Full wwPDB X-ray Structure Validation Report ⓘ

Mar 13, 2022 – 06:06 PM JST

PDB ID	:	7DPI
Title	:	Plasmodium falciparum cytoplasmic Phenylalanyl-tRNA synthetase in complex with BRD7929
Authors	:	Manmohan, S.; Malhotra, N.; Harlos, K.; Manickam, Y.; Sharma, A.
Deposited on	:	2020-12-19
Resolution	:	3.60 Å(reported)

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

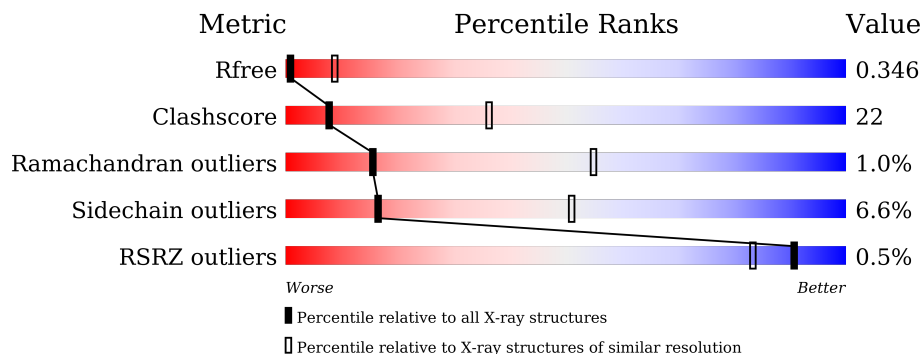|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.27
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.27

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.60 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Rfree		0.346
Clashscore		22
Ramachandran outliers		1.0%
Sidechain outliers		6.6%
RSRZ outliers		0.5%

Worse ← → Better

▌Percentile relative to all X-ray structures

▯Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1257 (3.70-3.50)
Clashscore	141614	1353 (3.70-3.50)
Ramachandran outliers	138981	1307 (3.70-3.50)
Sidechain outliers	138945	1307 (3.70-3.50)
RSRZ outliers	127900	1161 (3.70-3.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	308	49% 41% • 6%
1	C	308	% 61% 31% • 5%
2	B	623	% 56% 28% • 14%
2	D	623	54% 27% • 16%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 11773 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 Phenylalanine–tRNA ligase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	290	Total 2160	C 1395	N 356	O 399	S 10	0	0	0
1	C	292	Total 2161	C 1388	N 366	O 399	S 8	0	0	0

- Molecule 2 is a protein called Phenylalanyl-tRNA synthetase beta subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	536	Total 3776	C 2361	N 638	O 757	S 20	0	0	0
2	D	522	Total 3597	C 2243	N 615	O 721	S 18	0	0	0

- Molecule 3 is (8R,9S,10S)-10-[(dimethylamino)methyl]-N-(4-methoxyphenyl)-9-[4-(2-phenylethynyl)phenyl]-1,6-diazabicyclo[6.2.0]decane-6-carboxamide (three-letter code: B79) (formula: $C_{33}H_{38}N_4O_2$) (labeled as "Ligand of Interest" by depositor).

B79
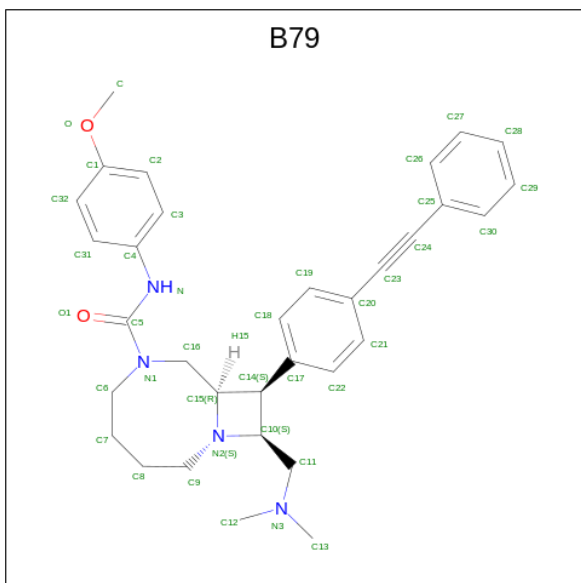
| Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total 39	C 33	N 4	O 2	0	0
3	C	1	Total 39	C 33	N 4	O 2	0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	1	Total 1	Mg 1	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
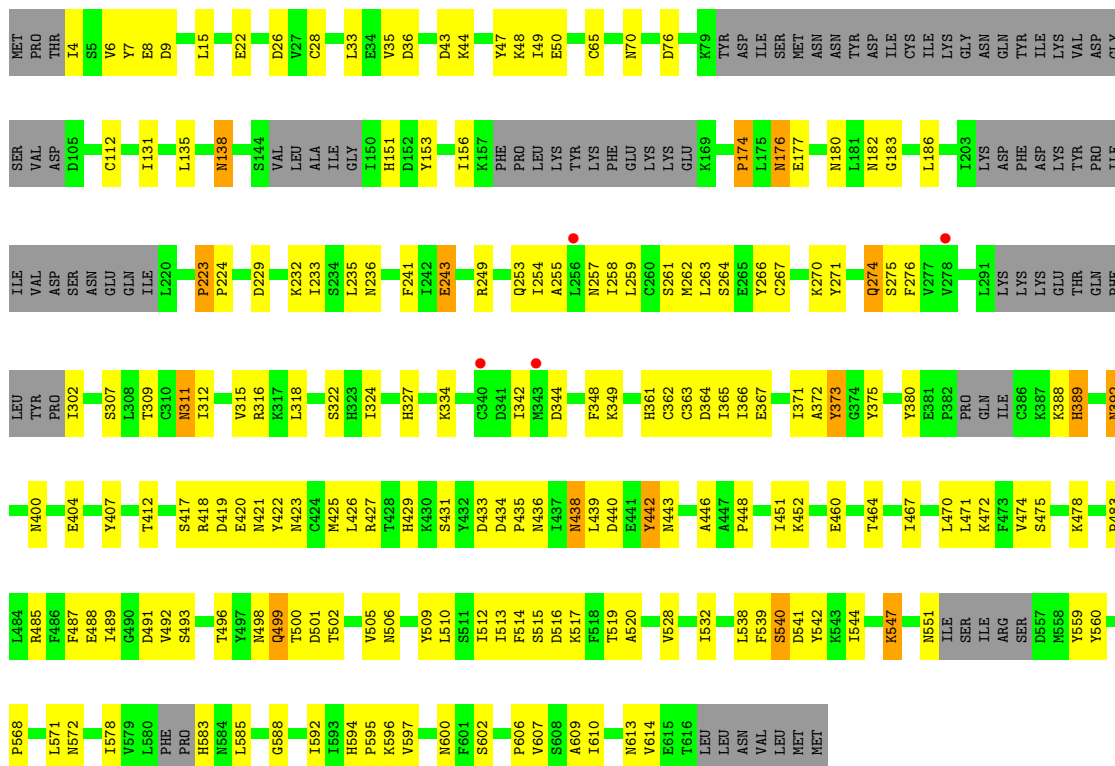
• Molecule 1: Phenylalanine–tRNA ligase
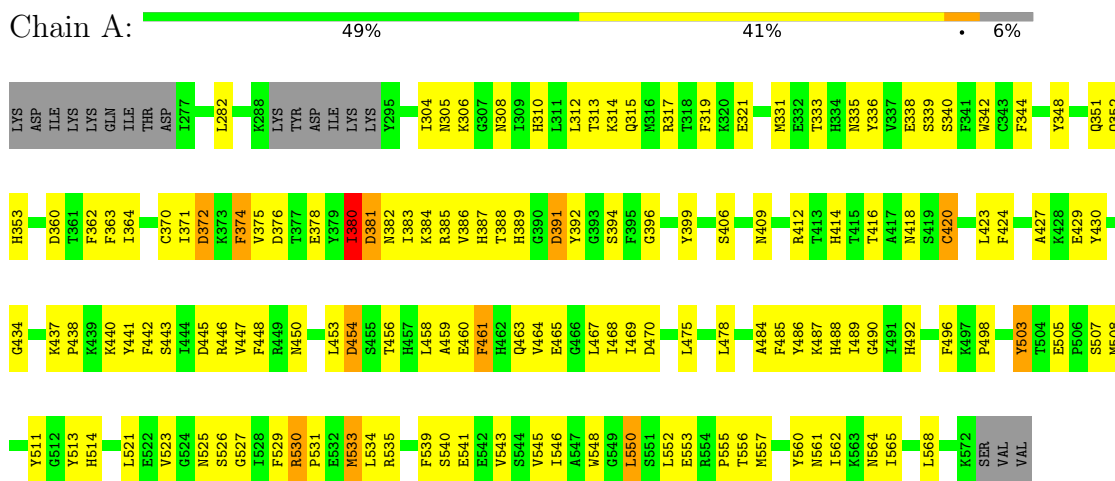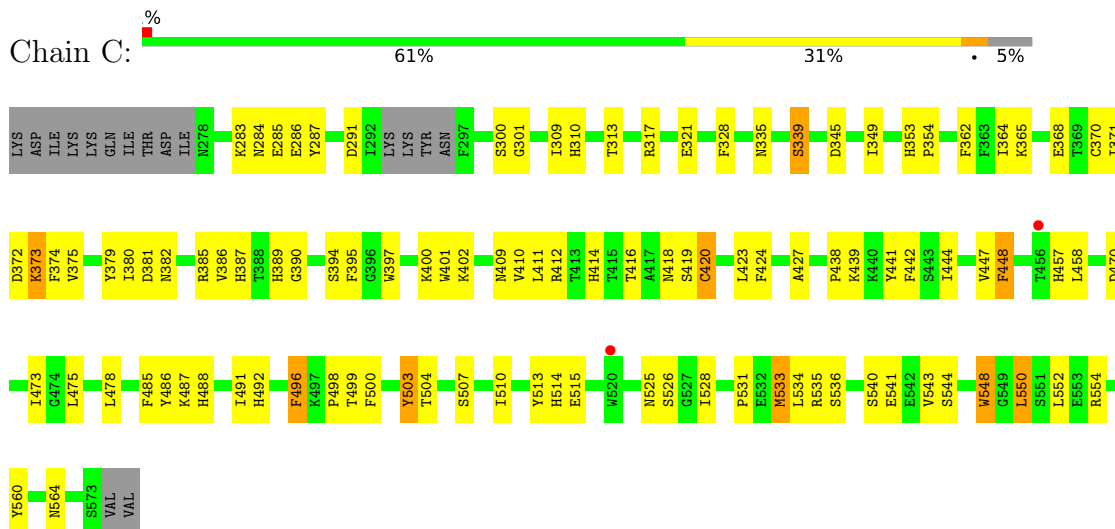
Chain A:

