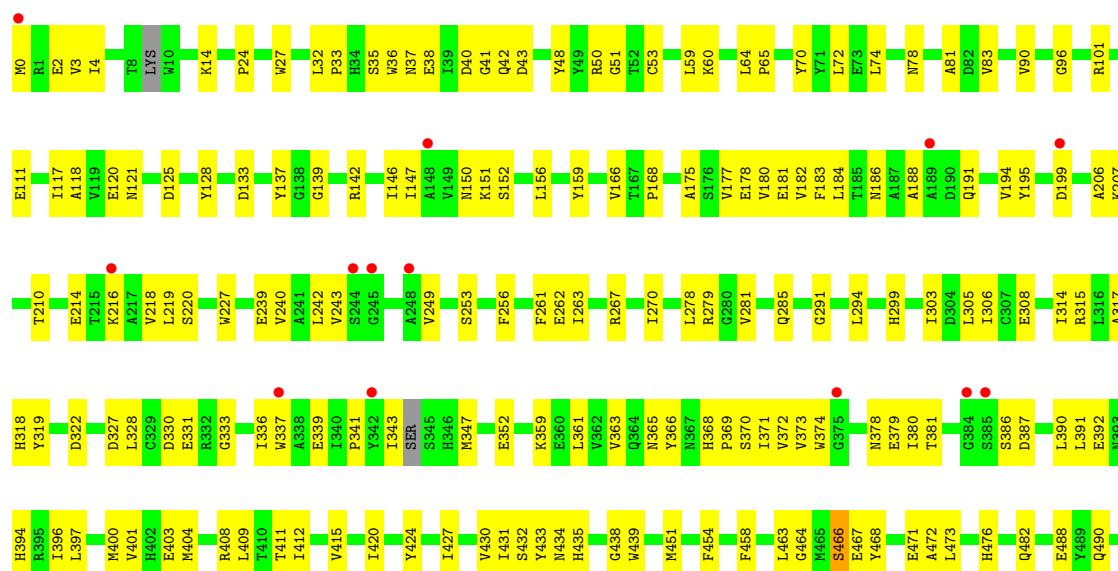


• Molecule 1: beta-galactosidase





• Molecule 1: beta-galactosidase





4 Data and refinement statistics

Property	Value	Source
Space group	P 2 ₁ 2 ₁ 2 ₁	Depositor
Cell constants a, b, c, α , β , γ	100.41 Å 145.95 Å 281.38 Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.96 – 2.70 49.96 – 2.70	Depositor EDS
% Data completeness (in resolution range)	99.3 (49.96-2.70) 99.3 (49.96-2.70)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.48 (at 2.69 Å)	Xtriage
Refinement program	PHENIX 1.17.1 _3660	Depositor
R, R_{free}	0.231 , 0.282 0.233 , 0.283	Depositor DCC
R_{free} test set	2000 reflections (1.75%)	wwPDB-VP
Wilson B-factor (Å ²)	56.1	Xtriage
Anisotropy	0.733	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 37.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	21102	wwPDB-VP
Average B, all atoms (Å ²)	65.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.57% 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: GOL, FMN, I9G

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	0.15	0/5325	0.36	0/7243
1	B	0.16	0/5310	0.38	0/7223
1	C	0.15	0/5291	0.36	0/7199
1	D	0.27	0/5129	0.49	1/6986 (0.0%)
All	All	0.19	0/21055	0.40	1/28651 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	14	LYS	N-CA-C	-6.76	104.93	112.57

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5182	0	4844	152	0
1	B	5168	0	4828	183	0
1	C	5150	0	4796	167	0
1	D	4994	0	4550	284	0
2	A	31	19	19	3	0
2	B	31	19	19	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	31	19	19	5	0
3	A	18	24	24	4	0
3	B	18	24	24	6	0
3	C	6	8	8	1	0
4	A	41	32	0	0	0
4	B	41	32	0	1	0
4	C	41	32	0	5	0
4	D	41	32	0	1	0
5	A	19	0	0	1	0
5	B	17	0	0	6	0
5	C	18	0	0	0	0
5	D	14	0	0	1	0
All	All	20861	241	19131	790	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 20.

