



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 25, 2023 – 12:11 PM JST

PDB ID : 7FGE
Title : A naturally-occurring neuraminidase-inhibitors-resistant NA from asiatic toad influenza B-like virus
Authors : Chai, Y.; Wu, Y.; Gao, F.
Deposited on : 2021-07-26
Resolution : 2.80 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 : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

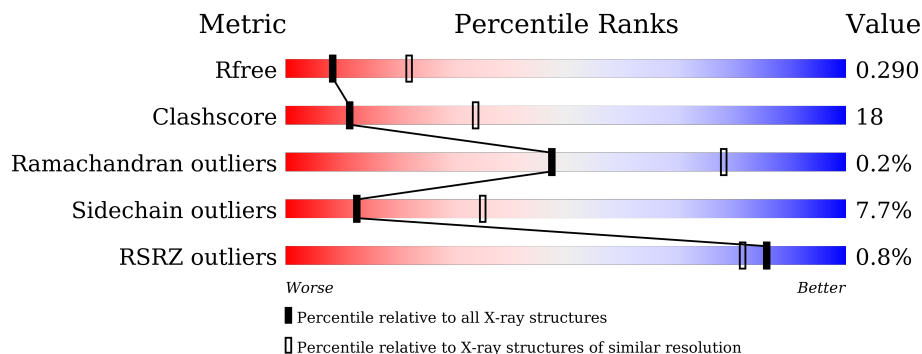
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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.



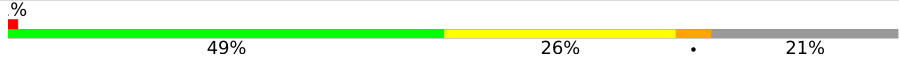

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	489	
1	B	489	
1	C	489	
1	D	489	
1	E	489	
1	F	489	

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Mol	Chain	Length	Quality of chain
1	G	489	
1	H	489	

2 Entry composition

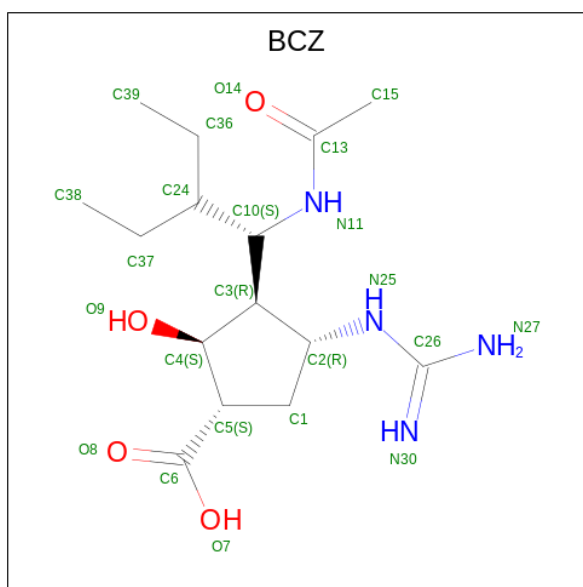
There are 4 unique types of molecules in this entry. The entry contains 23742 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 toad NA (PER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	387	2921	1807	508	575	31	0	0	0
1	B	387	2921	1807	508	575	31	0	0	0
1	C	387	2921	1807	508	575	31	0	0	0
1	D	387	2921	1807	508	575	31	0	0	0
1	E	387	2921	1807	508	575	31	0	0	0
1	F	387	2921	1807	508	575	31	0	0	0
1	G	387	2921	1807	508	575	31	0	0	0
1	H	387	2921	1807	508	575	31	0	0	0

- Molecule 2 is 3-(1-ACETYLAMINO-2-ETHYL-BUTYL)-4-GUANIDINO-2-HYDROXY-CYCLOPENTANECARBOXYLIC ACID (three-letter code: BCZ) (formula: C₁₅H₂₈N₄O₄) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			23	15	4	4		
2	B	1	Total	C	N	O	0	0
			23	15	4	4		
2	C	1	Total	C	N	O	0	0
			23	15	4	4		
2	D	1	Total	C	N	O	0	0
			23	15	4	4		
2	E	1	Total	C	N	O	0	0
			23	15	4	4		
2	F	1	Total	C	N	O	0	0
			23	15	4	4		
2	G	1	Total	C	N	O	0	0
			23	15	4	4		
2	H	1	Total	C	N	O	0	0
			23	15	4	4		

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

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

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	E	1	Total Ca 1 1	0	0
3	F	1	Total Ca 1 1	0	0
3	G	1	Total Ca 1 1	0	0
3	H	1	Total Ca 1 1	0	0

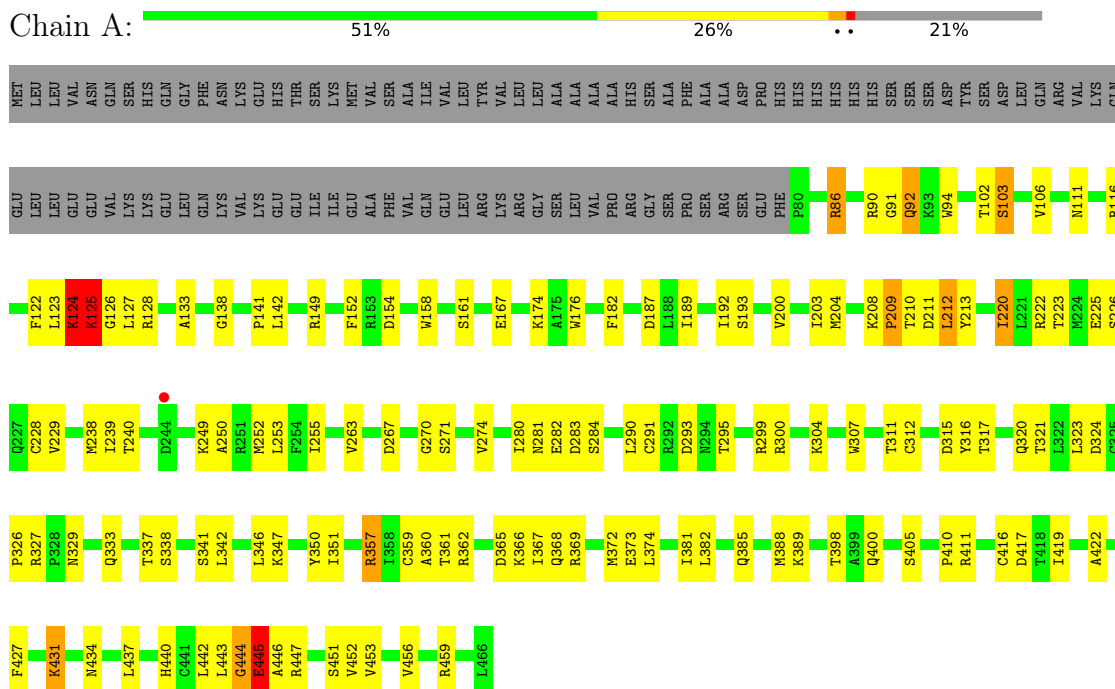
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	38	Total O 38 38	0	0
4	B	23	Total O 23 23	0	0
4	C	15	Total O 15 15	0	0
4	D	20	Total O 20 20	0	0
4	E	29	Total O 29 29	0	0
4	F	21	Total O 21 21	0	0
4	G	18	Total O 18 18	0	0
4	H	18	Total O 18 18	0	0

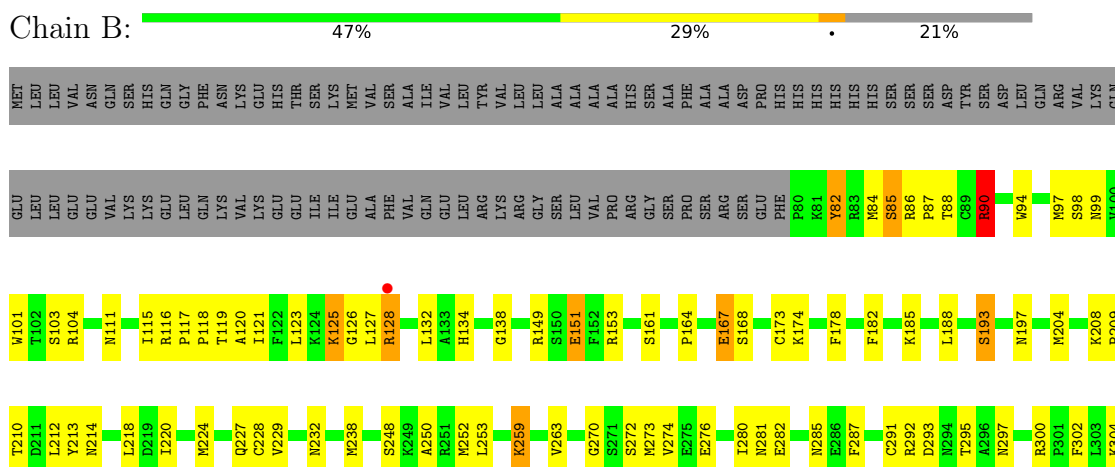
3 Residue-property plots

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: toad NA (PER)

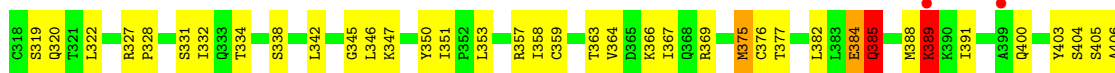
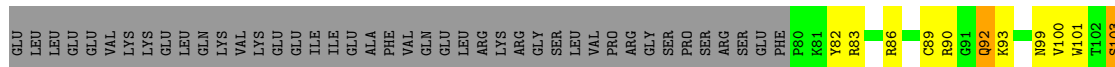
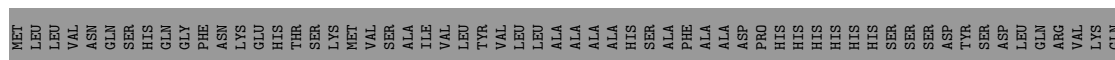


- Molecule 1: toad NA (PER)

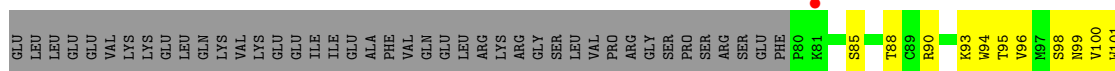
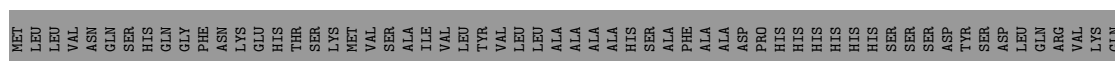




• Molecule 1: toad NA (PER)

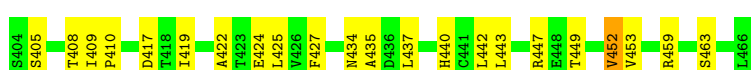
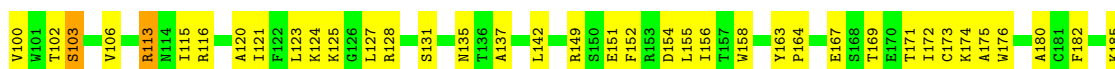
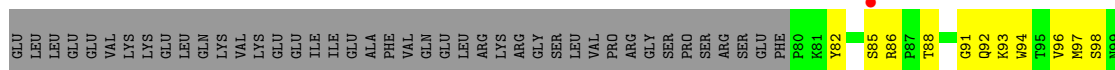
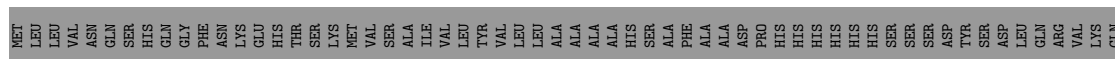


• Molecule 1: toad NA (PER)

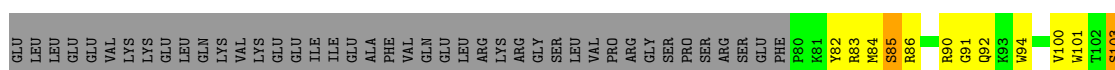
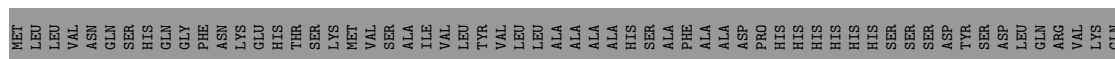




- Molecule 1: toad NA (PER)



- Molecule 1: toad NA (PER)



- Molecule 1: toad NA (PER)

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	105.22Å 135.12Å 135.45Å 90.00° 103.85° 90.00°	Depositor
Resolution (Å)	46.03 – 2.80 46.03 – 2.80	Depositor EDS
% Data completeness (in resolution range)	96.8 (46.03-2.80) 96.8 (46.03-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.33 (at 2.81Å)	Xtrriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, R_{free}	0.230 , 0.291 0.230 , 0.290	Depositor DCC
R_{free} test set	1988 reflections (2.27%)	wwPDB-VP
Wilson B-factor (Å ²)	38.5	Xtrriage
Anisotropy	1.097	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.26 , 1.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	23742	wwPDB-VP
Average B, all atoms (Å ²)	42.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.97% 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: CA, BCZ

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	0.52	2/2973 (0.1%)	0.76	3/4028 (0.1%)
1	B	0.58	6/2973 (0.2%)	0.94	18/4028 (0.4%)
1	C	0.51	2/2973 (0.1%)	0.83	6/4028 (0.1%)
1	D	0.50	0/2973	0.78	3/4028 (0.1%)
1	E	0.49	1/2973 (0.0%)	0.80	6/4028 (0.1%)
1	F	0.53	0/2973	0.79	6/4028 (0.1%)
1	G	0.55	3/2973 (0.1%)	0.86	11/4028 (0.3%)
1	H	0.53	1/2973 (0.0%)	0.84	7/4028 (0.2%)
All	All	0.53	15/23784 (0.1%)	0.83	60/32224 (0.2%)

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	A	0	2
1	B	0	2
1	C	0	2
1	D	0	2
1	F	0	2
1	G	0	2
1	H	0	3
All	All	0	15

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	167	GLU	CD-OE2	7.87	1.34	1.25
1	B	259	LYS	CD-CE	7.43	1.69	1.51
1	E	167	GLU	CD-OE2	7.25	1.33	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	448	GLU	CB-CG	7.08	1.65	1.52
1	A	445	GLU	CD-OE2	-6.57	1.18	1.25
1	C	448	GLU	CG-CD	6.46	1.61	1.51
1	B	445	GLU	CB-CG	6.44	1.64	1.52
1	G	384	GLU	CD-OE1	6.28	1.32	1.25
1	B	125	LYS	CE-NZ	5.95	1.64	1.49
1	B	167	GLU	CD-OE1	5.59	1.31	1.25
1	A	125	LYS	CD-CE	5.48	1.65	1.51
1	H	448	GLU	CD-OE1	5.47	1.31	1.25
1	B	167	GLU	CG-CD	5.32	1.59	1.51
1	G	313	LYS	CB-CG	-5.20	1.38	1.52
1	G	291	CYS	CB-SG	-5.03	1.73	1.81

All (60) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	381	ILE	CG1-CB-CG2	-17.22	73.52	111.40
1	E	259	LYS	CD-CE-NZ	-13.74	80.10	111.70
1	B	125	LYS	CG-CD-CE	13.56	152.57	111.90
1	B	125	LYS	CD-CE-NZ	-11.63	84.95	111.70
1	B	259	LYS	CD-CE-NZ	-11.37	85.55	111.70
1	C	448	GLU	CA-CB-CG	11.00	137.61	113.40
1	G	125	LYS	N-CA-CB	-10.09	92.45	110.60
1	B	125	LYS	N-CA-CB	-9.33	93.81	110.60
1	C	384	GLU	CA-CB-CG	9.26	133.78	113.40
1	B	259	LYS	CA-CB-CG	-9.06	93.47	113.40
1	B	313	LYS	CD-CE-NZ	-8.34	92.53	111.70
1	B	445	GLU	N-CA-CB	8.32	125.57	110.60
1	G	125	LYS	CG-CD-CE	8.29	136.76	111.90
1	F	366	LYS	CA-CB-CG	8.14	131.31	113.40
1	F	128	ARG	NE-CZ-NH2	-7.81	116.39	120.30
1	F	259	LYS	CB-CG-CD	-7.75	91.44	111.60
1	D	125	LYS	CA-CB-CG	-7.57	96.75	113.40
1	G	125	LYS	CD-CE-NZ	7.54	129.05	111.70
1	E	125	LYS	CG-CD-CE	-7.46	89.53	111.90
1	B	445	GLU	CG-CD-OE2	-7.38	103.53	118.30
1	C	385	GLN	CA-CB-CG	7.12	129.07	113.40
1	B	128	ARG	CG-CD-NE	7.02	126.54	111.80
1	G	299	ARG	N-CA-CB	-7.00	98.00	110.60
1	C	448	GLU	C-N-CA	-6.96	104.29	121.70
1	B	259	LYS	CB-CG-CD	6.93	129.61	111.60
1	A	125	LYS	CG-CD-CE	-6.88	91.25	111.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	259	LYS	CG-CD-CE	6.73	132.09	111.90
1	C	448	GLU	CG-CD-OE1	6.73	131.75	118.30
1	F	259	LYS	CA-CB-CG	6.58	127.88	113.40
1	G	124	LYS	C-N-CA	6.54	138.04	121.70
1	G	383	LEU	C-N-CA	-6.51	105.43	121.70
1	D	125	LYS	CD-CE-NZ	-6.36	97.08	111.70
1	H	266	VAL	CG1-CB-CG2	6.33	121.03	110.90
1	C	389	LYS	CD-CE-NZ	6.27	126.12	111.70
1	E	125	LYS	CB-CG-CD	6.18	127.67	111.60
1	B	445	GLU	CB-CA-C	-6.13	98.13	110.40
1	B	90	ARG	NE-CZ-NH2	-5.99	117.30	120.30
1	B	355	LYS	CB-CA-C	5.95	122.31	110.40
1	G	323	LEU	CB-CG-CD2	-5.95	100.89	111.00
1	H	389	LYS	CG-CD-CE	-5.86	94.32	111.90
1	B	353	LEU	CB-CG-CD1	-5.81	101.12	111.00
1	G	384	GLU	CG-CD-OE2	-5.63	107.05	118.30
1	B	125	LYS	CA-CB-CG	5.62	125.77	113.40
1	B	445	GLU	CG-CD-OE1	5.61	129.52	118.30
1	H	266	VAL	CA-CB-CG1	5.57	119.26	110.90
1	E	259	LYS	CB-CG-CD	5.50	125.89	111.60
1	G	303	LEU	CB-CG-CD1	-5.49	101.67	111.00
1	H	381	ILE	CA-CB-CG1	5.48	121.42	111.00
1	H	448	GLU	CA-CB-CG	5.43	125.35	113.40
1	B	128	ARG	NE-CZ-NH1	5.40	123.00	120.30
1	A	444	GLY	C-N-CA	-5.34	108.35	121.70
1	E	259	LYS	CA-CB-CG	-5.34	101.66	113.40
1	G	313	LYS	N-CA-CB	-5.30	101.07	110.60
1	F	447	ARG	NE-CZ-NH1	-5.26	117.67	120.30
1	D	377	THR	OG1-CB-CG2	5.23	122.03	110.00
1	H	113	ARG	CD-NE-CZ	5.22	130.91	123.60
1	F	228	CYS	CA-CB-SG	5.17	123.31	114.00
1	G	384	GLU	CG-CD-OE1	5.12	128.54	118.30
1	B	167	GLU	CG-CD-OE2	-5.10	108.09	118.30
1	A	445	GLU	CA-CB-CG	-5.04	102.31	113.40

There are no chirality outliers.

All (15) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	125	LYS	Mainchain
1	A	86	ARG	Sidechain
1	B	312	CYS	Peptide

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Mol	Chain	Res	Type	Group
1	B	90	ARG	Sidechain
1	C	384	GLU	Peptide
1	C	447	ARG	Sidechain
1	D	327	ARG	Sidechain
1	D	329	ASN	Sidechain
1	F	128	ARG	Sidechain
1	F	447	ARG	Sidechain
1	G	142	LEU	Peptide
1	G	299	ARG	Sidechain
1	H	113	ARG	Sidechain
1	H	447	ARG	Peptide
1	H	463	SER	Peptide

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	2921	0	2868	101	0
1	B	2921	0	2868	123	0
1	C	2921	0	2868	119	0
1	D	2921	0	2868	89	0
1	E	2921	0	2868	102	0
1	F	2921	0	2868	114	0
1	G	2921	0	2868	108	0
1	H	2921	0	2868	100	0
2	A	23	0	26	1	0
2	B	23	0	26	2	0
2	C	23	0	26	0	0
2	D	23	0	26	0	0
2	E	23	0	26	2	0
2	F	23	0	26	3	0
2	G	23	0	26	1	0
2	H	23	0	26	3	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	38	0	0	3	0
4	B	23	0	0	5	0
4	C	15	0	0	1	0
4	D	20	0	0	0	0
4	E	29	0	0	1	0
4	F	21	0	0	4	0
4	G	18	0	0	2	0
4	H	18	0	0	3	0
All	All	23742	0	23152	826	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 18.