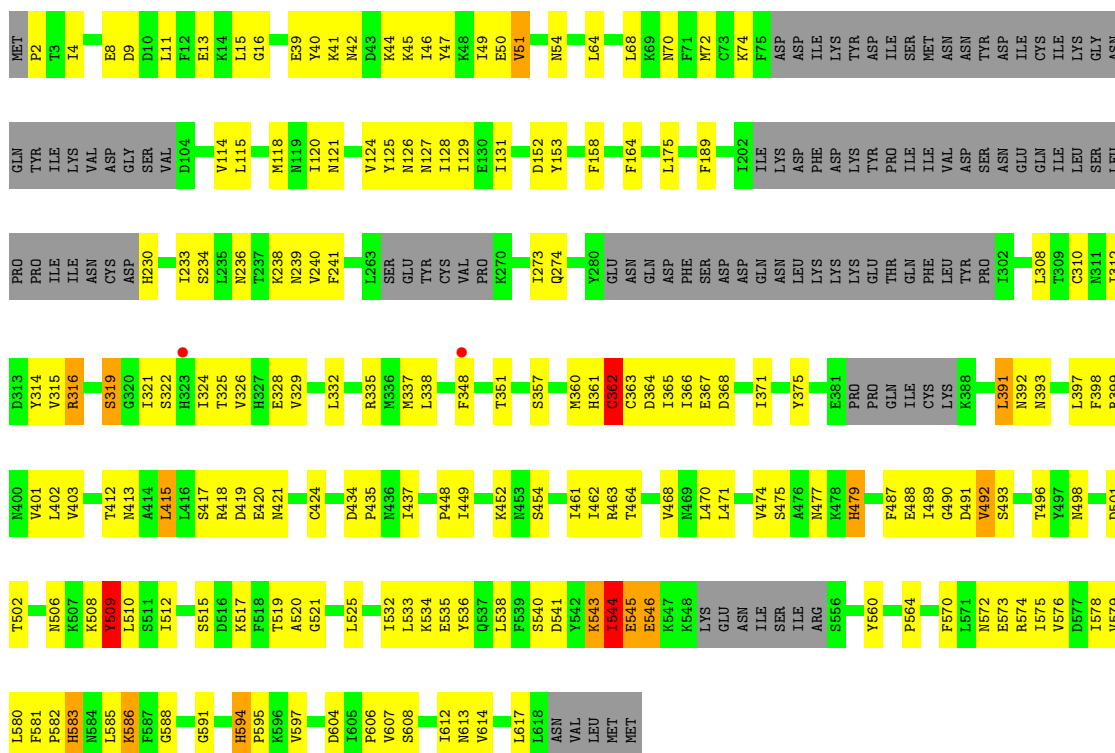

• Molecule 1: Phenylalanine–tRNA ligase

Chain C:

• Molecule 2: Phenylalanyl-tRNA synthetase beta subunit

Chain B:

• Molecule 2: Phenylalanyl-tRNA synthetase beta subunit

Chain D:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	86.65Å 108.03Å 140.53Å 90.00° 105.11° 90.00°	Depositor
Resolution (Å)	66.14 – 3.60 66.14 – 3.60	Depositor EDS
% Data completeness (in resolution range)	98.8 (66.14-3.60) 86.1 (66.14-3.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	1.10 (at 3.58Å)	Xtriage
Refinement program	PHENIX 1.15RC1_3423	Depositor
R, R_{free}	0.294 , 0.330 0.312 , 0.346	Depositor DCC
R_{free} test set	2002 reflections (6.92%)	wwPDB-VP
Wilson B-factor (Å^2)	96.0	Xtriage
Anisotropy	0.145	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.23 , 39.9	EDS
L-test for twinning [2]	$<|L|> = 0.43$, $<L^2> = 0.25$	Xtriage
Estimated twinning fraction	0.094 for h,-k,-h-l	Xtriage
Reported twinning fraction	0.180 for h,-k,-h-l	Depositor
Outliers	1 of 28944 reflections (0.003%)	Xtriage
F_o,F_c correlation	0.83	EDS
Total number of atoms	11773	wwPDB-VP
Average B, all atoms (Å^2)	87.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.88% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: B79, MG

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	0.60	0/2214	0.68	1/3010 (0.0%)
1	C	0.59	0/2214	0.67	0/3011
2	B	0.50	0/3825	0.68	4/5228 (0.1%)
2	D	0.55	1/3642 (0.0%)	0.68	3/4981 (0.1%)
All	All	0.55	1/11895 (0.0%)	0.68	8/16230 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	362	CYS	CB-SG	-5.16	1.73	1.81

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	235	LEU	N-CA-C	-8.02	89.36	111.00
2	D	545	GLU	N-CA-C	-7.39	91.04	111.00
2	D	41	LYS	N-CA-C	-6.16	94.37	111.00
2	B	438	ASN	N-CA-C	-5.80	95.33	111.00
2	B	380	TYR	N-CA-C	5.75	126.52	111.00
2	D	509	TYR	CA-CB-CG	5.31	123.48	113.40
2	B	235	LEU	C-N-CA	5.12	134.49	121.70
1	A	380	ILE	O-C-N	5.09	130.85	122.70

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2160	0	1922	116	0
1	C	2161	0	1911	84	0
2	B	3776	0	3207	140	0
2	D	3597	0	2984	159	0
3	A	39	0	0	2	0
3	C	39	0	0	2	0
4	B	1	0	0	0	0
All	All	11773	0	10024	475	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 22.