All (790) 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:C:166:VAL:HG22	1:C:180:VAL:HG12	1.37	1.06
1:C:588:GLU:HG3	1:C:598:LYS:HG2	1.36	1.06
1:D:23:MET:HE3	1:D:24:PRO:HD2	1.39	1.04
1:D:175:ALA:H	1:D:221:ILE:HG12	1.14	1.03
1:B:412:ILE:HG12	1:B:428:PRO:HG3	1.39	1.02
1:B:256:PHE:HB2	3:B:804:GOL:H11	1.46	0.94
1:C:168:PRO:HB3	1:C:177:VAL:HG12	1.49	0.94
1:C:3:VAL:HG22	1:C:147:ILE:HG12	1.53	0.90
1:D:340:ILE:HD11	1:D:342:TYR:HB2	1.51	0.90
1:A:563:LEU:HD23	1:A:580:VAL:HG22	1.55	0.88
1:D:619:VAL:HG22	1:D:628:GLU:HG3	1.54	0.88
1:C:279:ARG:HD2	1:C:510:THR:HG22	1.57	0.87
1:B:458:PHE:HB3	1:B:461:ILE:HD12	1.57	0.86
1:D:267:ARG:HA	1:D:505:LYS:HE2	1.58	0.86
1:C:317:ALA:HB1	1:C:318:HIS:ND1	1.91	0.84
1:C:191:GLN:HB3	1:C:243:VAL:O	1.78	0.82
1:A:598:LYS:O	1:A:599:LEU:HD12	1.80	0.82
1:B:229:GLY:HA3	5:B:901:HOH:O	1.79	0.82
1:B:66:GLU:HA	1:B:70:TYR:OH	1.79	0.81
1:D:174:ASP:HB3	1:D:221:ILE:CG2	2.12	0.80
1:D:175:ALA:N	1:D:221:ILE:HG12	1.97	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:514:ASN:O	1:D:535:GLY:HA2	1.83	0.79
1:A:196:THR:HG23	1:A:239:GLU:HB3	1.64	0.79
1:D:430:VAL:HG13	1:D:462:PRO:HB2	1.63	0.79
1:A:6:PHE:CE1	1:A:57:LYS:HE2	2.19	0.78
1:B:392:GLU:O	1:B:396:ILE:HG13	1.82	0.78
1:D:182:VAL:HG11	1:D:240:VAL:HG21	1.65	0.78
1:C:279:ARG:HD2	1:C:510:THR:CG2	2.13	0.78
1:D:278:LEU:HD13	1:D:313:THR:HG23	1.65	0.77
1:B:368:HIS:HB2	1:B:371:ILE:HD12	1.68	0.76
1:A:514:ASN:O	1:A:535:GLY:HA2	1.86	0.75
1:D:340:ILE:HD11	1:D:342:TYR:CB	2.17	0.75
1:B:636:THR:HG22	5:B:904:HOH:O	1.86	0.75
1:C:281:VAL:HG12	1:C:512:VAL:HB	1.69	0.74
1:C:366:TYR:O	1:C:408:ARG:NH2	2.20	0.74
1:D:23:MET:HE3	1:D:24:PRO:CD	2.16	0.74
1:A:392:GLU:O	1:A:396:ILE:HG13	1.87	0.74
1:D:7:ASN:HD21	1:D:143:ASP:HA	1.50	0.74
1:D:340:ILE:CD1	1:D:342:TYR:HB2	2.16	0.74
1:A:586:GLU:HG2	1:A:600:GLN:HG3	1.69	0.74
1:D:615:GLU:CG	1:D:632:ARG:HG2	2.18	0.73
1:D:351:ARG:HB3	1:D:393:ASN:OD1	1.88	0.73
1:B:563:LEU:HD13	1:B:629:SER:HB2	1.69	0.73
1:A:59:LEU:HD21	1:A:64:LEU:HD11	1.70	0.73
1:B:411:THR:O	1:B:412:ILE:HD13	1.88	0.73
1:D:514:ASN:OD1	1:D:515:MET:N	2.21	0.73
1:D:502:PHE:HE2	1:D:555:LEU:HD21	1.52	0.73
1:B:438:GLY:O	1:B:482:GLN:HG3	1.88	0.73
1:C:400:MET:HG2	1:C:404:MET:HE2	1.71	0.73
1:C:306:ILE:HD13	1:C:314:ILE:HD13	1.69	0.73
1:C:168:PRO:CB	1:C:177:VAL:HG12	2.17	0.72
1:B:425:ILE:HG23	1:B:431:ILE:HD13	1.69	0.72
1:D:317:ALA:HB1	1:D:318:HIS:ND1	2.05	0.72
1:D:430:VAL:CG1	1:D:462:PRO:HB2	2.20	0.72
1:A:599:LEU:HD13	1:A:608:PHE:CE2	2.25	0.71
1:B:514:ASN:O	1:B:535:GLY:HA2	1.90	0.71
1:D:358:MET:O	1:D:362:VAL:HG23	1.91	0.71
1:D:3:VAL:HG22	1:D:147:ILE:HG12	1.71	0.71
1:D:66:GLU:HA	1:D:66:GLU:OE2	1.91	0.71
1:B:281:VAL:HG12	1:B:512:VAL:HB	1.73	0.71
1:D:501:LEU:HD23	1:D:510:THR:CG2	2.21	0.70
1:D:306:ILE:HG12	1:D:515:MET:HE2	1.73	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:306:ILE:HG21	1:C:314:ILE:HD11	1.74	0.70
1:D:174:ASP:HB3	1:D:221:ILE:HG23	1.72	0.70
1:D:351:ARG:O	1:D:355:ILE:HD12	1.92	0.70
1:B:412:ILE:CG1	1:B:428:PRO:HG3	2.21	0.70
1:B:91:ALA:HB2	1:B:102:VAL:HG21	1.74	0.70
1:C:263:ILE:HD12	1:C:409:LEU:HD12	1.74	0.69
1:C:306:ILE:HD13	1:C:314:ILE:CD1	2.23	0.69
1:D:409:LEU:HD12	1:D:429:ASP:OD2	1.91	0.69
1:A:88:LYS:HD2	1:A:89:ALA:N	2.07	0.69
1:B:439:TRP:CZ2	1:B:471:GLU:HG3	2.27	0.69
1:D:168:PRO:HA	1:D:177:VAL:HA	1.74	0.69
1:B:574:ASP:O	1:B:612:ASN:N	2.25	0.69
1:C:278:LEU:C	1:C:279:ARG:HD3	2.18	0.69
1:D:342:TYR:OH	1:D:346:HIS:ND1	2.22	0.68
1:B:85:VAL:HG22	1:B:115:ILE:CD1	2.23	0.68
1:D:615:GLU:HG3	1:D:632:ARG:HG2	1.73	0.68
1:D:348:PRO:HB3	1:D:389:ASP:OD2	1.94	0.68
1:D:166:VAL:HG11	1:D:256:PHE:CG	2.29	0.68
1:D:168:PRO:CA	1:D:177:VAL:HG13	2.23	0.68
1:B:60:LYS:O	1:B:64:LEU:HD13	1.93	0.68
1:C:591:VAL:HG21	1:C:610:VAL:HG13	1.76	0.68
1:A:343:ILE:HG13	1:A:378:ASN:HD22	1.59	0.68
1:A:205:VAL:HG12	1:A:221:ILE:HG22	1.74	0.67
1:D:426:GLN:HE22	1:D:458:PHE:HE2	1.42	0.67
1:C:183:PHE:C	1:C:184:LEU:HD23	2.18	0.67
1:D:155:ASP:OD2	1:D:158:TYR:HB2	1.94	0.67
1:C:184:LEU:HD13	1:C:242:LEU:HD22	1.74	0.67
1:C:392:GLU:O	1:C:396:ILE:HG13	1.94	0.67
1:C:182:VAL:HG11	1:C:240:VAL:HG11	1.75	0.67
1:D:278:LEU:HD13	1:D:313:THR:CG2	2.24	0.67
1:C:431:ILE:HD11	1:C:454:PHE:CZ	2.29	0.67
1:A:439:TRP:CZ2	1:A:471:GLU:HG3	2.30	0.66
1:A:205:VAL:CG1	1:A:221:ILE:HG22	2.25	0.66
1:D:204:GLU:O	1:D:206:ALA:N	2.28	0.66
1:B:60:LYS:HB2	1:B:63:GLU:HG3	1.75	0.66
1:D:457:GLU:C	1:D:459:PRO:HD3	2.21	0.66
1:A:279:ARG:HD2	1:A:502:PHE:CD1	2.31	0.66
1:B:572:VAL:O	1:B:633:LYS:HE2	1.95	0.65
1:A:60:LYS:HA	1:A:111:GLU:O	1.96	0.65
1:D:7:ASN:HD22	1:D:32:LEU:HB2	1.62	0.65
1:B:573:GLU:HG3	1:B:575:THR:O	1.96	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:37:ASN:HA	1:D:40:ASP:OD1	1.96	0.65
2:B:802:FMN:O2'	2:B:802:FMN:N1	2.30	0.65
1:C:610:VAL:HG13	1:C:611:PRO:HD2	1.79	0.65
1:D:78:ASN:HA	1:D:96:GLY:HA3	1.78	0.64
1:C:438:GLY:O	1:C:482:GLN:HG3	1.96	0.64
1:D:1:ARG:NH2	1:D:156:LEU:HD21	2.13	0.64
1:D:361:LEU:HD12	1:D:365:ASN:HD22	1.63	0.64
1:D:463:LEU:HD12	1:D:464:GLY:N	2.13	0.64
1:D:306:ILE:CG1	1:D:515:MET:HE2	2.27	0.64
1:D:351:ARG:HA	1:D:354:THR:HG23	1.80	0.64
1:C:314:ILE:HB	1:C:336:ILE:CD1	2.27	0.64
1:D:193:LEU:HB3	1:D:210:THR:HG22	1.78	0.64
1:B:588:GLU:HB2	1:B:598:LYS:HG2	1.81	0.63
1:A:17:THR:HG21	1:B:355:ILE:HD13	1.80	0.63
1:B:591:VAL:HG12	1:B:618:LEU:HD23	1.80	0.63
1:B:285:GLN:HG2	1:B:319:TYR:CE1	2.33	0.63
1:C:514:ASN:O	1:C:535:GLY:HA2	1.97	0.63
1:B:425:ILE:CG2	1:B:431:ILE:HD13	2.27	0.63
1:A:395:ARG:HG2	1:A:427:ILE:HD13	1.81	0.63
1:D:174:ASP:OD1	1:D:224:VAL:N	2.30	0.63
1:B:111:GLU:OE1	1:B:112:GLU:HG2	1.97	0.63
1:D:563:LEU:CD2	1:D:627:ASP:HB3	2.29	0.63
1:B:359:LYS:HG2	1:B:404:MET:HE1	1.80	0.63
1:D:516:PHE:HD1	1:D:537:VAL:HB	1.64	0.63
1:D:165:LYS:O	1:D:180:VAL:HA	1.98	0.62
1:D:174:ASP:HB3	1:D:221:ILE:HG21	1.80	0.62
1:D:203:LYS:O	1:D:205:VAL:HG23	1.99	0.62
1:A:422:ASP:OD1	1:A:424:TYR:HB3	1.99	0.62
1:C:303:ILE:HG21	1:C:328:LEU:HD13	1.82	0.62
2:C:801:FMN:N1	2:C:801:FMN:O2'	2.32	0.62
1:B:343:ILE:HG13	1:B:378:ASN:HD22	1.65	0.62
1:D:129:PRO:HG2	1:D:136:PHE:CE1	2.35	0.62
1:C:411:THR:HB	1:C:430:VAL:HG23	1.79	0.62
1:D:359:LYS:O	1:D:363:VAL:HG23	2.00	0.62
1:D:445:SER:HA	1:D:500:GLN:HE22	1.64	0.62
1:D:182:VAL:CG1	1:D:240:VAL:HG21	2.29	0.62
1:A:500:GLN:O	1:A:504:ARG:HD2	2.00	0.61
1:B:376:LEU:HB2	1:B:412:ILE:HD11	1.82	0.61
1:D:234:TYR:O	1:D:235:LEU:HD12	1.99	0.61
1:C:380:ILE:HG21	1:C:394:HIS:CE1	2.36	0.61
1:A:88:LYS:HD2	1:A:89:ALA:H	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:400:MET:O	1:A:404:MET:HG3	2.00	0.61
1:C:359:LYS:O	1:C:363:VAL:HG23	2.00	0.61
1:A:496:GLU:O	1:A:500:GLN:HG3	2.00	0.61
1:D:451:MET:HE2	1:D:507:ILE:HD13	1.82	0.61
1:D:340:ILE:HD12	1:D:342:TYR:H	1.64	0.61
1:C:267:ARG:HH11	1:C:267:ARG:HG2	1.65	0.61
1:D:314:ILE:HD11	1:D:334:LEU:HG	1.82	0.61
1:D:393:ASN:HA	1:D:396:ILE:HD12	1.81	0.61
1:A:476:HIS:HA	1:A:488:GLU:OE1	2.01	0.61
1:A:577:LYS:HE2	1:A:607:HIS:ND1	2.16	0.60
1:D:498:ILE:HG23	1:D:502:PHE:CD1	2.36	0.60
1:C:59:LEU:HD21	1:C:64:LEU:HD11	1.83	0.60
1:B:168:PRO:HD3	3:B:804:GOL:H31	1.82	0.60
1:D:59:LEU:HB2	1:D:115:ILE:CD1	2.31	0.60
1:D:501:LEU:HD23	1:D:510:THR:HG21	1.82	0.60
4:C:803:I9G:C18	4:C:803:I9G:C08	2.80	0.60
1:A:391:LEU:O	1:A:395:ARG:HG3	2.02	0.60
1:D:175:ALA:O	1:D:221:ILE:HB	2.02	0.60
1:D:61:LYS:HE2	1:D:108:LEU:HB3	1.83	0.60
1:D:235:LEU:HD21	1:D:330:ASP:HB3	1.83	0.60
1:D:392:GLU:O	1:D:396:ILE:HG13	2.01	0.60
1:D:175:ALA:H	1:D:221:ILE:CG1	2.03	0.60
1:D:227:TRP:CZ2	1:D:333:GLY:HA2	2.37	0.60
1:D:378:ASN:ND2	1:D:379:GLU:HG3	2.17	0.60
1:C:411:THR:HB	1:C:430:VAL:CG2	2.31	0.60
1:B:356:SER:O	1:B:360:GLU:HG3	2.01	0.60
1:A:498:ILE:HG23	1:A:502:PHE:CD2	2.37	0.59
1:C:285:GLN:HG2	1:C:319:TYR:CE1	2.37	0.59
1:A:494:HIS:O	1:A:498:ILE:HG13	2.02	0.59
1:C:188:ALA:HB3	1:C:191:GLN:OE1	2.02	0.59
1:C:318:HIS:NE2	4:C:803:I9G:O01	2.31	0.59
1:D:1:ARG:HH22	1:D:156:LEU:HD21	1.66	0.59
1:D:593:GLY:C	1:D:594:LYS:HD2	2.27	0.59
1:D:222:PRO:O	1:D:223:ALA:C	2.45	0.59
1:C:3:VAL:HG22	1:C:147:ILE:CG1	2.32	0.59
1:A:16:ALA:HB3	1:A:54:TYR:CD1	2.38	0.59
1:A:191:GLN:HG2	1:A:244:SER:OG	2.03	0.59
1:B:615:GLU:HG2	1:B:632:ARG:HG2	1.84	0.59
1:C:35:SER:O	1:C:38:GLU:HG3	2.02	0.58
1:C:315:ARG:NH1	1:C:467:GLU:HG3	2.18	0.58
1:A:573:GLU:HG3	1:A:575:THR:O	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:155:ASP:O	1:D:156:LEU:HD23	2.03	0.58
1:D:168:PRO:HA	1:D:177:VAL:HG13	1.84	0.58
1:D:267:ARG:CA	1:D:505:LYS:HE2	2.32	0.58
1:B:1:ARG:HB2	1:B:250:ASP:OD1	2.03	0.58
1:A:458:PHE:HB3	1:A:461:ILE:HD12	1.86	0.58
1:C:615:GLU:HG2	1:C:632:ARG:HG2	1.85	0.58
1:A:317:ALA:HB1	1:A:318:HIS:ND1	2.19	0.58
1:A:563:LEU:HD13	1:A:629:SER:OG	2.04	0.58
1:D:94:ASP:OD2	1:D:127:VAL:HG21	2.03	0.58
1:D:400:MET:O	1:D:404:MET:HG2	2.04	0.58
1:A:270:ILE:CD1	1:A:275:GLU:HG2	2.34	0.58
1:D:33:PRO:HB3	1:D:141:TYR:O	2.03	0.58
1:D:285:GLN:HG2	1:D:319:TYR:OH	2.03	0.58
1:D:473:LEU:HD22	1:D:526:GLY:O	2.03	0.58
1:B:37:ASN:HA	1:B:40:ASP:OD1	2.04	0.58
1:C:206:ALA:HB1	1:C:219:LEU:HB3	1.86	0.57
1:B:587:VAL:HG22	1:B:622:ALA:HB2	1.86	0.57
1:A:84:TYR:HA	1:A:88:LYS:O	2.05	0.57
1:D:463:LEU:HD12	1:D:464:GLY:H	1.69	0.57
1:B:51:GLY:O	1:B:120:GLU:HA	2.04	0.57
1:B:620:ALA:O	1:B:626:LYS:HA	2.04	0.57
1:D:501:LEU:HD23	1:D:510:THR:HG22	1.86	0.57
1:B:633:LYS:HD3	1:B:634:VAL:N	2.19	0.57
1:D:411:THR:HA	1:D:430:VAL:O	2.03	0.57
1:D:563:LEU:HD22	1:D:627:ASP:HB3	1.86	0.57
1:B:6:PHE:HB3	1:B:144:VAL:HG12	1.86	0.57
1:D:20:PRO:HD2	1:D:116:VAL:HG11	1.86	0.57
1:D:381:THR:HG22	1:D:381:THR:O	2.05	0.57
1:D:188:ALA:HB1	1:D:190:ASP:OD1	2.05	0.57
1:D:197:VAL:O	1:D:205:VAL:HB	2.05	0.57
1:D:495:GLU:HG2	1:D:605:PHE:CD2	2.39	0.57
1:B:243:VAL:HG13	1:B:247:GLU:O	2.04	0.57
1:B:414:VAL:HG13	1:B:424:TYR:OH	2.04	0.57
1:C:168:PRO:HA	1:C:177:VAL:HA	1.87	0.56
1:B:494:HIS:O	1:B:498:ILE:HG13	2.05	0.56
1:A:154:PHE:CD2	1:A:252:VAL:HG13	2.40	0.56
1:C:397:LEU:O	1:C:401:VAL:HG23	2.04	0.56
1:A:174:ASP:OD1	1:A:222:PRO:HA	2.05	0.56
1:C:363:VAL:HG13	2:C:801:FMN:C6	2.36	0.56
1:C:591:VAL:HG22	1:C:618:LEU:HD22	1.88	0.56
1:B:59:LEU:HD21	1:B:64:LEU:HD21	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:91:ALA:HB2	1:B:102:VAL:CG2	2.36	0.56
1:B:591:VAL:HG12	1:B:618:LEU:CD2	2.36	0.56
1:A:412:ILE:HD12	1:A:414:VAL:HG22	1.87	0.56
1:A:590:PHE:CE2	1:A:595:SER:HB2	2.40	0.56
1:D:424:TYR:O	1:D:427:ILE:HG13	2.06	0.56
1:A:278:LEU:O	1:A:509:ALA:HA	2.06	0.56
1:A:359:LYS:HG3	1:A:400:MET:SD	2.45	0.56
1:B:590:PHE:CE1	1:B:595:SER:HB2	2.41	0.56
1:A:285:GLN:HG2	1:A:319:TYR:OH	2.06	0.56
1:D:280:GLY:HA3	1:D:313:THR:O	2.06	0.56
1:C:168:PRO:HB3	1:C:177:VAL:CG1	2.32	0.56
1:D:479:ASP:OD2	1:D:481:LYS:HE3	2.06	0.56
1:C:219:LEU:HD12	1:C:219:LEU:H	1.70	0.56
1:C:343:ILE:HG13	1:C:378:ASN:HD22	1.72	0.56
1:B:303:ILE:HD13	1:B:328:LEU:HB3	1.87	0.56
1:D:495:GLU:OE2	1:D:581:TYR:OH	2.22	0.55
1:B:431:ILE:HD11	1:B:454:PHE:CZ	2.41	0.55
1:C:128:TYR:CZ	1:C:347:MET:HE2	2.42	0.55
1:B:32:LEU:HA	1:B:33:PRO:C	2.32	0.55
1:B:400:MET:HG2	1:B:404:MET:CE	2.36	0.55
1:D:164:ILE:HB	1:D:252:VAL:HG11	1.89	0.55
1:D:377:SER:OG	1:D:380:ILE:HB	2.06	0.55
1:C:14:LYS:HG2	1:C:53:CYS:SG	2.47	0.55
1:D:439:TRP:CZ2	1:D:471:GLU:HB2	2.42	0.55
1:C:591:VAL:HG21	1:C:610:VAL:CG1	2.37	0.55
1:D:287:ARG:HG3	1:D:288:TRP:N	2.22	0.55
1:D:575:THR:HG23	1:D:610:VAL:C	2.32	0.55
1:D:594:LYS:HD2	1:D:594:LYS:N	2.21	0.55
1:D:154:PHE:HA	1:D:184:LEU:HD23	1.88	0.55
1:C:561:VAL:HG21	1:C:622:ALA:HB3	1.87	0.55
1:A:577:LYS:CE	1:A:607:HIS:HB3	2.37	0.55
1:B:154:PHE:HA	1:B:184:LEU:HD13	1.89	0.55
1:B:454:PHE:CD1	1:B:463:LEU:HD22	2.42	0.55
1:A:315:ARG:NH1	1:A:467:GLU:HG3	2.22	0.55
1:D:372:VAL:C	1:D:408:ARG:HG2	2.32	0.55
1:D:434:ASN:OD1	1:D:466:SER:HB3	2.07	0.55
1:A:1:ARG:HB2	1:A:250:ASP:OD1	2.06	0.54