All (826) 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:B:87:PRO:HB3	1:B:355:LYS:HE3	1.08	1.03
1:B:87:PRO:CB	1:B:355:LYS:HE3	1.86	1.03
1:A:445:GLU:HG3	1:A:446:ALA:N	1.74	1.00
1:B:87:PRO:HB3	1:B:355:LYS:CE	1.92	0.98
1:F:377:THR:HG22	1:F:379:GLY:H	1.31	0.91
1:G:175:ALA:HB2	1:G:191:CYS:HB3	1.54	0.90
1:H:293:ASP:O	4:H:601:HOH:O	1.89	0.89
1:B:173:CYS:HB3	1:B:204:MET:HE3	1.53	0.89
1:E:300:ARG:HH22	1:E:348:GLY:HA3	1.38	0.87
1:A:329:ASN:HA	1:A:366:LYS:HE3	1.57	0.86
1:C:123:LEU:HA	1:C:182:PHE:HB2	1.57	0.86
1:F:321:THR:HG23	1:F:362:ARG:HH11	1.42	0.85
1:C:151:GLU:HG3	1:C:174:LYS:HZ1	1.43	0.84
1:F:330:ASP:OD1	1:F:366:LYS:NZ	2.11	0.84
1:H:375:MET:HB3	1:H:388:MET:HB3	1.59	0.84
1:C:270:GLY:HA2	1:C:316:TYR:CE2	2.14	0.82
1:C:376:CYS:CB	1:C:389:LYS:HE2	2.09	0.82
1:C:376:CYS:N	1:C:389:LYS:HE2	1.94	0.82
1:G:377:THR:HG22	1:G:379:GLY:H	1.44	0.82
1:B:125:LYS:HD3	1:B:128:ARG:HH21	1.44	0.81
1:F:128:ARG:HH22	1:F:168:SER:HB2	1.44	0.81
1:A:167:GLU:HA	1:B:167:GLU:OE2	1.80	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:113:ARG:HH12	1:E:169:THR:HG21	1.46	0.81
1:E:85:SER:HA	1:E:281:ASN:HD21	1.45	0.80
1:F:327:ARG:CZ	1:F:366:LYS:HB3	2.10	0.80
1:C:351:ILE:HB	1:C:359:CYS:HB2	1.61	0.80
1:B:285:ASN:ND2	1:B:308:ASP:OD2	2.15	0.79
1:A:321:THR:HG23	1:A:362:ARG:HH11	1.47	0.78
1:G:318:CYS:SG	1:G:385:GLN:NE2	2.56	0.78
1:D:293:ASP:OD1	1:D:295:THR:OG1	1.99	0.78
1:A:282:GLU:OE1	1:A:304:LYS:NZ	2.17	0.78
1:F:324:ASP:O	1:F:327:ARG:HD3	1.84	0.78
1:A:249:LYS:NZ	1:A:267:ASP:OD1	2.17	0.77
1:G:319:SER:HA	1:G:385:GLN:HA	1.66	0.77
1:H:295:THR:O	4:H:601:HOH:O	2.03	0.76
1:F:290:LEU:HD12	1:F:300:ARG:HB3	1.68	0.75
1:D:88:THR:HG21	1:D:419:ILE:HD12	1.69	0.75
1:A:238:MET:HE2	1:A:240:THR:HB	1.68	0.75
1:B:88:THR:HG21	1:B:419:ILE:HD12	1.69	0.75
1:B:319:SER:OG	1:B:386:ASP:O	2.05	0.75
1:B:282:GLU:O	1:B:355:LYS:HD3	1.85	0.74
1:F:283:ASP:OD2	4:F:601:HOH:O	2.06	0.73
1:H:85:SER:OG	1:H:281:ASN:OD1	2.06	0.73
1:G:225:GLU:OE1	4:G:601:HOH:O	2.06	0.73
1:D:143:SER:HG	1:G:461:THR:HG1	1.34	0.73
1:F:327:ARG:HH21	1:F:366:LYS:HE2	1.53	0.73
1:G:323:LEU:HD21	1:G:388:MET:CE	2.18	0.73
1:H:273:MET:CE	1:H:294:ASN:H	2.02	0.73
1:C:224:MET:HE3	1:C:237:ALA:HA	1.69	0.72
1:E:401:THR:O	4:E:601:HOH:O	2.06	0.72
1:H:315:ASP:HB2	1:H:382:LEU:HD22	1.71	0.72
1:A:427:PHE:CZ	1:A:434:ASN:HB3	2.24	0.72
1:C:297:ASN:ND2	1:C:316:TYR:HE1	1.88	0.72
1:F:128:ARG:HB3	1:F:160:PRO:HD3	1.72	0.72
1:E:223:THR:HB	1:E:239:ILE:HG22	1.71	0.72
1:H:123:LEU:HA	1:H:182:PHE:HB2	1.71	0.72
1:B:125:LYS:HB3	1:B:128:ARG:NE	2.05	0.72
1:A:321:THR:HG23	1:A:362:ARG:NH1	2.04	0.71
1:B:126:GLY:O	1:B:128:ARG:HD3	1.89	0.71
1:H:103:SER:HB2	1:H:466:LEU:HD11	1.70	0.71
1:B:173:CYS:CB	1:B:204:MET:HE3	2.20	0.71
1:D:175:ALA:HB2	1:D:191:CYS:HB3	1.71	0.70
1:D:282:GLU:OE1	1:D:304:LYS:NZ	2.24	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:327:ARG:HG2	1:F:366:LYS:HB2	1.71	0.70
1:E:389:LYS:H	1:E:389:LYS:HD2	1.55	0.70
1:B:300:ARG:HG3	1:B:323:LEU:HB2	1.73	0.70
1:C:290:LEU:HD12	1:C:302:PHE:HD1	1.56	0.70
1:G:283:ASP:OD1	1:G:284:SER:N	2.24	0.70
1:H:88:THR:HG21	1:H:419:ILE:HD12	1.74	0.70
1:H:175:ALA:HB2	1:H:191:CYS:HB3	1.74	0.69
1:B:291:CYS:O	1:B:300:ARG:NH1	2.25	0.69
1:F:128:ARG:HA	1:F:160:PRO:HG3	1.73	0.69
1:F:320:GLN:HG2	1:F:385:GLN:O	1.92	0.69
1:B:321:THR:HG22	4:B:603:HOH:O	1.92	0.69
1:B:353:LEU:HD11	1:B:359:CYS:SG	2.33	0.69
1:G:289:CYS:HB2	1:G:303:LEU:HD13	1.75	0.68
1:A:128:ARG:HH11	1:A:128:ARG:HG3	1.59	0.68
1:D:353:LEU:HD12	1:D:357:ARG:HG2	1.74	0.68
1:G:324:ASP:O	1:G:327:ARG:NH1	2.26	0.68
1:C:453:VAL:HG21	1:H:200:VAL:HG11	1.74	0.68
1:E:401:THR:HA	1:E:425:LEU:HA	1.74	0.68
1:G:291:CYS:SG	1:G:303:LEU:HD11	2.33	0.68
1:F:327:ARG:CG	1:F:366:LYS:HD3	2.24	0.68
1:C:376:CYS:CA	1:C:389:LYS:HE2	2.23	0.68
1:C:214:ASN:HD21	1:D:93:LYS:HE3	1.58	0.68
1:H:344:GLY:O	4:H:601:HOH:O	2.11	0.68
1:C:290:LEU:HB2	1:C:350:TYR:HB2	1.75	0.68
1:D:100:VAL:HB	1:D:437:LEU:HB3	1.76	0.68
1:B:209:PRO:HB3	1:E:97:MET:HE3	1.75	0.67
1:E:400:GLN:HG3	1:E:401:THR:N	2.08	0.67
1:F:403:TYR:OH	2:F:501:BCZ:O7	2.06	0.67
1:D:290:LEU:HB2	1:D:350:TYR:HB2	1.74	0.67
1:A:293:ASP:OD1	1:A:295:THR:OG1	2.12	0.67
1:B:353:LEU:HD12	1:B:357:ARG:HG2	1.77	0.67
1:E:149:ARG:HB2	1:E:149:ARG:HH11	1.60	0.67
1:C:127:LEU:HD12	1:C:409:ILE:HD11	1.77	0.66
1:F:250:ALA:HB2	1:F:274:VAL:HB	1.75	0.66
1:G:123:LEU:HA	1:G:182:PHE:HB2	1.78	0.66
1:G:213:TYR:OH	1:G:251:ARG:NH1	2.27	0.66
1:E:121:ILE:HG12	1:E:227:GLN:HB3	1.76	0.66
1:G:353:LEU:HB2	1:G:357:ARG:HB3	1.78	0.66
1:G:422:ALA:HB1	1:G:437:LEU:HD11	1.78	0.66
1:H:283:ASP:OD1	1:H:284:SER:N	2.29	0.66
1:B:123:LEU:HA	1:B:182:PHE:HB2	1.77	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:346:LEU:HD13	1:F:369:ARG:HE	1.61	0.65
1:E:85:SER:HA	1:E:281:ASN:ND2	2.12	0.65
1:E:319:SER:HA	1:E:385:GLN:HA	1.76	0.65
1:B:347:LYS:HD3	1:B:403:TYR:CD2	2.31	0.65
1:C:239:ILE:HD11	1:C:253:LEU:HD21	1.77	0.65
1:G:238:MET:HE3	1:G:277:CYS:H	1.61	0.65
1:C:270:GLY:HA2	1:C:316:TYR:CD2	2.31	0.65
1:H:351:ILE:HB	1:H:359:CYS:HB2	1.79	0.65
1:H:270:GLY:HA2	1:H:316:TYR:CE1	2.30	0.65
1:H:325:CYS:HB3	1:H:346:LEU:HD12	1.78	0.65
1:B:464:SER:OG	4:B:601:HOH:O	2.15	0.65
1:E:172:ILE:HG21	1:E:189:ILE:HD12	1.79	0.64
1:E:175:ALA:HB2	1:E:191:CYS:HB3	1.79	0.64
1:E:351:ILE:HB	1:E:359:CYS:HB2	1.78	0.64
1:G:351:ILE:HB	1:G:359:CYS:HB2	1.79	0.64
1:D:122:PHE:CE1	1:D:126:GLY:HA2	2.31	0.64
1:A:92:GLN:HG2	1:A:444:GLY:HA3	1.78	0.64
1:C:282:GLU:OE2	1:C:350:TYR:OH	2.12	0.64
1:F:173:CYS:HB3	1:F:204:MET:CE	2.28	0.64
1:H:210:THR:O	1:H:259:LYS:HE3	1.97	0.64
1:F:125:LYS:NZ	4:F:604:HOH:O	2.29	0.64
1:H:174:LYS:HE3	1:H:193:SER:HB2	1.80	0.64
1:H:116:ARG:NH2	2:H:501:BCZ:O7	2.30	0.64
1:D:309:SER:HG	1:D:311:THR:HG1	1.46	0.63
1:B:401:THR:O	4:B:602:HOH:O	2.16	0.63
1:D:250:ALA:HB2	1:D:274:VAL:HB	1.80	0.63
1:G:270:GLY:HA2	1:G:316:TYR:CE2	2.34	0.63
1:E:113:ARG:HD2	1:E:137:ALA:HB2	1.79	0.63
1:G:90:ARG:NH1	4:G:602:HOH:O	2.31	0.63
1:D:351:ILE:HB	1:D:359:CYS:HB2	1.80	0.63
1:H:282:GLU:OE2	1:H:350:TYR:OH	2.17	0.63
1:D:353:LEU:HD11	1:D:359:CYS:SG	2.39	0.63
1:E:173:CYS:HB3	1:E:204:MET:CE	2.29	0.63
1:B:119:THR:OG1	1:B:120:ALA:N	2.30	0.62
1:C:262:LYS:HD2	1:C:310:ARG:HH11	1.64	0.62
1:H:280:ILE:HD13	1:H:350:TYR:O	1.98	0.62
1:F:113:ARG:HE	1:F:165:GLY:HA2	1.63	0.62
1:H:273:MET:HE1	1:H:294:ASN:H	1.63	0.62
1:A:229:VAL:HB	1:A:281:ASN:ND2	2.14	0.62
1:B:250:ALA:HB2	1:B:274:VAL:HB	1.81	0.62
1:C:175:ALA:HB2	1:C:191:CYS:HB3	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:323:LEU:HD21	1:G:388:MET:HE3	1.82	0.62
1:A:128:ARG:HH21	1:A:158:TRP:HA	1.63	0.62
1:A:351:ILE:HG23	1:A:419:ILE:HD13	1.81	0.62
1:A:443:LEU:HB2	1:F:212:LEU:HD23	1.81	0.62
1:C:389:LYS:H	1:C:389:LYS:CD	2.11	0.62
1:B:209:PRO:HB2	1:E:443:LEU:HD21	1.81	0.62
1:A:122:PHE:CE1	1:A:126:GLY:HA2	2.35	0.62
1:C:411:ARG:NH1	1:C:414:GLU:OE1	2.33	0.62
1:E:103:SER:HB3	1:E:427:PHE:CE2	2.35	0.62
1:F:86:ARG:NH1	1:F:417:ASP:OD1	2.33	0.62
1:G:299:ARG:CZ	1:G:339:PHE:HB3	2.30	0.62
1:B:308:ASP:OD1	1:B:309:SER:N	2.30	0.61
1:E:300:ARG:NH2	1:E:348:GLY:HA3	2.13	0.61
2:H:501:BCZ:C13	2:H:501:BCZ:H372	2.30	0.61
1:B:87:PRO:CA	1:B:355:LYS:HE3	2.31	0.61
1:D:259:LYS:NZ	1:G:414:GLU:OE2	2.34	0.61
1:F:286:GLU:HG2	1:F:306:PHE:HD1	1.65	0.61
1:D:276:GLU:HB3	1:D:347:LYS:HG3	1.81	0.61
1:F:286:GLU:HG2	1:F:306:PHE:CD1	2.35	0.61
1:G:323:LEU:HD21	1:G:388:MET:HE1	1.82	0.61
1:A:299:ARG:HD2	1:A:317:THR:O	2.00	0.61
1:G:275:GLU:HB2	1:G:292:ARG:HB3	1.83	0.61
1:E:128:ARG:HG3	1:E:128:ARG:HH11	1.66	0.60
1:B:118:PRO:HB2	1:B:437:LEU:HD13	1.84	0.60
1:H:463:SER:HA	1:H:466:LEU:HG	1.82	0.60
1:F:290:LEU:HB2	1:F:350:TYR:HB2	1.84	0.60
1:G:389:LYS:HE3	1:G:390:LYS:H	1.66	0.60
1:H:220:ILE:O	1:H:222:ARG:HD3	2.02	0.60
1:A:92:GLN:NE2	1:F:214:ASN:HD21	1.99	0.60
1:C:424:GLU:OE2	1:C:426:VAL:HG23	2.01	0.60
1:D:118:PRO:HA	1:D:131:SER:HB2	1.83	0.60
1:G:90:ARG:HH11	1:G:90:ARG:HG2	1.67	0.60
1:G:427:PHE:CZ	1:G:434:ASN:HB3	2.37	0.60
1:E:127:LEU:HD13	1:E:409:ILE:HD11	1.83	0.60
1:F:351:ILE:HB	1:F:359:CYS:HB2	1.84	0.60
1:B:101:TRP:HB3	1:B:104:ARG:HG3	1.84	0.59
1:F:85:SER:HA	1:F:281:ASN:ND2	2.17	0.59
1:H:296:ALA:HA	1:H:343:ALA:HA	1.82	0.59
1:A:225:GLU:O	4:A:601:HOH:O	2.17	0.59
1:B:126:GLY:C	1:B:128:ARG:HD3	2.23	0.59
1:F:101:TRP:HB3	1:F:104:ARG:HG3	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:116:ARG:NH1	1:D:117:PRO:HB3	2.17	0.59
1:A:223:THR:HB	1:A:239:ILE:HG22	1.84	0.59
1:E:422:ALA:HB1	1:E:437:LEU:HD11	1.84	0.59
1:E:173:CYS:HB3	1:E:204:MET:HE2	1.84	0.59
1:F:167:GLU:OE1	1:F:167:GLU:HA	2.02	0.59
1:G:226:SER:HB3	1:G:347:LYS:HE3	1.84	0.59
1:A:320:GLN:HG2	1:A:385:GLN:O	2.03	0.59
1:E:377:THR:HA	1:E:389:LYS:NZ	2.18	0.58
1:C:389:LYS:HZ2	1:C:391:ILE:CG1	2.16	0.58
1:F:321:THR:HG23	1:F:362:ARG:NH1	2.14	0.58
1:C:319:SER:HA	1:C:385:GLN:HA	1.85	0.58
1:C:369:ARG:HB2	1:C:400:GLN:HE22	1.66	0.58
1:F:309:SER:OG	1:F:311:THR:OG1	2.18	0.58
1:A:342:LEU:HD12	1:A:367:ILE:HD12	1.84	0.58
1:B:320:GLN:HG2	1:B:385:GLN:O	2.03	0.58
1:F:276:GLU:OE2	1:F:403:TYR:OH	2.21	0.58
1:F:364:VAL:HG22	1:F:373:GLU:OE2	2.03	0.58
1:G:85:SER:OG	1:G:283:ASP:O	2.15	0.58
1:B:214:ASN:ND2	1:E:92:GLN:OE1	2.37	0.58
1:D:121:ILE:HG23	1:D:227:GLN:HB3	1.86	0.58
1:D:282:GLU:OE2	1:D:350:TYR:OH	2.11	0.58
1:C:183:ASP:OD2	1:C:205:TYR:OH	2.15	0.58
1:B:347:LYS:HD3	1:B:403:TYR:HD2	1.68	0.58
1:C:332:ILE:HG23	1:C:385:GLN:OE1	2.02	0.58
1:E:250:ALA:HB2	1:E:274:VAL:HB	1.86	0.58
1:G:262:LYS:HE2	1:G:264:VAL:HG12	1.86	0.58
1:G:425:LEU:HD12	1:G:436:ASP:HB2	1.85	0.58
1:B:270:GLY:HA2	1:B:316:TYR:CE2	2.38	0.58
1:B:293:ASP:OD1	1:B:295:THR:OG1	2.21	0.58
1:D:209:PRO:HG3	1:G:97:MET:SD	2.44	0.58
1:B:427:PHE:CZ	1:B:434:ASN:HB3	2.39	0.57
1:D:123:LEU:HA	1:D:182:PHE:HB2	1.85	0.57
1:H:361:THR:HB	1:H:372:MET:SD	2.45	0.57
1:C:297:ASN:ND2	1:C:316:TYR:CE1	2.72	0.57
1:F:327:ARG:HG3	1:F:366:LYS:HD3	1.86	0.57
1:A:315:ASP:HB2	1:A:382:LEU:HD22	1.85	0.57
1:D:179:PHE:CE2	1:D:190:GLY:HA3	2.39	0.57
1:G:324:ASP:OD2	1:G:325:CYS:N	2.37	0.57
1:B:127:LEU:O	1:B:128:ARG:HD2	2.03	0.57
1:H:224:MET:HE3	1:H:237:ALA:HA	1.86	0.57
1:F:448:GLU:O	1:F:449:THR:HG22	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:357:ARG:HD2	1:G:378:ASN:OD1	2.04	0.57
1:C:389:LYS:HD3	1:C:389:LYS:N	2.19	0.57
1:E:400:GLN:HE21	1:E:400:GLN:HA	1.70	0.57
1:E:276:GLU:OE2	1:E:403:TYR:OH	2.13	0.57
1:G:303:LEU:N	1:G:303:LEU:HD12	2.20	0.57
1:E:324:ASP:OD1	1:E:325:CYS:N	2.35	0.56
1:F:315:ASP:HB2	1:F:382:LEU:HD13	1.85	0.56
1:A:239:ILE:HD13	1:A:253:LEU:HD11	1.88	0.56
1:B:125:LYS:HD3	1:B:128:ARG:NH2	2.19	0.56
1:D:408:THR:HB	1:D:417:ASP:HB3	1.87	0.56
1:E:205:TYR:CE2	1:E:257:GLU:HA	2.40	0.56
1:H:273:MET:HE2	1:H:294:ASN:H	1.69	0.56
1:C:223:THR:HB	1:C:239:ILE:HG22	1.88	0.56
1:H:94:TRP:HB2	1:H:452:VAL:HG13	1.87	0.56
1:H:369:ARG:NH1	1:H:369:ARG:HG3	2.20	0.56
1:A:90:ARG:NH2	1:A:357:ARG:HD3	2.20	0.56
1:B:134:HIS:CE1	1:B:153:ARG:HE	2.24	0.56
1:A:456:VAL:HB	1:F:151:GLU:HG3	1.88	0.56
1:C:358:ILE:O	1:C:376:CYS:HB3	2.06	0.56
1:C:389:LYS:NZ	1:C:391:ILE:HG12	2.20	0.56
1:F:238:MET:HB2	1:F:252:MET:HE1	1.87	0.56
1:B:362:ARG:HE	1:B:375:MET:HE1	1.71	0.56
1:D:290:LEU:HD13	1:D:350:TYR:CD1	2.41	0.56
1:B:361:THR:HB	1:B:372:MET:HE1	1.88	0.56
1:B:375:MET:HB3	1:B:388:MET:HB2	1.88	0.56
1:D:378:ASN:OD1	1:D:378:ASN:N	2.39	0.56
1:B:361:THR:HB	1:B:372:MET:CE	2.36	0.55
1:H:346:LEU:HD11	1:H:369:ARG:HD3	1.88	0.55
1:A:222:ARG:HB3	2:A:501:BCZ:H152	1.88	0.55
1:C:389:LYS:HZ2	1:C:391:ILE:HG12	1.71	0.55
1:E:85:SER:CA	1:E:281:ASN:HD21	2.19	0.55
1:F:238:MET:HB2	1:F:252:MET:CE	2.37	0.55
1:A:86:ARG:NH1	1:A:417:ASP:OD1	2.39	0.55
1:A:290:LEU:HB2	1:A:350:TYR:HB2	1.89	0.55
1:G:100:VAL:HG11	1:G:158:TRP:HZ2	1.71	0.55
1:F:290:LEU:HD23	1:F:350:TYR:CD1	2.41	0.55
1:A:250:ALA:HB2	1:A:274:VAL:HB	1.88	0.55
1:B:116:ARG:NH1	1:B:424:GLU:OE2	2.39	0.55
1:C:376:CYS:HB2	1:C:389:LYS:HE2	1.87	0.55
1:E:91:GLY:HA3	1:E:442:LEU:HG	1.89	0.55
1:F:128:ARG:HH21	1:F:159:SER:HA	1.72	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:276:GLU:HB3	1:H:347:LYS:HG3	1.88	0.55
1:A:203:ILE:HD13	1:A:255:ILE:HD13	1.88	0.55
1:B:445:GLU:CG	1:B:446:ALA:H	2.11	0.55
1:D:308:ASP:OD1	1:D:308:ASP:N	2.38	0.55
1:G:113:ARG:NH1	1:G:169:THR:HG21	2.21	0.55
1:C:118:PRO:HA	1:C:131:SER:HB2	1.89	0.55
1:D:134:HIS:CD2	1:D:153:ARG:HD3	2.42	0.55