All (475) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:378:GLU:O	1:A:381:ASP:HB2	1.51	1.11
1:C:540:SER:HB2	1:C:543:VAL:HG23	1.33	1.07
1:C:390:GLY:HA3	1:C:395:PHE:HA	1.50	0.92
2:D:509:TYR:HB3	2:D:613:ASN:HA	1.51	0.91
1:C:411:LEU:HD13	1:C:448:PHE:HE2	1.37	0.87
2:D:462:ILE:HG21	2:D:493:SER:OG	1.74	0.87
1:C:424:PHE:O	1:C:427:ALA:HB3	1.77	0.85
2:B:6:VAL:HB	2:B:47:TYR:H	1.42	0.82
1:A:469:ILE:HG23	1:A:545:VAL:HG12	1.61	0.81
2:D:40:TYR:HD1	2:D:45:LYS:HA	1.46	0.81
2:B:493:SER:HB3	2:B:506:ASN:HD22	1.46	0.80
1:A:438:PRO:HA	1:A:469:ILE:O	1.81	0.80
2:B:597:VAL:HA	2:B:600:ASN:HD22	1.47	0.79
1:A:438:PRO:HB3	1:A:470:ASP:HB3	1.63	0.78
2:D:325:THR:HA	2:D:328:GLU:HG3	1.65	0.77
1:C:395:PHE:O	2:D:360:MET:CB	2.33	0.77
1:C:373:LYS:HB2	1:C:380:ILE:HD11	1.66	0.76
2:D:362:CYS:HB2	2:D:365:ILE:HD12	1.68	0.76
2:B:22:GLU:O	2:B:26:ASP:HB2	1.86	0.75
2:B:512:ILE:HG12	2:B:610:ILE:HG12	1.68	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:258:ILE:O	2:B:262:MET:CB	2.36	0.73
1:A:388:THR:HG22	1:A:399:TYR:O	1.88	0.73
2:B:547:LYS:O	2:B:551:ASN:N	2.20	0.73
2:D:412:THR:N	2:D:488:GLU:OE1	2.21	0.73
2:D:570:PHE:HB2	2:D:575:ILE:HD12	1.69	0.72
1:C:310:HIS:HB3	1:C:313:THR:HG22	1.71	0.72
2:B:389:HIS:ND1	2:B:389:HIS:O	2.22	0.72
1:A:468:ILE:HG22	1:A:546:ILE:HG12	1.72	0.71
2:D:402:LEU:HD21	2:D:532:ILE:HD11	1.70	0.71
1:C:291:ASP:HB3	2:D:573:GLU:HB3	1.72	0.71
1:C:486:TYR:HD2	1:C:491:ILE:HD11	1.54	0.71
1:A:529:PHE:HA	1:A:530:ARG:HH21	1.55	0.71
2:B:613:ASN:OD1	2:B:614:VAL:N	2.22	0.71
2:B:257:ASN:ND2	2:B:302:ILE:O	2.21	0.71
1:A:424:PHE:O	1:A:427:ALA:HB3	1.90	0.71
2:B:264:SER:HB3	2:B:271:TYR:HA	1.72	0.70
1:C:535:ARG:NH2	1:C:541:GLU:O	2.25	0.70
1:A:352:GLN:O	1:A:353:HIS:ND1	2.25	0.70
1:A:409:ASN:ND2	2:D:502:THR:OG1	2.23	0.70
1:A:378:GLU:O	1:A:381:ASP:CB	2.34	0.70
2:D:479:HIS:O	2:D:479:HIS:ND1	2.25	0.70
1:C:335:ASN:O	1:C:412:ARG:NH1	2.26	0.69
2:D:121:ASN:O	2:D:125:TYR:N	2.25	0.69
2:D:434:ASP:O	2:D:437:ILE:N	2.25	0.69
1:A:409:ASN:HD21	2:D:502:THR:HG1	1.41	0.69
1:A:486:TYR:HE2	1:A:523:VAL:HG22	1.58	0.68
1:C:382:ASN:O	1:C:386:VAL:HG23	1.93	0.68
1:C:416:THR:O	1:C:419:SER:HB2	1.94	0.68
1:A:384:LYS:O	1:A:388:THR:HG23	1.93	0.68
2:B:489:ILE:HD13	2:B:510:LEU:HD13	1.75	0.68
2:D:509:TYR:HA	2:D:614:VAL:HG12	1.75	0.68
2:D:152:ASP:HA	2:D:240:VAL:HA	1.77	0.67
1:C:394:SER:HB3	2:D:361:HIS:HA	1.75	0.67
2:B:153:TYR:HA	2:B:156:ILE:HD13	1.75	0.67
1:A:304:ILE:HG22	1:A:305:ASN:H	1.60	0.67
1:C:335:ASN:ND2	1:C:418:ASN:OD1	2.27	0.67
2:D:308:LEU:HD13	2:D:362:CYS:CA	2.25	0.67
1:A:370:CYS:HB3	2:D:502:THR:HA	1.77	0.66
1:A:565:ILE:HG13	1:A:568:LEU:HD21	1.78	0.66
1:A:530:ARG:HD3	1:A:530:ARG:N	2.10	0.66
1:C:540:SER:HB2	1:C:543:VAL:CG2	2.19	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:308:LEU:HD13	2:D:362:CYS:HA	1.78	0.66
1:C:353:HIS:CG	1:C:354:PRO:HD2	2.31	0.66
2:B:309:THR:HG22	2:B:349:LYS:HG2	1.77	0.66
1:A:412:ARG:NH1	1:A:418:ASN:OD1	2.29	0.65
2:D:448:PRO:HG3	2:D:464:THR:HG21	1.78	0.65
2:B:519:THR:OG1	2:B:520:ALA:N	2.28	0.65
2:B:496:THR:HG21	2:B:505:VAL:HB	1.78	0.65
1:A:486:TYR:O	1:A:492:HIS:NE2	2.29	0.65
1:C:496:PHE:HD2	1:C:510:ILE:HG22	1.63	0.64
1:C:387:HIS:ND1	1:C:401:TRP:CD1	2.66	0.64
2:D:581:PHE:HB3	2:D:583:HIS:H	1.61	0.64
1:A:282:LEU:HD22	2:B:595:PRO:HB3	1.80	0.64
2:B:407:TYR:CE2	2:B:485:ARG:HB3	2.32	0.64
1:C:394:SER:CB	2:D:361:HIS:HA	2.28	0.63
2:B:15:LEU:HD21	2:B:65:CYS:HB2	1.81	0.63
2:D:308:LEU:HD13	2:D:362:CYS:CB	2.29	0.63
1:A:525:ASN:OD1	1:A:526:SER:N	2.29	0.62
1:A:380:ILE:O	1:A:380:ILE:HG22	1.99	0.62
2:B:255:ALA:HA	2:B:258:ILE:HG12	1.80	0.62
1:A:539:PHE:HB3	1:A:543:VAL:HG11	1.81	0.62
1:C:438:PRO:HB3	1:C:470:ASP:HB3	1.81	0.62
2:D:175:LEU:O	2:D:230:HIS:N	2.33	0.62
2:D:540:SER:OG	2:D:541:ASP:N	2.34	0.61
2:B:448:PRO:HB3	2:B:464:THR:HG21	1.83	0.61
1:C:531:PRO:HB3	1:C:535:ARG:HH11	1.65	0.60
1:A:454:ASP:OD1	1:A:456:THR:OG1	2.20	0.60
1:C:470:ASP:OD1	1:C:470:ASP:N	2.33	0.60
2:D:434:ASP:OD1	2:D:434:ASP:N	2.34	0.60
1:A:335:ASN:O	1:A:412:ARG:NH1	2.35	0.60
1:A:362:PHE:CZ	1:A:450:ASN:HB2	2.37	0.60
2:D:361:HIS:C	2:D:363:CYS:H	2.05	0.60
2:D:613:ASN:OD1	2:D:614:VAL:N	2.35	0.60
1:A:378:GLU:CB	1:A:381:ASP:HB2	2.32	0.59
2:B:4:ILE:O	2:B:48:LYS:HA	2.02	0.59
2:B:425:MET:HB2	2:B:427:ARG:HG2	1.83	0.59
1:C:411:LEU:HD13	1:C:448:PHE:CE2	2.29	0.59
1:A:412:ARG:HG3	1:A:447:VAL:HG13	1.85	0.59
2:B:538:LEU:HB3	2:B:560:TYR:HD1	1.66	0.59
2:D:487:PHE:HB3	2:D:512:ILE:HG23	1.85	0.59
1:C:564:ASN:O	1:C:564:ASN:ND2	2.36	0.59
2:B:309:THR:HA	2:B:348:PHE:O	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:390:GLY:HA3	1:C:395:PHE:CA	2.28	0.58
2:B:76:ASP:OD1	2:B:76:ASP:N	2.36	0.58
2:D:2:PRO:HB2	2:D:50:GLU:O	2.02	0.58
2:D:115:LEU:HA	2:D:273:ILE:HG13	1.86	0.58
2:B:182:ASN:OD1	2:B:183:GLY:N	2.37	0.58
2:B:467:ILE:HA	2:B:470:LEU:HD13	1.86	0.58
2:D:401:VAL:HG21	2:D:535:GLU:HG2	1.84	0.58
2:D:509:TYR:CB	2:D:613:ASN:HA	2.31	0.58