1:D:340:ILE:HD12	1:D:342:TYR:N	2.23	0.54
1:D:409:LEU:HB3	1:D:429:ASP:HB2	1.89	0.54
1:C:306:ILE:HA	1:C:515:MET:HE2	1.90	0.54
1:D:263:ILE:HD13	1:D:508:TRP:CE3	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:16:ALA:HB3	1:B:54:TYR:CD1	2.42	0.54
1:A:577:LYS:HE2	1:A:607:HIS:HB3	1.89	0.54
1:D:50:ARG:HA	1:D:121:ASN:OD1	2.07	0.54
1:D:303:ILE:HG23	1:D:332:ARG:NH1	2.23	0.54
4:C:803:I9G:C18	4:C:803:I9G:C07	2.86	0.54
1:A:352:GLU:HG3	1:B:17:THR:O	2.07	0.54
1:D:72:LEU:HD12	1:D:146:ILE:CD1	2.37	0.54
1:B:182:VAL:O	1:B:215:THR:HB	2.08	0.54
1:B:177:VAL:HG22	1:B:219:LEU:O	2.07	0.54
1:A:586:GLU:OE2	1:A:598:LYS:HD2	2.08	0.53
1:D:493:TYR:O	1:D:497:MET:HG2	2.07	0.53
1:D:254:THR:HG21	1:D:367:ASN:OD1	2.08	0.53
1:A:32:LEU:HA	1:A:33:PRO:C	2.34	0.53
1:D:194:VAL:HG22	1:D:209:GLU:HG3	1.90	0.53
1:C:128:TYR:CE1	1:C:347:MET:HE2	2.44	0.53
1:B:365:ASN:HB3	1:B:368:HIS:HD2	1.73	0.53
1:A:323:GLN:OE1	1:A:365:ASN:ND2	2.40	0.53
1:D:69:CYS:HB2	1:D:149:VAL:HG23	1.91	0.53
1:D:388:GLU:O	1:D:392:GLU:HB2	2.09	0.53
1:D:602:GLU:HB2	5:D:906:HOH:O	2.07	0.53
1:A:60:LYS:HE2	1:A:112:GLU:OE2	2.09	0.53
1:A:434:ASN:CG	1:A:467:GLU:HB2	2.34	0.53
1:A:496:GLU:OE2	1:A:499:LYS:NZ	2.32	0.53
1:C:0:MET:HB2	1:C:249:VAL:O	2.09	0.53
1:C:379:GLU:HB3	1:C:415:VAL:HB	1.90	0.53
1:A:85:VAL:HG22	1:A:115:ILE:HD12	1.91	0.52
1:B:63:GLU:O	1:B:64:LEU:HD12	2.09	0.52
1:A:190:ASP:OD1	1:A:190:ASP:N	2.42	0.52
1:A:198:LYS:HE2	1:A:202:GLY:O	2.10	0.52
1:D:387:ASP:O	1:D:391:LEU:HG	2.09	0.52
1:C:278:LEU:O	1:C:279:ARG:HD3	2.10	0.52
1:B:160:GLY:O	1:B:364:GLN:HG2	2.09	0.52
1:D:166:VAL:HG11	1:D:256:PHE:CD2	2.44	0.52
1:D:438:GLY:O	1:D:439:TRP:C	2.51	0.52
1:C:341:PRO:O	1:C:343:ILE:HG22	2.09	0.52
1:A:142:ARG:HD3	1:A:322:ASP:OD2	2.10	0.52
3:A:804:GOL:H2	1:B:92:HIS:CE1	2.44	0.52
1:D:32:LEU:HA	1:D:33:PRO:C	2.34	0.52
1:D:51:GLY:O	1:D:120:GLU:HA	2.09	0.52
1:B:254:THR:HG21	1:B:367:ASN:ND2	2.24	0.52
1:D:61:LYS:NZ	1:D:108:LEU:HB2	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:197:VAL:HG23	1:B:219:LEU:HD22	1.91	0.52
1:A:59:LEU:HD11	1:A:146:ILE:HD13	1.91	0.52
1:D:74:LEU:HD22	1:D:100:TRP:CZ2	2.45	0.52
1:D:394:HIS:O	1:D:398:ASN:HB2	2.09	0.52
1:C:373:VAL:HA	1:C:409:LEU:O	2.09	0.52
1:C:451:MET:HE3	1:C:463:LEU:CD2	2.39	0.52
1:B:373:VAL:HG12	1:B:409:LEU:HB2	1.92	0.52
1:B:498:ILE:O	1:B:502:PHE:HB2	2.09	0.52
1:C:150:ASN:OD1	1:C:151:LYS:N	2.43	0.52
1:A:270:ILE:HD13	1:A:275:GLU:HG2	1.91	0.51
1:C:152:SER:HB3	1:C:186:ASN:O	2.11	0.51
1:B:60:LYS:HE2	1:B:112:GLU:OE1	2.10	0.51
1:B:177:VAL:HG23	1:B:177:VAL:O	2.08	0.51
1:B:585:PRO:O	1:B:600:GLN:HG2	2.09	0.51
1:C:50:ARG:HA	1:C:121:ASN:OD1	2.10	0.51
1:D:137:TYR:HD2	1:D:292:ASN:HB3	1.75	0.51
1:D:337:TRP:CD1	1:D:337:TRP:C	2.89	0.51
1:B:174:ASP:OD1	1:B:222:PRO:HA	2.10	0.51
1:A:203:LYS:HD2	1:A:203:LYS:N	2.25	0.51
1:D:373:VAL:CG1	1:D:411:THR:HG22	2.40	0.51
1:B:197:VAL:HG11	1:B:221:ILE:HD11	1.93	0.51
1:B:621:VAL:HG22	1:B:626:LYS:CD	2.41	0.51
1:A:59:LEU:HD22	1:A:108:LEU:HD22	1.92	0.51
1:D:236:TYR:O	1:D:256:PHE:N	2.35	0.51
1:D:438:GLY:O	1:D:482:GLN:NE2	2.43	0.51
1:C:390:LEU:HD23	1:C:390:LEU:O	2.10	0.51
1:A:267:ARG:HD2	1:A:275:GLU:OE2	2.11	0.51
1:A:599:LEU:HB2	1:A:608:PHE:CZ	2.46	0.51
1:B:243:VAL:CG1	1:B:246:GLU:HA	2.41	0.51
1:B:343:ILE:HG12	1:B:344:SER:N	2.25	0.51
1:B:417:MET:SD	1:B:417:MET:N	2.84	0.51
1:D:10:TRP:CE2	1:D:57:LYS:HD3	2.46	0.51
1:D:368:HIS:HB2	1:D:371:ILE:HG13	1.92	0.51
1:C:371:ILE:HB	1:C:408:ARG:NH1	2.26	0.51
1:B:67:ALA:HB1	1:B:149:VAL:O	2.11	0.51
1:C:439:TRP:CZ2	1:C:471:GLU:HG3	2.46	0.50
1:B:434:ASN:CG	1:B:467:GLU:HB2	2.36	0.50
1:C:400:MET:HA	1:C:403:GLU:OE1	2.12	0.50
1:B:33:PRO:HB2	1:B:293:ALA:HB1	1.94	0.50
1:D:285:GLN:HG2	1:D:319:TYR:CZ	2.47	0.50
1:B:315:ARG:NH1	1:B:467:GLU:HG3	2.26	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:236:TYR:HB3	1:D:256:PHE:CZ	2.46	0.50
1:D:498:ILE:HG23	1:D:502:PHE:CG	2.46	0.50
1:B:68:ASP:HB2	1:B:151:LYS:N	2.26	0.50
1:D:368:HIS:CB	1:D:371:ILE:HG13	2.42	0.50
1:B:230:LYS:N	5:B:901:HOH:O	2.45	0.50
1:B:328:LEU:O	1:B:332:ARG:HG2	2.11	0.50
1:C:239:GLU:HG2	1:C:253:SER:HB2	1.94	0.50
1:A:193:LEU:N	1:A:210:THR:O	2.38	0.50
1:C:175:ALA:O	1:C:220:SER:OG	2.21	0.50
1:B:261:PHE:CE2	1:B:372:VAL:HB	2.47	0.50
1:D:72:LEU:HD12	1:D:146:ILE:HD11	1.94	0.50
1:C:51:GLY:O	1:C:120:GLU:HA	2.12	0.50
1:D:33:PRO:HB2	1:D:293:ALA:HB1	1.94	0.50
1:D:315:ARG:HB2	1:D:511:HIS:CG	2.47	0.50
1:D:430:VAL:HG13	1:D:462:PRO:CB	2.38	0.50
1:D:88:LYS:O	1:D:90:VAL:HG13	2.12	0.49
1:D:500:GLN:O	1:D:504:ARG:HD2	2.12	0.49
1:A:188:ALA:HB1	1:A:190:ASP:OD1	2.11	0.49
1:D:433:TYR:HB3	1:D:435:HIS:CD2	2.47	0.49
1:B:263:ILE:HD12	1:B:409:LEU:HD12	1.93	0.49
1:B:439:TRP:CH2	1:B:471:GLU:HB2	2.47	0.49
1:C:561:VAL:CG2	1:C:622:ALA:HB3	2.41	0.49
1:B:359:LYS:CG	1:B:404:MET:HE1	2.40	0.49
1:D:23:MET:CE	1:D:24:PRO:HD2	2.25	0.49
1:D:590:PHE:CE1	1:D:595:SER:HB2	2.47	0.49
1:D:598:LYS:HG2	1:C:597:GLY:HA2	1.92	0.49
1:D:615:GLU:HG2	1:D:632:ARG:HG2	1.94	0.49
1:B:256:PHE:HB2	3:B:804:GOL:C1	2.32	0.49
1:D:220:SER:O	1:D:221:ILE:HB	2.12	0.49
1:D:414:VAL:HG11	1:D:433:TYR:CZ	2.47	0.49
1:C:420:ILE:HG13	1:C:458:PHE:HE2	1.77	0.49
1:B:5:ASN:HD21	1:B:7:ASN:HB2	1.77	0.49
1:A:51:GLY:O	1:A:120:GLU:HA	2.12	0.49
1:D:78:ASN:HA	1:D:96:GLY:CA	2.43	0.49
1:D:190:ASP:OD1	1:D:190:ASP:N	2.45	0.49
1:B:536:LEU:O	1:B:545:LYS:HG3	2.13	0.49
1:D:165:LYS:HG3	1:D:366:TYR:CE2	2.48	0.49
1:D:303:ILE:HD12	1:D:328:LEU:HB3	1.95	0.49
1:A:473:LEU:HB2	1:A:475:TRP:CD1	2.48	0.48
1:A:51:GLY:O	1:A:120:GLU:HG2	2.13	0.48
1:D:458:PHE:N	1:D:459:PRO:HD3	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:227:TRP:CZ2	1:C:333:GLY:HA2	2.49	0.48
1:D:474:ASN:OD1	1:D:476:HIS:HE1	1.97	0.48
1:C:498:ILE:HD11	1:C:551:TYR:CD1	2.48	0.48
1:B:317:ALA:HB1	1:B:318:HIS:ND1	2.28	0.48
1:A:184:LEU:HD22	1:A:242:LEU:HD13	1.94	0.48
1:C:390:LEU:HD23	1:C:390:LEU:C	2.39	0.48
1:D:563:LEU:HD23	1:D:627:ASP:C	2.38	0.48
1:B:343:ILE:CG1	1:B:378:ASN:HD22	2.27	0.48
1:B:369:PRO:HD3	3:B:804:GOL:O1	2.14	0.48
1:A:210:THR:OG1	1:A:214:GLU:HB3	2.14	0.48
1:C:207:LYS:N	1:C:219:LEU:HD23	2.28	0.48
1:C:473:LEU:HD21	1:C:533:HIS:CD2	2.49	0.48
1:A:175:ALA:HB3	1:A:221:ILE:HG13	1.95	0.48
1:A:336:ILE:N	1:A:370:SER:O	2.36	0.48
1:C:267:ARG:HG2	1:C:267:ARG:NH1	2.28	0.48
1:B:85:VAL:HG22	1:B:115:ILE:HD13	1.96	0.48
1:B:191:GLN:NE2	1:B:242:LEU:HD21	2.28	0.48
1:D:14:LYS:HZ3	1:D:36:TRP:CD1	2.32	0.48
1:D:340:ILE:CD1	1:D:342:TYR:CB	2.86	0.48
1:B:35:SER:O	1:B:38:GLU:HG3	2.13	0.48
1:A:464:GLY:HA2	1:A:507:ILE:HG23	1.95	0.48
1:D:432:SER:HB2	1:D:466:SER:OG	2.13	0.48
1:C:194:VAL:O	1:C:240:VAL:HA	2.13	0.47
1:B:3:VAL:C	1:B:4:ILE:HD13	2.39	0.47
1:B:419:ASP:OD1	1:B:421:HIS:N	2.33	0.47
1:D:620:ALA:O	1:D:626:LYS:HA	2.14	0.47
1:B:318:HIS:HA	1:B:339:GLU:OE2	2.14	0.47
1:B:343:ILE:CD1	1:B:378:ASN:HD22	2.27	0.47
1:B:516:PHE:HD1	1:B:537:VAL:HB	1.78	0.47
1:A:78:ASN:HA	1:A:79:ALA:HA	1.58	0.47
1:D:110:GLU:CD	1:D:111:GLU:H	2.22	0.47
1:D:441:GLY:HA3	4:D:801:I9G:C38	2.44	0.47
1:C:493:TYR:CE1	1:C:497:MET:HG3	2.48	0.47
1:B:281:VAL:O	1:B:314:ILE:HA	2.14	0.47
1:B:427:ILE:HB	1:B:428:PRO:HD3	1.96	0.47
1:A:192:LYS:HB2	1:A:243:VAL:HG22	1.96	0.47
1:A:494:HIS:HE1	1:A:512:VAL:HG13	1.80	0.47
1:D:263:ILE:HD12	1:D:430:VAL:HG21	1.96	0.47
1:D:376:LEU:HB2	1:D:412:ILE:HG22	1.95	0.47
1:C:263:ILE:HD12	1:C:409:LEU:CD1	2.43	0.47
1:D:502:PHE:CE2	1:D:555:LEU:HD21	2.41	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:36:TRP:CZ3	1:C:139:GLY:HA2	2.50	0.47
1:C:476:HIS:HA	1:C:488:GLU:OE1	2.14	0.47
1:B:337:TRP:HH2	1:B:432:SER:HB2	1.79	0.47
1:A:337:TRP:CD1	1:A:337:TRP:C	2.92	0.47
1:D:254:THR:HG21	1:D:367:ASN:CB	2.44	0.47
1:C:65:PRO:O	1:C:70:TYR:OH	2.24	0.47
1:B:88:LYS:O	1:B:90:VAL:HG13	2.14	0.47
1:B:162:PRO:O	1:B:252:VAL:HG21	2.15	0.47
1:A:279:ARG:HD3	1:A:510:THR:OG1	2.15	0.47
1:D:1:ARG:HB2	1:D:250:ASP:OD1	2.15	0.47
1:D:72:LEU:CD2	1:D:74:LEU:HD11	2.44	0.47
1:D:73:GLU:C	1:D:74:LEU:HD12	2.40	0.47
1:D:137:TYR:CD2	1:D:292:ASN:HB3	2.49	0.47
1:D:265:PRO:O	1:D:455:HIS:NE2	2.45	0.47
1:D:367:ASN:N	1:D:367:ASN:HD22	2.12	0.47
1:D:478:SER:C	1:D:480:PRO:HD3	2.39	0.47
1:C:40:ASP:HA	1:C:43:ASP:OD2	2.15	0.47
1:C:133:ASP:HB3	4:C:803:I9G:C08	2.45	0.47
1:C:610:VAL:HG13	1:C:611:PRO:CD	2.43	0.47
1:B:13:THR:HG21	1:B:27:TRP:CE2	2.50	0.47
1:B:561:VAL:HG23	1:B:625:TYR:HB3	1.97	0.47
1:D:531:GLN:OE1	1:D:539:PHE:HB2	2.14	0.47
1:C:81:ALA:HA	1:C:118:ALA:O	2.15	0.47
1:B:416:SER:HB2	1:B:434:ASN:O	2.15	0.47
1:C:318:HIS:HA	1:C:339:GLU:OE2	2.15	0.47
1:A:278:LEU:O	1:A:279:ARG:NH1	2.46	0.47
1:D:4:ILE:CG1	1:D:146:ILE:HB	2.45	0.47
1:D:59:LEU:HB2	1:D:115:ILE:HD11	1.97	0.47
1:D:224:VAL:O	1:D:226:LEU:HD12	2.14	0.47
1:D:513:TRP:HA	1:D:514:ASN:HA	1.64	0.47
1:D:379:GLU:HG2	1:D:434:ASN:HD22	1.80	0.46
1:D:336:ILE:HG12	1:D:370:SER:HB2	1.96	0.46
1:D:358:MET:HE1	1:D:375:GLY:O	2.15	0.46
1:D:368:HIS:HB2	1:D:371:ILE:CD1	2.44	0.46
1:C:294:LEU:HD12	1:C:299:HIS:HE1	1.79	0.46
1:C:513:TRP:HA	1:C:514:ASN:HA	1.69	0.46
1:B:230:LYS:HG2	1:B:332:ARG:O	2.16	0.46
1:B:334:LEU:O	1:B:370:SER:HB2	2.14	0.46
1:A:374:TRP:NE1	1:A:408:ARG:HD2	2.30	0.46
1:D:200:ALA:C	1:D:202:GLY:H	2.23	0.46
1:D:301:GLU:O	1:D:305:LEU:HD23	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:303:ILE:CD1	1:D:328:LEU:HB3	2.45	0.46
1:C:168:PRO:CA	1:C:177:VAL:HG12	2.45	0.46
1:C:372:VAL:HG23	1:C:373:VAL:HG13	1.97	0.46
1:C:433:TYR:HB3	1:C:435:HIS:CD2	2.50	0.46
1:A:287:ARG:NH2	1:A:541:ARG:HG2	2.31	0.46
1:C:181:GLU:HG3	1:C:216:LYS:HG2	1.97	0.46
1:D:327:ASP:O	1:D:331:GLU:HG3	2.15	0.46
1:C:472:ALA:HB2	1:C:490:GLN:CB	2.45	0.46
1:B:59:LEU:HD21	1:B:64:LEU:CD2	2.45	0.46
1:A:341:PRO:O	1:A:343:ILE:HG22	2.15	0.46
1:A:616:SER:HB2	1:A:631:ILE:HG13	1.98	0.46
1:D:200:ALA:C	1:D:202:GLY:N	2.72	0.46
1:C:327:ASP:O	1:C:331:GLU:HG3	2.15	0.46
1:D:309:LEU:C	1:D:309:LEU:HD23	2.41	0.46
1:D:497:MET:HE3	1:D:501:LEU:HD13	1.98	0.46
1:C:83:VAL:O	1:C:90:VAL:HG22	2.15	0.46
1:C:184:LEU:CD1	1:C:242:LEU:HD22	2.44	0.46
1:C:308:GLU:HG2	1:C:552:LYS:HE3	1.98	0.46
1:C:568:TYR:CZ	1:C:571:ARG:HG2	2.51	0.46
1:B:588:GLU:CB	1:B:598:LYS:HG2	2.45	0.46
1:A:343:ILE:HG12	1:A:344:SER:N	2.31	0.46
1:D:198:LYS:HA	1:D:203:LYS:O	2.15	0.46
1:B:373:VAL:HA	1:B:409:LEU:O	2.14	0.46
1:B:495:GLU:HG2	1:B:605:PHE:CD2	2.50	0.46
1:D:285:GLN:HG2	1:D:319:TYR:CE1	2.51	0.46
1:D:398:ASN:OD1	1:D:427:ILE:HG22	2.16	0.46
1:B:78:ASN:HA	1:B:79:ALA:HA	1.60	0.46
1:A:35:SER:O	1:A:38:GLU:HG3	2.15	0.46
1:A:390:LEU:C	1:A:390:LEU:HD23	2.41	0.46
1:A:416:SER:OG	1:A:435:HIS:ND1	2.44	0.46
1:D:316:LEU:HB3	1:D:321:HIS:CD2	2.52	0.45
1:C:60:LYS:HA	1:C:111:GLU:O	2.16	0.45
1:B:149:VAL:HA	5:B:905:HOH:O	2.16	0.45
1:A:306:ILE:HG13	1:A:515:MET:HE2	1.98	0.45
1:A:411:THR:HB	1:A:430:VAL:CG2	2.47	0.45
1:D:473:LEU:HD11	1:D:533:HIS:ND1	2.32	0.45
1:D:563:LEU:HD23	1:D:627:ASP:HB3	1.98	0.45
1:C:195:TYR:O	1:C:207:LYS:HA	2.16	0.45
1:B:391:LEU:O	1:B:395:ARG:HG3	2.17	0.45
1:A:92:HIS:CG	3:A:804:GOL:H11	2.51	0.45
1:A:243:VAL:HA	1:A:247:GLU:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:61:LYS:HE3	1:D:108:LEU:O	2.16	0.45
1:A:271:LEU:HD23	1:A:276:TYR:CD2	2.51	0.45
1:A:427:ILE:HB	1:A:428:PRO:HD3	1.98	0.45
1:D:476:HIS:HA	1:D:488:GLU:OE1	2.15	0.45
1:B:230:LYS:HE3	1:B:307:CYS:SG	2.56	0.45
1:D:390:LEU:HD23	1:D:394:HIS:CE1	2.52	0.45
1:D:411:THR:OG1	1:D:412:ILE:N	2.50	0.45
1:B:400:MET:HG2	1:B:404:MET:HE3	1.98	0.45
1:A:61:LYS:HB3	1:A:111:GLU:OE2	2.16	0.45
1:A:536:LEU:O	1:A:545:LYS:HG3	2.16	0.45
1:D:573:GLU:H	1:D:573:GLU:CD	2.25	0.45
1:D:600:GLN:O	1:C:599:LEU:HD13	2.17	0.45
1:A:88:LYS:HE3	1:A:89:ALA:O	2.16	0.45
1:A:303:ILE:HD11	1:A:334:LEU:HD12	1.97	0.45
1:D:340:ILE:HG22	1:D:361:LEU:HD22	1.98	0.45
1:C:381:THR:HG21	1:C:424:TYR:CE1	2.52	0.45
1:B:376:LEU:HB2	1:B:412:ILE:CD1	2.45	0.45
