



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2024 – 10:25 PM EDT

PDB ID : 1CI7
Title : TERNARY COMPLEX OF THYMIDYLATE SYNTHASE FROM PNEUMOCYSTIS CARINII
Authors : Anderson, A.C.; O'Neil, R.H.; Delano, W.L.; Stroud, R.M.
Deposited on : 1999-04-08
Resolution : 2.60 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 : 2022.3.0, CSD as543be (2022)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

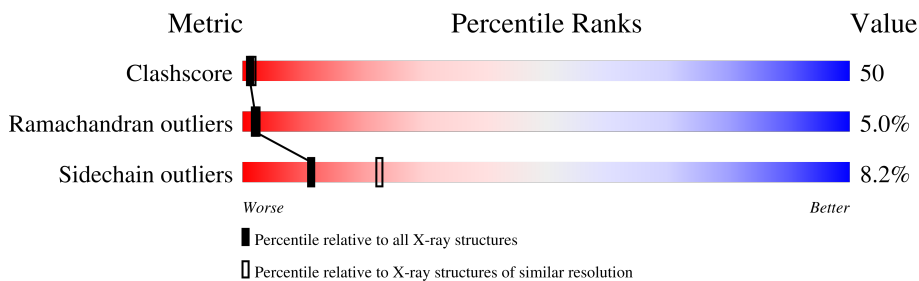
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	297	
1	B	297	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	CB3	A	768	X	-	X	-

2 Entry composition [i](#)

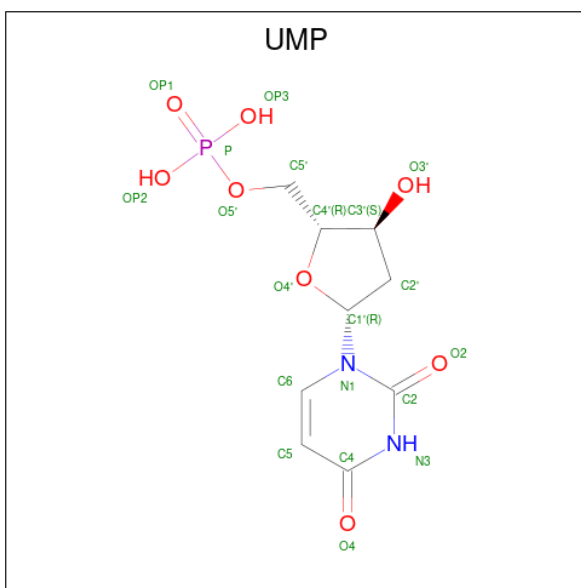
There are 4 unique types of molecules in this entry. The entry contains 5025 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 PROTEIN (THYMIDYLATE SYNTHASE).

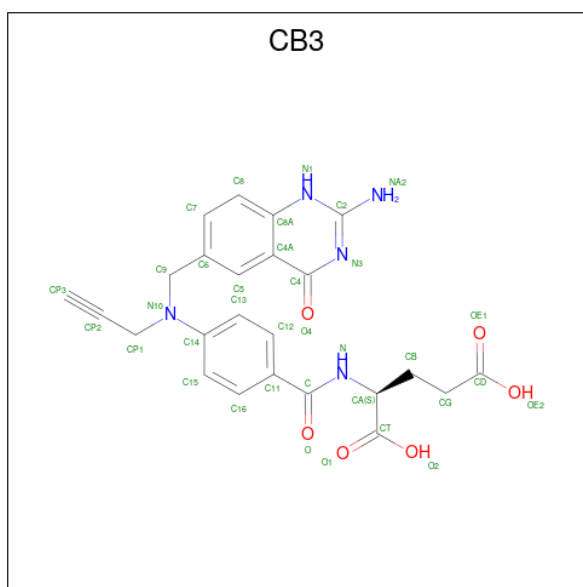
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	292	Total 2377	C 1516	N 410	O 436	S 15	0	0	0
1	B	292	Total 2377	C 1516	N 410	O 436	S 15	0	0	0

- Molecule 2 is 2'-DEOXYURIDINE 5'-MONOPHOSPHATE (three-letter code: UMP) (formula: C₉H₁₃N₂O₈P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total 20	C 9	N 2	O 8	P 1	0	0
2	B	1	Total 20	C 9	N 2	O 8	P 1	0	0