1:C:487:LYS:HA	1:C:491:ILE:O	2.03	0.58
2:B:131:ILE:O	2:B:135:LEU:HB3	2.04	0.58
2:B:362:CYS:HA	2:B:365:ILE:HD12	1.85	0.58
2:D:118:MET:N	2:D:238:LYS:O	2.37	0.58
2:B:429:HIS:HB2	2:B:448:PRO:HD3	1.86	0.58
2:B:324:ILE:HG21	2:B:327:HIS:HB2	1.85	0.58
2:B:426:LEU:HD12	2:B:568:PRO:HB2	1.86	0.58
2:D:492:VAL:O	2:D:506:ASN:HA	2.04	0.58
1:C:540:SER:CB	1:C:543:VAL:HG23	2.21	0.57
2:B:538:LEU:HB3	2:B:560:TYR:CD1	2.38	0.57
2:D:338:LEU:O	2:D:351:THR:OG1	2.20	0.57
1:C:362:PHE:HB3	1:C:411:LEU:HB2	1.86	0.57
1:C:386:VAL:HG12	1:C:386:VAL:O	2.02	0.57
2:D:335:ARG:HH12	2:D:371:ILE:HD12	1.68	0.57
1:A:487:LYS:HA	1:A:490:GLY:O	2.05	0.57
2:B:421:ASN:O	2:B:427:ARG:HG3	2.04	0.57
2:B:472:LYS:O	2:B:475:SER:OG	2.23	0.57
2:D:521:GLY:O	2:D:525:LEU:N	2.27	0.56
1:A:531:PRO:HA	1:A:534:LEU:HB2	1.87	0.56
2:B:419:ASP:HB3	2:B:423:ASN:HB3	1.86	0.56
2:B:516:ASP:OD1	2:B:517:LYS:N	2.39	0.56
1:C:486:TYR:CD2	1:C:491:ILE:HD11	2.38	0.56
2:B:6:VAL:N	2:B:47:TYR:O	2.36	0.56
2:D:489:ILE:HG23	2:D:510:LEU:HB3	1.88	0.56
2:D:573:GLU:O	2:D:574:ARG:HD3	2.04	0.56
2:B:422:TYR:HA	2:B:427:ARG:HB2	1.86	0.56
2:B:540:SER:O	2:B:542:TYR:N	2.38	0.56
2:D:326:VAL:O	2:D:329:VAL:HG12	2.06	0.56
2:D:332:LEU:HB3	2:D:337:MET:HB2	1.86	0.56
1:A:414:HIS:HB3	1:A:416:THR:HG22	1.86	0.56
1:A:362:PHE:HE1	2:D:454:SER:HA	1.70	0.56
1:A:440:LYS:HG2	1:A:468:ILE:HG13	1.87	0.56
2:D:120:ILE:HD11	2:D:236:ASN:H	1.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:325:THR:HB	2:D:348:PHE:CZ	2.40	0.56
2:B:267:CYS:SG	2:B:270:LYS:N	2.79	0.56
1:A:503:TYR:O	1:A:530:ARG:HD2	2.05	0.56
2:D:543:LYS:HG3	2:D:546:GLU:HG2	1.88	0.56
1:A:564:ASN:OD1	1:A:565:ILE:N	2.38	0.55
2:D:614:VAL:O	2:D:617:LEU:N	2.32	0.55
2:D:364:ASP:O	2:D:367:GLU:N	2.38	0.55
1:A:348:TYR:HE1	1:A:386:VAL:HG12	1.70	0.55
2:B:334:LYS:HE2	2:B:372:ALA:HB1	1.88	0.55
1:A:467:LEU:HA	1:A:546:ILE:O	2.07	0.55
2:D:398:PHE:O	2:D:402:LEU:N	2.36	0.55
1:A:340:SER:O	1:A:344:PHE:N	2.26	0.55
1:A:553:GLU:O	1:A:556:THR:N	2.39	0.55
2:D:335:ARG:NH1	2:D:371:ILE:HD12	2.22	0.55
1:C:300:SER:OG	1:C:301:GLY:N	2.41	0.54
2:D:543:LYS:HD3	2:D:543:LYS:C	2.27	0.54
1:C:531:PRO:HA	1:C:534:LEU:HB3	1.90	0.54
1:A:470:ASP:OD1	1:A:470:ASP:N	2.39	0.54
1:C:473:ILE:H	1:C:544:SER:HB3	1.73	0.54
2:D:364:ASP:O	2:D:367:GLU:HB3	2.07	0.54
1:C:370:CYS:C	1:C:371:ILE:HD12	2.28	0.54
2:B:471:LEU:O	2:B:474:VAL:HG12	2.08	0.54
2:D:44:LYS:O	2:D:46:ILE:HG23	2.07	0.54
2:B:434:ASP:O	2:B:436:ASN:N	2.41	0.54
2:B:572:ASN:OD1	2:B:572:ASN:N	2.40	0.54
1:C:387:HIS:ND1	1:C:401:TRP:HD1	2.05	0.53
2:D:233:ILE:O	2:D:234:SER:OG	2.23	0.53
2:D:315:VAL:HG13	2:D:366:ILE:HG12	1.89	0.53
2:D:415:LEU:HB2	2:D:461:ILE:O	2.08	0.53
2:D:316:ARG:HD3	2:D:322:SER:HA	1.90	0.53
2:D:594:HIS:ND1	2:D:595:PRO:HD2	2.24	0.53
2:D:4:ILE:HA	2:D:49:ILE:O	2.08	0.53
2:D:316:ARG:HD3	2:D:321:ILE:O	2.08	0.53
2:D:490:GLY:O	2:D:508:LYS:HA	2.08	0.53
1:A:331:MET:HG3	1:A:443:SER:HB3	1.89	0.53
1:A:539:PHE:O	1:A:540:SER:OG	2.23	0.53
1:A:507:SER:HA	1:A:527:GLY:HA2	1.91	0.53
1:C:414:HIS:HB3	1:C:416:THR:HG22	1.91	0.53
2:B:342:ILE:O	2:B:344:ASP:N	2.42	0.53
2:D:308:LEU:HD22	2:D:362:CYS:HB3	1.91	0.52
2:D:580:LEU:O	2:D:581:PHE:HB2	2.08	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:491:ILE:HG22	1:C:514:HIS:CD2	2.43	0.52
2:D:515:SER:HB2	2:D:607:VAL:HG12	1.90	0.52
2:B:254:ILE:O	2:B:258:ILE:HG23	2.08	0.52
2:D:534:LYS:HA	2:D:538:LEU:HA	1.91	0.52
1:A:317:ARG:O	1:A:321:GLU:HG2	2.10	0.52
1:C:439:LYS:HD3	1:C:441:TYR:HE1	1.75	0.52
2:D:519:THR:OG1	2:D:520:ALA:O	2.26	0.52
2:D:2:PRO:HB3	2:D:51:VAL:O	2.10	0.51
2:B:177:GLU:OE1	2:B:177:GLU:N	2.40	0.51
2:B:407:TYR:CD2	2:B:485:ARG:HB3	2.45	0.51
2:D:273:ILE:HG12	2:D:274:GLN:O	2.10	0.51
2:D:391:LEU:HG	2:D:392:ASN:H	1.76	0.51
1:C:317:ARG:O	1:C:321:GLU:HG2	2.11	0.51
1:C:504:THR:OG1	1:C:528:ILE:N	2.42	0.51
2:B:501:ASP:OD1	2:B:502:THR:N	2.44	0.51
1:A:412:ARG:NH2	1:A:445:ASP:HB3	2.26	0.51
1:C:526:SER:HA	1:C:548:TRP:HA	1.93	0.51
2:D:115:LEU:HA	2:D:274:GLN:H	1.76	0.51
1:A:310:HIS:O	1:A:313:THR:OG1	2.25	0.51
1:A:475:LEU:O	1:A:478:LEU:N	2.44	0.51
2:B:571:LEU:N	2:B:592:ILE:O	2.38	0.51
1:C:328:PHE:HB3	1:C:442:PHE:HD2	1.76	0.50
1:C:411:LEU:HD11	2:B:451:ILE:HD11	1.93	0.50
2:B:312:ILE:O	2:B:315:VAL:HG22	2.11	0.50
2:B:487:PHE:HB2	2:B:512:ILE:HG22	1.92	0.50
2:D:491:ASP:OD1	2:D:506:ASN:HB3	2.11	0.50
2:B:274:GLN:O	2:B:276:PHE:N	2.43	0.50
1:A:338:GLU:HG3	1:A:342:TRP:HB2	1.92	0.50
2:D:9:ASP:O	2:D:11:LEU:N	2.45	0.50
2:D:578:ILE:N	2:D:588:GLY:O	2.37	0.50
2:D:581:PHE:HD2	2:D:583:HIS:HB2	1.76	0.50
1:C:362:PHE:O	1:C:410:VAL:HG22	2.11	0.50
2:B:498:ASN:O	2:B:500:THR:N	2.45	0.50
2:D:572:ASN:OD1	2:D:572:ASN:N	2.42	0.50
2:B:174:PRO:HA	2:B:229:ASP:HA	1.93	0.50
2:B:258:ILE:HG13	2:B:259:LEU:N	2.26	0.50
1:C:349:ILE:HD11	1:C:503:TYR:HD1	1.76	0.50
2:B:417:SER:HB2	2:B:420:GLU:HB2	1.93	0.50
2:B:431:SER:OG	2:B:434:ASP:OD1	2.28	0.50
1:A:430:TYR:O	1:A:434:GLY:N	2.41	0.50
1:C:317:ARG:HG3	1:C:321:GLU:OE2	2.11	0.50