1:A:17:THR:HG21	1:B:355:ILE:CD1	2.45	0.45
1:A:75:ARG:HB2	1:A:142:ARG:HB3	1.98	0.45
1:D:435:HIS:ND1	1:D:437:PHE:CE2	2.85	0.45
1:D:619:VAL:CG2	1:D:628:GLU:HG3	2.38	0.45
1:A:199:ASP:OD1	1:A:200:ALA:N	2.49	0.45
1:A:334:LEU:O	1:A:370:SER:HB2	2.17	0.45
1:A:416:SER:HB2	1:A:434:ASN:O	2.17	0.45
1:A:465:MET:C	5:A:902:HOH:O	2.60	0.45
1:C:374:TRP:CE2	1:C:408:ARG:HD2	2.51	0.45
1:B:61:LYS:HE2	1:B:110:GLU:O	2.16	0.45
1:B:80:SER:HB3	1:B:94:ASP:OD1	2.17	0.45
1:B:285:GLN:HG2	1:B:319:TYR:CZ	2.52	0.45
1:B:591:VAL:HG23	1:B:591:VAL:O	2.16	0.45
1:A:412:ILE:HG12	1:A:428:PRO:HG3	1.99	0.45
1:A:481:LYS:HD2	1:A:481:LYS:HA	1.57	0.45
1:D:13:THR:HG21	1:D:27:TRP:CZ2	2.52	0.45
1:A:1:ARG:HB2	1:A:149:VAL:HG12	1.99	0.44
1:A:414:VAL:HG12	1:A:415:VAL:O	2.17	0.44
1:D:142:ARG:HD3	1:D:322:ASP:OD1	2.16	0.44
1:D:221:ILE:HD11	1:D:224:VAL:CB	2.46	0.44
1:D:464:GLY:HA2	1:D:507:ILE:HG23	1.98	0.44
1:C:374:TRP:NE1	1:C:408:ARG:HD2	2.32	0.44
2:C:801:FMN:O2'	2:C:801:FMN:C10	2.65	0.44
1:B:33:PRO:HB3	1:B:141:TYR:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:159:TYR:O	1:D:364:GLN:NE2	2.51	0.44
1:D:318:HIS:O	1:D:341:PRO:HA	2.17	0.44
1:C:24:PRO:HG2	1:C:27:TRP:CE3	2.52	0.44
1:C:32:LEU:HA	1:C:33:PRO:C	2.40	0.44
1:C:59:LEU:CD2	1:C:64:LEU:HD11	2.48	0.44
1:A:182:VAL:O	1:A:215:THR:HB	2.17	0.44
1:A:373:VAL:HA	1:A:409:LEU:O	2.17	0.44
1:D:306:ILE:HA	1:D:515:MET:HE2	1.99	0.44
1:D:420:ILE:CG2	1:D:454:PHE:HD1	2.29	0.44
1:A:584:LEU:HB3	1:A:585:PRO:HD2	1.99	0.44
1:D:92:HIS:NE2	1:D:94:ASP:OD1	2.51	0.44
1:B:633:LYS:HD3	1:B:634:VAL:H	1.82	0.44
1:D:351:ARG:HA	1:D:354:THR:CG2	2.47	0.44
1:B:194:VAL:HG22	1:B:209:GLU:HG3	1.99	0.44
1:B:418:CYS:SG	1:B:424:TYR:HE2	2.41	0.44
1:B:513:TRP:HA	1:B:514:ASN:HA	1.62	0.44
1:A:577:LYS:HE2	1:A:607:HIS:CG	2.52	0.44
1:D:283:ARG:HD3	1:D:284:HIS:O	2.18	0.44
1:C:37:ASN:HA	1:C:40:ASP:OD1	2.18	0.44
1:C:263:ILE:CD1	1:C:409:LEU:HD12	2.44	0.44
1:C:315:ARG:HH11	1:C:467:GLU:HG3	1.83	0.44
1:B:10:TRP:CE3	1:B:55:TYR:HB3	2.52	0.44
1:B:376:LEU:HD12	1:B:412:ILE:HD11	1.99	0.44
2:B:802:FMN:H1'1	2:B:802:FMN:H9	1.75	0.44
1:D:184:LEU:HD13	1:D:187:ALA:CB	2.48	0.44
1:D:439:TRP:HZ2	1:D:485:TYR:CE2	2.36	0.44
1:A:81:ALA:HA	1:A:118:ALA:O	2.18	0.44
1:D:469:GLY:HA3	1:D:513:TRP:O	2.17	0.44
1:C:281:VAL:O	1:C:314:ILE:HA	2.17	0.44
1:D:78:ASN:HA	1:D:79:ALA:HA	1.54	0.43
1:C:159:TYR:CZ	1:C:359:LYS:HD2	2.53	0.43
1:C:261:PHE:C	1:C:262:GLU:HG3	2.43	0.43
1:A:192:LYS:HE2	1:A:243:VAL:HG21	2.00	0.43
1:A:468:TYR:CZ	1:A:512:VAL:HG22	2.53	0.43
1:A:634:VAL:HG22	1:A:635:ASP:N	2.33	0.43
1:D:236:TYR:CE2	1:D:258:CYS:SG	3.11	0.43
1:D:414:VAL:HG12	1:D:415:VAL:O	2.18	0.43
1:C:256:PHE:HB2	3:C:802:GOL:H12	1.99	0.43
1:C:557:ASP:O	1:C:559:PRO:HD3	2.18	0.43
1:B:621:VAL:HG22	1:B:626:LYS:HD3	1.99	0.43
1:D:154:PHE:HE1	1:D:250:ASP:C	2.25	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:286:ASP:O	1:D:541:ARG:NH2	2.51	0.43
1:D:317:ALA:HB1	1:D:318:HIS:CG	2.52	0.43
1:D:340:ILE:HG12	1:D:358:MET:HE2	2.01	0.43
1:D:463:LEU:O	1:D:507:ILE:HA	2.17	0.43
1:B:278:LEU:O	1:B:509:ALA:HA	2.19	0.43
1:B:642:SER:O	1:B:644:LYS:NZ	2.51	0.43
1:D:236:TYR:O	1:D:255:ARG:HA	2.18	0.43
1:B:242:LEU:HD23	1:B:242:LEU:C	2.42	0.43
1:B:243:VAL:HG11	1:B:246:GLU:HA	1.99	0.43
1:B:257:GLY:N	3:B:804:GOL:O1	2.48	0.43
1:A:412:ILE:HD12	1:A:414:VAL:CG2	2.48	0.43
1:C:386:SER:HB3	1:C:391:LEU:CD2	2.49	0.43
1:C:531:GLN:HB2	1:C:533:HIS:NE2	2.33	0.43
1:C:620:ALA:O	1:C:626:LYS:HA	2.18	0.43
1:B:502:PHE:CZ	1:B:555:LEU:HD11	2.53	0.43
1:D:374:TRP:HE1	1:D:408:ARG:HD2	1.83	0.43
1:C:368:HIS:HB2	1:C:371:ILE:HG13	2.00	0.43
1:C:386:SER:HA	1:C:390:LEU:HD13	2.01	0.43
1:B:518:PHE:HZ	4:B:803:I9G:O09	2.00	0.43
1:A:192:LYS:HB2	1:A:243:VAL:CG2	2.47	0.43
1:A:205:VAL:HG11	1:A:221:ILE:HG22	1.99	0.43
1:B:444:VAL:HG23	1:B:493:TYR:CE1	2.53	0.43
1:A:395:ARG:CG	1:A:427:ILE:HD13	2.49	0.43
1:A:78:ASN:HB3	1:A:137:TYR:O	2.19	0.43
1:D:468:TYR:CD2	1:D:497:MET:HE2	2.54	0.43
1:C:305:LEU:CD2	1:C:544:LYS:HE3	2.48	0.43
1:C:468:TYR:CD2	1:C:497:MET:HE2	2.54	0.43
1:B:74:LEU:HD21	1:B:117:ILE:HD13	1.99	0.43
1:B:183:PHE:C	1:B:184:LEU:HD22	2.43	0.43
1:B:279:ARG:HD3	1:B:510:THR:OG1	2.19	0.43
1:B:400:MET:HE2	1:B:400:MET:HB3	1.93	0.43
1:A:168:PRO:HD3	3:A:802:GOL:H2	2.00	0.43
1:A:188:ALA:N	1:A:191:GLN:OE1	2.52	0.43
1:A:379:GLU:HB3	1:A:415:VAL:HB	2.01	0.43
1:D:8:THR:O	1:D:57:LYS:HE2	2.19	0.43
1:D:268:GLY:O	1:D:270:ILE:HD12	2.19	0.43
1:D:274:GLU:OE2	1:D:274:GLU:HA	2.19	0.43
1:C:330:ASP:CG	1:C:369:PRO:HD2	2.43	0.43
1:C:361:LEU:HD12	1:C:365:ASN:ND2	2.34	0.43
1:B:317:ALA:HB1	1:B:318:HIS:HA	2.01	0.43
2:B:802:FMN:N1	2:B:802:FMN:C2'	2.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:363:VAL:HA	2:A:801:FMN:HM72	2.00	0.42
1:C:337:TRP:CD1	1:C:337:TRP:C	2.97	0.42
2:A:801:FMN:H1'1	2:A:801:FMN:H9	1.74	0.42
1:D:424:TYR:HA	1:D:427:ILE:HG13	2.00	0.42
1:C:142:ARG:HD3	1:C:322:ASP:OD2	2.19	0.42
1:C:261:PHE:HA	1:C:270:ILE:O	2.18	0.42
1:B:41:GLY:HA2	1:B:48:TYR:HB3	2.02	0.42
1:A:468:TYR:OH	1:A:512:VAL:HG22	2.20	0.42
1:D:287:ARG:HG3	1:D:288:TRP:H	1.84	0.42
1:D:327:ASP:OD1	1:D:368:HIS:HE1	2.02	0.42
1:C:133:ASP:OD1	1:C:523:ARG:NE	2.50	0.42
1:D:434:ASN:OD1	1:D:467:GLU:HB2	2.19	0.42
1:B:303:ILE:HG21	1:B:328:LEU:HD13	2.01	0.42
1:B:392:GLU:OE1	1:B:392:GLU:HA	2.20	0.42
1:B:458:PHE:CB	1:B:461:ILE:HD12	2.37	0.42
1:A:78:ASN:HA	1:A:96:GLY:HA3	2.00	0.42
1:D:13:THR:HB	1:D:27:TRP:CD2	2.55	0.42
1:D:81:ALA:HA	1:D:118:ALA:O	2.19	0.42
1:D:168:PRO:HB3	1:D:177:VAL:HG22	2.01	0.42
1:D:237:THR:O	1:D:237:THR:HG23	2.20	0.42
1:A:390:LEU:HD23	1:A:390:LEU:O	2.19	0.42
1:A:482:GLN:HB2	1:A:489:TYR:OH	2.20	0.42
1:A:563:LEU:HD23	1:A:580:VAL:CG2	2.38	0.42
1:D:168:PRO:N	1:D:177:VAL:HG13	2.34	0.42
1:C:261:PHE:CE2	1:C:372:VAL:HB	2.54	0.42
1:B:42:GLN:HE21	1:B:291:GLY:HA2	1.85	0.42
1:B:90:VAL:HG11	1:B:107:GLU:HG3	2.01	0.42
1:B:316:LEU:HB3	1:B:321:HIS:CD2	2.54	0.42
1:A:457:GLU:C	1:A:459:PRO:HD3	2.45	0.42
1:D:61:LYS:HZ3	1:D:108:LEU:HB2	1.84	0.42
1:D:164:ILE:HB	1:D:252:VAL:CG1	2.48	0.42
1:C:168:PRO:HA	1:C:177:VAL:HG12	2.02	0.42
1:C:432:SER:HB3	1:C:464:GLY:C	2.44	0.42
1:D:72:LEU:HD12	1:D:146:ILE:HD13	2.02	0.42
1:D:237:THR:HA	1:D:255:ARG:HA	2.01	0.42
1:D:478:SER:O	1:D:480:PRO:HD3	2.19	0.42
1:D:516:PHE:CD1	1:D:537:VAL:HB	2.50	0.42
1:B:474:ASN:HB3	3:B:805:GOL:H32	2.00	0.42
1:A:570:ASP:OD1	1:A:632:ARG:NH1	2.53	0.42
1:D:83:VAL:HG22	1:D:117:ILE:HG12	2.02	0.42
1:D:495:GLU:HG2	1:D:605:PHE:CE2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:78:ASN:ND2	1:C:137:TYR:O	2.43	0.42
1:C:188:ALA:H	1:C:191:GLN:HE22	1.67	0.42
1:C:424:TYR:HA	1:C:427:ILE:HG13	2.01	0.42
1:C:434:ASN:CG	1:C:467:GLU:HB2	2.44	0.42
1:A:11:ALA:HB1	1:A:27:TRP:HB2	2.02	0.42
1:D:35:SER:O	1:D:38:GLU:HG3	2.19	0.42
1:B:60:LYS:HD3	1:B:63:GLU:CD	2.45	0.42
1:D:14:LYS:HZ3	1:D:36:TRP:HD1	1.66	0.41
1:D:340:ILE:HB	1:D:341:PRO:HD2	2.02	0.41
1:D:373:VAL:CG1	1:D:411:THR:CG2	2.98	0.41
1:C:101:ARG:CZ	1:C:156:LEU:HD23	2.50	0.41
1:C:178:GLU:HB2	1:C:218:VAL:HG22	2.01	0.41
1:C:411:THR:OG1	1:C:412:ILE:N	2.53	0.41
1:C:451:MET:HE3	1:C:463:LEU:HD21	2.02	0.41
1:B:2:GLU:HG2	1:B:4:ILE:CD1	2.49	0.41
1:B:495:GLU:HG2	1:B:605:PHE:CE2	2.55	0.41
1:A:13:THR:HG21	1:A:27:TRP:CZ2	2.55	0.41
1:A:577:LYS:HE2	1:A:607:HIS:CB	2.49	0.41
1:D:3:VAL:HG22	1:D:147:ILE:HG23	2.02	0.41
1:D:227:TRP:CD1	1:D:235:LEU:CD1	3.02	0.41
1:D:281:VAL:O	1:D:314:ILE:HA	2.19	0.41
1:D:451:MET:HE3	1:D:463:LEU:HG	2.02	0.41
1:D:451:MET:CE	1:D:507:ILE:HD13	2.47	0.41
1:C:352:GLU:OE1	1:C:352:GLU:N	2.34	0.41
1:C:590:PHE:O	1:C:618:LEU:HA	2.20	0.41
1:B:166:VAL:HG22	1:B:180:VAL:HG22	2.01	0.41
1:B:563:LEU:HD13	1:B:629:SER:CB	2.44	0.41
1:A:473:LEU:HD11	1:A:533:HIS:CE1	2.55	0.41
2:A:801:FMN:O2'	2:A:801:FMN:N1	2.54	0.41
1:C:306:ILE:HG13	1:C:515:MET:HE2	2.01	0.41
1:B:556:SER:OG	1:B:558:GLU:HB2	2.19	0.41
1:A:225:HIS:HB2	1:A:234:TYR:CD2	2.55	0.41
1:A:540:ASP:OD1	1:A:542:LYS:HB2	2.20	0.41
1:D:69:CYS:HB2	1:D:149:VAL:CG2	2.49	0.41
1:D:184:LEU:HD13	1:D:187:ALA:HB1	2.02	0.41
1:C:78:ASN:HA	1:C:96:GLY:HA3	2.01	0.41
1:C:411:THR:CB	1:C:430:VAL:HG23	2.47	0.41
1:B:1:ARG:HG3	1:B:149:VAL:HG12	2.02	0.41
1:B:182:VAL:CG1	1:B:240:VAL:HG21	2.50	0.41
1:B:434:ASN:OD1	1:B:467:GLU:HB2	2.20	0.41
1:B:472:ALA:O	1:B:545:LYS:NZ	2.47	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:531:GLN:NE2	1:B:539:PHE:HB2	2.35	0.41
3:A:804:GOL:O1	1:B:82:ASP:OD1	2.32	0.41
1:D:4:ILE:HG12	1:D:146:ILE:HB	2.02	0.41
1:D:236:TYR:HD2	1:D:258:CYS:HG	1.61	0.41
1:C:41:GLY:HA2	1:C:48:TYR:HB3	2.01	0.41
1:C:42:GLN:HE21	1:C:291:GLY:HA2	1.85	0.41
1:A:33:PRO:HB3	1:A:141:TYR:O	2.21	0.41
1:A:411:THR:OG1	1:A:412:ILE:N	2.54	0.41
1:D:137:TYR:HE2	1:D:286:ASP:HB3	1.86	0.41
1:D:275:GLU:OE2	1:D:505:LYS:NZ	2.54	0.41
1:C:183:PHE:O	1:C:184:LEU:HD23	2.20	0.41
1:B:73:GLU:HB2	1:B:147:ILE:HD11	2.02	0.41
1:B:315:ARG:HB2	1:B:511:HIS:CD2	2.56	0.41
1:B:337:TRP:CD1	1:B:337:TRP:C	2.98	0.41
1:A:227:TRP:CZ2	1:A:333:GLY:HA2	2.55	0.41
1:D:439:TRP:O	1:D:482:GLN:NE2	2.53	0.41
1:D:495:GLU:O	1:D:499:LYS:HG3	2.20	0.41
1:C:72:LEU:O	1:C:101:ARG:HA	2.21	0.41
2:C:801:FMN:H9	2:C:801:FMN:H1'1	1.77	0.41
1:A:620:ALA:O	1:A:626:LYS:HA	2.21	0.41
1:D:41:GLY:HA2	1:D:48:TYR:HB3	2.02	0.41
1:C:59:LEU:HD11	1:C:146:ILE:HD12	2.03	0.41
1:C:210:THR:OG1	1:C:214:GLU:HB3	2.21	0.41
1:C:363:VAL:HG13	2:C:801:FMN:H6	2.00	0.41
1:B:276:TYR:CE2	5:B:901:HOH:O	2.70	0.41
1:B:285:GLN:HG2	1:B:319:TYR:OH	2.20	0.41
1:B:400:MET:HG2	1:B:404:MET:HE2	2.01	0.41
1:A:44:GLY:HA2	1:A:521:ASP:O	2.21	0.41
1:A:380:ILE:HG21	1:A:394:HIS:CE1	2.55	0.41
1:D:7:ASN:ND2	1:D:143:ASP:HA	2.26	0.41
1:D:24:PRO:HG2	1:D:27:TRP:CE3	2.56	0.41
1:D:69:CYS:HA	1:D:105:THR:CG2	2.50	0.41
1:D:374:TRP:NE1	1:D:408:ARG:HD2	2.36	0.41
1:C:361:LEU:HD12	1:C:361:LEU:O	2.21	0.41
1:C:412:ILE:HG12	1:C:431:ILE:HG22	2.02	0.41
1:B:149:VAL:CA	5:B:905:HOH:O	2.69	0.41
1:B:153:HIS:ND1	1:B:154:PHE:O	2.49	0.41
1:B:476:HIS:HA	1:B:488:GLU:OE1	2.21	0.41
1:D:184:LEU:HB3	1:D:187:ALA:HB2	2.02	0.41
1:D:643:LEU:O	1:D:643:LEU:HD23	2.21	0.41
1:C:371:ILE:O	1:C:408:ARG:NH1	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:102:VAL:O	1:B:102:VAL:HG13	2.20	0.41
1:B:495:GLU:OE2	1:B:581:TYR:OH	2.29	0.41
1:A:41:GLY:HA2	1:A:48:TYR:HB3	2.03	0.40
1:C:125:ASP:HA	1:C:347:MET:SD	2.61	0.40
1:C:544:LYS:HD3	1:C:548:PHE:CE1	2.56	0.40
1:B:85:VAL:HG22	1:B:115:ILE:HD12	2.00	0.40
1:B:309:LEU:HD21	1:B:551:TYR:HB3	2.02	0.40
1:A:200:ALA:HB2	1:A:234:TYR:CZ	2.57	0.40
1:D:164:ILE:CG2	1:D:254:THR:OG1	2.69	0.40
1:D:210:THR:HG23	1:D:211:ALA:N	2.36	0.40
1:D:317:ALA:HB1	1:D:318:HIS:HA	2.02	0.40
1:A:1:ARG:HG3	1:A:149:VAL:CG1	2.52	0.40
1:A:60:LYS:CE	1:A:112:GLU:OE2	2.70	0.40
1:A:599:LEU:HB2	1:A:608:PHE:CE2	2.56	0.40
1:D:432:SER:HA	1:D:464:GLY:O	2.22	0.40
1:C:133:ASP:HB3	4:C:803:I9G:O09	2.21	0.40
1:C:330:ASP:OD1	1:C:370:SER:OG	2.28	0.40
1:D:23:MET:HB2	1:D:58:GLN:OE1	2.21	0.40
1:C:74:LEU:HD21	1:C:117:ILE:HD13	2.02	0.40
1:C:337:TRP:CH2	1:C:466:SER:HB3	2.57	0.40
1:B:184:LEU:HD13	1:B:184:LEU:HA	1.91	0.40
1:A:411:THR:HB	1:A:430:VAL:HG22	2.02	0.40
1:A:454:PHE:CD1	1:A:454:PHE:C	2.99	0.40
1:A:458:PHE:N	1:A:459:PRO:HD3	2.36	0.40
1:D:155:ASP:C	1:D:156:LEU:HD23	2.46	0.40
1:D:430:VAL:HG12	1:D:431:ILE:H	1.87	0.40
1:D:452:ASP:O	1:D:456:LYS:N	2.50	0.40
1:D:598:LYS:HG2	1:C:597:GLY:CA	2.51	0.40
1:C:2:GLU:HG2	1:C:4:ILE:HD11	2.03	0.40
1:B:600:GLN:HA	1:B:606:PHE:HE2	1.87	0.40
1:B:642:SER:OG	1:B:644:LYS:HG3	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	642/756 (85%)	613 (96%)	28 (4%)	1 (0%)	43	68
1	B	639/756 (84%)	609 (95%)	30 (5%)	0	100	100
1	C	636/756 (84%)	608 (96%)	28 (4%)	0	100	100
1	D	615/756 (81%)	563 (92%)	46 (8%)	6 (1%)	12	32
All	All	2532/3024 (84%)	2393 (94%)	132 (5%)	7 (0%)	36	60