1:D:411:ARG:HE	1:D:418:THR:HG1	1.53	0.55
1:E:300:ARG:HE	1:E:323:LEU:HB3	1.71	0.55
1:A:324:ASP:O	1:A:327:ARG:HD3	2.06	0.54
1:D:326:PRO:HG2	1:D:342:LEU:HB3	1.87	0.54
1:E:389:LYS:H	1:E:389:LYS:CD	2.20	0.54
1:F:239:ILE:HG12	1:F:253:LEU:HD11	1.88	0.54
1:F:111:ASN:HA	1:F:138:GLY:O	2.08	0.54
1:H:309:SER:OG	1:H:311:THR:OG1	2.23	0.54
1:A:326:PRO:HA	1:A:366:LYS:O	2.08	0.54
1:B:115:ILE:HD13	1:B:164:PRO:HG3	1.88	0.54
1:C:92:GLN:NE2	1:C:447:ARG:NH1	2.55	0.54
1:C:389:LYS:CD	1:C:389:LYS:N	2.70	0.54
1:D:302:PHE:HB3	1:D:382:LEU:HD21	1.89	0.54
1:E:124:LYS:N	1:E:187:ASP:OD1	2.37	0.54
1:A:422:ALA:HB1	1:A:437:LEU:HD11	1.90	0.54
1:F:128:ARG:HH21	1:F:159:SER:CA	2.20	0.54
1:F:353:LEU:HB2	1:F:357:ARG:HB3	1.89	0.54
1:B:94:TRP:HB2	1:B:452:VAL:HG22	1.90	0.54
1:G:238:MET:CE	1:G:277:CYS:H	2.20	0.54
1:G:335:CYS:SG	1:G:385:GLN:NE2	2.81	0.54
1:H:427:PHE:CZ	1:H:434:ASN:HB3	2.41	0.54
1:C:369:ARG:HB2	1:C:400:GLN:NE2	2.22	0.54
1:C:389:LYS:HD3	1:C:389:LYS:O	2.08	0.54
1:A:128:ARG:HG3	1:A:128:ARG:NH1	2.22	0.53
1:C:463:SER:HA	1:C:466:LEU:HD12	1.90	0.53
1:E:115:ILE:O	1:E:116:ARG:HG2	2.08	0.53
1:F:127:LEU:HD22	1:F:409:ILE:HD11	1.90	0.53
1:A:445:GLU:CG	1:A:446:ALA:N	2.61	0.53
1:B:90:ARG:NH2	1:B:357:ARG:HD3	2.23	0.53
1:C:232:ASN:ND2	4:C:601:HOH:O	2.42	0.53
1:G:303:LEU:HD12	1:G:303:LEU:H	1.73	0.53
1:C:389:LYS:H	1:C:389:LYS:HD2	1.71	0.53
1:G:389:LYS:HE3	1:G:390:LYS:N	2.23	0.53
1:E:82:TYR:CE1	1:E:185:LYS:HD2	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:91:GLY:N	1:A:442:LEU:HD21	2.24	0.53
1:E:131:SER:O	1:E:155:LEU:HD12	2.09	0.53
1:E:361:THR:HB	1:E:372:MET:SD	2.48	0.53
1:D:424:GLU:HG3	1:D:435:ALA:HB1	1.90	0.53
1:H:179:PHE:CE2	1:H:190:GLY:HA3	2.43	0.53
1:B:121:ILE:HG12	1:B:227:GLN:HB3	1.90	0.53
1:C:292:ARG:HE	1:C:345:GLY:HA3	1.74	0.53
1:D:127:LEU:HD22	1:D:409:ILE:HD11	1.90	0.53
1:H:332:ILE:HG23	1:H:385:GLN:NE2	2.23	0.53
1:A:211:ASP:OD1	1:A:212:LEU:N	2.39	0.53
1:B:123:LEU:HD12	1:B:128:ARG:HG3	1.90	0.53
1:E:113:ARG:NH1	1:E:169:THR:HG21	2.22	0.53
1:B:151:GLU:HG3	1:B:174:LYS:HZ1	1.74	0.52
1:G:151:GLU:HG3	1:H:456:VAL:HB	1.89	0.52
1:A:123:LEU:HA	1:A:182:PHE:HB2	1.90	0.52
1:A:290:LEU:HD22	1:A:300:ARG:HB3	1.91	0.52
1:H:322:LEU:HB2	1:H:327:ARG:HD2	1.90	0.52
1:H:93:LYS:HG3	1:H:451:SER:HB3	1.89	0.52
1:C:92:GLN:HE21	1:C:447:ARG:HH11	1.57	0.52
1:E:135:ASN:ND2	1:F:101:TRP:HD1	2.07	0.52
1:H:275:GLU:HB2	1:H:292:ARG:HB3	1.92	0.52
1:G:224:MET:O	1:G:225:GLU:HB2	2.09	0.52
1:H:369:ARG:HG3	1:H:369:ARG:HH11	1.74	0.52
1:B:411:ARG:HD3	1:B:414:GLU:OE1	2.08	0.52
1:C:375:MET:HB3	1:C:388:MET:HB3	1.92	0.52
1:F:282:GLU:OE2	1:F:350:TYR:OH	2.11	0.52
1:G:127:LEU:HD13	1:G:409:ILE:HD11	1.92	0.52
1:H:411:ARG:HD3	1:H:414:GLU:OE2	2.10	0.52
1:C:224:MET:CE	1:C:237:ALA:HA	2.38	0.52
1:E:128:ARG:HH21	1:E:158:TRP:HA	1.72	0.52
1:G:94:TRP:CZ2	1:G:442:LEU:HD12	2.45	0.52
1:B:132:LEU:HB2	1:B:153:ARG:NH1	2.25	0.52
1:E:424:GLU:HG3	1:E:435:ALA:HB1	1.91	0.52
1:F:94:TRP:CZ3	1:F:421:VAL:HG23	2.45	0.52
1:F:427:PHE:CZ	1:F:434:ASN:HB3	2.45	0.52
1:C:315:ASP:HB2	1:C:382:LEU:HD22	1.91	0.51
1:F:270:GLY:HA2	1:F:316:TYR:CE2	2.45	0.51
1:A:252:MET:HG3	1:A:312:CYS:SG	2.50	0.51
1:B:224:MET:HG2	1:B:238:MET:HB3	1.92	0.51
1:D:187:ASP:HB3	1:D:189:ILE:HD11	1.91	0.51
1:A:238:MET:HB2	1:A:252:MET:HE2	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:103:SER:HB3	1:F:427:PHE:CE2	2.45	0.51
1:C:115:ILE:HD13	1:C:164:PRO:HG3	1.93	0.51
1:B:351:ILE:HB	1:B:359:CYS:HB2	1.91	0.51
1:C:100:VAL:HB	1:C:437:LEU:HB3	1.91	0.51
1:C:127:LEU:HD12	1:C:409:ILE:CD1	2.41	0.51
1:G:280:ILE:HG13	1:G:350:TYR:O	2.10	0.51
1:H:357:ARG:NH2	1:H:450:GLU:OE1	2.41	0.51
1:H:224:MET:HG2	1:H:277:CYS:O	2.11	0.51
1:G:291:CYS:SG	1:G:303:LEU:CD1	2.99	0.51
1:E:396:THR:HB	1:E:399:ALA:HB2	1.93	0.51
1:G:401:THR:HA	1:G:425:LEU:HA	1.93	0.51
1:H:224:MET:O	1:H:225:GLU:HB2	2.10	0.51
1:E:149:ARG:HG2	1:E:176:TRP:CE3	2.47	0.50
1:D:377:THR:HA	1:D:389:LYS:NZ	2.26	0.50
1:E:282:GLU:OE2	1:E:350:TYR:OH	2.18	0.50
1:F:134:HIS:CE1	1:F:153:ARG:HD3	2.47	0.50
1:E:401:THR:HG22	1:E:425:LEU:HD23	1.92	0.50
1:F:175:ALA:HB2	1:F:191:CYS:HB3	1.93	0.50
1:F:291:CYS:SG	1:F:303:LEU:HD13	2.51	0.50
1:D:100:VAL:HG11	1:D:158:TRP:HZ2	1.77	0.50
1:D:427:PHE:CZ	1:D:434:ASN:HB3	2.46	0.50
1:E:149:ARG:HB2	1:E:149:ARG:NH1	2.26	0.50
1:B:327:ARG:NE	1:B:362:ARG:HH11	2.09	0.50
1:C:224:MET:HE3	1:C:238:MET:H	1.76	0.50
1:F:296:ALA:HA	1:F:342:LEU:O	2.11	0.50
1:A:222:ARG:HG3	1:A:240:THR:HG22	1.94	0.50
1:B:276:GLU:HB3	1:B:347:LYS:HD2	1.93	0.50
1:E:151:GLU:O	1:E:174:LYS:NZ	2.45	0.50
1:A:453:VAL:HG21	1:F:200:VAL:HG21	1.94	0.50
1:E:300:ARG:HE	1:E:323:LEU:CB	2.24	0.50
1:F:100:VAL:HB	1:F:437:LEU:HB3	1.92	0.50
1:E:427:PHE:CZ	1:E:434:ASN:HB3	2.47	0.50
1:F:225:GLU:OE1	4:F:602:HOH:O	2.20	0.50
1:F:300:ARG:NH2	1:F:323:LEU:O	2.45	0.50
1:B:103:SER:HB3	1:B:427:PHE:CZ	2.47	0.50
1:B:174:LYS:HE3	1:B:193:SER:HB2	1.94	0.50
1:F:173:CYS:HB3	1:F:204:MET:HE1	1.94	0.50
1:B:127:LEU:HD22	1:B:409:ILE:HD11	1.93	0.49
1:B:149:ARG:HH11	1:B:220:ILE:HG21	1.77	0.49
1:D:275:GLU:HB2	1:D:292:ARG:HB3	1.93	0.49
1:D:292:ARG:HE	1:D:345:GLY:HA3	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:94:TRP:HB2	1:G:452:VAL:HG13	1.94	0.49
1:C:105:TRP:CZ2	1:H:113:ARG:NH1	2.80	0.49
1:H:226:SER:HB3	1:H:347:LYS:HE2	1.94	0.49
1:D:240:THR:HG21	1:D:275:GLU:OE1	2.11	0.49
1:F:300:ARG:O	1:F:317:THR:HG23	2.12	0.49
1:G:411:ARG:HB3	1:G:414:GLU:HG3	1.95	0.49
1:A:92:GLN:HB3	1:A:445:GLU:O	2.11	0.49
1:B:387:ALA:HA	4:B:603:HOH:O	2.12	0.49
1:D:224:MET:O	1:D:225:GLU:HB2	2.12	0.49
1:F:224:MET:O	1:F:225:GLU:HB2	2.12	0.49
1:G:273:MET:HE1	1:G:294:ASN:HB2	1.94	0.49
1:B:372:MET:HG3	1:B:423:THR:HG23	1.93	0.49
1:G:116:ARG:HD2	1:G:424:GLU:OE2	2.12	0.49
1:G:224:MET:O	1:G:347:LYS:HE2	2.13	0.49
1:G:229:VAL:O	1:G:235:CYS:HA	2.12	0.49
1:F:255:ILE:HA	1:F:259:LYS:O	2.11	0.49
1:G:222:ARG:HG3	1:G:240:THR:HG22	1.95	0.49
1:B:97:MET:HE3	1:B:98:SER:HB3	1.95	0.49
1:B:282:GLU:O	1:B:355:LYS:CD	2.57	0.49
1:C:357:ARG:NH2	1:C:389:LYS:HZ3	2.11	0.49
1:E:149:ARG:HG2	1:E:176:TRP:CD2	2.47	0.49
1:B:132:LEU:HD21	1:B:178:PHE:HD2	1.78	0.49
1:D:143:SER:OG	1:G:461:THR:OG1	2.15	0.49
1:D:309:SER:OG	1:D:311:THR:OG1	2.19	0.49
1:H:123:LEU:HD12	1:H:128:ARG:HB2	1.94	0.49
1:H:211:ASP:OD1	1:H:212:LEU:N	2.42	0.49
1:B:410:PRO:HA	1:B:417:ASP:OD1	2.12	0.49
1:E:88:THR:HG21	1:E:419:ILE:HD12	1.95	0.49
1:F:346:LEU:HG	1:F:347:LYS:O	2.13	0.49
1:B:346:LEU:HD13	1:B:369:ARG:HE	1.77	0.49
1:F:371:GLY:O	1:F:372:MET:HE2	2.13	0.49
1:H:149:ARG:NH1	2:H:501:BCZ:O14	2.45	0.48
1:G:90:ARG:HH11	1:G:90:ARG:CG	2.26	0.48
1:G:110:THR:OG1	1:G:111:ASN:N	2.46	0.48
1:G:127:LEU:HD22	1:G:409:ILE:HD11	1.95	0.48
1:G:312:CYS:O	1:G:313:LYS:HB2	2.13	0.48
1:B:116:ARG:NH1	1:B:117:PRO:HB3	2.28	0.48
1:B:149:ARG:NH1	1:B:220:ILE:HG21	2.29	0.48
1:B:357:ARG:HD2	1:B:378:ASN:OD1	2.13	0.48
1:C:89:CYS:SG	1:C:411:ARG:HD2	2.54	0.48
1:C:105:TRP:HZ2	1:H:113:ARG:NH1	2.11	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:445:GLU:OE1	1:F:447:ARG:NH2	2.46	0.48
1:B:248:SER:O	1:B:248:SER:OG	2.29	0.48
1:D:110:THR:OG1	1:D:111:ASN:N	2.46	0.48
1:E:192:ILE:HG12	1:E:201:LEU:HA	1.96	0.48
1:C:212:LEU:HD23	1:D:443:LEU:HB2	1.94	0.48
1:E:211:ASP:OD1	1:E:212:LEU:N	2.42	0.48
1:F:347:LYS:HD3	1:F:403:TYR:CD2	2.48	0.48
1:G:423:THR:HB	1:G:438:VAL:HG22	1.95	0.48
1:H:262:LYS:HE2	1:H:264:VAL:CG1	2.44	0.48
1:C:93:LYS:HG3	1:C:451:SER:HB2	1.96	0.48
1:C:124:LYS:HB2	1:C:187:ASP:OD1	2.14	0.48
1:C:320:GLN:HG2	1:C:385:GLN:O	2.13	0.48
1:C:376:CYS:N	1:C:389:LYS:CE	2.72	0.48
1:G:353:LEU:HD12	1:G:357:ARG:HG2	1.96	0.48
1:H:223:THR:HB	1:H:239:ILE:HG22	1.95	0.48
1:A:346:LEU:HD12	1:A:369:ARG:NH2	2.29	0.48
1:C:239:ILE:HD13	1:C:253:LEU:HD11	1.95	0.48
1:C:327:ARG:NH2	1:C:363:THR:O	2.40	0.48
1:D:347:LYS:HD3	1:D:403:TYR:CD2	2.48	0.48
1:G:411:ARG:NE	1:G:418:THR:OG1	2.38	0.48
1:A:220:ILE:O	1:A:222:ARG:HG2	2.14	0.47
1:A:427:PHE:CE1	1:A:434:ASN:HB3	2.48	0.47
1:D:273:MET:CE	1:D:295:THR:HG23	2.44	0.47
1:E:94:TRP:HB2	1:E:452:VAL:HG22	1.96	0.47
1:G:174:LYS:HE3	1:G:193:SER:HB2	1.96	0.47
1:H:121:ILE:HG23	1:H:227:GLN:HB3	1.96	0.47
1:H:297:ASN:ND2	1:H:316:TYR:HE2	2.12	0.47
1:G:267:ASP:HA	1:G:271:SER:CB	2.44	0.47
1:H:377:THR:HG22	1:H:379:GLY:H	1.79	0.47
1:B:125:LYS:HB3	1:B:128:ARG:HE	1.77	0.47
1:C:353:LEU:HB2	1:C:357:ARG:HB3	1.96	0.47
1:D:96:VAL:HG22	1:D:440:HIS:NE2	2.29	0.47
1:D:223:THR:HB	1:D:239:ILE:HG22	1.96	0.47
1:E:385:GLN:H	1:E:385:GLN:HG2	1.51	0.47
1:F:327:ARG:NH2	1:F:366:LYS:HE2	2.23	0.47
1:A:290:LEU:HD23	1:A:290:LEU:HA	1.77	0.47
1:B:134:HIS:CE1	1:B:153:ARG:HH21	2.31	0.47
1:B:401:THR:HA	1:B:425:LEU:HA	1.96	0.47
1:D:216:TYR:OH	1:D:251:ARG:HG3	2.14	0.47
1:D:322:LEU:HD13	1:D:328:PRO:HD2	1.96	0.47
1:G:267:ASP:HA	1:G:271:SER:HB2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:208:LYS:O	1:A:210:THR:HG23	2.15	0.47
1:A:341:SER:C	1:A:342:LEU:HD23	2.34	0.47
1:D:262:LYS:HG3	1:D:310:ARG:HH11	1.77	0.47
1:E:123:LEU:HA	1:E:182:PHE:HB2	1.96	0.47
1:H:135:ASN:HB2	1:H:152:PHE:O	2.14	0.47
1:A:365:ASP:HB3	1:A:368:GLN:O	2.14	0.47
1:D:401:THR:HG22	1:D:425:LEU:HD23	1.97	0.47
1:G:113:ARG:HG3	1:G:137:ALA:HB2	1.96	0.47
1:H:273:MET:HB3	1:H:293:ASP:OD1	2.14	0.47
1:H:410:PRO:HA	1:H:417:ASP:OD1	2.14	0.47
1:A:238:MET:HB2	1:A:252:MET:CE	2.45	0.47
1:A:351:ILE:HD12	1:A:360:ALA:HA	1.97	0.47
1:B:174:LYS:HB2	1:E:98:SER:HA	1.96	0.47
1:C:103:SER:HB2	1:C:462:TYR:HE1	1.80	0.47
1:C:224:MET:O	1:C:225:GLU:HB2	2.15	0.47
1:C:281:ASN:HA	1:C:287:PHE:HB2	1.97	0.47
1:D:94:TRP:HB2	1:D:452:VAL:HG22	1.97	0.47
1:F:85:SER:HA	1:F:281:ASN:HD21	1.78	0.47
1:F:128:ARG:HH21	1:F:159:SER:N	2.13	0.47
1:G:115:ILE:HD13	1:G:164:PRO:HG3	1.95	0.47
1:H:90:ARG:NH2	1:H:357:ARG:HD3	2.30	0.47
1:H:98:SER:OG	1:H:160:PRO:O	2.30	0.47
1:C:347:LYS:HD3	1:C:403:TYR:CD2	2.49	0.47
1:E:347:LYS:HD3	1:E:403:TYR:CD2	2.49	0.47
1:F:173:CYS:HB3	1:F:204:MET:HE2	1.96	0.47
1:F:342:LEU:HD13	1:F:367:ILE:HD11	1.96	0.47
1:H:121:ILE:HD12	1:H:130:VAL:HG21	1.96	0.47
1:A:359:CYS:HB3	1:A:374:LEU:HD21	1.97	0.47
1:C:238:MET:HB2	1:C:252:MET:SD	2.55	0.47
1:D:361:THR:HB	1:D:372:MET:SD	2.54	0.47
1:E:142:LEU:HD22	1:F:462:TYR:HB2	1.97	0.47
1:B:281:ASN:HA	1:B:287:PHE:HB2	1.96	0.46
1:C:229:VAL:HG23	1:C:307:TRP:CZ2	2.50	0.46
1:E:222:ARG:HD2	2:E:501:BCZ:H393	1.96	0.46
1:F:290:LEU:HD23	1:F:350:TYR:HB2	1.97	0.46
1:C:290:LEU:HD12	1:C:302:PHE:CD1	2.44	0.46
1:H:281:ASN:HA	1:H:287:PHE:HB2	1.97	0.46
1:A:209:PRO:HG3	1:B:97:MET:SD	2.55	0.46
1:B:302:PHE:HE1	1:B:304:LYS:HD2	1.79	0.46
1:E:389:LYS:HD2	1:E:389:LYS:N	2.28	0.46
1:A:94:TRP:HB2	1:A:452:VAL:HG22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:SER:HB2	1:B:161:SER:HB2	1.97	0.46
1:D:118:PRO:HB2	1:D:437:LEU:HD13	1.96	0.46
1:E:372:MET:HE3	1:E:372:MET:HB2	1.81	0.46
1:F:327:ARG:NE	1:F:366:LYS:HB3	2.30	0.46
1:G:358:ILE:O	1:G:376:CYS:HA	2.15	0.46
2:B:501:BCZ:H31	2:B:501:BCZ:H361	1.73	0.46
1:D:116:ARG:HH12	1:D:117:PRO:HB3	1.80	0.46
1:E:292:ARG:HE	1:E:345:GLY:HA3	1.80	0.46
1:A:102:THR:O	1:A:106:VAL:HG23	2.15	0.46
2:B:501:BCZ:C13	2:B:501:BCZ:H372	2.45	0.46
1:F:186:GLU:HB2	1:F:205:TYR:CE1	2.51	0.46
1:G:210:THR:O	1:G:259:LYS:HE3	2.16	0.46
1:C:134:HIS:ND1	1:C:153:ARG:HD3	2.30	0.46
1:E:100:VAL:HB	1:E:437:LEU:HB3	1.97	0.46
1:G:125:LYS:HE2	1:G:170:GLU:OE1	2.15	0.46
1:A:90:ARG:HH21	1:A:357:ARG:HD3	1.80	0.46
1:B:111:ASN:HA	1:B:138:GLY:O	2.15	0.46
1:B:151:GLU:HG3	1:B:174:LYS:NZ	2.30	0.46
1:E:94:TRP:NE1	1:E:442:LEU:HD13	2.31	0.46
1:E:359:CYS:HB3	1:E:374:LEU:HD11	1.98	0.46
1:F:322:LEU:O	1:F:362:ARG:HD2	2.15	0.46
1:A:111:ASN:HA	1:A:138:GLY:O	2.16	0.46
1:A:167:GLU:CD	1:A:167:GLU:H	2.19	0.46
1:A:174:LYS:HD2	1:B:99:ASN:OD1	2.16	0.46
1:G:123:LEU:HA	1:G:182:PHE:CB	2.43	0.46
1:H:92:GLN:HG3	1:H:447:ARG:HG3	1.96	0.46
1:A:411:ARG:HB2	1:A:416:CYS:O	2.15	0.46
1:E:293:ASP:OD1	1:E:295:THR:OG1	2.27	0.46
1:G:151:GLU:O	1:G:174:LYS:NZ	2.49	0.46
1:H:424:GLU:HG3	1:H:435:ALA:HB1	1.98	0.46
1:B:149:ARG:NH1	1:B:220:ILE:HD13	2.32	0.45
1:B:319:SER:HB2	1:B:381:ILE:HG13	1.97	0.45
1:C:99:ASN:HB2	1:C:101:TRP:CD1	2.52	0.45
1:A:388:MET:HB2	1:A:388:MET:HE3	1.69	0.45
1:B:327:ARG:HE	1:B:362:ARG:HH11	1.64	0.45
1:C:208:LYS:HB3	1:D:409:ILE:HG21	1.99	0.45
1:C:376:CYS:O	1:C:389:LYS:HD2	2.16	0.45
2:E:501:BCZ:H111	2:E:501:BCZ:H392	1.81	0.45