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Full wwPDB X-ray Structure Validation Report

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:311:ASN:N	2:B:311:ASN:OD1	2.44	0.50
2:D:417:SER:OG	2:D:420:GLU:HB2	2.12	0.50
1:A:380:ILE:C	1:A:382:ASN:N	2.64	0.49
2:B:578:ILE:HD12	2:B:588:GLY:HA3	1.94	0.49
2:B:223:PRO:HG2	2:B:224:PRO:HD3	1.93	0.49
2:B:539:PHE:O	2:B:541:ASP:N	2.45	0.49
1:A:430:TYR:OH	1:A:437:LYS:O	2.31	0.49
1:A:507:SER:OG	1:A:508:MET:N	2.45	0.49
2:B:509:TYR:HD1	2:B:613:ASN:HA	1.77	0.49
2:B:373:TYR:HD2	2:B:373:TYR:O	1.96	0.49
2:D:72:MET:O	2:D:74:LYS:N	2.41	0.49
1:A:394:SER:HB2	2:B:361:HIS:HB2	1.94	0.49
1:C:353:HIS:CD2	1:C:354:PRO:HD2	2.48	0.49
2:D:604:ASP:N	2:D:604:ASP:OD1	2.46	0.49
2:D:40:TYR:CD1	2:D:45:LYS:HA	2.37	0.49
2:D:418:ARG:HG3	2:D:419:ASP:H	1.78	0.49
1:A:557:MET:SD	1:A:565:ILE:HB	2.53	0.48
2:B:6:VAL:HG21	2:B:47:TYR:HD1	1.78	0.48
2:B:540:SER:C	2:B:542:TYR:H	2.15	0.48
2:D:520:ALA:HB1	2:D:608:SER:HB3	1.95	0.48
1:A:458:LEU:HD12	1:A:459:ALA:H	1.78	0.48
1:C:375:VAL:HG22	1:C:380:ILE:HD12	1.95	0.48
1:A:315:GLN:HA	1:A:315:GLN:OE1	2.13	0.48
2:B:517:LYS:O	2:B:517:LYS:HD3	2.13	0.48
1:C:475:LEU:O	1:C:478:LEU:N	2.47	0.48
2:D:324:ILE:O	2:D:325:THR:OG1	2.29	0.48
1:A:560:TYR:CG	1:A:560:TYR:O	2.67	0.48
2:B:467:ILE:O	2:B:470:LEU:HB2	2.13	0.48
1:C:510:ILE:HD12	1:C:510:ILE:O	2.13	0.48
2:B:596:LYS:NZ	2:B:600:ASN:OD1	2.47	0.48
1:A:446:ARG:HH11	1:A:460:GLU:HG3	1.79	0.48
2:D:540:SER:HA	2:D:560:TYR:CE1	2.49	0.48
2:B:492:VAL:O	2:B:506:ASN:HA	2.14	0.47
1:A:442:PHE:HA	1:A:465:GLU:O	2.14	0.47
2:B:489:ILE:CD1	2:B:510:LEU:HD13	2.44	0.47
2:D:421:ASN:OD1	2:D:468:VAL:HG11	2.14	0.47
2:B:488:GLU:O	2:B:510:LEU:HA	2.14	0.47
1:C:286:GLU:N	1:C:286:GLU:OE1	2.48	0.47
2:B:509:TYR:HE1	2:B:613:ASN:ND2	2.13	0.47
2:D:470:LEU:O	2:D:474:VAL:HG23	2.14	0.47
2:D:570:PHE:CD2	2:D:591:GLY:HA3	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:533:MET:O	1:C:536:SER:OG	2.23	0.47
2:D:534:LYS:HA	2:D:538:LEU:H	1.80	0.47
2:D:471:LEU:O	2:D:475:SER:N	2.42	0.47
1:A:348:TYR:HB2	1:A:533:MET:HB3	1.96	0.47
1:A:374:PHE:C	1:A:376:ASP:H	2.17	0.47
1:A:385:ARG:O	1:A:389:HIS:N	2.38	0.47
2:B:400:ASN:O	2:B:404:GLU:HG3	2.15	0.47
2:B:513:ILE:HG22	2:B:609:ALA:CB	2.45	0.47
2:D:538:LEU:HD23	2:D:538:LEU:O	2.14	0.47
1:A:331:MET:CG	1:A:443:SER:HB3	2.44	0.47
1:C:328:PHE:HB3	1:C:442:PHE:CD2	2.49	0.47
2:B:316:ARG:HB3	2:B:322:SER:HB3	1.97	0.47
2:B:509:TYR:CD1	2:B:613:ASN:HA	2.50	0.47
2:B:35:VAL:HG11	2:B:48:LYS:O	2.15	0.47
2:D:424:CYS:O	2:D:597:VAL:HG23	2.15	0.47
1:A:464:VAL:HG22	1:A:550:LEU:HG	1.96	0.46
2:B:418:ARG:HG3	2:B:460:GLU:HB3	1.96	0.46
2:B:451:ILE:HG23	2:B:452:LYS:O	2.15	0.46
2:B:594:HIS:CG	2:B:595:PRO:HD2	2.50	0.46
2:D:308:LEU:CD1	2:D:362:CYS:HA	2.45	0.46
1:A:387:HIS:O	1:A:396:GLY:HA3	2.15	0.46
2:B:429:HIS:O	2:B:446:ALA:HB1	2.15	0.46
2:D:579:VAL:HA	2:D:586:LYS:HA	1.98	0.46
1:A:333:THR:HG23	1:A:445:ASP:HB2	1.98	0.46
1:A:340:SER:OG	1:A:406:SER:O	2.33	0.46
1:C:560:TYR:CG	1:C:560:TYR:O	2.68	0.46
2:D:51:VAL:O	2:D:51:VAL:HG12	2.16	0.46
1:C:309:ILE:HG22	1:C:310:HIS:O	2.16	0.46
2:B:440:ASP:HB3	2:B:443:ASN:CB	2.45	0.46
2:D:125:TYR:O	2:D:129:ILE:HG13	2.15	0.46
2:D:412:THR:OG1	2:D:413:ASN:N	2.45	0.46
1:C:365:LYS:HA	1:C:368:GLU:HB3	1.97	0.46
2:B:412:THR:HG21	2:B:470:LEU:HD12	1.97	0.46
2:D:543:LYS:HG3	2:D:546:GLU:CG	2.46	0.46
1:A:420:CYS:O	1:A:423:LEU:HB2	2.16	0.45
1:C:550:LEU:HA	3:C:701:B79:C21	2.47	0.45
2:B:425:MET:HB2	2:B:427:ARG:CG	2.46	0.45
1:A:363:PHE:O	2:D:452:LYS:HG2	2.15	0.45
1:C:535:ARG:HE	1:C:541:GLU:HA	1.81	0.45
2:B:253:GLN:O	2:B:257:ASN:ND2	2.50	0.45
1:A:552:LEU:O	1:A:555:PRO:HG2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:176:ASN:OD1	2:B:176:ASN:N	2.49	0.45
2:D:521:GLY:N	2:D:608:SER:OG	2.36	0.45
1:C:371:ILE:HG22	1:C:372:ASP:N	2.31	0.45
1:C:515:GLU:CD	1:C:515:GLU:H	2.20	0.45
2:D:54:ASN:HB3	2:D:357:SER:HB2	1.98	0.45
2:D:501:ASP:OD1	2:D:502:THR:N	2.50	0.45
2:D:509:TYR:HB2	2:D:612:ILE:O	2.16	0.45
1:A:380:ILE:HG21	1:A:383:ILE:HD12	1.98	0.45
1:A:523:VAL:HG23	3:A:701:B79:C32	2.47	0.45
1:A:531:PRO:HD2	2:B:363:CYS:SG	2.56	0.45
2:B:7:TYR:HA	2:B:44:LYS:HD3	1.98	0.45
2:B:498:ASN:CG	2:B:499:GLN:H	2.20	0.45
2:D:490:GLY:O	2:D:508:LYS:CB	2.64	0.45
2:B:274:GLN:C	2:B:276:PHE:H	2.20	0.45
2:D:399:ARG:O	2:D:403:VAL:HG23	2.17	0.45
2:D:477:ASN:N	2:D:477:ASN:OD1	2.50	0.45
1:A:492:HIS:HB3	1:A:513:TYR:O	2.17	0.45
1:C:373:LYS:O	1:C:375:VAL:N	2.49	0.45
1:C:394:SER:HB3	2:D:361:HIS:CA	2.43	0.45
2:B:28:CYS:HB3	2:B:33:LEU:CD1	2.46	0.44
2:D:13:GLU:O	2:D:16:GLY:N	2.50	0.44
2:B:540:SER:O	2:B:540:SER:OG	2.20	0.44
2:B:571:LEU:HD12	2:B:594:HIS:CE1	2.53	0.44
2:D:412:THR:HB	2:D:488:GLU:OE2	2.17	0.44
2:B:151:HIS:HA	2:B:241:PHE:O	2.17	0.44
2:D:490:GLY:O	2:D:508:LYS:CA	2.65	0.44
1:A:394:SER:CB	2:B:361:HIS:HB2	2.48	0.44
2:D:126:ASN:OD1	2:D:127:ASN:N	2.50	0.44
1:A:374:PHE:C	1:A:376:ASP:N	2.70	0.44
1:A:463:GLN:HA	1:A:550:LEU:O	2.17	0.44
2:B:442:TYR:HB2	2:B:585:LEU:HD21	1.99	0.44
2:D:115:LEU:CA	2:D:273:ILE:HG13	2.47	0.44
2:D:393:ASN:N	2:D:393:ASN:OD1	2.51	0.44
2:D:492:VAL:HG21	2:D:509:TYR:CE2	2.53	0.44
1:A:319:PHE:HD1	1:A:464:VAL:HG11	1.82	0.44
1:C:531:PRO:HD2	2:D:361:HIS:HD2	1.83	0.44
2:D:564:PRO:HA	2:D:576:VAL:HG12	1.99	0.44
2:D:11:LEU:O	2:D:15:LEU:HG	2.18	0.44
1:A:312:LEU:HD21	1:A:568:LEU:HD12	1.99	0.44
1:A:505:GLU:HB3	2:B:364:ASP:OD1	2.17	0.43
2:B:263:LEU:O	2:B:266:TYR:N	2.49	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:402:LEU:HD23	2:D:402:LEU:HA	1.78	0.43
1:A:351:GLN:HG2	1:A:352:GLN:OE1	2.18	0.43
1:A:364:ILE:HG21	2:D:449:ILE:HD11	2.00	0.43
1:C:364:ILE:HA	2:B:451:ILE:HD12	1.99	0.43