- Molecule 3 is 10-PROPARGYL-5,8-DIDEAZAFOLIC ACID (three-letter code: CB3) (formula: C₂₄H₂₃N₅O₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	35	24	5	6	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	A	93	93	93	0	0
4	B	103	103	103	0	0

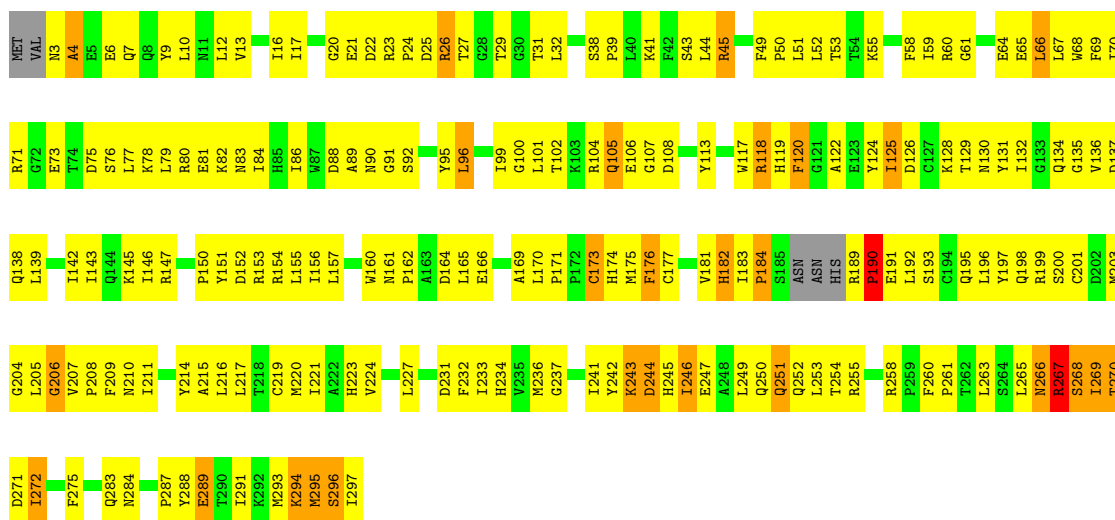
3 Residue-property plots

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. 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. 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.

Note EDS was not executed.

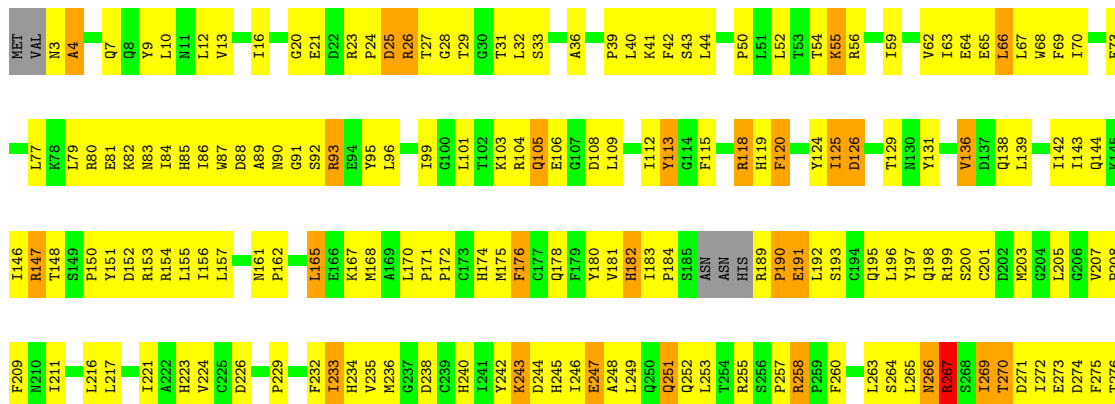
- Molecule 1: PROTEIN (THYMIDYLATE SYNTHASE)

Chain A: 



- Molecule 1: PROTEIN (THYMIDYLATE SYNTHASE)

Chain B: 



L277	D278	D279	F280	N281	P287	Y288	E289	T290	I291	K292	M293	K294	M295	S296	I297
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4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	66.16Å 178.76Å 54.05Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.60	Depositor
% Data completeness (in resolution range)	75.3 (50.00-2.60)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	12.70	Depositor
Refinement program	CNS 0.4	Depositor
R, R_{free}	0.221 , 0.294	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	5025	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