1:F:346:LEU:HD13	1:F:369:ARG:NE	2.28	0.45
1:G:200:VAL:HG21	1:H:453:VAL:HG21	1.98	0.45
1:G:321:THR:HG22	1:G:330:ASP:OD2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:329:ASN:HA	1:B:366:LYS:HE3	1.98	0.45
1:C:229:VAL:HG23	1:C:307:TRP:HZ2	1.81	0.45
1:B:132:LEU:HB2	1:B:153:ARG:HH11	1.82	0.45
1:B:149:ARG:HH12	1:B:220:ILE:HD13	1.81	0.45
1:C:90:ARG:HH21	1:C:357:ARG:HD2	1.81	0.45
1:D:229:VAL:O	1:D:235:CYS:HA	2.16	0.45
1:F:394:LEU:HD23	1:F:452:VAL:HG11	1.98	0.45
1:H:133:ALA:HB2	1:H:156:ILE:HD13	1.98	0.45
1:A:222:ARG:HG3	1:A:240:THR:CG2	2.47	0.45
1:C:224:MET:CE	1:C:238:MET:H	2.29	0.45
1:D:396:THR:CG2	1:D:398:THR:HG22	2.47	0.45
1:F:347:LYS:HD3	1:F:403:TYR:HD2	1.80	0.45
1:G:90:ARG:NH1	1:G:90:ARG:HG2	2.30	0.45
1:G:105:TRP:CE3	1:G:110:THR:HG21	2.52	0.45
1:G:238:MET:HE1	1:G:276:GLU:N	2.32	0.45
1:C:276:GLU:HB3	1:C:347:LYS:HD2	1.99	0.45
1:F:222:ARG:HB3	2:F:501:BCZ:H152	1.98	0.45
1:F:290:LEU:HD12	1:F:300:ARG:HD2	1.98	0.45
1:B:324:ASP:OD1	1:B:325:CYS:N	2.47	0.45
1:E:180:ALA:HB2	1:E:189:ILE:HG23	1.99	0.45
1:G:179:PHE:CE2	1:G:190:GLY:HA3	2.51	0.45
1:H:118:PRO:HB2	1:H:437:LEU:HD13	1.99	0.45
1:A:149:ARG:HD3	1:A:176:TRP:CZ3	2.52	0.45
1:A:229:VAL:HG23	1:A:307:TRP:CZ2	2.52	0.45
1:B:322:LEU:HB2	1:B:327:ARG:HD2	1.97	0.45
1:E:149:ARG:HD3	1:E:176:TRP:CZ3	2.52	0.45
1:H:226:SER:HB3	1:H:347:LYS:CE	2.46	0.45
1:H:411:ARG:NH1	1:H:414:GLU:OE2	2.49	0.45
1:D:188:LEU:C	1:D:189:ILE:HD12	2.37	0.45
1:F:118:PRO:HD2	1:F:424:GLU:HG3	1.99	0.45
1:H:213:TYR:OH	1:H:251:ARG:NH1	2.50	0.45
1:C:224:MET:HE3	1:C:237:ALA:CA	2.41	0.44
1:C:376:CYS:SG	1:C:389:LYS:HE2	2.57	0.44
1:H:293:ASP:OD2	1:H:297:ASN:HB3	2.16	0.44
1:A:152:PHE:CD1	1:B:104:ARG:HD2	2.52	0.44
1:A:270:GLY:HA2	1:A:316:TYR:CE2	2.51	0.44
1:C:83:ARG:NH1	1:C:182:PHE:O	2.50	0.44
1:E:102:THR:O	1:E:106:VAL:HG23	2.18	0.44
1:E:279:CYS:O	1:E:280:ILE:HG12	2.17	0.44
1:F:148:ASP:HB3	2:F:501:BCZ:N30	2.32	0.44
1:F:188:LEU:O	1:F:189:ILE:HD13	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:225:GLU:HB3	4:F:607:HOH:O	2.17	0.44
1:E:86:ARG:NH1	1:E:417:ASP:OD1	2.50	0.44
1:F:188:LEU:C	1:F:189:ILE:HD13	2.38	0.44
1:F:256:LYS:O	1:F:259:LYS:HB2	2.17	0.44
1:G:280:ILE:HD11	1:G:406:ALA:HB3	1.98	0.44
1:A:359:CYS:HB3	1:A:374:LEU:CD2	2.47	0.44
1:B:372:MET:HG3	1:B:423:THR:CG2	2.48	0.44
1:C:275:GLU:HB2	1:C:292:ARG:O	2.17	0.44
1:E:93:LYS:HD3	1:E:453:VAL:HG23	2.00	0.44
1:H:101:TRP:HA	1:H:101:TRP:CE3	2.52	0.44
1:H:115:ILE:HD13	1:H:164:PRO:HG3	2.00	0.44
1:H:177:SER:HA	1:H:225:GLU:OE2	2.18	0.44
1:C:119:THR:OG1	1:C:120:ALA:N	2.51	0.44
1:D:353:LEU:HB2	1:D:357:ARG:HB3	1.99	0.44
1:F:113:ARG:HG2	1:F:137:ALA:HB2	1.99	0.44
1:G:102:THR:O	1:G:106:VAL:HG23	2.17	0.44
1:D:111:ASN:HA	1:D:138:GLY:O	2.18	0.44
1:H:273:MET:HE2	1:H:293:ASP:OD1	2.17	0.44
1:A:128:ARG:HA	1:A:128:ARG:HD2	1.78	0.44
1:H:365:ASP:HB3	1:H:368:GLN:O	2.17	0.44
1:C:366:LYS:O	1:C:367:ILE:HD13	2.18	0.44
1:D:124:LYS:C	1:D:125:LYS:HG3	2.38	0.44
1:F:91:GLY:HA3	1:F:442:LEU:HG	1.99	0.44
1:F:259:LYS:HE2	1:F:261:GLU:CG	2.47	0.44
1:A:337:THR:HB	1:D:251:ARG:NH2	2.32	0.44
1:B:297:ASN:ND2	1:B:316:TYR:CE1	2.86	0.44
1:C:121:ILE:HG12	1:C:227:GLN:HB3	1.99	0.44
1:C:214:ASN:ND2	1:D:93:LYS:HE3	2.30	0.44
1:C:389:LYS:CE	1:C:391:ILE:HG12	2.48	0.44
1:D:261:GLU:C	1:D:262:LYS:HG2	2.37	0.44
1:G:226:SER:HB3	1:G:347:LYS:CE	2.48	0.44
1:G:248:SER:O	1:G:248:SER:OG	2.29	0.44
1:C:410:PRO:HA	1:C:417:ASP:OD1	2.18	0.43
1:D:177:SER:HA	1:D:225:GLU:OE2	2.18	0.43
1:D:380:ASN:OD1	1:D:383:LEU:HD12	2.18	0.43
1:E:299:ARG:NH2	1:E:333:GLN:HB2	2.33	0.43
1:H:186:GLU:HB2	1:H:205:TYR:CE1	2.53	0.43
1:C:300:ARG:O	1:C:317:THR:HG23	2.18	0.43
1:F:123:LEU:HA	1:F:182:PHE:HB2	2.00	0.43
1:H:332:ILE:H	1:H:332:ILE:HD12	1.83	0.43
1:A:142:LEU:HD22	1:B:462:TYR:HB2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:381:ILE:HG12	1:A:381:ILE:O	2.18	0.43
1:E:320:GLN:HG2	1:E:385:GLN:O	2.17	0.43
1:E:459:ARG:O	1:E:463:SER:HB3	2.18	0.43
1:F:123:LEU:HA	1:F:182:PHE:CB	2.48	0.43
1:A:127:LEU:O	4:A:602:HOH:O	2.21	0.43
1:C:187:ASP:HB3	1:C:189:ILE:HD11	2.01	0.43
1:C:347:LYS:HD3	1:C:403:TYR:HD2	1.83	0.43
1:F:90:ARG:HE	1:F:90:ARG:HB3	1.64	0.43
1:H:297:ASN:ND2	1:H:316:TYR:CE2	2.86	0.43
1:G:91:GLY:HA3	1:G:442:LEU:HD22	2.01	0.43
1:A:459:ARG:NH1	4:A:605:HOH:O	2.47	0.43
1:C:131:SER:OG	1:C:132:LEU:N	2.52	0.43
1:G:196:ASP:HB3	1:G:220:ILE:HG13	2.01	0.43
1:H:359:CYS:HB3	1:H:374:LEU:HD11	2.01	0.43
1:A:300:ARG:HG3	1:A:323:LEU:HB2	1.99	0.43
1:C:290:LEU:HD23	1:C:300:ARG:HD2	2.00	0.43
1:H:353:LEU:HD12	1:H:357:ARG:HE	1.84	0.43
1:A:149:ARG:HG2	1:A:176:TRP:CE3	2.54	0.43
1:B:280:ILE:HG13	1:B:350:TYR:O	2.19	0.43
1:C:215:SER:HA	1:C:221:LEU:HD22	2.01	0.43
1:C:389:LYS:HE3	1:C:391:ILE:HG12	1.99	0.43
1:G:411:ARG:HB2	1:G:414:GLU:HB2	2.00	0.43
1:H:290:LEU:HB2	1:H:350:TYR:HB2	2.00	0.43
1:A:124:LYS:HG2	1:A:125:LYS:HG3	2.00	0.43
1:B:85:SER:HA	1:B:281:ASN:ND2	2.34	0.43
1:C:92:GLN:HE21	1:C:447:ARG:NH1	2.16	0.43
1:C:166:ASP:O	1:C:169:THR:OG1	2.22	0.43
1:D:276:GLU:OE1	1:D:292:ARG:HD2	2.19	0.43
1:D:315:ASP:HB2	1:D:382:LEU:HD22	2.01	0.43
1:A:103:SER:HB3	1:A:427:PHE:CZ	2.54	0.42
1:A:346:LEU:HD12	1:A:369:ARG:HH21	1.84	0.42
1:B:229:VAL:HG23	1:B:307:TRP:CH2	2.53	0.42
1:B:363:THR:OG1	1:B:365:ASP:O	2.37	0.42
1:C:118:PRO:HG2	1:C:424:GLU:HG3	2.00	0.42
1:C:212:LEU:C	1:C:212:LEU:HD12	2.40	0.42
1:C:322:LEU:HD13	1:C:328:PRO:HD2	2.01	0.42
1:D:142:LEU:HB3	1:D:143:SER:H	1.48	0.42
1:F:297:ASN:HD21	1:F:316:TYR:HE1	1.66	0.42
1:G:148:ASP:OD2	2:G:501:BCZ:O9	2.29	0.42
1:G:302:PHE:HB3	1:G:382:LEU:HD21	2.01	0.42
1:H:116:ARG:HD2	1:H:424:GLU:OE2	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:152:PHE:CD1	1:F:104:ARG:HD2	2.55	0.42
1:G:209:PRO:HG3	1:H:97:MET:SD	2.59	0.42
1:H:283:ASP:CG	1:H:284:SER:N	2.72	0.42
1:B:120:ALA:C	1:B:121:ILE:HG13	2.39	0.42
1:D:280:ILE:HD11	1:D:406:ALA:HB3	2.01	0.42
1:H:103:SER:O	1:H:466:LEU:HD21	2.19	0.42
1:A:92:GLN:HB2	1:A:447:ARG:HD2	2.01	0.42
1:B:94:TRP:NE1	1:B:442:LEU:HD13	2.34	0.42
1:B:403:TYR:HB2	1:B:424:GLU:OE1	2.19	0.42
1:D:280:ILE:HG22	1:D:281:ASN:O	2.19	0.42
1:G:113:ARG:HD2	1:G:165:GLY:HA2	2.01	0.42
1:A:200:VAL:HG21	1:B:453:VAL:HG21	2.01	0.42
1:B:82:TYR:CE1	1:B:185:LYS:HD2	2.54	0.42
1:E:223:THR:OG1	1:E:238:MET:O	2.25	0.42
1:E:308:ASP:OD1	1:E:308:ASP:N	2.50	0.42
1:E:346:LEU:HG	1:E:347:LYS:N	2.35	0.42
1:E:410:PRO:HA	1:E:417:ASP:OD1	2.19	0.42
1:F:230:CYS:HA	1:F:235:CYS:HA	2.01	0.42
1:B:84:MET:HE3	1:B:232:ASN:HB2	2.02	0.42
1:D:425:LEU:HB2	1:D:436:ASP:HB2	2.01	0.42
1:E:276:GLU:OE1	1:E:292:ARG:HD2	2.19	0.42
1:F:297:ASN:ND2	1:F:316:TYR:CE1	2.87	0.42
1:H:352:PRO:O	1:H:353:LEU:HD23	2.19	0.42
1:H:396:THR:HG22	1:H:399:ALA:H	1.84	0.42
1:A:280:ILE:HG22	1:A:281:ASN:O	2.19	0.42
1:B:346:LEU:HD13	1:B:369:ARG:NE	2.35	0.42
1:F:342:LEU:HD23	1:F:342:LEU:HA	1.85	0.42
1:G:270:GLY:HA2	1:G:316:TYR:CD2	2.53	0.42
1:G:296:ALA:HA	1:G:343:ALA:HA	2.01	0.42
1:H:332:ILE:HD12	1:H:332:ILE:N	2.34	0.42
1:B:115:ILE:O	1:B:116:ARG:HG2	2.19	0.42
1:C:282:GLU:OE1	1:C:304:LYS:NZ	2.43	0.42
1:C:342:LEU:HD23	1:C:342:LEU:HA	1.89	0.42
1:D:94:TRP:NE1	1:D:442:LEU:HD13	2.34	0.42
1:E:173:CYS:HB3	1:E:204:MET:HE1	2.02	0.42
1:A:229:VAL:HB	1:A:281:ASN:HD22	1.83	0.42
1:B:320:GLN:N	4:B:603:HOH:O	2.53	0.42
1:C:308:ASP:OD1	1:C:308:ASP:N	2.53	0.42
1:H:411:ARG:HH11	1:H:414:GLU:CD	2.22	0.42
1:A:372:MET:HE3	1:A:372:MET:HB2	1.80	0.42
1:C:82:TYR:HE2	1:C:183:ASP:OD2	2.03	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:174:LYS:HD2	1:G:96:VAL:CG1	2.50	0.42
1:E:85:SER:HB2	1:E:231:ASN:HB2	2.01	0.42
1:F:376:CYS:SG	1:F:391:ILE:HG13	2.59	0.42
1:F:445:GLU:HG2	1:F:446:ALA:N	2.31	0.42
1:G:381:ILE:O	1:G:381:ILE:HG13	2.20	0.42
1:G:394:LEU:HD23	1:G:452:VAL:HG11	2.01	0.42
1:B:125:LYS:HB3	1:B:128:ARG:CZ	2.50	0.41
1:D:95:THR:OG1	1:D:443:LEU:HD12	2.20	0.41
1:E:297:ASN:ND2	1:E:316:TYR:CE1	2.88	0.41
1:A:213:TYR:HE2	1:A:263:VAL:HG21	1.85	0.41
1:A:410:PRO:HA	1:A:417:ASP:OD1	2.21	0.41
1:B:287:PHE:CE2	1:B:305:CYS:HB2	2.55	0.41
1:B:437:LEU:HD12	1:B:437:LEU:HA	1.91	0.41
1:C:116:ARG:O	1:C:132:LEU:HB2	2.20	0.41
1:C:280:ILE:HD11	1:C:406:ALA:C	2.40	0.41
1:D:261:GLU:O	1:D:262:LYS:HG2	2.20	0.41
1:F:394:LEU:HD23	1:F:452:VAL:CG1	2.50	0.41
1:G:223:THR:HB	1:G:239:ILE:HG22	2.01	0.41
1:H:223:THR:OG1	1:H:224:MET:N	2.53	0.41
1:H:298:SER:HB2	1:H:322:LEU:HD22	2.02	0.41
1:B:327:ARG:NH2	1:B:362:ARG:HD2	2.36	0.41
1:G:120:ALA:C	1:G:121:ILE:HG13	2.41	0.41
1:G:299:ARG:NH1	1:G:339:PHE:HB3	2.35	0.41
1:A:187:ASP:HB3	1:A:189:ILE:HD11	2.02	0.41
1:A:192:ILE:HA	1:A:200:VAL:O	2.20	0.41
1:A:226:SER:HB3	1:A:347:LYS:HE2	2.01	0.41
1:A:440:HIS:NE2	1:A:453:VAL:O	2.46	0.41
1:C:114:ASN:HA	1:C:434:ASN:CG	2.40	0.41
1:D:123:LEU:HA	1:D:123:LEU:HD23	1.86	0.41
1:E:362:ARG:HE	1:E:375:MET:HE2	1.84	0.41
1:F:254:PHE:CE2	1:F:310:ARG:HB3	2.55	0.41
1:F:445:GLU:OE1	1:F:447:ARG:CZ	2.68	0.41
1:G:359:CYS:HB3	1:G:374:LEU:HD11	2.01	0.41
1:A:128:ARG:HE	1:A:158:TRP:C	2.24	0.41
1:A:141:PRO:HG3	1:A:431:LYS:O	2.20	0.41
1:A:351:ILE:HD11	1:A:361:THR:HG23	2.02	0.41
1:B:292:ARG:HE	1:B:345:GLY:HA3	1.86	0.41
1:C:92:GLN:HE21	1:C:92:GLN:HB2	1.71	0.41
1:D:236:SER:HA	1:D:253:LEU:O	2.20	0.41
1:E:347:LYS:HD3	1:E:403:TYR:HD2	1.85	0.41
1:B:354:GLY:O	1:B:355:LYS:HG3	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:192:ILE:HG12	1:C:201:LEU:HB2	2.02	0.41
1:C:427:PHE:CZ	1:C:434:ASN:HB3	2.56	0.41
1:E:96:VAL:HG22	1:E:440:HIS:NE2	2.35	0.41
1:H:350:TYR:CE2	1:H:352:PRO:HD3	2.56	0.41
1:B:208:LYS:O	1:B:210:THR:HG23	2.20	0.41
1:B:321:THR:HG22	1:B:388:MET:H	1.86	0.41
1:C:116:ARG:HA	1:C:117:PRO:HA	1.97	0.41
1:H:119:THR:HG21	1:H:226:SER:HA	2.01	0.41
1:B:213:TYR:CE2	1:B:263:VAL:HG21	2.56	0.41
1:D:236:SER:OG	1:D:252:MET:HG3	2.20	0.41
1:E:115:ILE:HD13	1:E:164:PRO:HG3	2.02	0.41
1:F:128:ARG:HB3	1:F:160:PRO:CD	2.48	0.41
1:G:262:LYS:HE2	1:G:264:VAL:CG1	2.50	0.41
1:H:115:ILE:HA	1:H:132:LEU:O	2.21	0.41
1:H:411:ARG:HB2	1:H:416:CYS:O	2.21	0.41
1:A:291:CYS:O	1:A:300:ARG:HD3	2.20	0.41
1:A:299:ARG:HH22	1:A:333:GLN:HB2	1.86	0.41
1:A:366:LYS:C	1:A:367:ILE:HD13	2.41	0.41
1:B:350:TYR:HE1	1:B:358:ILE:HG23	1.85	0.41
1:C:275:GLU:HB2	1:C:292:ARG:HB3	2.02	0.41
1:C:389:LYS:HD3	1:C:389:LYS:C	2.40	0.41
1:D:90:ARG:NH2	1:D:357:ARG:HD3	2.36	0.41
1:E:120:ALA:C	1:E:121:ILE:HG13	2.41	0.41
1:E:281:ASN:HA	1:E:287:PHE:HB2	2.02	0.41
1:E:408:THR:HB	1:E:417:ASP:HB3	2.02	0.41
1:F:276:GLU:OE1	1:F:347:LYS:HB2	2.21	0.41
1:F:326:PRO:HG2	1:F:342:LEU:HB3	2.02	0.41
1:G:105:TRP:HE3	1:G:110:THR:HG21	1.85	0.41
1:G:176:TRP:NE1	1:G:193:SER:HA	2.36	0.41
1:H:93:LYS:HD3	1:H:453:VAL:CG2	2.51	0.41
1:C:82:TYR:CZ	1:C:185:LYS:HD2	2.55	0.41
1:C:376:CYS:H	1:C:389:LYS:HE2	1.80	0.41
1:D:226:SER:HB3	1:D:347:LYS:NZ	2.35	0.41
1:E:128:ARG:HG3	1:E:128:ARG:NH1	2.33	0.41
1:E:377:THR:HA	1:E:389:LYS:HZ2	1.84	0.41
1:G:100:VAL:HB	1:G:437:LEU:HB3	2.03	0.41
1:H:300:ARG:O	1:H:317:THR:HG23	2.21	0.41
1:A:212:LEU:HD22	1:B:443:LEU:HB2	2.02	0.40
1:B:101:TRP:HA	1:B:101:TRP:CE3	2.56	0.40
1:B:197:ASN:O	1:B:218:LEU:HG	2.20	0.40
1:E:363:THR:OG1	1:E:365:ASP:O	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:224:MET:HE3	1:F:237:ALA:HA	2.03	0.40
1:F:327:ARG:HG2	1:F:366:LYS:CB	2.45	0.40
1:G:391:ILE:HG22	1:G:452:VAL:HG23	2.02	0.40
1:H:282:GLU:OE1	1:H:304:LYS:NZ	2.34	0.40
1:D:239:ILE:CD1	1:D:253:LEU:HD21	2.51	0.40
1:E:156:ILE:HG22	1:E:171:THR:HG22	2.03	0.40
1:G:315:ASP:HB2	1:G:382:LEU:HD22	2.02	0.40
1:C:128:ARG:HD3	1:C:158:TRP:O	2.21	0.40
1:D:85:SER:HA	1:D:281:ASN:ND2	2.37	0.40
1:D:195:PRO:HB2	1:D:197:ASN:OD1	2.20	0.40
1:F:82:TYR:CE1	1:F:185:LYS:HD2	2.56	0.40
1:G:252:MET:HB3	1:G:264:VAL:HG22	2.03	0.40
1:B:213:TYR:HE2	1:B:263:VAL:HG21	1.87	0.40
1:C:240:THR:HG21	1:C:275:GLU:OE2	2.21	0.40
1:C:292:ARG:HG3	1:C:346:LEU:H	1.85	0.40
1:D:94:TRP:O	1:D:453:VAL:HG23	2.22	0.40
1:E:92:GLN:HG3	1:E:447:ARG:NH1	2.36	0.40
1:F:127:LEU:O	1:F:128:ARG:CB	2.68	0.40
1:G:283:ASP:CG	1:G:284:SER:N	2.74	0.40
1:A:133:ALA:HB3	1:A:154:ASP:OD1	2.22	0.40
1:C:376:CYS:SG	1:C:389:LYS:NZ	2.94	0.40
1:D:99:ASN:HB3	1:D:101:TRP:CD1	2.57	0.40
1:E:346:LEU:HD13	1:E:369:ARG:CG	2.51	0.40
1:F:290:LEU:HD12	1:F:300:ARG:CB	2.46	0.40
1:G:363:THR:H	1:G:363:THR:HG23	1.67	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	385/489 (79%)	362 (94%)	21 (6%)	2 (0%)	29 61