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	205	VAL
1	D	224	VAL
1	A	9	LYS
1	D	222	PRO
1	D	344	SER
1	D	439	TRP
1	D	221	ILE

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	545/640 (85%)	543 (100%)	2 (0%)	84	93
1	B	544/640 (85%)	542 (100%)	2 (0%)	84	93
1	C	541/640 (84%)	538 (99%)	3 (1%)	78	91
1	D	511/640 (80%)	503 (98%)	8 (2%)	55	80
All	All	2141/2560 (84%)	2126 (99%)	15 (1%)	76	90

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	149	VAL

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Mol	Chain	Res	Type
1	A	345	SER
1	D	14	LYS
1	D	210	THR
1	D	218	VAL
1	D	313	THR
1	D	314	ILE
1	D	386	SER
1	D	466	SER
1	D	586	GLU
1	C	199	ASP
1	C	387	ASP
1	C	466	SER
1	B	63	GLU
1	B	343	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	357	GLN
1	A	421	HIS
1	D	58	GLN
1	D	320	GLN
1	D	323	GLN
1	D	364	GLN
1	D	365	ASN
1	D	447	ASN
1	D	476	HIS
1	D	500	GLN
1	D	529	ASN
1	C	320	GLN
1	C	323	GLN
1	C	357	GLN
1	C	365	ASN
1	C	455	HIS
1	C	529	ASN
1	C	604	HIS
1	B	320	GLN

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](#)

14 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	I9G	B	803	-	44,47,47	2.20	10 (22%)	49,70,70	2.23	12 (24%)
2	FMN	A	801	-	33,33,33	1.08	2 (6%)	48,50,50	1.35	10 (20%)
2	FMN	B	802	-	33,33,33	1.12	2 (6%)	48,50,50	1.39	7 (14%)
3	GOL	A	804	-	5,5,5	0.81	0	5,5,5	1.11	0
3	GOL	B	805	-	5,5,5	0.87	0	5,5,5	0.90	0
4	I9G	C	803	-	44,47,47	2.58	10 (22%)	49,70,70	2.95	21 (42%)
3	GOL	C	802	-	5,5,5	0.82	0	5,5,5	1.06	0
3	GOL	B	804	-	5,5,5	0.88	0	5,5,5	1.34	1 (20%)
4	I9G	D	801	-	44,47,47	2.17	9 (20%)	49,70,70	1.91	7 (14%)
3	GOL	A	802	-	5,5,5	0.80	0	5,5,5	0.97	0
3	GOL	B	801	-	5,5,5	0.83	0	5,5,5	1.19	1 (20%)
2	FMN	C	801	-	33,33,33	1.07	2 (6%)	48,50,50	1.47	8 (16%)
3	GOL	A	803	-	5,5,5	0.99	0	5,5,5	1.24	1 (20%)
4	I9G	A	805	-	44,47,47	2.18	11 (25%)	49,70,70	2.07	6 (12%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	I9G	B	803	-	-	0/16/61/61	0/7/7/7
2	FMN	A	801	-	-	9/18/18/18	0/3/3/3
2	FMN	B	802	-	-	12/18/18/18	0/3/3/3
3	GOL	A	804	-	-	2/4/4/4	-
3	GOL	B	805	-	-	3/4/4/4	-
4	I9G	C	803	-	-	4/16/61/61	0/7/7/7
3	GOL	C	802	-	-	2/4/4/4	-
3	GOL	B	804	-	-	2/4/4/4	-
4	I9G	D	801	-	-	2/16/61/61	0/7/7/7
3	GOL	A	802	-	-	2/4/4/4	-
3	GOL	B	801	-	-	2/4/4/4	-
2	FMN	C	801	-	-	8/18/18/18	0/3/3/3
3	GOL	A	803	-	-	2/4/4/4	-
4	I9G	A	805	-	-	4/16/61/61	0/7/7/7

All (46) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	803	I9G	O06-C05	8.94	1.62	1.42
4	C	803	I9G	C14-N13	-6.43	1.35	1.47
4	D	801	I9G	C19-N16	6.10	1.52	1.37
4	C	803	I9G	C19-N16	6.00	1.52	1.37
4	B	803	I9G	C19-N16	5.90	1.52	1.37
4	A	805	I9G	C19-N16	5.67	1.51	1.37
4	B	803	I9G	C14-N13	-5.42	1.37	1.47
4	D	801	I9G	C18-N13	-5.26	1.37	1.47
4	B	803	I9G	O06-C05	5.21	1.53	1.42
4	A	805	I9G	C18-N13	-5.15	1.37	1.47
4	D	801	I9G	C14-N13	-5.08	1.37	1.47
4	A	805	I9G	C14-N13	-5.03	1.37	1.47
4	D	801	I9G	O06-C05	5.02	1.53	1.42
4	A	805	I9G	O06-C05	5.02	1.53	1.42
4	B	803	I9G	C18-N13	-4.91	1.38	1.47
4	C	803	I9G	O06-C07	4.75	1.52	1.43
4	B	803	I9G	C34-N36	4.34	1.48	1.37
4	C	803	I9G	C34-N36	4.33	1.48	1.37
4	C	803	I9G	C18-N13	-4.29	1.39	1.47
4	D	801	I9G	C34-N36	4.18	1.47	1.37
4	A	805	I9G	C34-N36	4.16	1.47	1.37
2	B	802	FMN	C4A-N5	3.62	1.38	1.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	801	FMN	C4A-N5	3.43	1.38	1.30
4	A	805	I9G	C27-C28	3.36	1.47	1.40
2	C	801	FMN	C4A-N5	3.30	1.37	1.30
4	B	803	I9G	C27-C28	3.18	1.46	1.40
4	C	803	I9G	C27-C28	3.09	1.46	1.40
4	A	805	I9G	C30-C29	3.04	1.56	1.51
4	B	803	I9G	C30-C29	2.91	1.56	1.51
4	D	801	I9G	C27-C28	2.80	1.46	1.40
4	D	801	I9G	N20-N21	2.79	1.35	1.32
2	B	802	FMN	C10-N1	2.74	1.38	1.33
4	C	803	I9G	C27-C23	2.73	1.50	1.46
2	A	801	FMN	C10-N1	2.62	1.38	1.33
4	C	803	I9G	N20-N21	2.60	1.35	1.32
4	D	801	I9G	C27-C23	2.47	1.50	1.46
4	D	801	I9G	C30-C29	2.46	1.55	1.51
4	C	803	I9G	C30-C29	2.45	1.55	1.51
4	A	805	I9G	C27-C23	2.43	1.50	1.46
4	B	803	I9G	C27-C23	2.43	1.50	1.46
4	A	805	I9G	N20-N21	2.34	1.35	1.32
2	C	801	FMN	C10-N1	2.33	1.37	1.33
4	B	803	I9G	O06-C07	2.31	1.47	1.43
4	A	805	I9G	C03-C05	2.23	1.56	1.52
4	B	803	I9G	N20-N21	2.10	1.34	1.32
4	A	805	I9G	C03-C02	-2.02	1.47	1.52

All (74) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	803	I9G	C24-S25-C26	8.13	99.36	90.40
4	B	803	I9G	C24-S25-C26	7.88	99.08	90.40
4	D	801	I9G	C24-S25-C26	7.86	99.06	90.40
4	A	805	I9G	C24-S25-C26	7.32	98.46	90.40
4	B	803	I9G	C02-C03-C05	5.83	118.23	108.94
4	C	803	I9G	C18-N13-C14	5.78	120.14	109.13
4	A	805	I9G	C27-C26-N35	-5.65	120.42	126.66
4	B	803	I9G	C27-C26-N35	-5.63	120.44	126.66
4	A	805	I9G	C02-C03-C05	5.34	117.47	108.94
4	C	803	I9G	C27-C26-N35	-5.26	120.85	126.66
4	B	803	I9G	C23-C24-S25	-5.11	106.69	112.41
4	C	803	I9G	C23-C24-S25	-5.07	106.72	112.41
4	C	803	I9G	O09-C08-C07	-4.99	98.36	109.76
4	D	801	I9G	C27-C26-N35	-4.98	121.16	126.66