2:B:431:SER:O	2:B:434:ASP:N	2.51	0.43
1:A:511:TYR:HB2	1:A:521:LEU:O	2.18	0.43
2:B:33:LEU:HD12	2:B:33:LEU:O	2.19	0.43
2:B:138:ASN:OD1	2:B:138:ASN:N	2.51	0.43
2:D:391:LEU:HG	2:D:392:ASN:N	2.33	0.43
2:D:579:VAL:HG23	2:D:585:LEU:C	2.39	0.43
2:B:538:LEU:HA	2:B:559:TYR:HB3	2.01	0.43
1:A:352:GLN:H	1:A:352:GLN:CD	2.20	0.43
1:A:362:PHE:CE1	1:A:450:ASN:HB2	2.52	0.43
1:A:420:CYS:HA	1:A:423:LEU:HG	2.01	0.43
1:C:444:ILE:HD11	1:C:552:LEU:HD22	2.00	0.43
2:B:180:ASN:OD1	2:B:180:ASN:N	2.52	0.43
2:B:478:LYS:NZ	2:B:602:SER:O	2.34	0.43
2:B:538:LEU:HA	2:B:559:TYR:CG	2.53	0.43
2:D:127:ASN:O	2:D:131:ILE:HG13	2.19	0.43
2:D:434:ASP:O	2:D:435:PRO:C	2.57	0.43
2:D:544:ILE:HB	2:D:545:GLU:H	1.32	0.43
2:B:9:ASP:N	2:B:9:ASP:OD1	2.51	0.43
2:D:361:HIS:C	2:D:363:CYS:N	2.72	0.43
1:A:348:TYR:CE1	1:A:386:VAL:HG12	2.53	0.43
1:C:498:PRO:HB3	2:D:375:TYR:CE2	2.53	0.43
2:B:367:GLU:O	2:B:371:ILE:HG13	2.18	0.43
2:B:392:ASN:O	2:B:392:ASN:ND2	2.37	0.43
2:D:362:CYS:O	2:D:362:CYS:SG	2.75	0.43
2:D:533:LEU:O	2:D:538:LEU:N	2.51	0.43
2:B:43:ASP:OD1	2:B:43:ASP:N	2.51	0.43
2:B:388:LYS:H	2:B:388:LYS:HG2	1.49	0.43
2:D:39:GLU:O	2:D:46:ILE:HG12	2.19	0.43
1:A:380:ILE:C	1:A:382:ASN:H	2.22	0.43
1:A:441:TYR:HB2	1:A:467:LEU:HG	2.01	0.43
1:A:485:PHE:O	1:A:488:HIS:N	2.52	0.43
1:C:412:ARG:HB3	1:C:447:VAL:HG13	2.00	0.43
2:D:332:LEU:HB3	2:D:337:MET:O	2.18	0.43
1:C:287:TYR:N	1:C:287:TYR:CD2	2.87	0.43
2:B:483:PRO:HA	2:B:515:SER:O	2.19	0.43
2:B:594:HIS:CD2	2:B:595:PRO:HD2	2.54	0.43
2:D:153:TYR:HB3	2:D:239:ASN:CB	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:491:ASP:HA	2:D:508:LYS:HA	1.99	0.42
1:A:352:GLN:OE1	1:A:352:GLN:N	2.39	0.42
1:A:372:ASP:OD1	2:D:501:ASP:HA	2.18	0.42
1:A:386:VAL:HG22	1:A:391:ASP:HB3	2.01	0.42
1:C:339:SER:HA	1:C:409:ASN:HA	2.01	0.42
1:C:387:HIS:HA	1:C:397:TRP:CB	2.49	0.42
1:C:420:CYS:O	1:C:423:LEU:HB2	2.19	0.42
2:B:528:VAL:O	2:B:532:ILE:HG13	2.19	0.42
2:D:543:LYS:HD2	2:D:546:GLU:HB3	2.01	0.42
2:D:581:PHE:CD1	2:D:582:PRO:HD2	2.54	0.42
1:C:400:LYS:O	1:C:402:LYS:N	2.51	0.42
2:B:488:GLU:O	2:B:510:LEU:HD12	2.19	0.42
2:D:64:LEU:O	2:D:68:LEU:HG	2.18	0.42
1:A:306:LYS:NZ	1:A:308:ASN:HB3	2.33	0.42
1:A:362:PHE:CE1	2:D:454:SER:HA	2.51	0.42
1:C:283:LYS:O	1:C:285:GLU:N	2.52	0.42
2:B:315:VAL:HG12	2:B:366:ILE:CD1	2.50	0.42
2:D:535:GLU:O	2:D:536:TYR:HD1	2.02	0.42
1:A:484:ALA:O	1:A:487:LYS:HB3	2.19	0.42
1:A:461:PHE:HB2	1:A:553:GLU:OE1	2.20	0.42
1:A:568:LEU:H	1:A:568:LEU:HD23	1.84	0.42
2:B:223:PRO:CG	2:B:224:PRO:HD3	2.50	0.42
2:B:315:VAL:HG12	2:B:366:ILE:HD11	2.00	0.42
2:D:312:ILE:HD13	2:D:312:ILE:HA	1.76	0.42
2:D:581:PHE:HD2	2:D:583:HIS:CB	2.32	0.42
2:D:9:ASP:O	2:D:11:LEU:HG	2.19	0.42
1:A:314:LYS:HA	1:A:317:ARG:HD2	2.02	0.42
2:B:186:LEU:HD12	2:B:186:LEU:HA	1.86	0.42
1:A:539:PHE:CB	1:A:543:VAL:HG11	2.48	0.42
1:C:411:LEU:HD23	1:C:411:LEU:HA	1.84	0.42
1:A:453:LEU:HA	1:A:453:LEU:HD23	1.72	0.41
1:C:283:LYS:H	1:C:283:LYS:HG3	1.57	0.41
1:C:504:THR:HG23	1:C:507:SER:HB3	2.02	0.41
2:B:35:VAL:HG21	2:B:49:ILE:HA	2.01	0.41
2:B:112:CYS:CB	2:B:243:GLU:HB2	2.49	0.41
1:A:514:HIS:O	1:A:514:HIS:ND1	2.53	0.41
1:C:385:ARG:O	1:C:389:HIS:N	2.52	0.41
2:B:50:GLU:H	2:B:50:GLU:HG2	1.65	0.41
1:C:485:PHE:O	1:C:488:HIS:N	2.52	0.41
2:D:8:GLU:H	2:D:8:GLU:CD	2.23	0.41
1:A:446:ARG:HD2	1:A:448:PHE:HE1	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:433:ASP:N	2:B:433:ASP:OD1	2.53	0.41
1:A:475:LEU:N	2:B:318:LEU:O	2.44	0.41
2:B:6:VAL:HG12	2:B:8:GLU:N	2.36	0.41
2:B:35:VAL:HG13	2:B:36:ASP:O	2.19	0.41
2:B:438:ASN:OD1	2:B:438:ASN:N	2.53	0.41
2:D:496:THR:HG22	2:D:498:ASN:O	2.20	0.41
1:A:371:ILE:HG23	1:A:372:ASP:OD1	2.21	0.41
1:A:561:ASN:O	1:A:562:ILE:HD13	2.21	0.41
1:C:535:ARG:HH21	1:C:541:GLU:CA	2.34	0.41
2:D:462:ILE:HG23	2:D:463:ARG:O	2.20	0.41
1:C:368:GLU:H	1:C:368:GLU:HG2	1.63	0.41
1:C:457:HIS:ND1	1:C:554:ARG:NH1	2.69	0.41
1:A:282:LEU:HD11	2:B:606:PRO:HB3	2.03	0.41
1:C:499:THR:OG1	1:C:500:PHE:N	2.53	0.41
2:D:319:SER:OG	2:D:321:ILE:HG12	2.21	0.41
2:D:517:LYS:HA	2:D:606:PRO:HD2	2.03	0.41
1:A:319:PHE:CD1	1:A:464:VAL:HG11	2.56	0.41
1:A:331:MET:SD	1:A:443:SER:HB3	2.61	0.41
1:A:372:ASP:HB2	2:D:501:ASP:CB	2.51	0.41
1:A:521:LEU:O	1:A:523:VAL:N	2.53	0.41
3:A:701:B79:C16	3:A:701:B79:C22	2.98	0.41
2:B:316:ARG:HD3	2:B:322:SER:HB2	2.03	0.41
2:B:514:PHE:O	2:B:607:VAL:HG23	2.20	0.41
2:D:118:MET:O	2:D:238:LYS:HA	2.21	0.41
2:D:489:ILE:HG12	2:D:510:LEU:HB2	2.03	0.41
2:D:533:LEU:HD13	2:D:533:LEU:HA	1.67	0.41
2:D:560:TYR:HB2	2:D:579:VAL:O	2.20	0.41
1:A:486:TYR:O	1:A:489:ILE:HG22	2.21	0.41
2:D:543:LYS:O	2:D:543:LYS:CG	2.69	0.41
1:C:345:ASP:OD2	1:C:401:TRP:NE1	2.54	0.40
2:B:544:ILE:HD11	2:B:559:TYR:HD2	1.85	0.40
2:B:551:ASN:N	2:B:551:ASN:OD1	2.54	0.40
2:D:124:VAL:O	2:D:128:ILE:HG23	2.21	0.40
2:D:335:ARG:HD3	2:D:368:ASP:HB3	2.04	0.40
2:D:585:LEU:HD12	2:D:585:LEU:HA	1.77	0.40
1:A:535:ARG:HD2	1:A:541:GLU:HA	2.03	0.40
3:C:701:B79:C16	3:C:701:B79:C22	2.99	0.40
2:B:451:ILE:HD12	2:B:451:ILE:HA	1.81	0.40
2:D:114:VAL:HA	2:D:241:PHE:HA	2.03	0.40
1:A:498:PRO:HB3	2:B:375:TYR:CE2	2.57	0.40
2:D:397:LEU:HD12	2:D:536:TYR:OH	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:464:THR:O	2:D:509:TYR:OH	2.25	0.40
1:A:335:ASN:ND2	1:A:338:GLU:OE1	2.55	0.40
2:B:483:PRO:HB2	2:B:485:ARG:HE	1.86	0.40
2:D:314:TYR:OH	2:D:361:HIS:NE2	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	286/308 (93%)	230 (80%)	54 (19%)	2 (1%)	22	61
1	C	288/308 (94%)	223 (77%)	65 (23%)	0	100	100
2	B	518/623 (83%)	411 (79%)	97 (19%)	10 (2%)	8	42
2	D	508/623 (82%)	410 (81%)	94 (18%)	4 (1%)	19	59
All	All	1600/1862 (86%)	1274 (80%)	310 (19%)	16 (1%)	15	55