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	385/489 (79%)	365 (95%)	20 (5%)	0	100	100
1	C	385/489 (79%)	359 (93%)	26 (7%)	0	100	100
1	D	385/489 (79%)	361 (94%)	22 (6%)	2 (0%)	29	61
1	E	385/489 (79%)	364 (94%)	21 (6%)	0	100	100
1	F	385/489 (79%)	364 (94%)	20 (5%)	1 (0%)	41	72
1	G	385/489 (79%)	364 (94%)	21 (6%)	0	100	100
1	H	385/489 (79%)	363 (94%)	20 (5%)	2 (0%)	29	61
All	All	3080/3912 (79%)	2902 (94%)	171 (6%)	7 (0%)	47	78

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	124	LYS
1	H	448	GLU
1	H	464	SER
1	D	144	GLY
1	F	449	THR
1	A	220	ILE
1	D	220	ILE

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	327/417 (78%)	302 (92%)	25 (8%)	13	36
1	B	327/417 (78%)	300 (92%)	27 (8%)	11	32
1	C	327/417 (78%)	304 (93%)	23 (7%)	15	40
1	D	327/417 (78%)	300 (92%)	27 (8%)	11	32
1	E	327/417 (78%)	305 (93%)	22 (7%)	16	43
1	F	327/417 (78%)	298 (91%)	29 (9%)	9	28
1	G	327/417 (78%)	299 (91%)	28 (9%)	10	30

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	H	327/417 (78%)	306 (94%)	21 (6%)	17	45
All	All	2616/3336 (78%)	2414 (92%)	202 (8%)	13	35

All (202) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	92	GLN
1	A	103	SER
1	A	116	ARG
1	A	124	LYS
1	A	125	LYS
1	A	161	SER
1	A	193	SER
1	A	204	MET
1	A	209	PRO
1	A	212	LEU
1	A	228	CYS
1	A	271	SER
1	A	283	ASP
1	A	284	SER
1	A	311	THR
1	A	338	SER
1	A	357	ARG
1	A	373	GLU
1	A	389	LYS
1	A	398	THR
1	A	400	GLN
1	A	405	SER
1	A	431	LYS
1	A	445	GLU
1	A	451	SER
1	B	82	TYR
1	B	85	SER
1	B	86	ARG
1	B	151	GLU
1	B	168	SER
1	B	188	LEU
1	B	193	SER
1	B	212	LEU
1	B	228	CYS
1	B	252	MET
1	B	253	LEU

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Mol	Chain	Res	Type
1	B	259	LYS
1	B	272	SER
1	B	273	MET
1	B	311	THR
1	B	313	LYS
1	B	334	THR
1	B	338	SER
1	B	375	MET
1	B	386	ASP
1	B	389	LYS
1	B	405	SER
1	B	408	THR
1	B	413	THR
1	B	428	SER
1	B	445	GLU
1	B	465	LEU
1	C	86	ARG
1	C	92	GLN
1	C	103	SER
1	C	204	MET
1	C	214	ASN
1	C	215	SER
1	C	228	CYS
1	C	238	MET
1	C	240	THR
1	C	273	MET
1	C	311	THR
1	C	331	SER
1	C	334	THR
1	C	338	SER
1	C	364	VAL
1	C	375	MET
1	C	377	THR
1	C	385	GLN
1	C	389	LYS
1	C	404	SER
1	C	405	SER
1	C	445	GLU
1	C	463	SER
1	D	98	SER
1	D	110	THR
1	D	116	ARG

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Mol	Chain	Res	Type
1	D	132	LEU
1	D	145	THR
1	D	191	CYS
1	D	193	SER
1	D	212	LEU
1	D	228	CYS
1	D	240	THR
1	D	248	SER
1	D	272	SER
1	D	273	MET
1	D	321	THR
1	D	327	ARG
1	D	334	THR
1	D	338	SER
1	D	341	SER
1	D	362	ARG
1	D	366	LYS
1	D	378	ASN
1	D	384	GLU
1	D	389	LYS
1	D	404	SER
1	D	405	SER
1	D	438	VAL
1	D	452	VAL
1	E	103	SER
1	E	113	ARG
1	E	154	ASP
1	E	163	TYR
1	E	215	SER
1	E	228	CYS
1	E	248	SER
1	E	272	SER
1	E	319	SER
1	E	331	SER
1	E	338	SER
1	E	357	ARG
1	E	367	ILE
1	E	369	ARG
1	E	375	MET
1	E	377	THR
1	E	389	LYS
1	E	391	ILE

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Mol	Chain	Res	Type
1	E	398	THR
1	E	405	SER
1	E	449	THR
1	E	452	VAL
1	F	83	ARG
1	F	84	MET
1	F	85	SER
1	F	92	GLN
1	F	103	SER
1	F	116	ARG
1	F	128	ARG
1	F	161	SER
1	F	167	GLU
1	F	193	SER
1	F	228	CYS
1	F	240	THR
1	F	259	LYS
1	F	272	SER
1	F	273	MET
1	F	278	SER
1	F	289	CYS
1	F	300	ARG
1	F	311	THR
1	F	313	LYS
1	F	331	SER
1	F	333	GLN
1	F	341	SER
1	F	357	ARG
1	F	362	ARG
1	F	366	LYS
1	F	367	ILE
1	F	405	SER
1	F	451	SER
1	G	86	ARG
1	G	90	ARG
1	G	98	SER
1	G	110	THR
1	G	128	ARG
1	G	132	LEU
1	G	143	SER
1	G	153	ARG
1	G	171	THR

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Mol	Chain	Res	Type
1	G	224	MET
1	G	228	CYS
1	G	248	SER
1	G	252	MET
1	G	259	LYS
1	G	267	ASP
1	G	273	MET
1	G	283	ASP
1	G	321	THR
1	G	341	SER
1	G	357	ARG
1	G	375	MET
1	G	381	ILE
1	G	384	GLU
1	G	405	SER
1	G	431	LYS
1	G	442	LEU
1	G	448	GLU
1	G	461	THR
1	H	84	MET
1	H	85	SER
1	H	127	LEU
1	H	147	SER
1	H	174	LYS
1	H	200	VAL
1	H	222	ARG
1	H	228	CYS
1	H	238	MET
1	H	245	ILE
1	H	266	VAL
1	H	281	ASN
1	H	284	SER
1	H	315	ASP
1	H	334	THR
1	H	338	SER
1	H	341	SER
1	H	375	MET
1	H	408	THR
1	H	415	GLU
1	H	448	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	92	GLN
1	B	134	HIS
1	B	214	ASN
1	C	92	GLN
1	C	214	ASN
1	C	368	GLN
1	D	294	ASN
1	D	380	ASN
1	E	92	GLN
1	E	400	GLN
1	G	92	GLN
1	H	385	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 16 ligands modelled in this entry, 8 are monoatomic - 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	$\# Z > 2$
2	BCZ	D	501	-	22,23,23	3.55	10 (45%)	23,32,32	1.85	7 (30%)
2	BCZ	E	501	-	22,23,23	3.44	10 (45%)	23,32,32	1.25	4 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	BCZ	C	501	-	22,23,23	3.51	10 (45%)	23,32,32	1.38	4 (17%)
2	BCZ	G	501	-	22,23,23	3.43	9 (40%)	23,32,32	1.48	6 (26%)
2	BCZ	B	501	-	22,23,23	3.48	9 (40%)	23,32,32	1.30	4 (17%)
2	BCZ	A	501	-	22,23,23	3.45	10 (45%)	23,32,32	1.49	5 (21%)
2	BCZ	H	501	-	22,23,23	3.41	9 (40%)	23,32,32	1.34	4 (17%)
2	BCZ	F	501	-	22,23,23	3.65	9 (40%)	23,32,32	1.22	3 (13%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BCZ	D	501	-	-	11/24/40/40	0/1/1/1
2	BCZ	E	501	-	-	0/24/40/40	0/1/1/1
2	BCZ	C	501	-	-	9/24/40/40	0/1/1/1
2	BCZ	G	501	-	-	1/24/40/40	0/1/1/1
2	BCZ	B	501	-	-	3/24/40/40	0/1/1/1
2	BCZ	A	501	-	-	2/24/40/40	0/1/1/1
2	BCZ	H	501	-	-	4/24/40/40	0/1/1/1
2	BCZ	F	501	-	-	2/24/40/40	0/1/1/1

All (76) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	501	BCZ	C1-C2	-9.59	1.37	1.54
2	B	501	BCZ	C1-C2	-9.31	1.38	1.54
2	A	501	BCZ	C1-C2	-9.31	1.38	1.54
2	C	501	BCZ	C1-C2	-9.29	1.38	1.54
2	E	501	BCZ	C1-C2	-9.28	1.38	1.54
2	H	501	BCZ	C1-C2	-9.19	1.38	1.54
2	G	501	BCZ	C1-C2	-9.03	1.38	1.54
2	D	501	BCZ	C1-C2	-8.63	1.39	1.54
2	F	501	BCZ	C26-N25	8.28	1.47	1.33
2	B	501	BCZ	C26-N25	7.67	1.46	1.33
2	D	501	BCZ	C26-N25	7.58	1.46	1.33
2	E	501	BCZ	C26-N25	7.47	1.46	1.33
2	A	501	BCZ	C26-N25	7.40	1.46	1.33
2	G	501	BCZ	C26-N25	7.07	1.45	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	501	BCZ	C26-N25	6.70	1.44	1.33
2	C	501	BCZ	C26-N25	6.60	1.44	1.33
2	D	501	BCZ	C3-C2	6.50	1.67	1.53
2	C	501	BCZ	C3-C2	5.99	1.66	1.53
2	G	501	BCZ	C3-C2	5.79	1.66	1.53
2	F	501	BCZ	C3-C2	5.76	1.66	1.53
2	A	501	BCZ	C3-C4	-5.62	1.37	1.53
2	H	501	BCZ	C3-C4	-5.60	1.37	1.53
2	E	501	BCZ	C3-C4	-5.51	1.37	1.53
2	B	501	BCZ	C3-C2	5.48	1.65	1.53
2	D	501	BCZ	C3-C4	-5.46	1.38	1.53
2	B	501	BCZ	C3-C4	-5.37	1.38	1.53
2	F	501	BCZ	C3-C4	-5.36	1.38	1.53
2	G	501	BCZ	C3-C4	-5.34	1.38	1.53
2	H	501	BCZ	C3-C2	5.32	1.65	1.53
2	C	501	BCZ	C3-C4	-5.26	1.38	1.53
2	E	501	BCZ	C3-C2	5.18	1.64	1.53
2	A	501	BCZ	C3-C2	5.00	1.64	1.53
2	C	501	BCZ	C5-C4	4.43	1.60	1.53
2	C	501	BCZ	C5-C6	-4.25	1.43	1.51
2	G	501	BCZ	C5-C4	4.16	1.60	1.53
2	H	501	BCZ	C5-C4	4.13	1.60	1.53
2	D	501	BCZ	C5-C4	4.08	1.60	1.53
2	F	501	BCZ	C5-C6	-4.04	1.44	1.51
2	D	501	BCZ	C5-C6	-3.94	1.44	1.51
2	F	501	BCZ	C5-C4	3.92	1.59	1.53
2	A	501	BCZ	C5-C4	3.83	1.59	1.53
2	E	501	BCZ	C5-C4	3.80	1.59	1.53
2	F	501	BCZ	C13-N11	3.80	1.47	1.34
2	A	501	BCZ	C13-N11	3.68	1.47	1.34
2	G	501	BCZ	C5-C6	-3.51	1.45	1.51
2	B	501	BCZ	C5-C4	3.43	1.59	1.53
2	B	501	BCZ	C5-C6	-3.42	1.45	1.51
2	D	501	BCZ	C13-N11	3.35	1.45	1.34
2	B	501	BCZ	C13-N11	3.33	1.45	1.34
2	H	501	BCZ	C5-C6	-3.25	1.45	1.51
2	D	501	BCZ	C1-C5	3.25	1.60	1.54
2	C	501	BCZ	C13-N11	3.25	1.45	1.34
2	H	501	BCZ	C13-N11	3.24	1.45	1.34
2	H	501	BCZ	C1-C5	3.21	1.60	1.54
2	A	501	BCZ	C1-C5	3.20	1.60	1.54
2	E	501	BCZ	C13-N11	3.16	1.45	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	G	501	BCZ	C1-C5	3.05	1.60	1.54
2	E	501	BCZ	C1-C5	3.03	1.60	1.54
2	B	501	BCZ	C1-C5	2.97	1.60	1.54
2	G	501	BCZ	C13-N11	2.88	1.44	1.34
2	F	501	BCZ	C1-C5	2.73	1.59	1.54
2	E	501	BCZ	C5-C6	-2.73	1.46	1.51
2	C	501	BCZ	C1-C5	2.69	1.59	1.54
2	A	501	BCZ	C5-C6	-2.48	1.46	1.51
2	E	501	BCZ	C26-N27	-2.29	1.25	1.34
2	C	501	BCZ	C26-N27	-2.28	1.25	1.34
2	A	501	BCZ	C26-N27	-2.27	1.25	1.34
2	H	501	BCZ	C26-N27	-2.25	1.25	1.34
2	B	501	BCZ	C26-N27	-2.24	1.25	1.34
2	D	501	BCZ	C26-N27	-2.17	1.25	1.34
2	D	501	BCZ	O14-C13	-2.15	1.18	1.23
2	G	501	BCZ	C26-N27	-2.15	1.26	1.34
2	F	501	BCZ	C26-N27	-2.13	1.26	1.34
2	E	501	BCZ	O14-C13	-2.11	1.18	1.23
2	A	501	BCZ	O14-C13	-2.08	1.18	1.23
2	C	501	BCZ	C26-N30	-2.06	1.24	1.32