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	803	I9G	C17-C18-N13	4.77	119.00	110.61
4	D	801	I9G	C23-C24-S25	-4.73	107.11	112.41
4	C	803	I9G	O04-C03-C02	-4.64	99.43	110.38
4	C	803	I9G	O01-C02-C03	4.62	121.27	110.38
4	C	803	I9G	O06-C07-C08	-4.47	100.65	109.48
4	A	805	I9G	C23-C24-S25	-4.39	107.49	112.41
4	C	803	I9G	O11-C10-C07	4.23	136.07	120.81
4	C	803	I9G	O06-C07-C10	-4.02	93.56	106.14
4	B	803	I9G	O06-C07-C08	3.89	117.16	109.48
4	C	803	I9G	C14-C15-N16	3.82	118.84	110.78
4	A	805	I9G	C14-C15-N16	3.60	118.36	110.78
2	C	801	FMN	C4-N3-C2	-3.57	119.30	125.64
4	C	803	I9G	C02-C03-C05	-3.57	103.25	108.94
4	C	803	I9G	O04-C03-C05	3.56	121.73	109.66
4	C	803	I9G	C08-C02-C03	3.51	117.00	110.83
4	C	803	I9G	O12-C10-O11	-3.50	116.13	124.08
4	D	801	I9G	C02-C03-C05	3.46	114.46	108.94
2	A	801	FMN	C4-N3-C2	-3.42	119.56	125.64
2	B	802	FMN	C5A-C9A-N10	3.38	121.03	117.97
2	C	801	FMN	C4A-C10-N10	3.23	121.10	116.48
2	B	802	FMN	C4-N3-C2	-3.22	119.93	125.64
4	D	801	I9G	O06-C07-C08	3.20	115.81	109.48
2	C	801	FMN	C10-N1-C2	3.11	123.59	116.85
2	C	801	FMN	C4A-C4-N3	3.04	120.99	113.25
2	C	801	FMN	C4A-C10-N1	-3.04	117.14	124.59
4	A	805	I9G	O06-C07-C08	2.94	115.28	109.48
2	B	802	FMN	C9A-C5A-N5	-2.92	119.36	122.45
2	A	801	FMN	C5A-C9A-N10	2.82	120.52	117.97
2	A	801	FMN	C4A-C4-N3	2.81	120.41	113.25
2	B	802	FMN	C4A-C4-N3	2.80	120.38	113.25
4	C	803	I9G	C02-C08-C07	2.79	114.10	109.30
2	A	801	FMN	C4A-C10-N1	-2.74	117.86	124.59
2	C	801	FMN	O4-C4-C4A	-2.64	119.56	126.53
4	C	803	I9G	C15-C14-N13	2.64	115.26	110.61
2	B	802	FMN	O4-C4-C4A	-2.61	119.64	126.53
4	B	803	I9G	C41-N36-C37	-2.57	105.78	111.57
2	A	801	FMN	O4-C4-C4A	-2.47	120.02	126.53
4	C	803	I9G	O01-C02-C08	-2.46	104.58	110.38
2	C	801	FMN	C5A-C9A-N10	2.43	120.17	117.97
2	C	801	FMN	C10-C4A-N5	-2.43	119.85	124.81
2	A	801	FMN	C4A-C10-N10	2.42	119.94	116.48
4	B	803	I9G	C18-C17-N16	2.41	115.85	110.78

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	804	GOL	C3-C2-C1	-2.35	103.19	111.80
2	A	801	FMN	C10-N1-C2	2.29	121.81	116.85
2	B	802	FMN	C4A-C10-N1	-2.29	118.98	124.59
4	B	803	I9G	C40-C41-N36	2.28	114.23	109.93
4	D	801	I9G	O06-C05-C03	2.27	118.07	110.79
4	B	803	I9G	C40-O39-C38	2.25	117.16	109.88
2	A	801	FMN	C9A-C5A-N5	-2.25	120.07	122.45
4	B	803	I9G	O39-C40-C41	2.24	116.60	111.77
2	A	801	FMN	C10-C4A-N5	-2.19	120.34	124.81
3	A	803	GOL	C3-C2-C1	-2.18	103.80	111.80
3	B	801	GOL	C3-C2-C1	-2.17	103.84	111.80
4	C	803	I9G	C17-N16-C15	-2.14	106.75	111.57
4	D	801	I9G	C18-C17-N16	2.13	115.26	110.78
2	A	801	FMN	C4-C4A-C10	2.09	120.51	116.93
4	B	803	I9G	C17-C18-N13	2.08	114.27	110.61
4	C	803	I9G	C34-N35-C26	2.08	121.70	116.24
4	B	803	I9G	C34-N35-C26	2.07	121.68	116.24
2	B	802	FMN	C1'-N10-C9A	-2.07	116.62	120.63

There are no chirality outliers.

All (54) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	801	FMN	C2'-C1'-N10-C10
2	A	801	FMN	N10-C1'-C2'-O2'
2	A	801	FMN	C2'-C3'-C4'-O4'
2	A	801	FMN	C2'-C3'-C4'-C5'
2	A	801	FMN	O3'-C3'-C4'-O4'
2	A	801	FMN	O3'-C3'-C4'-C5'
2	A	801	FMN	C3'-C4'-C5'-O5'
2	A	801	FMN	O4'-C4'-C5'-O5'
2	C	801	FMN	C2'-C1'-N10-C10
2	C	801	FMN	N10-C1'-C2'-O2'
2	C	801	FMN	N10-C1'-C2'-C3'
2	C	801	FMN	C5'-O5'-P-O1P
2	B	802	FMN	C2'-C1'-N10-C10
2	B	802	FMN	N10-C1'-C2'-O2'
2	B	802	FMN	N10-C1'-C2'-C3'
2	B	802	FMN	C2'-C3'-C4'-O4'
2	B	802	FMN	O3'-C3'-C4'-O4'
3	A	802	GOL	C1-C2-C3-O3
3	A	803	GOL	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
3	A	804	GOL	C1-C2-C3-O3
3	C	802	GOL	C1-C2-C3-O3
3	B	804	GOL	C1-C2-C3-O3
4	D	801	I9G	C29-C34-N36-C37
4	D	801	I9G	N35-C34-N36-C37
4	C	803	I9G	C03-C05-N13-C14
4	C	803	I9G	O06-C05-N13-C14
4	C	803	I9G	C29-C34-N36-C37
4	C	803	I9G	N35-C34-N36-C37
2	B	802	FMN	O3'-C3'-C4'-C5'
2	B	802	FMN	C2'-C3'-C4'-C5'
3	A	802	GOL	O2-C2-C3-O3
3	B	805	GOL	O2-C2-C3-O3
4	A	805	I9G	N35-C34-N36-C41
3	B	801	GOL	C1-C2-C3-O3
3	B	805	GOL	C1-C2-C3-O3
3	A	803	GOL	O2-C2-C3-O3
3	C	802	GOL	O2-C2-C3-O3
4	A	805	I9G	C29-C34-N36-C41
3	A	804	GOL	O2-C2-C3-O3
3	B	804	GOL	O2-C2-C3-O3
4	A	805	I9G	N35-C34-N36-C37
2	C	801	FMN	C5'-O5'-P-O3P
2	B	802	FMN	O4'-C4'-C5'-O5'
2	B	802	FMN	O2'-C2'-C3'-O3'
2	A	801	FMN	N10-C1'-C2'-C3'
4	A	805	I9G	C29-C34-N36-C37
3	B	801	GOL	O2-C2-C3-O3
3	B	805	GOL	O1-C1-C2-C3
2	B	802	FMN	O2'-C2'-C3'-C4'
2	B	802	FMN	C2'-C1'-N10-C9A
2	C	801	FMN	C1'-C2'-C3'-O3'
2	B	802	FMN	C1'-C2'-C3'-O3'
2	C	801	FMN	C5'-O5'-P-O2P
2	C	801	FMN	O2'-C2'-C3'-O3'

There are no ring outliers.

11 monomers are involved in 29 short contacts:

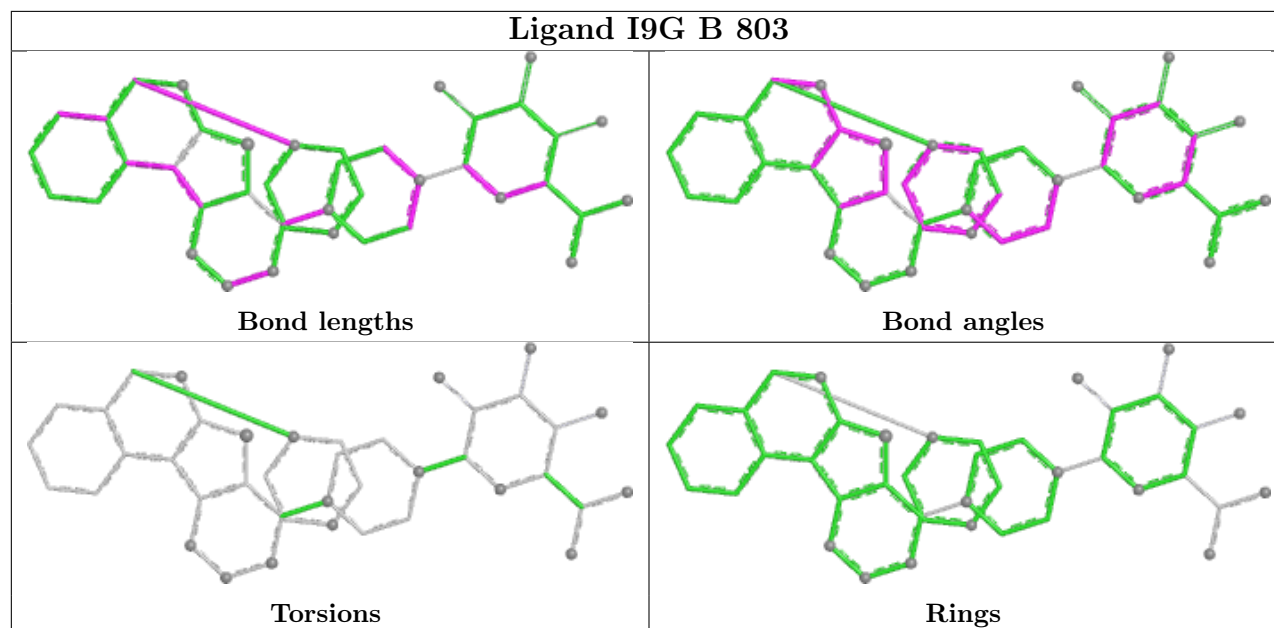
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	803	I9G	1	0
2	A	801	FMN	3	0

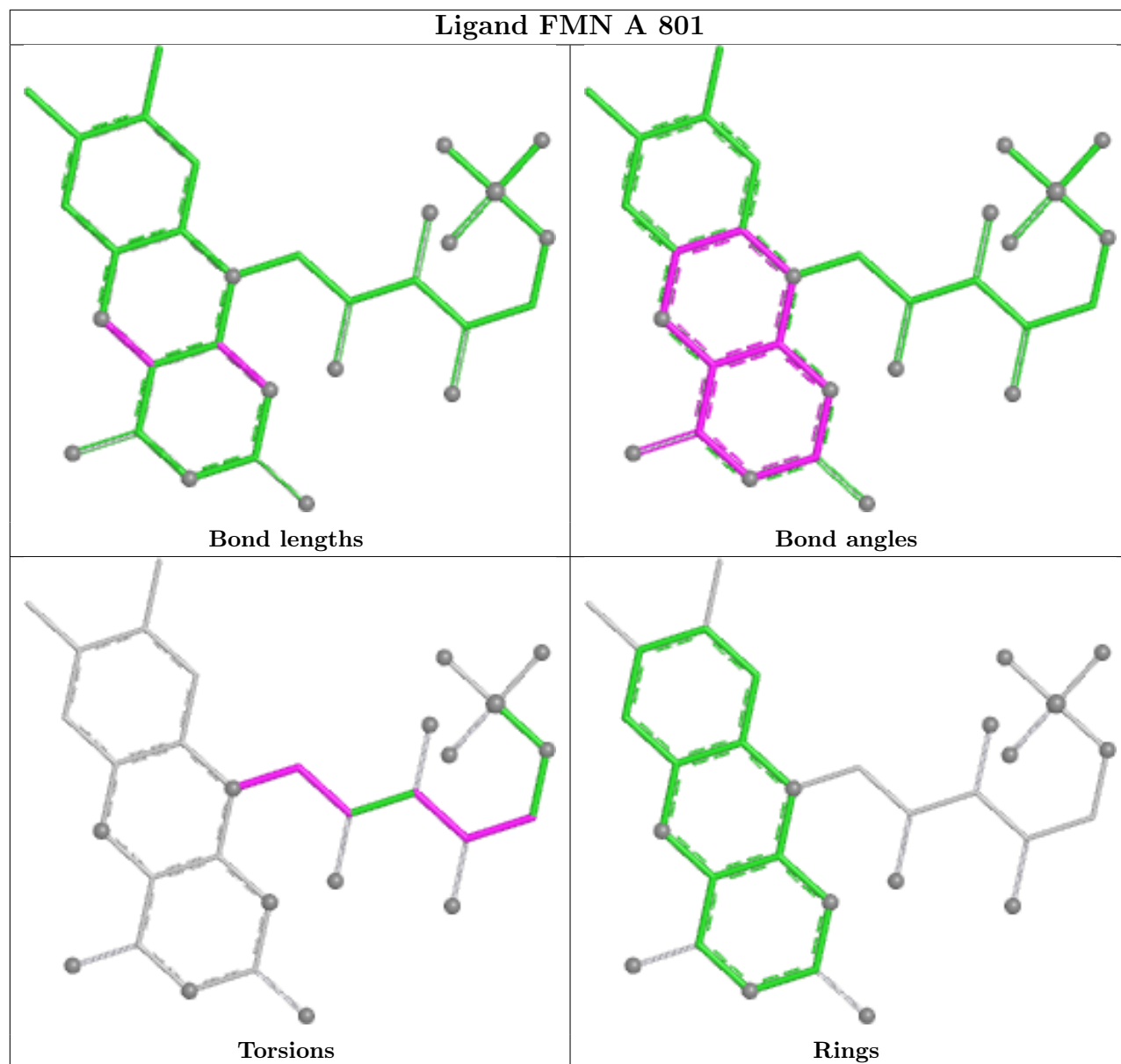
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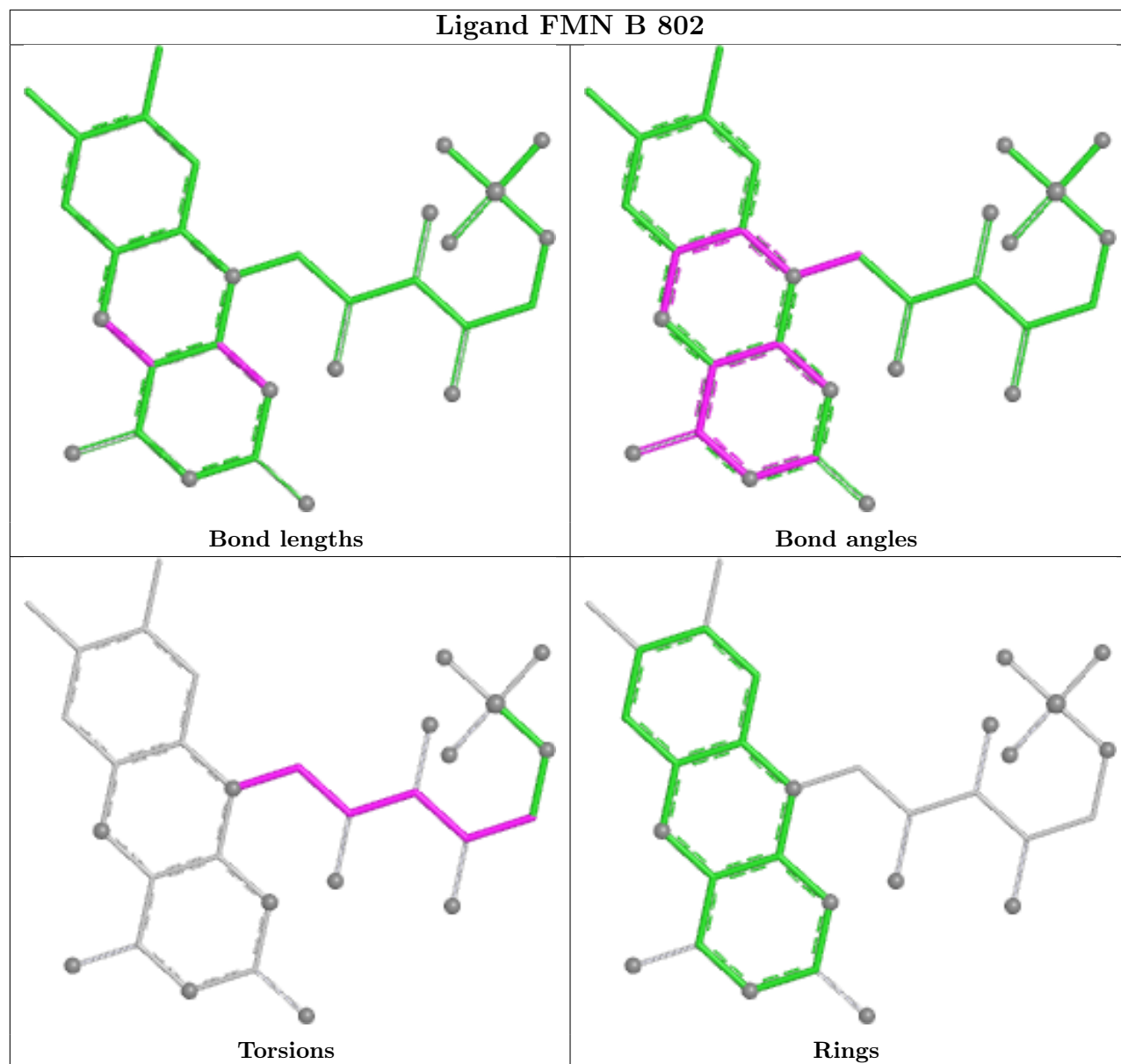
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	802	FMN	3	0
3	A	804	GOL	3	0
3	B	805	GOL	1	0
4	C	803	I9G	5	0
3	C	802	GOL	1	0
3	B	804	GOL	5	0
4	D	801	I9G	1	0
3	A	802	GOL	1	0
2	C	801	FMN	5	0