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: CB3, UMP

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	0.42	0/2437	0.77	6/3302 (0.2%)
1	B	0.43	0/2437	0.74	6/3302 (0.2%)
All	All	0.42	0/4874	0.75	12/6604 (0.2%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	266	ASN	N-CA-C	8.50	133.94	111.00
1	A	269	ILE	N-CA-C	-7.68	90.25	111.00
1	B	267	ARG	N-CA-C	-7.55	90.60	111.00
1	A	173	CYS	CA-CB-SG	6.85	126.33	114.00
1	A	190	PRO	N-CA-C	6.54	129.10	112.10
1	A	267	ARG	N-CA-C	-6.52	93.39	111.00
1	B	266	ASN	N-CA-C	6.51	128.57	111.00
1	B	266	ASN	CB-CA-C	-6.43	97.54	110.40
1	B	269	ILE	N-CA-C	-6.39	93.76	111.00
1	B	266	ASN	CA-C-N	-6.12	103.73	117.20
1	A	266	ASN	CA-C-N	-5.90	104.22	117.20
1	B	174	HIS	N-CA-C	-5.07	97.31	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2377	0	2330	270	0
1	B	2377	0	2331	232	0
2	A	20	0	10	3	0
2	B	20	0	11	3	0
3	A	35	0	21	18	0
4	A	93	0	0	4	0
4	B	103	0	0	8	0
All	All	5025	0	4703	479	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 50.