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	501	BCZ	C15-C13-N11	4.46	123.65	116.10
2	D	501	BCZ	O7-C6-C5	3.79	124.47	114.03
2	C	501	BCZ	C24-C10-N11	-3.75	104.73	110.68
2	A	501	BCZ	O7-C6-O8	-3.47	116.22	124.09
2	G	501	BCZ	C24-C10-N11	-3.25	105.53	110.68
2	D	501	BCZ	C24-C10-N11	3.04	115.50	110.68
2	A	501	BCZ	O7-C6-C5	2.85	121.88	114.03
2	E	501	BCZ	O7-C6-O8	-2.84	117.64	124.09
2	F	501	BCZ	O7-C6-O8	-2.77	117.79	124.09
2	G	501	BCZ	C10-N11-C13	-2.75	116.49	123.18
2	C	501	BCZ	C15-C13-N11	2.74	120.73	116.10
2	H	501	BCZ	C24-C10-N11	-2.73	106.36	110.68
2	G	501	BCZ	O14-C13-N11	-2.68	117.03	121.95
2	E	501	BCZ	C15-C13-N11	2.61	120.52	116.10
2	B	501	BCZ	O7-C6-C5	2.59	121.16	114.03
2	H	501	BCZ	O7-C6-C5	2.57	121.10	114.03
2	B	501	BCZ	C24-C10-N11	-2.57	106.61	110.68
2	D	501	BCZ	O7-C6-O8	-2.50	118.40	124.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	BCZ	O7-C6-O8	-2.43	118.58	124.09
2	A	501	BCZ	C15-C13-N11	2.41	120.17	116.10
2	C	501	BCZ	C4-C3-C2	-2.39	100.66	104.09
2	H	501	BCZ	O7-C6-O8	-2.36	118.74	124.09
2	D	501	BCZ	O14-C13-N11	-2.35	117.63	121.95
2	G	501	BCZ	O7-C6-C5	2.34	120.47	114.03
2	G	501	BCZ	O7-C6-O8	-2.33	118.79	124.09
2	G	501	BCZ	C15-C13-N11	2.33	120.04	116.10
2	D	501	BCZ	O8-C6-C5	-2.33	117.11	122.95
2	E	501	BCZ	O7-C6-C5	2.17	120.00	114.03
2	A	501	BCZ	C24-C10-C3	-2.17	110.19	115.55
2	F	501	BCZ	C24-C10-C3	-2.16	110.20	115.55
2	C	501	BCZ	C36-C24-C10	2.15	119.29	112.33
2	E	501	BCZ	C24-C10-N11	-2.12	107.31	110.68
2	A	501	BCZ	C1-C2-N25	2.12	116.93	112.39
2	B	501	BCZ	C24-C10-C3	-2.07	110.44	115.55
2	D	501	BCZ	C10-N11-C13	2.06	128.19	123.18
2	F	501	BCZ	O7-C6-C5	2.06	119.71	114.03
2	H	501	BCZ	O9-C4-C5	-2.04	106.07	110.94

There are no chirality outliers.

All (32) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	501	BCZ	N11-C10-C24-C36
2	C	501	BCZ	C10-C24-C37-C38
2	D	501	BCZ	C24-C10-C3-C2
2	D	501	BCZ	N11-C10-C3-C4
2	D	501	BCZ	N11-C10-C24-C37
2	D	501	BCZ	N11-C10-C24-C36
2	D	501	BCZ	C3-C10-N11-C13
2	D	501	BCZ	C24-C10-N11-C13
2	D	501	BCZ	C15-C13-N11-C10
2	D	501	BCZ	O14-C13-N11-C10
2	A	501	BCZ	C36-C24-C37-C38
2	B	501	BCZ	C36-C24-C37-C38
2	H	501	BCZ	C36-C24-C37-C38
2	C	501	BCZ	C36-C24-C37-C38
2	H	501	BCZ	C37-C24-C36-C39
2	F	501	BCZ	C4-C5-C6-O7
2	C	501	BCZ	C3-C10-C24-C36
2	D	501	BCZ	C3-C10-C24-C37

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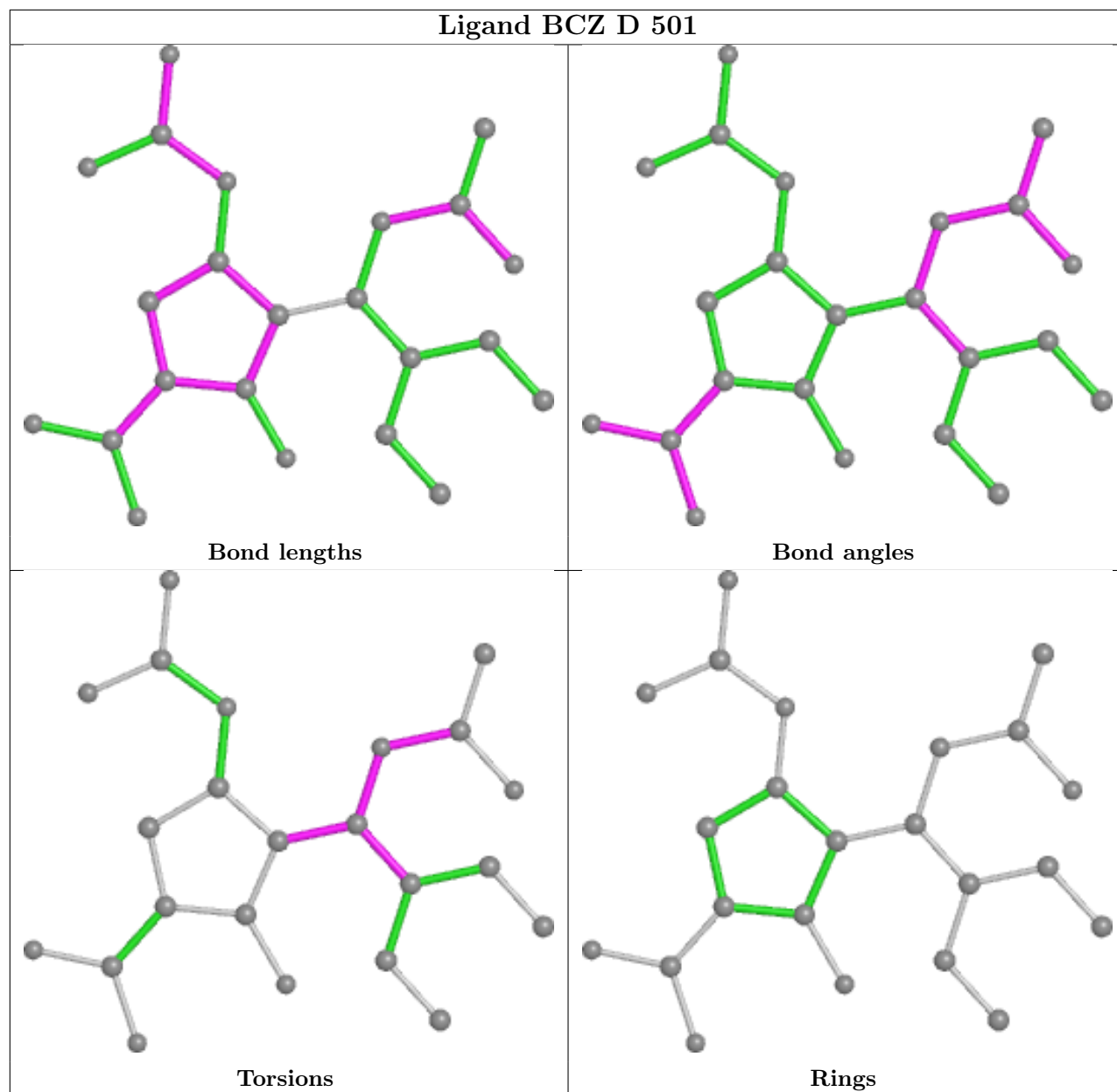
Mol	Chain	Res	Type	Atoms
2	F	501	BCZ	C37-C24-C36-C39
2	H	501	BCZ	C10-C24-C36-C39
2	C	501	BCZ	C24-C10-C3-C4
2	A	501	BCZ	C10-C24-C37-C38
2	B	501	BCZ	C10-C24-C37-C38
2	H	501	BCZ	C10-C24-C37-C38
2	C	501	BCZ	C4-C5-C6-O8
2	C	501	BCZ	C4-C5-C6-O7
2	C	501	BCZ	C1-C5-C6-O8
2	C	501	BCZ	C1-C5-C6-O7
2	B	501	BCZ	C37-C24-C36-C39
2	G	501	BCZ	C36-C24-C37-C38
2	D	501	BCZ	N11-C10-C3-C2
2	D	501	BCZ	C24-C10-C3-C4

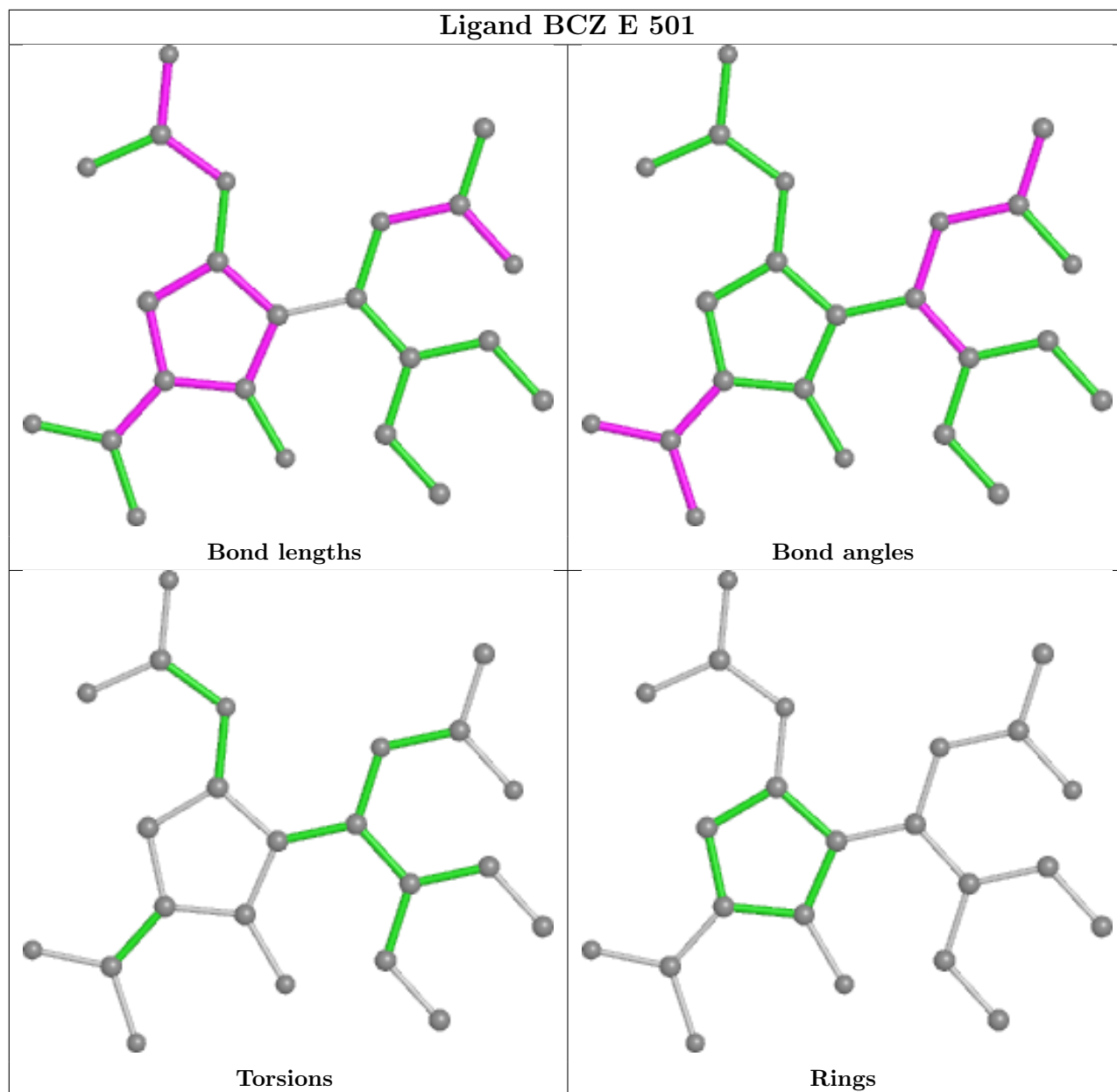
There are no ring outliers.

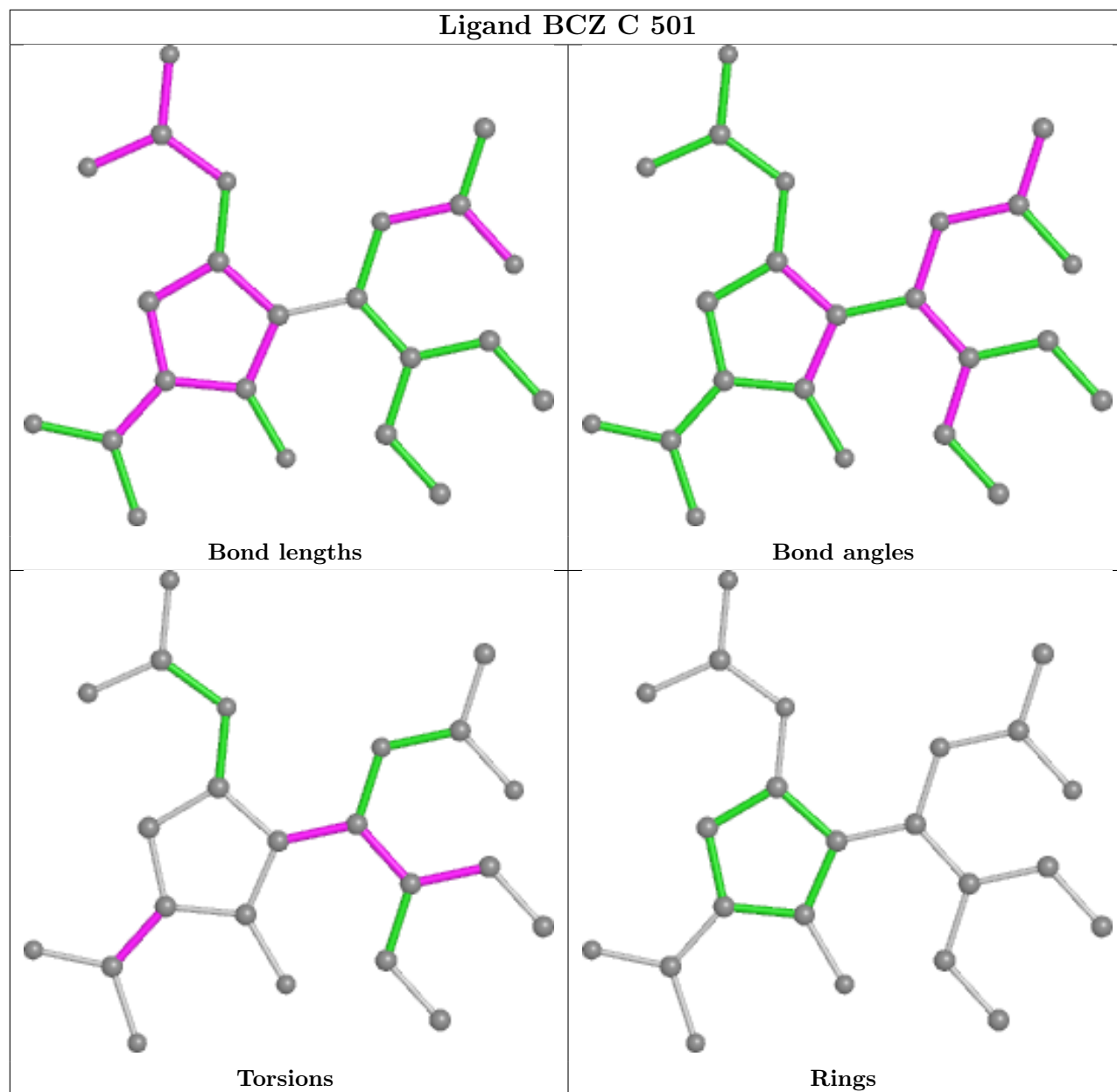
6 monomers are involved in 12 short contacts:

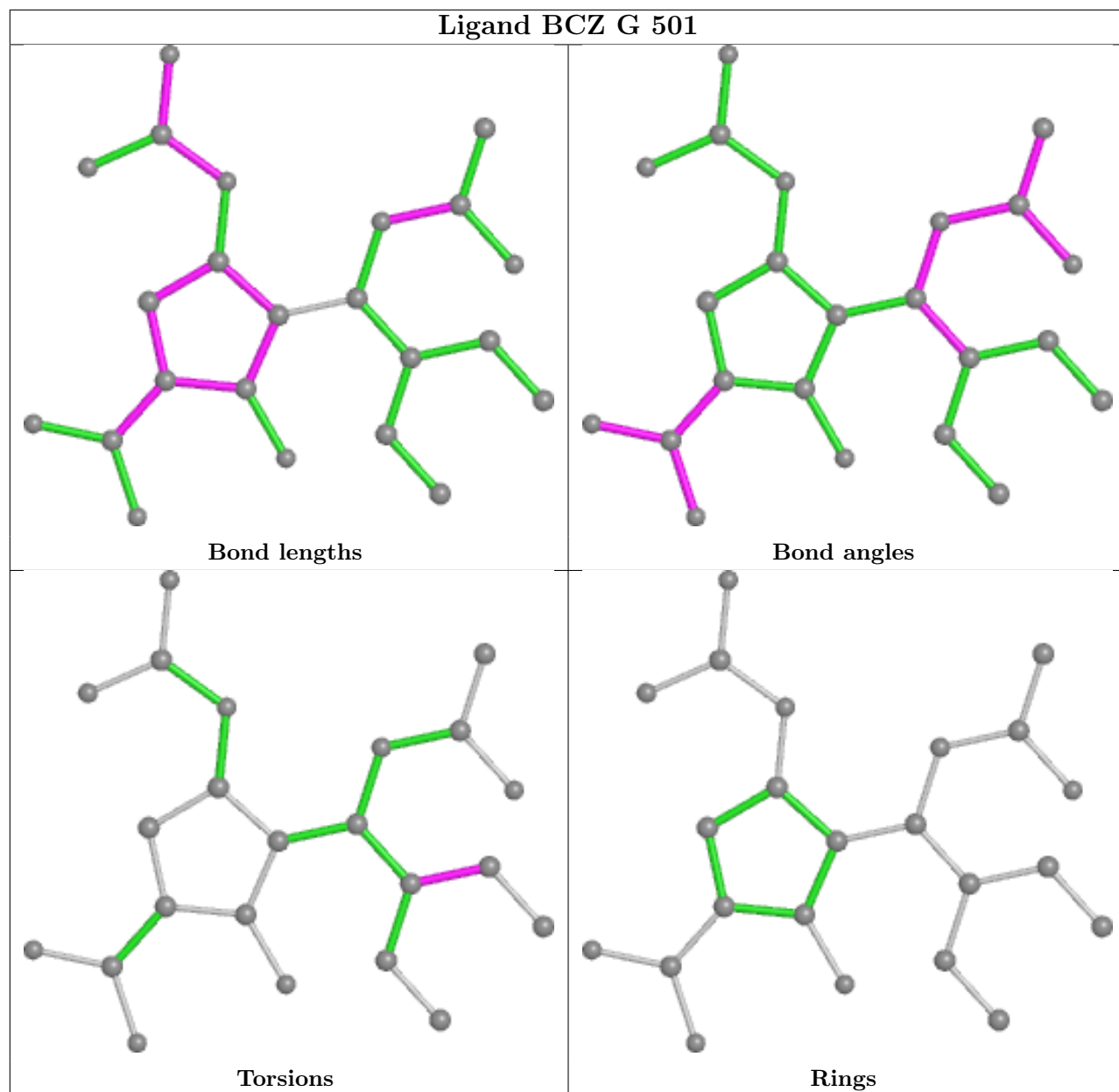
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	501	BCZ	2	0
2	G	501	BCZ	1	0
2	B	501	BCZ	2	0
2	A	501	BCZ	1	0
2	H	501	BCZ	3	0
2	F	501	BCZ	3	0