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	236	ASN
2	B	275	SER
2	B	439	LEU
2	B	540	SER
2	D	42	ASN
2	B	499	GLN
2	D	362	CYS
2	B	232	LYS
2	B	174	PRO
2	D	544	ILE
2	B	274	GLN

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Mol	Chain	Res	Type
2	D	51	VAL
2	B	435	PRO
1	A	375	VAL
2	B	233	ILE
1	A	380	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	204/282 (72%)	186 (91%)	18 (9%)	10	40
1	C	201/282 (71%)	184 (92%)	17 (8%)	10	41
2	B	348/588 (59%)	332 (95%)	16 (5%)	27	61
2	D	315/588 (54%)	296 (94%)	19 (6%)	19	54
All	All	1068/1740 (61%)	998 (93%)	70 (7%)	16	51

All (70) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	336	TYR
1	A	339	SER
1	A	360	ASP
1	A	372	ASP
1	A	374	PHE
1	A	381	ASP
1	A	391	ASP
1	A	392	TYR
1	A	420	CYS
1	A	429	GLU
1	A	454	ASP
1	A	461	PHE
1	A	496	PHE
1	A	503	TYR
1	A	530	ARG
1	A	533	MET

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Mol	Chain	Res	Type
1	A	548	TRP
1	A	550	LEU
1	C	284	ASN
1	C	339	SER
1	C	373	LYS
1	C	374	PHE
1	C	379	TYR
1	C	381	ASP
1	C	420	CYS
1	C	448	PHE
1	C	458	LEU
1	C	492	HIS
1	C	496	PHE
1	C	503	TYR
1	C	513	TYR
1	C	525	ASN
1	C	533	MET
1	C	548	TRP
1	C	550	LEU
2	B	70	ASN
2	B	138	ASN
2	B	176	ASN
2	B	223	PRO
2	B	243	GLU
2	B	249	ARG
2	B	261	SER
2	B	307	SER
2	B	311	ASN
2	B	373	TYR
2	B	389	HIS
2	B	392	ASN
2	B	442	TYR
2	B	491	ASP
2	B	547	LYS
2	B	583	HIS
2	D	47	TYR
2	D	70	ASN
2	D	158	PHE
2	D	164	PHE
2	D	189	PHE
2	D	310	CYS
2	D	316	ARG

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Mol	Chain	Res	Type
2	D	319	SER
2	D	391	LEU
2	D	415	LEU
2	D	479	HIS
2	D	492	VAL
2	D	509	TYR
2	D	543	LYS
2	D	544	ILE
2	D	546	GLU
2	D	583	HIS
2	D	586	LYS
2	D	594	HIS

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

Mol	Chain	Res	Type
2	D	331	ASN
2	D	537	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 1 is monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond

length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
3	B79	A	701	-	37,43,43	0.25	0	44,59,59	0.38	0
3	B79	C	701	-	37,43,43	0.30	0	44,59,59	0.50	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	B79	A	701	-	-	2/17/50/50	0/4/5/5
3	B79	C	701	-	-	3/17/50/50	0/4/5/5

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	701	B79	C32-C1-O-C
3	C	701	B79	C32-C1-O-C
3	A	701	B79	C2-C1-O-C
3	C	701	B79	C2-C1-O-C
3	C	701	B79	C15-C14-C17-C22

There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	701	B79	2	0
3	C	701	B79	2	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 then 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 B79 A 701

| Bond lengths | Bond angles |

| Torsions | Rings |

Ligand B79 C 701

Bond lengths

Bond angles

Torsions

Rings
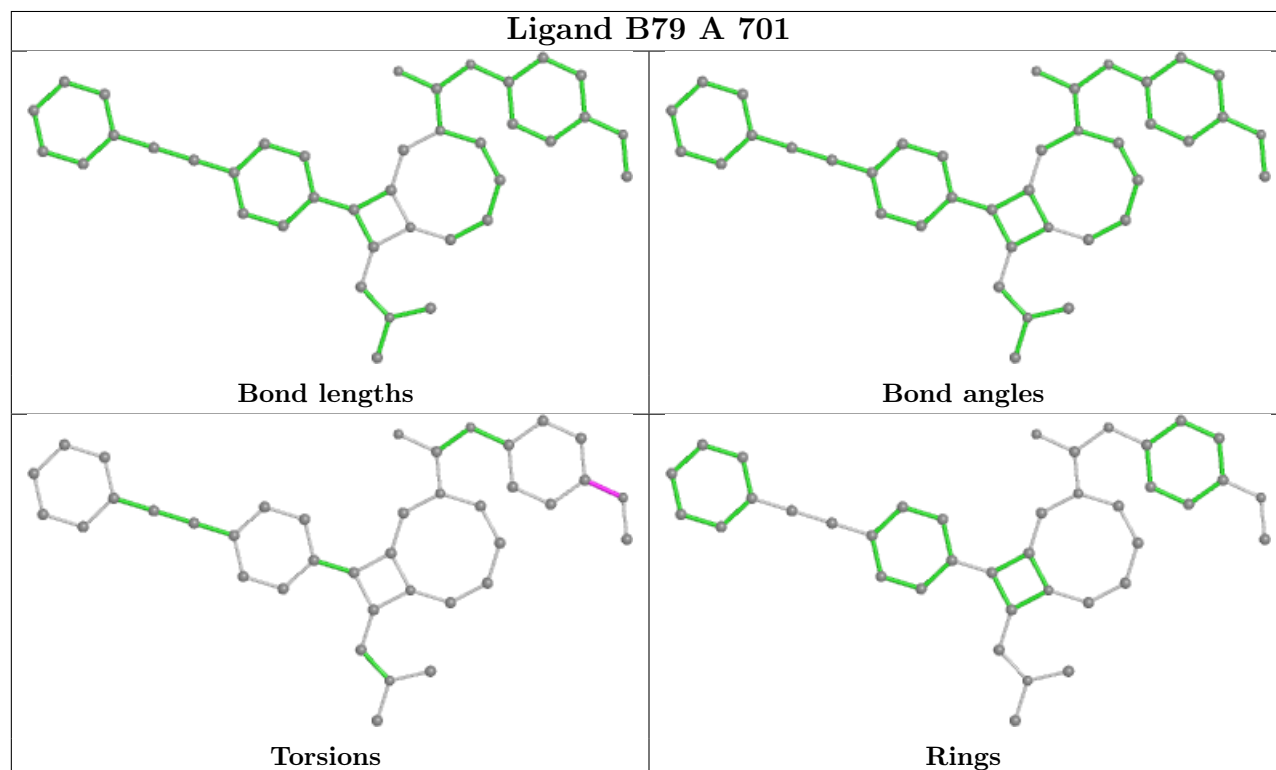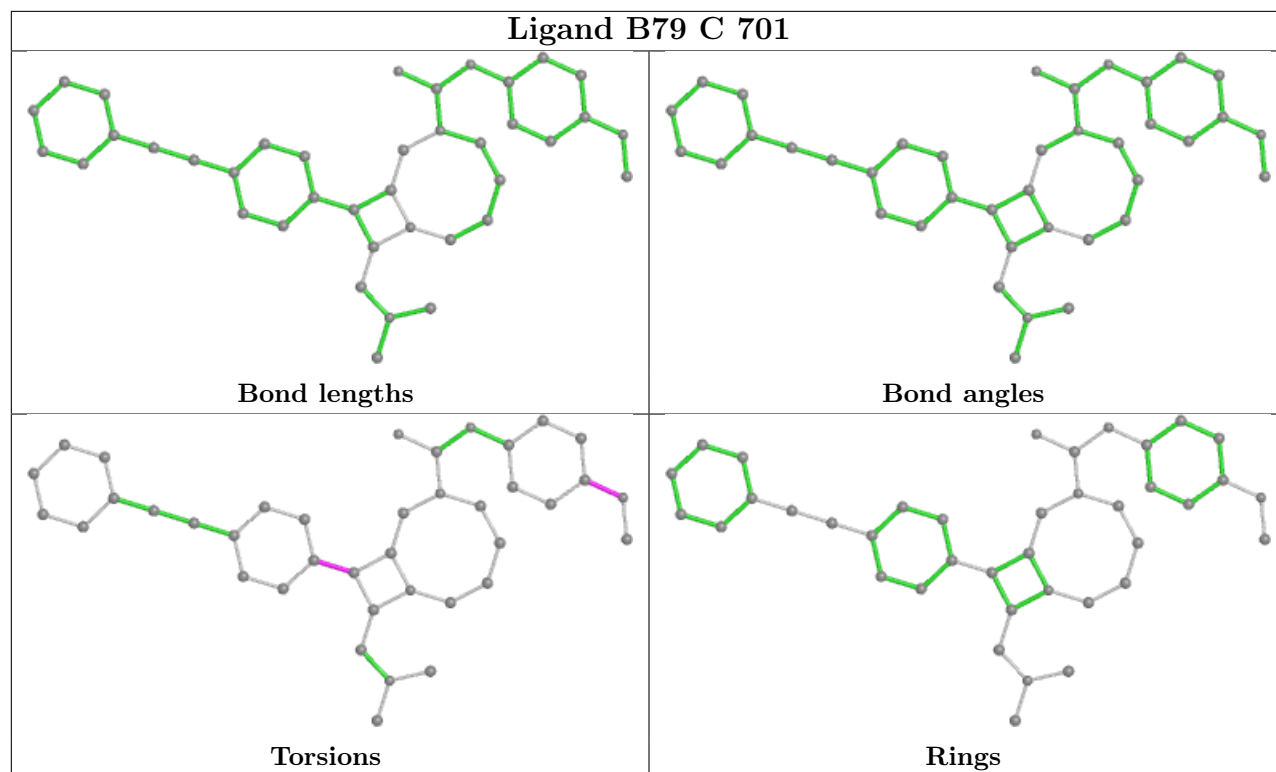
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	290/308 (94%)	-0.62	0	100	100	49, 79, 128, 153	0
1	C	292/308 (94%)	-0.60	2 (0%)	87	78	48, 79, 125, 177	0
2	B	536/623 (86%)	-0.72	4 (0%)	87	78	50, 87, 135, 191	0
2	D	522/623 (83%)	-0.66	2 (0%)	92	86	48, 87, 140, 203	0
All	All	1640/1862 (88%)	-0.66	8 (0%)	91	83	48, 84, 134, 203	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	520	TRP	4.3
1	C	456	THR	3.8
2	B	340	CYS	3.5
2	B	278	VAL	3.3
2	D	323	HIS	2.7
2	B	256	LEU	2.6
2	B	343	MET	2.4
2	D	348	PHE	2.3