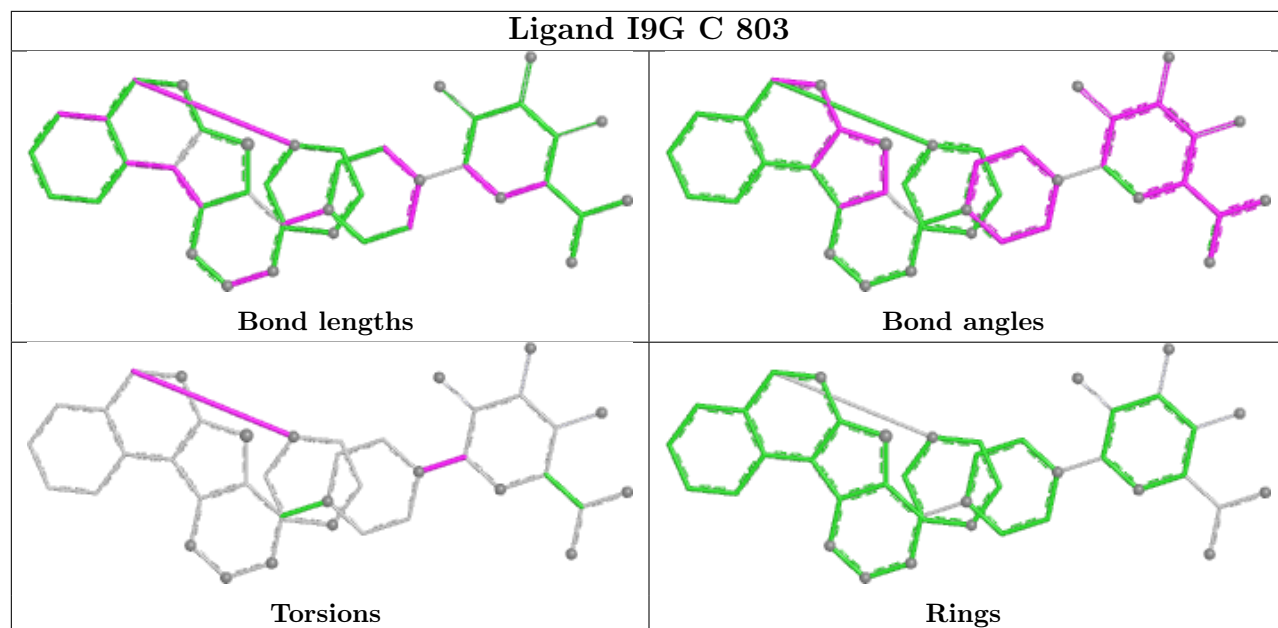
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.



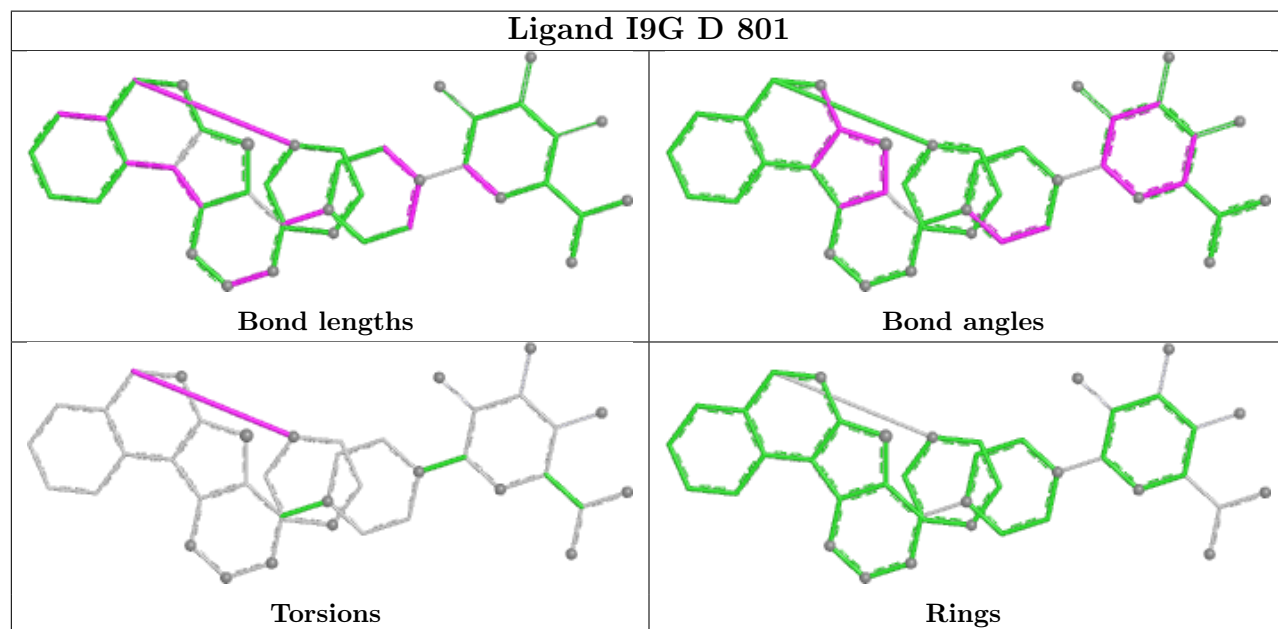


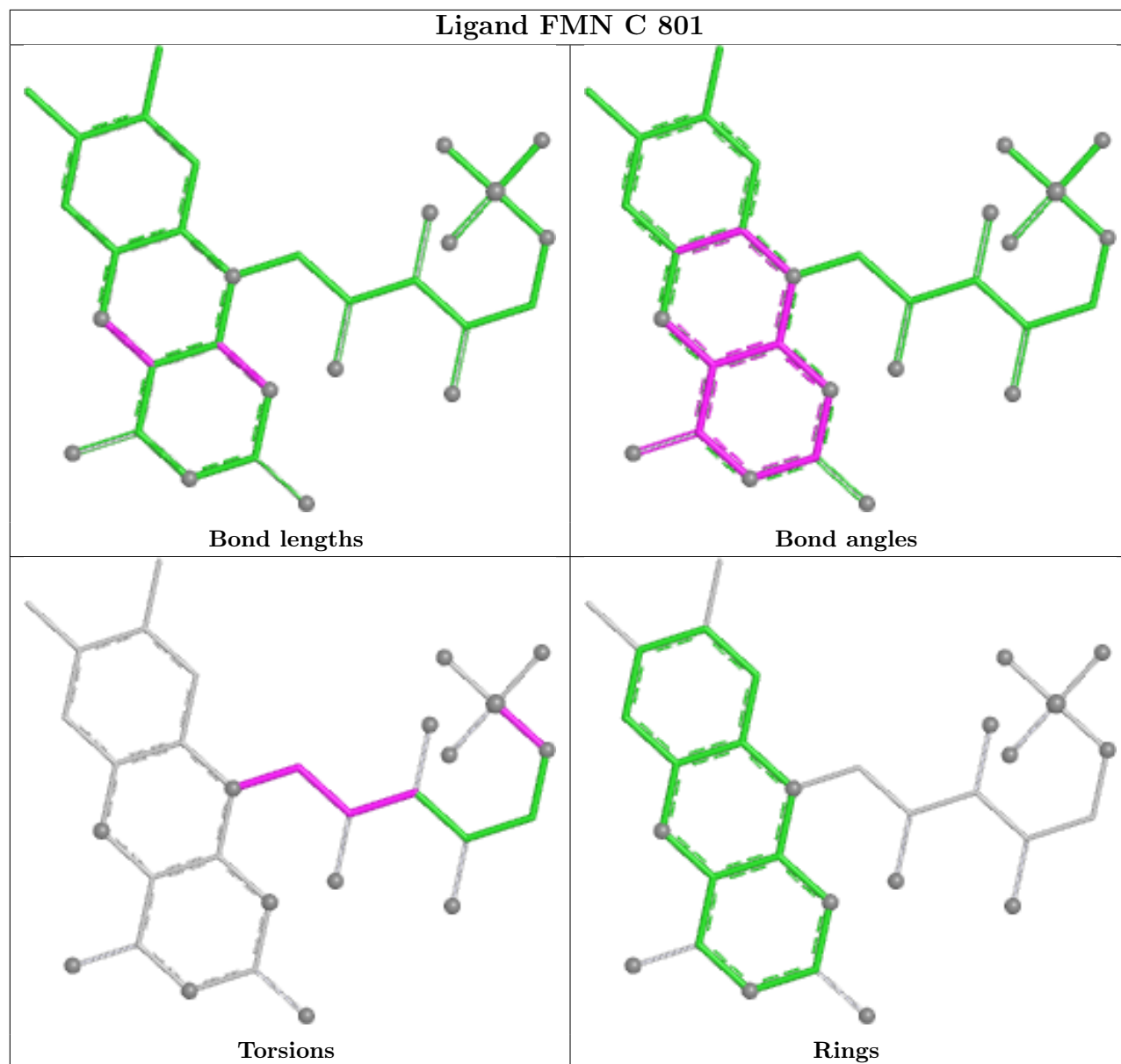


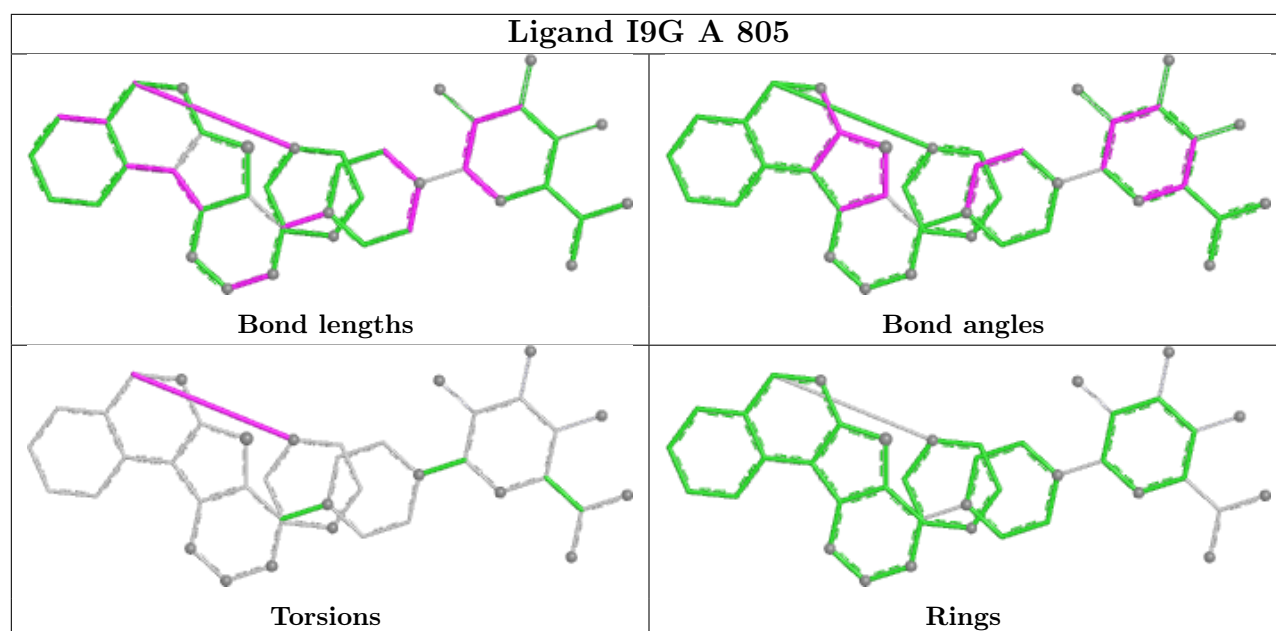
Ligand I9G C 803



Ligand I9G D 801







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	644/756 (85%)	0.24	11 (1%) 69 67	41, 57, 83, 114	0
1	B	643/756 (85%)	0.27	12 (1%) 66 63	42, 59, 83, 106	0
1	C	642/756 (84%)	0.33	13 (2%) 65 62	43, 60, 90, 123	0
1	D	631/756 (83%)	1.03	85 (13%) 7 6	52, 74, 101, 116	0
All	All	2560/3024 (84%)	0.46	121 (4%) 36 33	41, 62, 93, 123	0

All (121) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	170	ILE	5.8
1	D	14	LYS	5.6
1	D	183	PHE	4.8
1	D	188	ALA	4.8
1	D	461	ILE	4.7
1	D	216	LYS	4.6
1	D	245	GLY	4.5
1	D	437	PHE	4.4
1	D	236	TYR	4.3
1	D	189	ALA	4.2
1	D	420	ILE	4.1
1	D	180	VAL	4.0
1	D	385	SER	4.0
1	D	158	TYR	4.0
1	D	212	ALA	3.8
1	D	241	ALA	3.8
1	D	424	TYR	3.8
1	B	424	TYR	3.7
1	D	190	ASP	3.7
1	B	0	MET	3.6
1	D	438	GLY	3.6