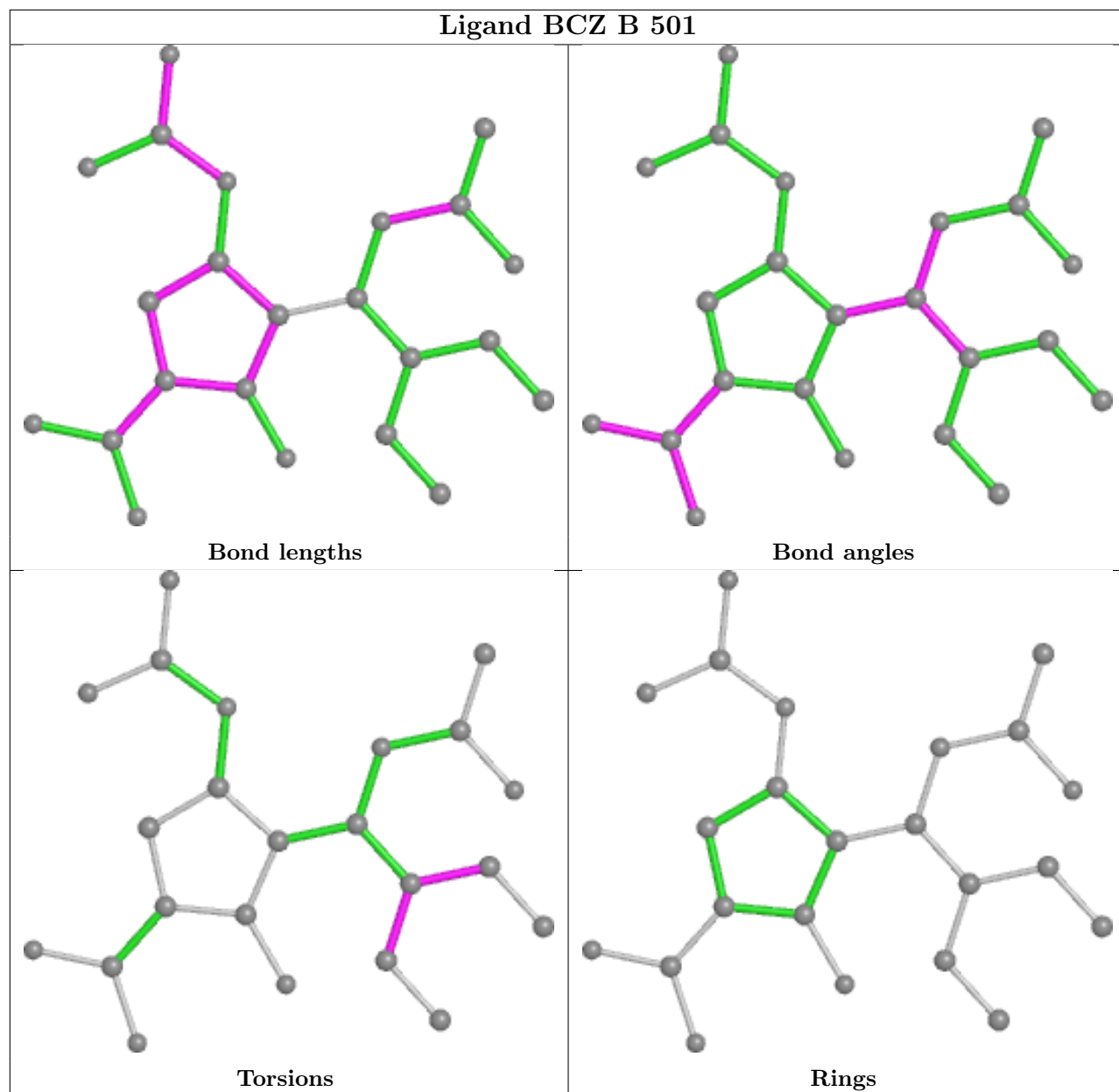
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

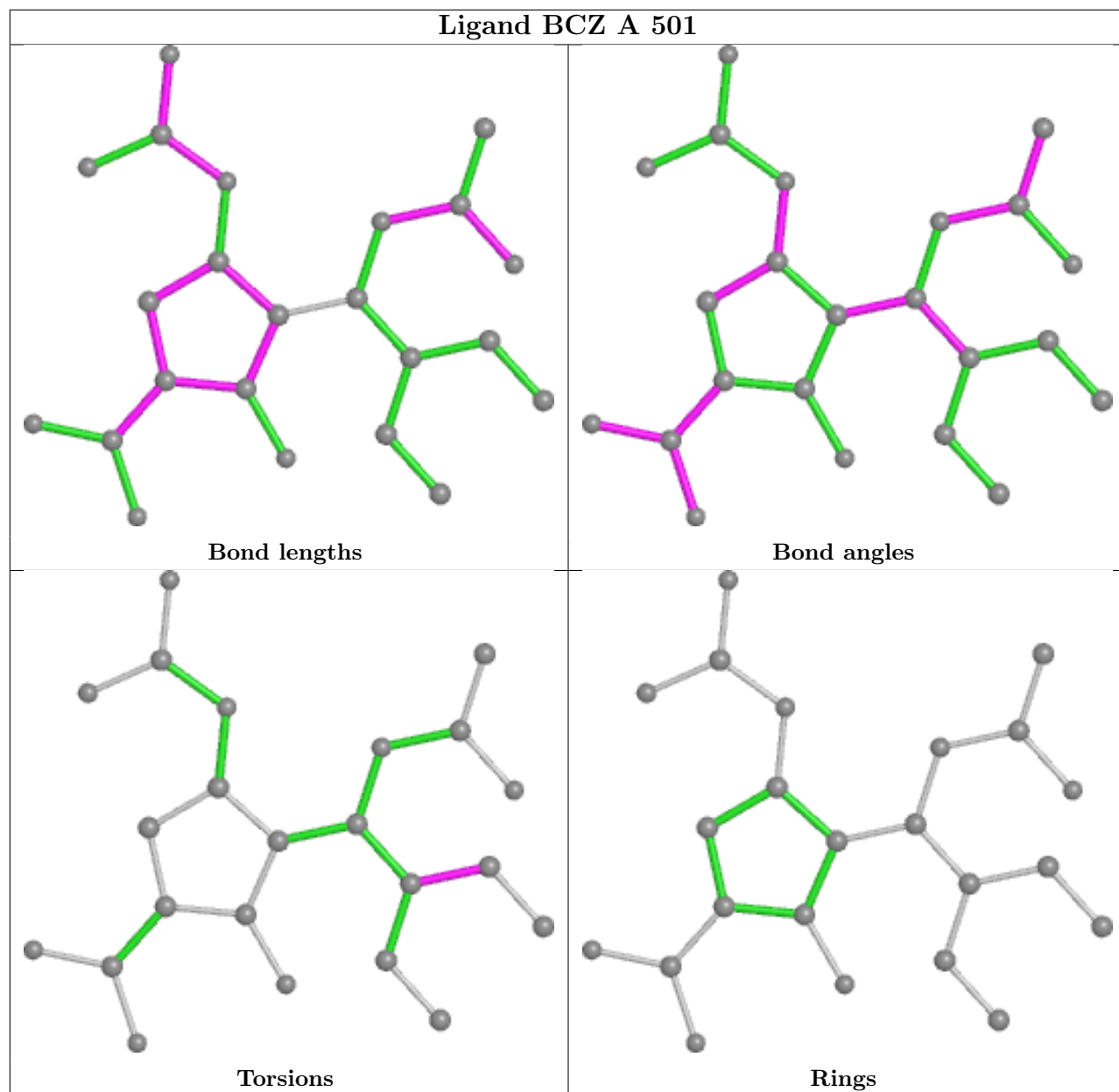


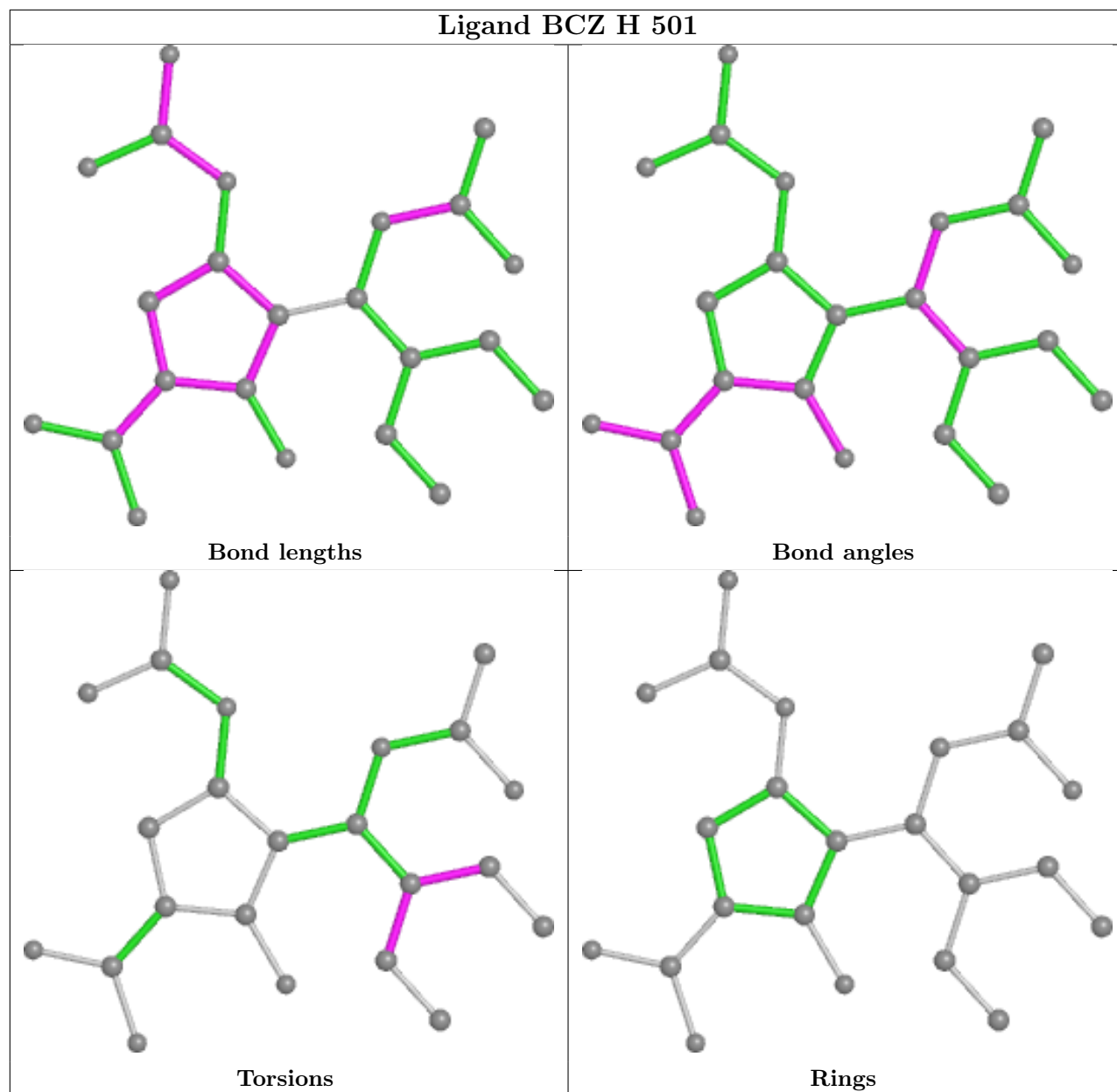


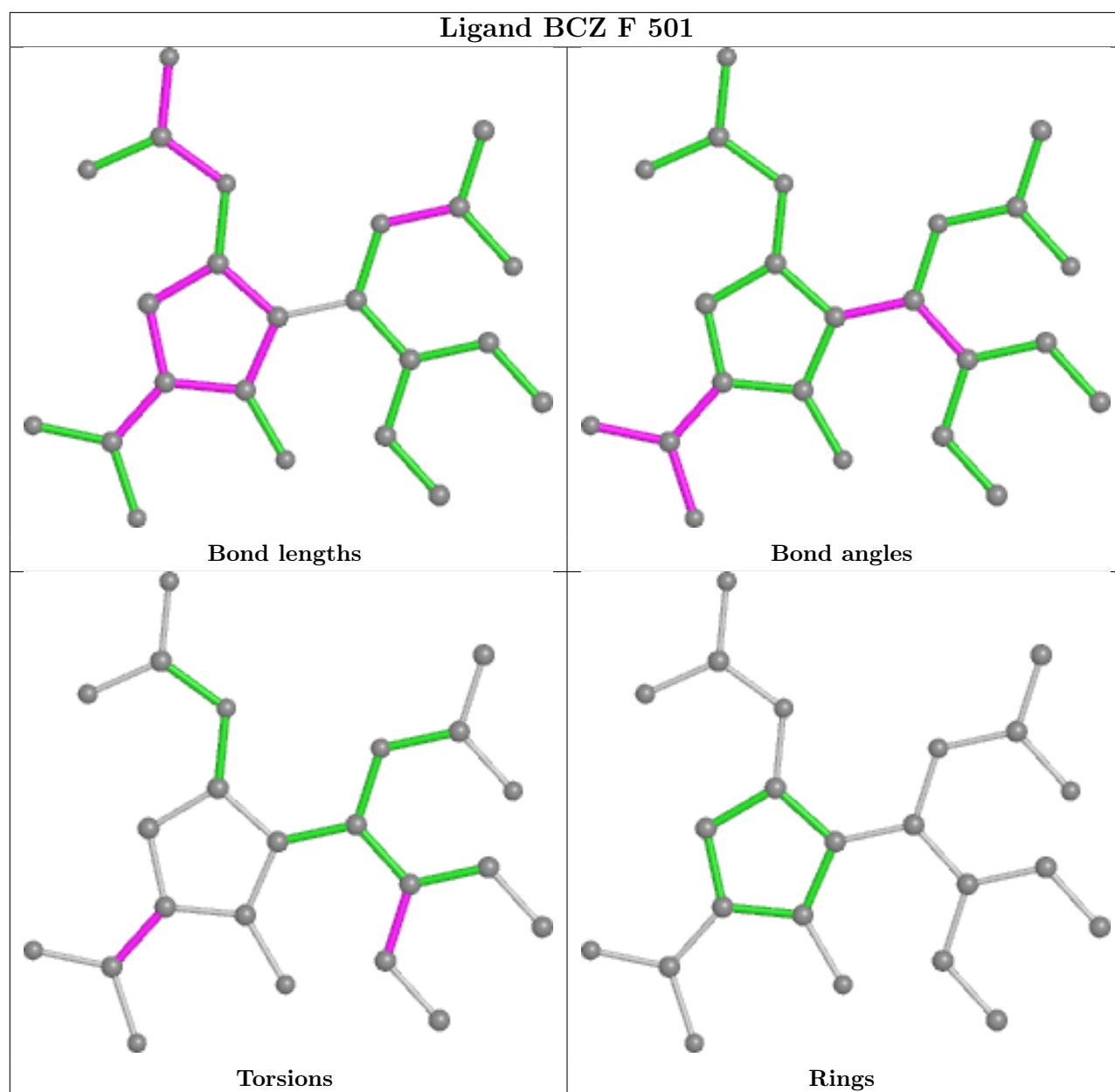












5.7 Other polymers [i](#)

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	387/489 (79%)	-0.22	1 (0%) 94 93	35, 39, 51, 80	0
1	B	387/489 (79%)	-0.23	2 (0%) 91 88	37, 41, 54, 80	0
1	C	387/489 (79%)	-0.24	4 (1%) 82 77	34, 41, 57, 93	0
1	D	387/489 (79%)	-0.15	8 (2%) 63 54	34, 41, 59, 88	0
1	E	387/489 (79%)	-0.21	1 (0%) 94 93	38, 42, 54, 72	0
1	F	387/489 (79%)	-0.19	4 (1%) 82 77	35, 41, 57, 84	0
1	G	387/489 (79%)	-0.15	4 (1%) 82 77	32, 41, 58, 89	0
1	H	387/489 (79%)	-0.19	0 100 100	32, 40, 58, 66	0
All	All	3096/3912 (79%)	-0.20	24 (0%) 86 81	32, 41, 57, 93	0

All (24) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	244	ASP	3.2
1	G	328	PRO	2.9
1	F	414	GLU	2.8
1	C	413	THR	2.8
1	F	413	THR	2.8
1	E	85	SER	2.6
1	D	143	SER	2.5
1	C	399	ALA	2.4
1	D	336	GLY	2.3
1	B	128	ARG	2.3
1	G	413	THR	2.3
1	F	317	THR	2.2
1	G	142	LEU	2.2
1	D	414	GLU	2.2
1	B	413	THR	2.2
1	D	379	GLY	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	389	LYS	2.2
1	D	465	LEU	2.2
1	C	142	LEU	2.2
1	G	412	ALA	2.2
1	D	430	ALA	2.1
1	F	128	ARG	2.1
1	D	388	MET	2.0
1	D	81	LYS	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