All (479) 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:223:HIS:NE2	1:B:266:ASN:ND2	1.93	1.17
1:B:223:HIS:CE1	1:B:266:ASN:HD21	1.65	1.14
1:B:183:ILE:HG23	1:B:189:ARG:HB2	1.31	1.08
1:A:294:LYS:H	1:A:294:LYS:HD2	1.25	1.01
1:A:80:ARG:HH21	1:A:88:ASP:HA	1.26	1.00
1:A:189:ARG:HB3	1:A:190:PRO:HD2	1.45	0.99
1:A:52:LEU:HD12	1:A:52:LEU:H	1.29	0.94
1:B:52:LEU:HD12	1:B:52:LEU:H	1.36	0.91
1:A:223:HIS:CE1	1:A:266:ASN:ND2	2.40	0.90
1:A:223:HIS:NE2	1:A:266:ASN:ND2	2.19	0.90
1:A:4:ALA:HA	1:A:7:GLN:HB3	1.56	0.87
1:B:126:ASP:OD1	1:B:129:THR:HG23	1.74	0.87
1:B:183:ILE:CG2	1:B:189:ARG:HB2	2.05	0.86
1:B:294:LYS:H	1:B:294:LYS:HD2	1.38	0.85
1:B:151:TYR:OH	1:B:183:ILE:HD12	1.77	0.84
1:A:120:PHE:HB3	1:A:136:VAL:HG12	1.61	0.82
1:A:151:TYR:OH	1:A:183:ILE:HD12	1.79	0.82
1:A:209:PHE:HB3	3:A:768:CB3:HP3	1.60	0.81
1:B:90:ASN:ND2	1:B:170:LEU:HD12	1.96	0.81
1:A:209:PHE:CD2	3:A:768:CB3:CP3	2.65	0.80
1:A:145:LYS:HD3	1:A:152:ASP:OD1	1.82	0.80
1:A:196:LEU:CD2	1:A:234:HIS:HA	2.12	0.80
1:B:183:ILE:HG23	1:B:189:ARG:CB	2.11	0.79
1:B:3:ASN:HD21	1:B:260:PHE:H	1.31	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:125:ILE:HG13	1:A:125:ILE:O	1.83	0.77
1:A:92:SER:O	1:A:96:LEU:HD23	1.85	0.76
1:B:249:LEU:O	1:B:253:LEU:HG	1.86	0.76
1:A:120:PHE:CE1	1:B:162:PRO:HD2	2.21	0.76
1:B:77:LEU:HD23	1:B:80:ARG:HH11	1.49	0.76
1:A:146:ILE:HD12	1:A:221:ILE:HD11	1.68	0.76
1:B:13:VAL:HB	1:B:253:LEU:HD21	1.67	0.75
1:B:190:PRO:O	1:B:191:GLU:HB2	1.86	0.75
1:B:271:ASP:O	1:B:272:ILE:HG22	1.87	0.74
1:B:3:ASN:N	1:B:257:PRO:HB2	2.03	0.74
1:B:217:LEU:O	1:B:221:ILE:HG22	1.88	0.74
1:B:103:LYS:O	1:B:103:LYS:HD3	1.88	0.73
1:A:223:HIS:CD2	1:A:266:ASN:HD21	2.06	0.73
1:A:198:GLN:HE21	1:A:201:CYS:HA	1.54	0.73
1:A:154:ARG:HE	2:B:765:UMP:P	2.13	0.72
1:A:223:HIS:CD2	1:A:266:ASN:ND2	2.58	0.72
1:A:266:ASN:HB3	1:A:269:ILE:HD13	1.69	0.72
1:A:209:PHE:HB3	3:A:768:CB3:CP3	2.19	0.72
1:A:271:ASP:O	1:A:272:ILE:HG22	1.89	0.71
1:B:23:ARG:HG3	1:B:33:SER:OG	1.90	0.71
1:A:13:VAL:HG11	1:A:249:LEU:HD12	1.72	0.71
1:A:160:TRP:CD2	1:A:175:MET:HE3	2.25	0.71
3:A:768:CB3:H12	3:A:768:CB3:CP2	2.20	0.71
1:B:271:ASP:HB3	1:B:274:ASP:HB2	1.73	0.70
1:A:23:ARG:NH2	1:B:181:VAL:O	2.24	0.70
1:B:25:ASP:HB3	1:B:29:THR:O	1.92	0.70
1:A:124:TYR:O	1:A:125:ILE:HG23	1.90	0.70
1:A:183:ILE:HG23	1:A:189:ARG:HB2	1.73	0.70
1:A:233:ILE:HD12	1:B:36:ALA:CB	2.21	0.70
1:A:233:ILE:HD12	1:B:36:ALA:HB3	1.72	0.69
1:B:124:TYR:O	1:B:125:ILE:HG23	1.91	0.69
1:A:205:LEU:HD21	1:A:293:MET:HB2	1.74	0.69
1:A:73:GLU:OE2	1:A:78:LYS:HG2	1.92	0.69
1:B:183:ILE:HG23	1:B:184:PRO:HD2	1.74	0.69
1:B:77:LEU:HA	1:B:80:ARG:HD2	1.75	0.68
1:B:68:TRP:CG	1:B:79:LEU:HD11	2.29	0.68
1:B:138:GLN:O	1:B:142:ILE:HG13	1.93	0.68
1:A:177:CYS:HG	1:A:214:TYR:HE1	1.42	0.68
1:A:243:LYS:HA	1:A:246:ILE:HG13	1.75	0.68
1:B:118:ARG:HE	1:B:139:LEU:HD23	1.59	0.67
1:B:44:LEU:HD23	1:B:229:PRO:HB2	1.74	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:243:LYS:HZ3	1:A:244:ASP:N	1.92	0.67
1:B:170:LEU:HD23	1:B:171:PRO:HD2	1.76	0.67