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Mol	Chain	Res	Type	RSRZ
1	D	96	GLY	3.5
1	D	211	ALA	3.5
1	A	0	MET	3.4
1	B	8	THR	3.4
1	D	199	ASP	3.3
1	D	454	PHE	3.2
1	D	340	ILE	3.1
1	B	383	ALA	3.1
1	B	273	GLY	3.1
1	D	205	VAL	3.1
1	D	261	PHE	3.1
1	D	222	PRO	3.1
1	D	164	ILE	3.0
1	D	206	ALA	3.0
1	D	337	TRP	3.0
1	D	279	ARG	3.0
1	D	182	VAL	2.9
1	D	128	TYR	2.9
1	A	383	ALA	2.9
1	D	373	VAL	2.8
1	A	385	SER	2.8
1	A	245	GLY	2.8
1	D	218	VAL	2.8
1	D	196	THR	2.8
1	D	417	MET	2.8
1	D	176	SER	2.8
1	C	385	SER	2.7
1	D	177	VAL	2.7
1	D	376	LEU	2.7
1	A	212	ALA	2.7
1	D	89	ALA	2.7
1	D	342	TYR	2.7
1	C	0	MET	2.7
1	D	404	MET	2.6
1	D	195	TYR	2.6
1	D	246	GLU	2.6
1	D	457	GLU	2.6
1	C	245	GLY	2.6
1	C	189	ALA	2.6
1	A	384	GLY	2.5
1	D	162	PRO	2.5
1	C	199	ASP	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	644	LYS	2.5
1	D	269	PHE	2.5
1	D	200	ALA	2.5
1	D	374	TRP	2.4
1	D	450	TRP	2.4
1	D	252	VAL	2.4
1	D	220	SER	2.4
1	D	168	PRO	2.4
1	D	249	VAL	2.4
1	D	237	THR	2.3
1	C	216	LYS	2.3
1	B	337	TRP	2.3
1	D	313	THR	2.3
1	D	344	SER	2.3
1	D	449	PRO	2.3
1	D	98	SER	2.3
1	C	337	TRP	2.3
1	C	375	GLY	2.3
1	D	224	VAL	2.3
1	D	343	ILE	2.2
1	B	258	CYS	2.2
1	D	194	VAL	2.2
1	D	401	VAL	2.2
1	D	644	LYS	2.2
1	A	424	TYR	2.2
1	D	229	GLY	2.2
1	D	239	GLU	2.2
1	D	458	PHE	2.2
1	D	69	CYS	2.2
1	D	159	TYR	2.2
1	D	421	HIS	2.2
1	A	189	ALA	2.1
1	D	126	ARG	2.1
1	D	193	LEU	2.1
1	D	238	ALA	2.1
1	D	186	ASN	2.1
1	C	384	GLY	2.1
1	B	412	ILE	2.1
1	D	439	TRP	2.1
1	D	381	THR	2.1
1	C	342	TYR	2.1
1	D	240	VAL	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	405	ASP	2.1
1	D	419	ASP	2.1
1	C	148	ALA	2.1
1	C	248	ALA	2.1
1	D	221	ILE	2.1
1	B	613	VAL	2.1
1	D	466	SER	2.0
1	C	244	SER	2.0
1	B	385	SER	2.0
1	B	460	ASN	2.0
1	D	247	GLU	2.0
1	B	246	GLU	2.0
1	D	345	SER	2.0
1	A	599	LEU	2.0
1	D	235	LEU	2.0
1	A	218	VAL	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 [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	GOL	A	804	6/6	0.65	0.18	48,60,72,77	14
3	GOL	A	803	6/6	0.73	0.20	55,66,77,82	0
3	GOL	B	805	6/6	0.75	0.16	64,78,94,94	0
3	GOL	B	801	6/6	0.79	0.19	62,80,92,98	0
4	I9G	C	803	41/41	0.81	0.19	47,71,99,100	73
2	FMN	C	801	31/31	0.82	0.15	79,95,120,126	0
4	I9G	B	803	41/41	0.83	0.15	53,73,100,106	73

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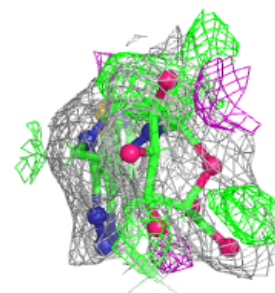
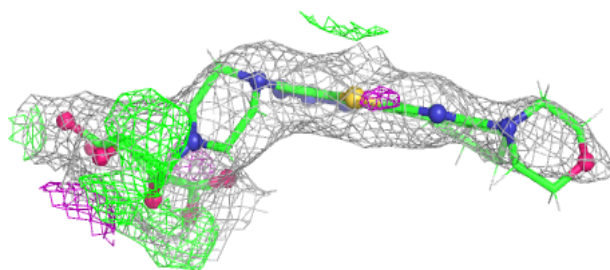
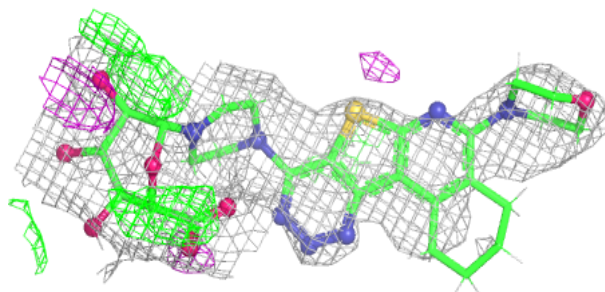
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	FMN	A	801	31/31	0.85	0.13	63,76,102,110	0
4	I9G	D	801	41/41	0.85	0.14	67,87,121,126	73
3	GOL	C	802	6/6	0.87	0.17	76,92,95,100	0
4	I9G	A	805	41/41	0.89	0.13	48,65,85,90	73
3	GOL	A	802	6/6	0.89	0.18	59,73,82,89	0
2	FMN	B	802	31/31	0.90	0.10	54,71,92,111	0
3	GOL	B	804	6/6	0.93	0.12	50,65,75,78	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.

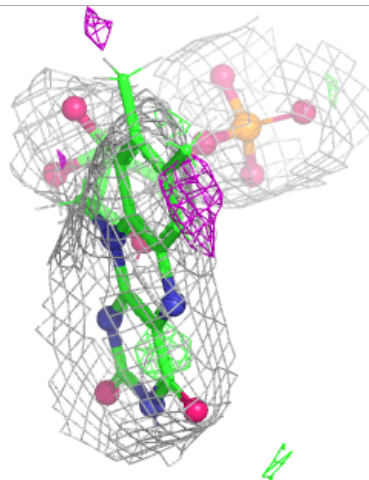
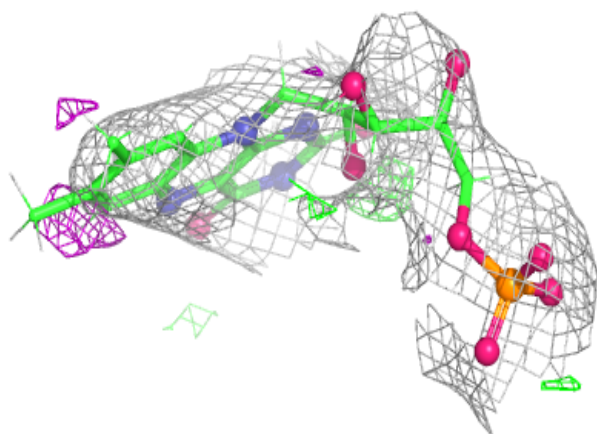
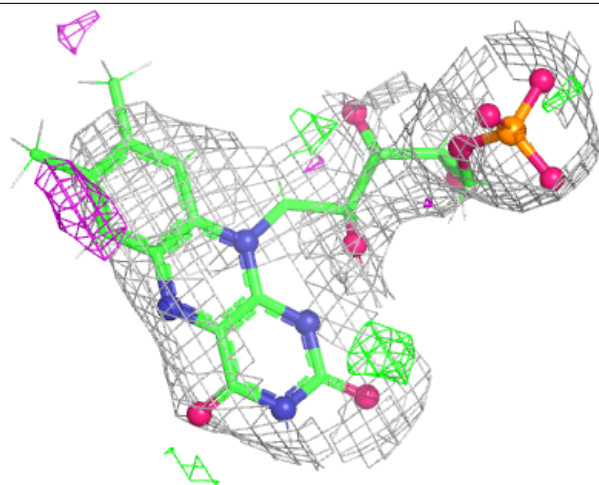
Electron density around I9G C 803:

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



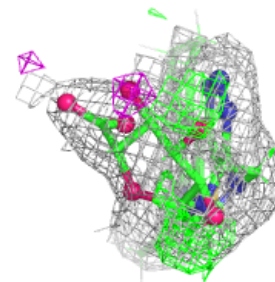
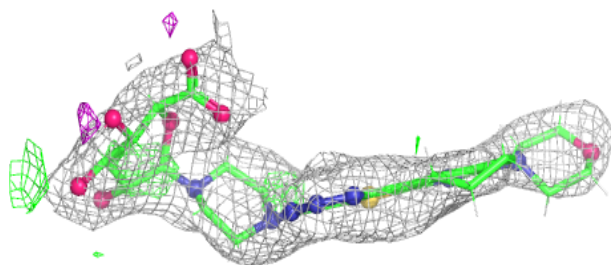
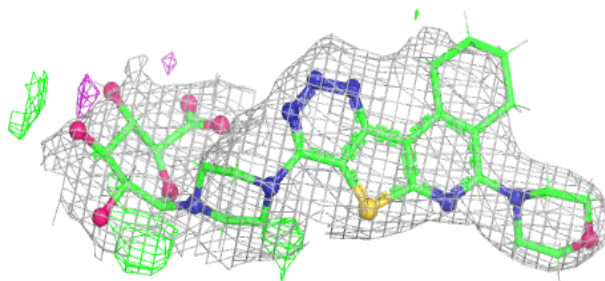
Electron density around FMN C 801:

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

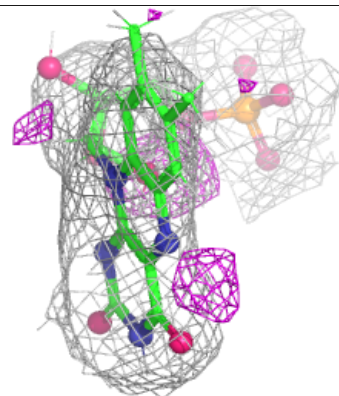
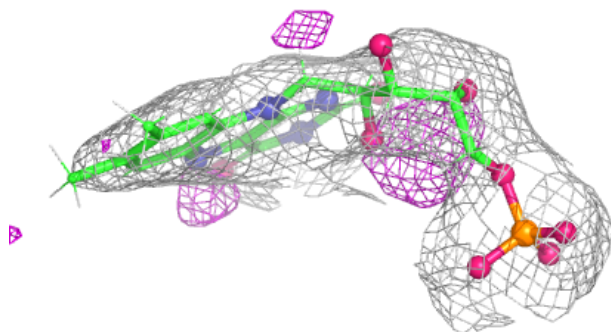
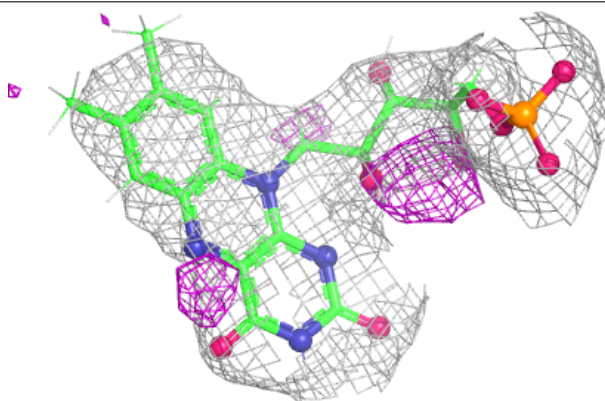


Electron density around I9G B 803:

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

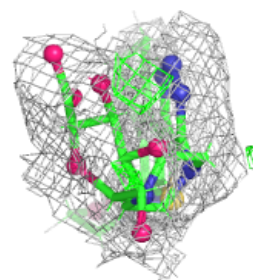
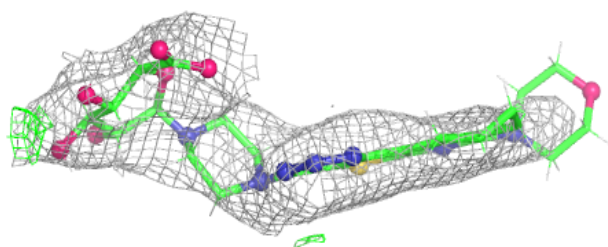
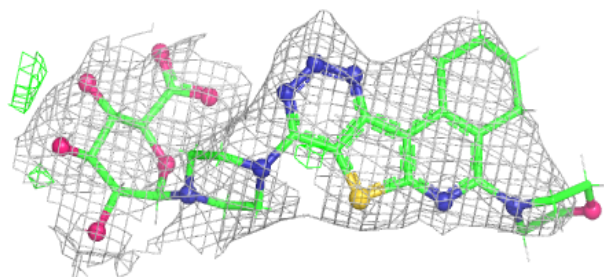
**Electron density around FMN A 801:**

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

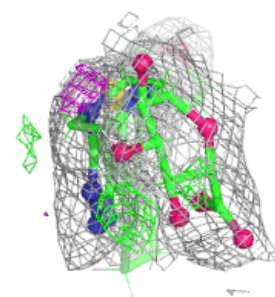
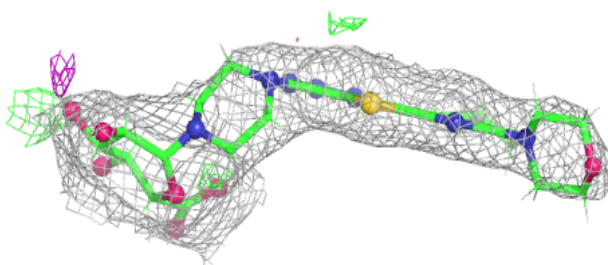
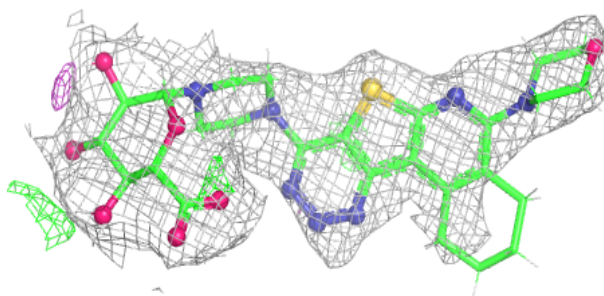


Electron density around I9G D 801:

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

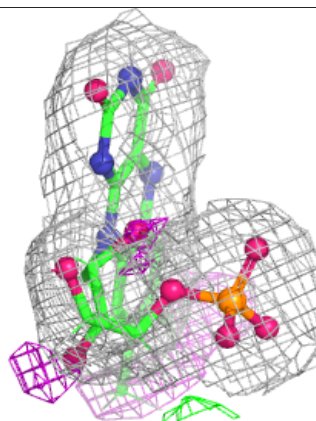
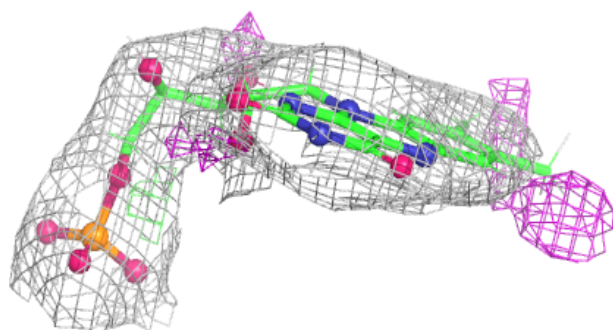
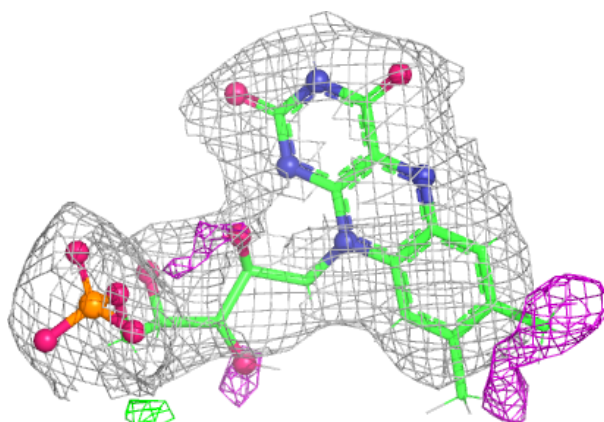
**Electron density around I9G A 805:**

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



Electron density around FMN B 802:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.