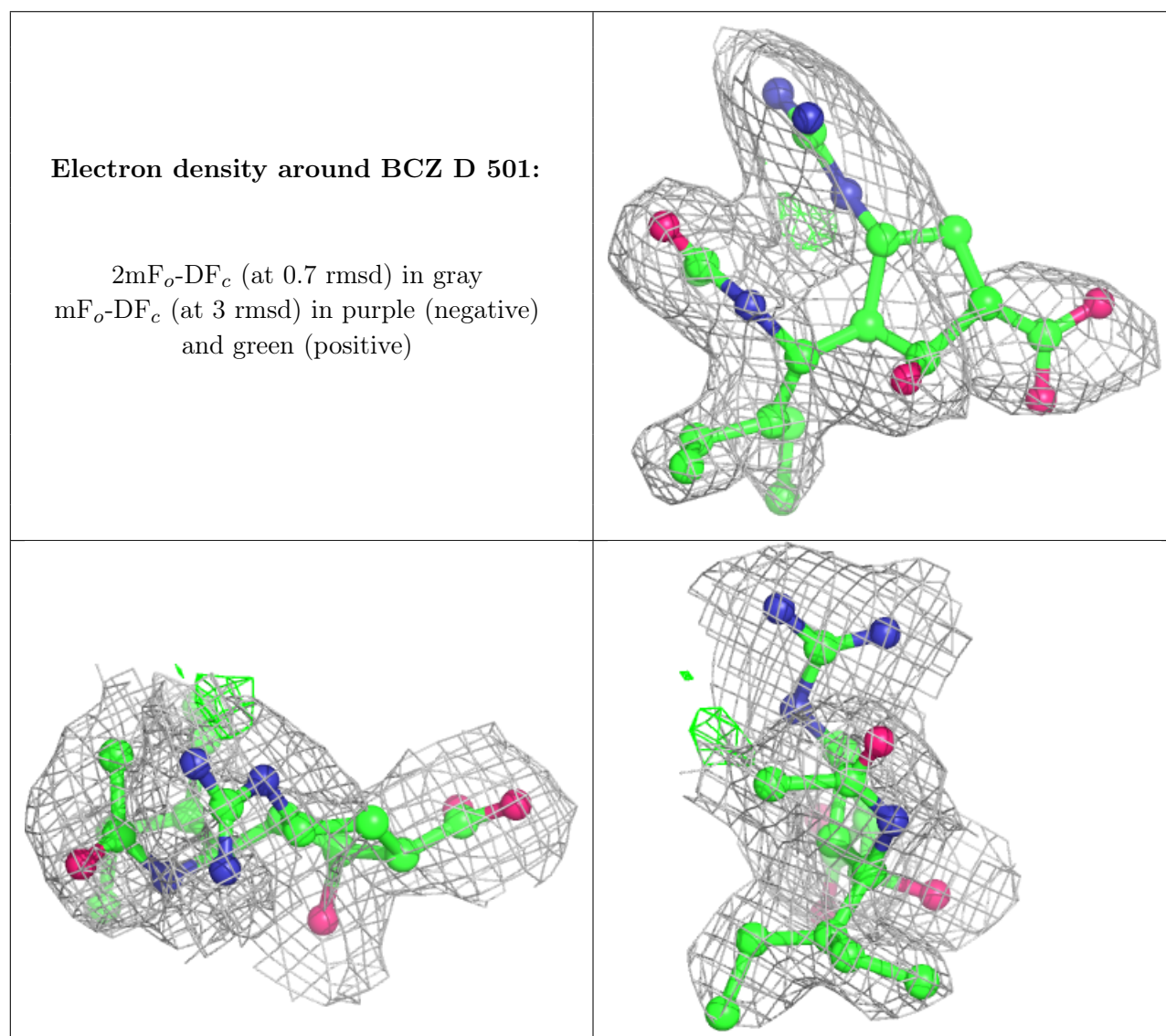
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	BCZ	D	501	23/23	0.90	0.19	33,37,40,41	0
2	BCZ	G	501	23/23	0.90	0.23	33,37,40,43	0
2	BCZ	H	501	23/23	0.90	0.20	32,34,38,39	0
2	BCZ	B	501	23/23	0.91	0.18	38,39,40,45	0
2	BCZ	C	501	23/23	0.92	0.17	36,39,41,42	0
3	CA	F	502	1/1	0.92	0.14	60,60,60,60	0
2	BCZ	E	501	23/23	0.93	0.16	38,39,43,46	0
2	BCZ	F	501	23/23	0.94	0.16	35,37,40,41	0
2	BCZ	A	501	23/23	0.94	0.16	34,35,37,40	0
3	CA	H	502	1/1	0.94	0.12	46,46,46,46	0
3	CA	D	502	1/1	0.95	0.05	51,51,51,51	0
3	CA	E	502	1/1	0.95	0.09	45,45,45,45	0
3	CA	A	502	1/1	0.95	0.07	48,48,48,48	0
3	CA	G	502	1/1	0.95	0.04	50,50,50,50	0
3	CA	C	502	1/1	0.95	0.06	42,42,42,42	0

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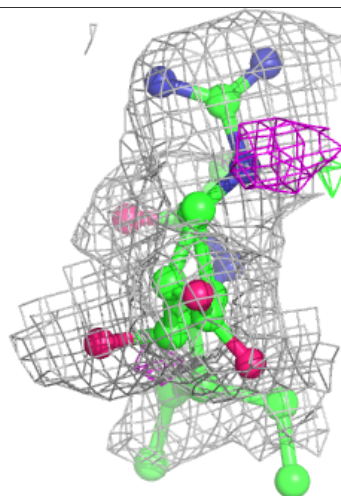
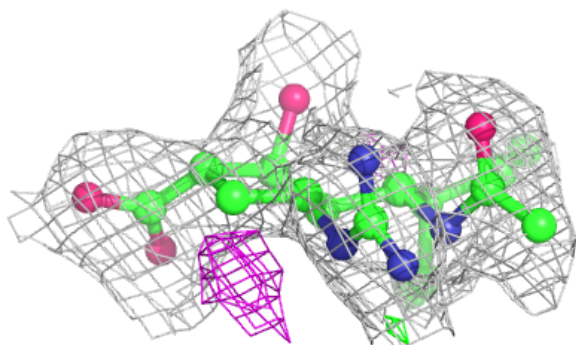
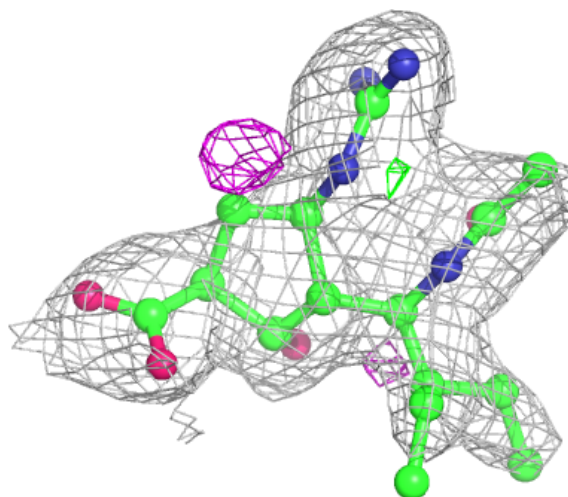
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	CA	B	502	1/1	0.98	0.15	55,55,55,55	0

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.



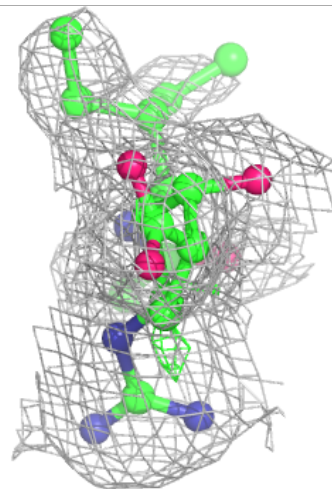
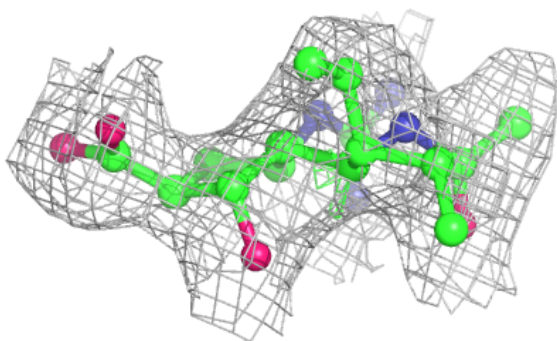
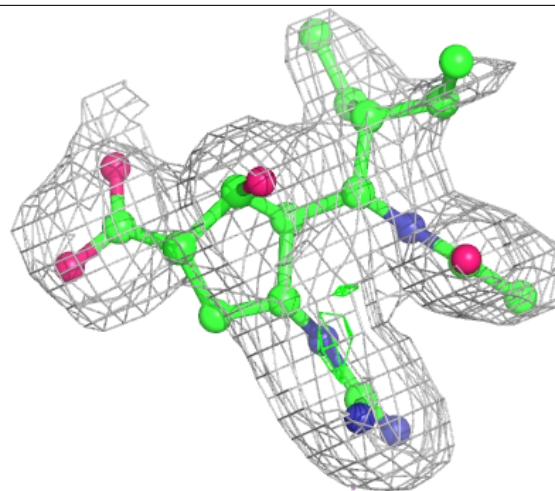
Electron density around BCZ G 501:

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



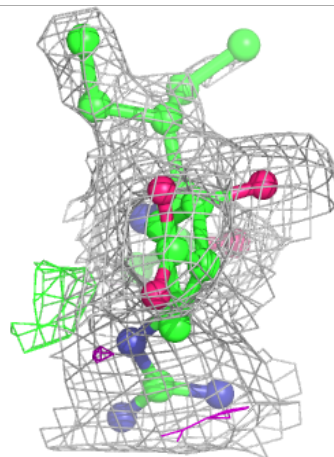
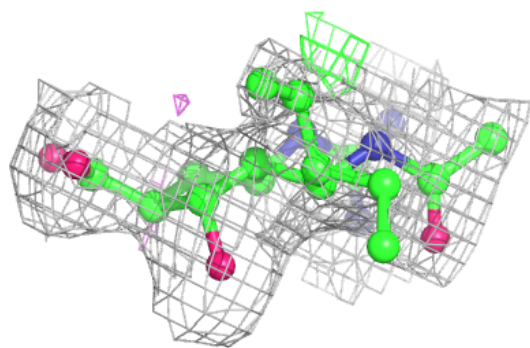
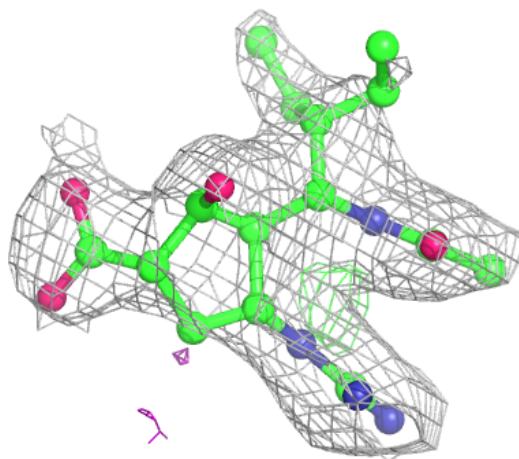
Electron density around BCZ H 501:

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



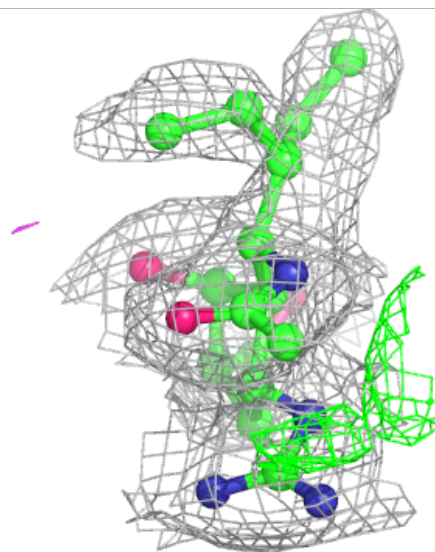
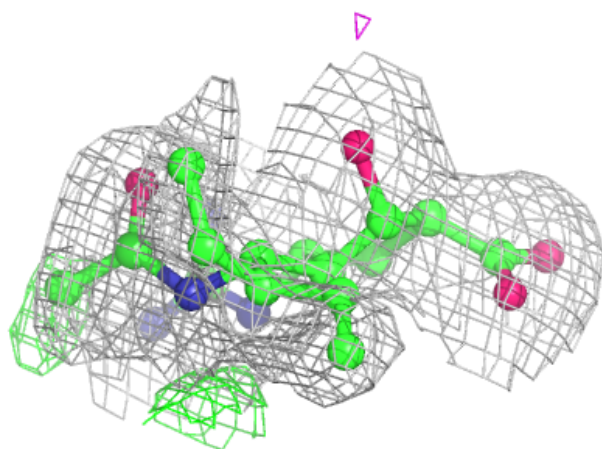
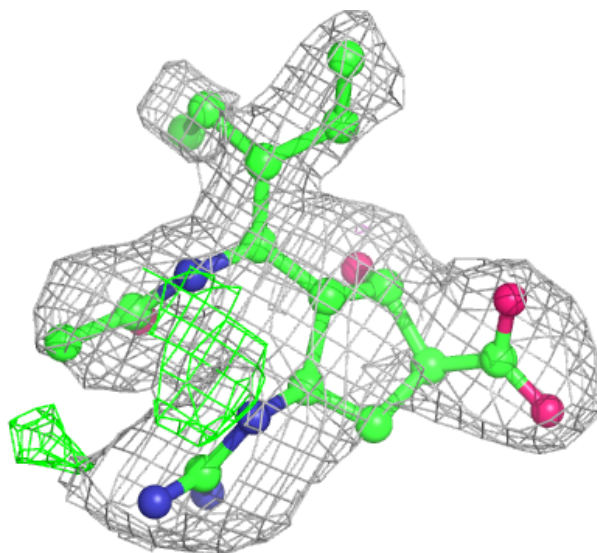
Electron density around BCZ B 501:

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



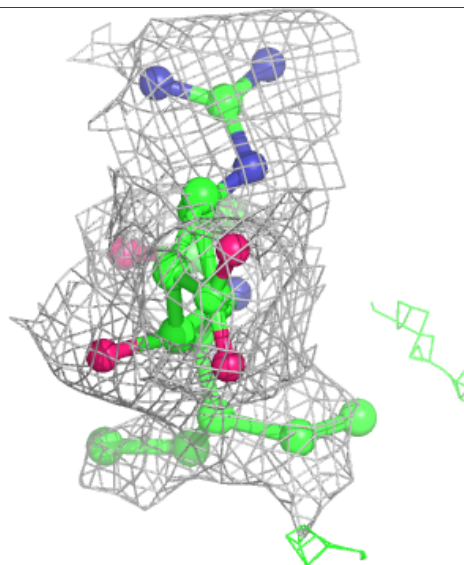
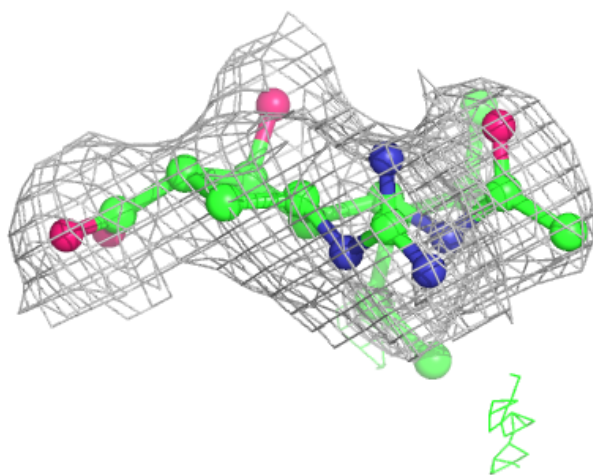
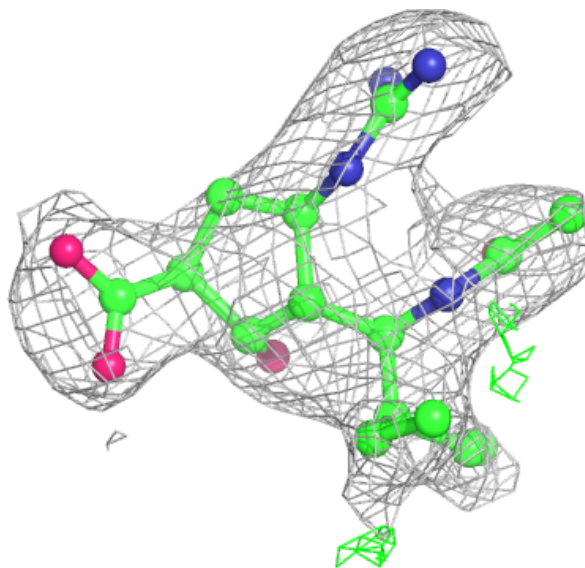
Electron density around BCZ C 501:

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



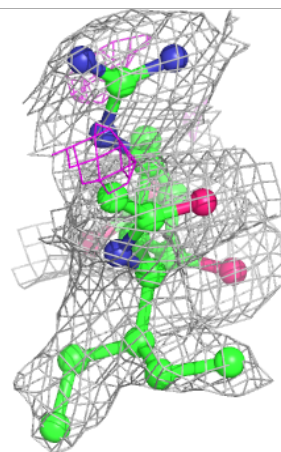
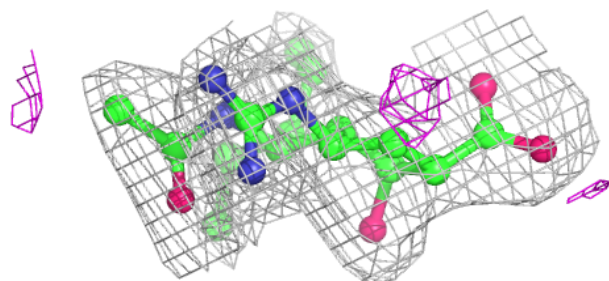
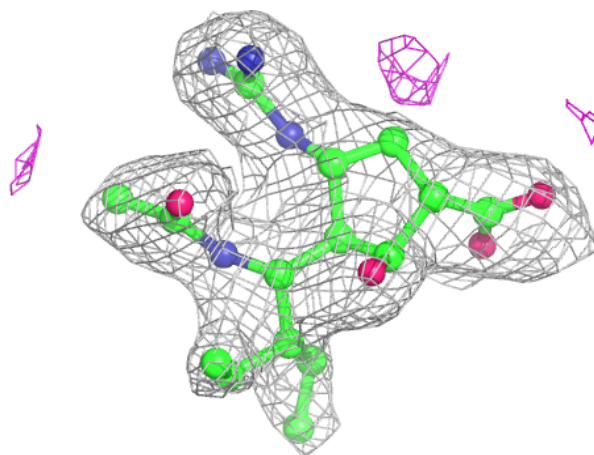
Electron density around BCZ E 501:

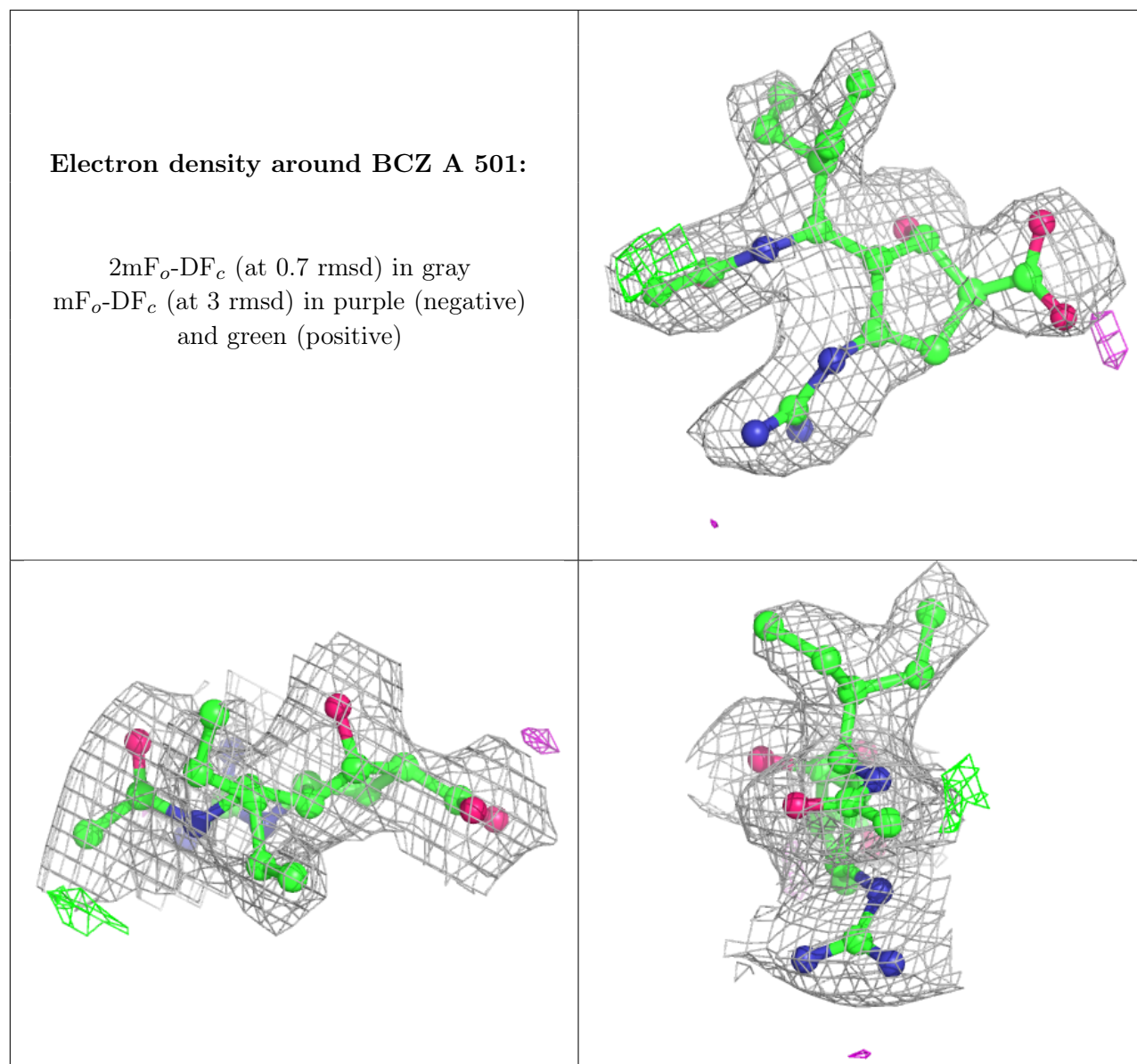
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around BCZ F 501:

$2mF_o-DF_c$ (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.