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

There are no non-standard protein/DNA/RNA residues in this entry.
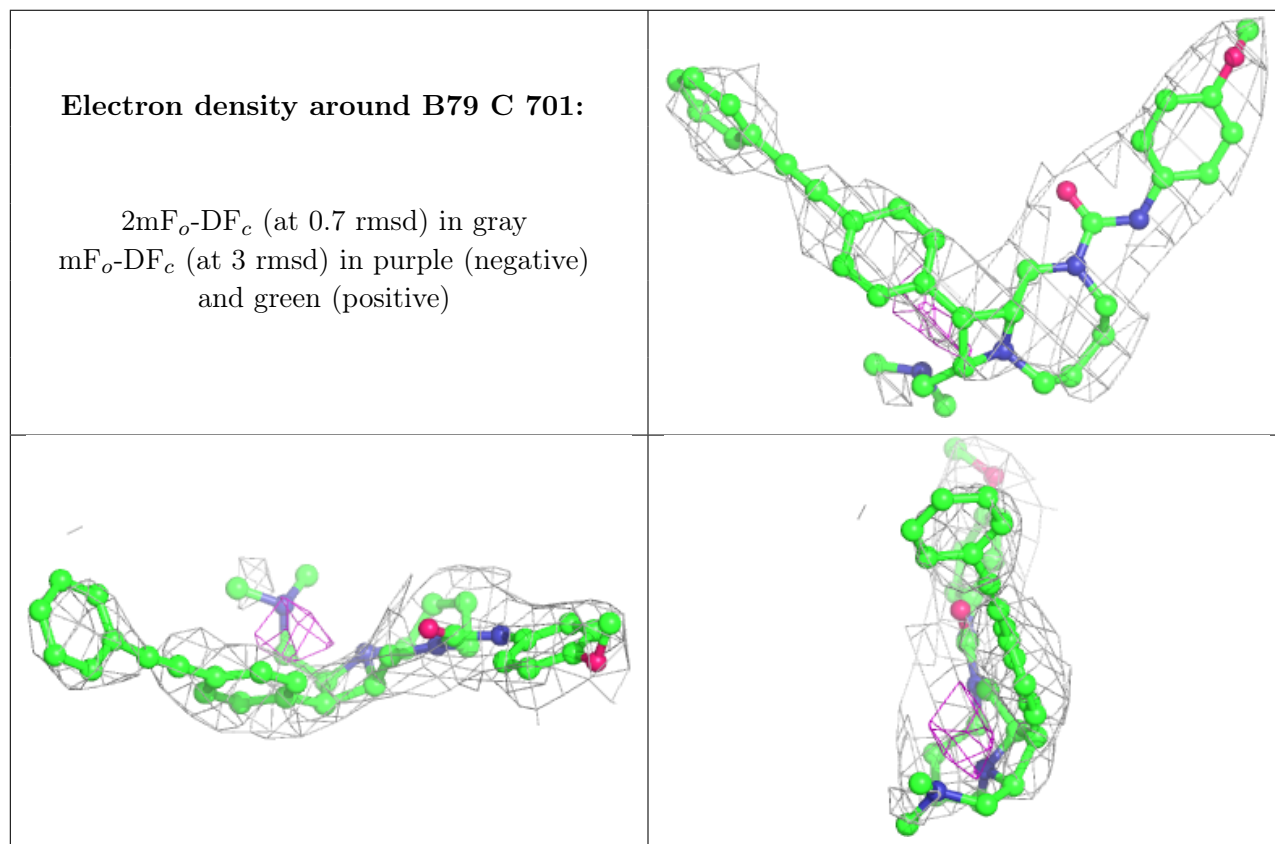
6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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.
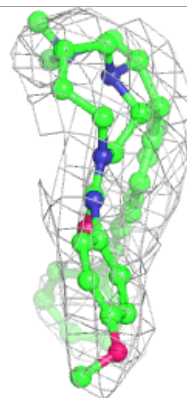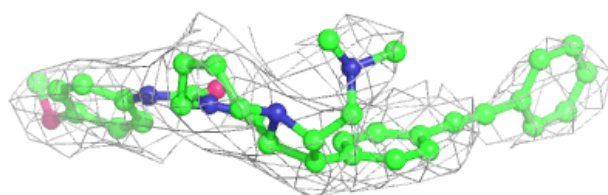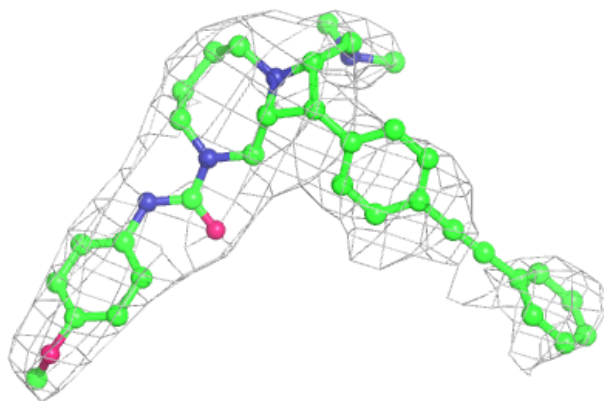
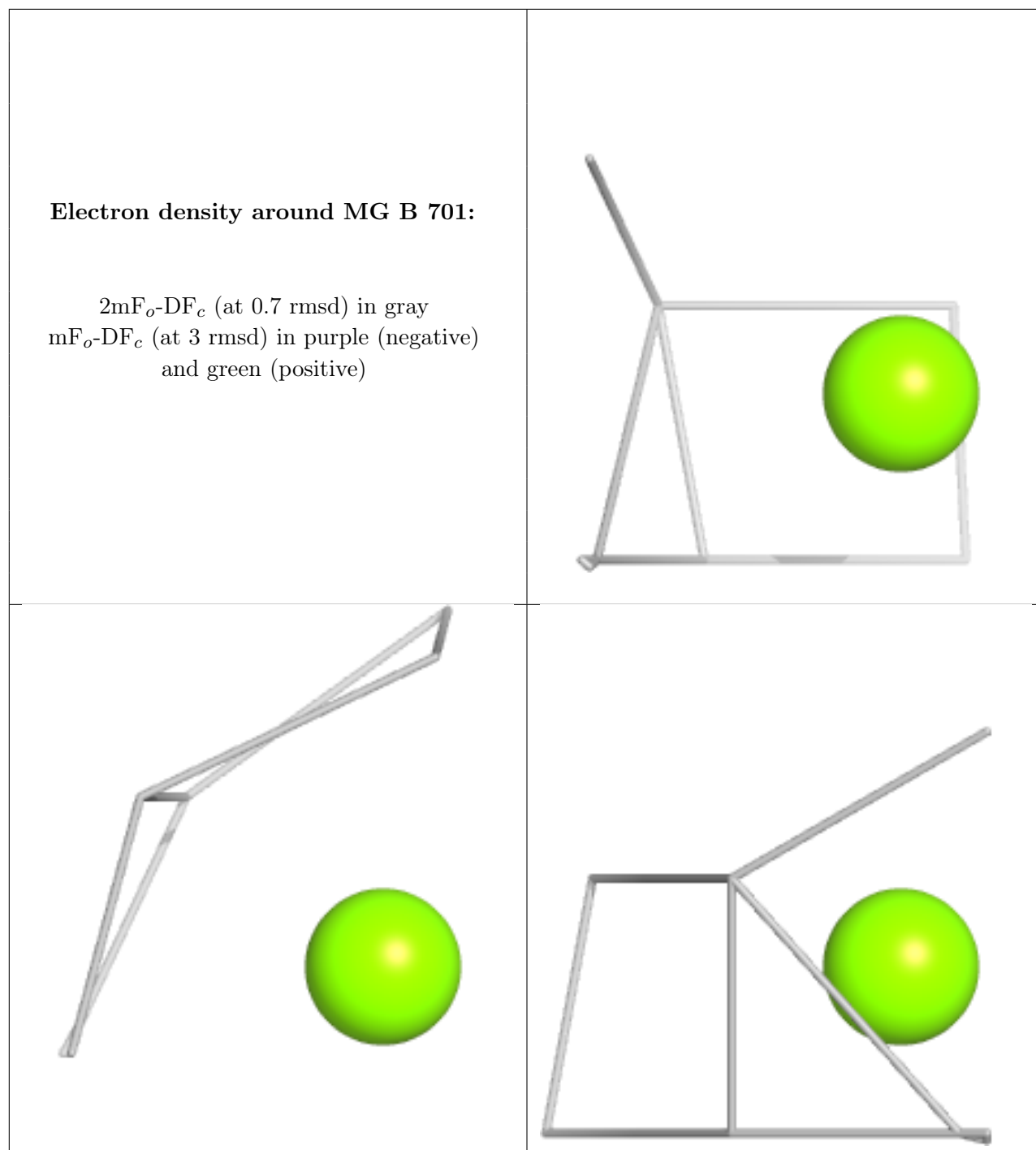| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
3	B79	C	701	39/39	0.88	0.40	49,61,84,105	39
3	B79	A	701	39/39	0.93	0.31	57,72,91,93	0
4	MG	B	701	1/1	0.98	0.06	88,88,88,88	0

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 B79 C 701:

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

Electron density around B79 A 701:

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

Electron density around MG B 701:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.