1:A:182:HIS:HE1	1:A:193:SER:OG	1.77	0.66
1:A:170:LEU:HD23	1:A:171:PRO:HD2	1.77	0.66
1:A:192:LEU:CD2	1:A:221:ILE:HG23	2.27	0.65
1:A:55:LYS:HD2	1:A:291:ILE:HB	1.78	0.65
1:B:142:ILE:O	1:B:146:ILE:HG13	1.96	0.65
1:B:13:VAL:HG11	1:B:249:LEU:HD12	1.79	0.65
1:A:196:LEU:HD23	1:A:234:HIS:HA	1.77	0.65
1:B:144:GLN:HE21	1:B:144:GLN:HA	1.61	0.65
1:B:183:ILE:HG12	1:B:189:ARG:O	1.95	0.65
1:A:294:LYS:HD2	1:A:294:LYS:N	2.05	0.64
1:A:295:MET:HG2	1:A:296:SER:H	1.62	0.64
1:A:60:ARG:HH12	1:A:84:ILE:HD11	1.62	0.64
1:A:153:ARG:HG3	1:B:238:ASP:OD1	1.97	0.64
1:A:25:ASP:OD1	1:A:27:THR:N	2.30	0.64
1:A:295:MET:O	1:A:296:SER:HB2	1.96	0.64
1:B:93:ARG:HG2	4:B:1097:HOH:O	1.96	0.64
1:B:3:ASN:HD21	1:B:260:PHE:N	1.95	0.64
1:B:105:GLN:NE2	1:B:106:GLU:N	2.45	0.64
1:B:267:ARG:O	1:B:269:ILE:HD12	1.97	0.64
1:A:41:LYS:HE2	1:A:233:ILE:HD11	1.80	0.64
1:A:99:ILE:HD11	1:A:101:LEU:HD12	1.80	0.64
1:A:151:TYR:CE1	1:B:24:PRO:HD2	2.33	0.63
1:A:24:PRO:HD2	1:B:151:TYR:CD1	2.33	0.63
1:B:52:LEU:HA	1:B:260:PHE:HE1	1.62	0.63
1:A:96:LEU:HD12	1:A:104:ARG:HB3	1.80	0.63
1:A:196:LEU:HD21	1:A:234:HIS:CD2	2.34	0.63
1:B:196:LEU:HD21	1:B:234:HIS:CD2	2.34	0.63
1:A:160:TRP:CE3	1:A:175:MET:HE3	2.34	0.63
1:A:196:LEU:HD22	1:A:232:PHE:CZ	2.34	0.63
1:A:201:CYS:SG	1:A:236:MET:HG2	2.39	0.63
1:B:125:ILE:O	1:B:126:ASP:HB3	1.99	0.63
1:A:210:ASN:ND2	3:A:768:CB3:CP3	2.62	0.63
1:A:251:GLN:HG3	1:A:252:GLN:N	2.13	0.63
1:B:272:ILE:HA	1:B:275:PHE:CE1	2.34	0.63
1:B:201:CYS:SG	1:B:236:MET:HB3	2.39	0.62
1:B:89:ALA:HB1	1:B:297:ILE:HD13	1.81	0.62
1:B:223:HIS:CE1	1:B:266:ASN:ND2	2.49	0.62
1:B:93:ARG:HH11	1:B:93:ARG:HB2	1.65	0.62
1:A:201:CYS:SG	1:A:236:MET:HB3	2.39	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:96:LEU:HB3	1:B:101:LEU:O	2.00	0.62
1:B:245:HIS:O	1:B:249:LEU:HD23	1.99	0.62
1:A:64:GLU:CG	1:A:82:LYS:HD3	2.29	0.61
1:B:68:TRP:CD2	1:B:79:LEU:HD11	2.35	0.61
1:A:270:THR:O	1:A:270:THR:OG1	2.19	0.61
1:B:182:HIS:HE1	1:B:193:SER:OG	1.83	0.61
1:B:64:GLU:CD	1:B:82:LYS:HD3	2.20	0.61
1:B:3:ASN:O	1:B:4:ALA:CB	2.48	0.61
1:A:146:ILE:CD1	1:A:221:ILE:HD11	2.31	0.61
1:A:184:PRO:HD2	1:A:189:ARG:HB2	1.83	0.61
1:A:207:VAL:HB	1:A:208:PRO:HD3	1.82	0.61
1:A:243:LYS:C	1:A:245:HIS:H	2.03	0.61
3:A:768:CB3:O	3:A:768:CB3:HG1	2.00	0.60
1:A:182:HIS:ND1	1:A:191:GLU:HB3	2.16	0.60
1:B:66:LEU:O	1:B:70:ILE:HG13	2.00	0.60
1:A:189:ARG:HB3	1:A:190:PRO:CD	2.28	0.60
1:A:196:LEU:HD22	1:A:232:PHE:CE1	2.37	0.60
1:B:120:PHE:HB3	1:B:136:VAL:HG13	1.83	0.60
1:B:170:LEU:HD23	1:B:171:PRO:CD	2.32	0.60
1:B:99:ILE:HD11	1:B:101:LEU:HD12	1.84	0.60
1:B:272:ILE:HA	1:B:275:PHE:CD1	2.37	0.60
1:A:162:PRO:HD2	1:B:120:PHE:CE1	2.37	0.60
1:B:243:LYS:C	1:B:245:HIS:H	2.03	0.60
1:A:195:GLN:NE2	1:B:197:TYR:HE1	2.00	0.59
1:A:58:PHE:HB2	3:A:768:CB3:HA	1.84	0.59
1:A:125:ILE:O	1:A:126:ASP:HB3	2.00	0.59
1:A:255:ARG:NH1	1:A:291:ILE:HD11	2.17	0.59
1:B:207:VAL:HB	1:B:208:PRO:HD3	1.82	0.59
1:A:58:PHE:O	1:A:61:GLY:N	2.36	0.59
1:A:124:TYR:O	1:A:125:ILE:CG2	2.51	0.59
1:B:182:HIS:ND1	1:B:182:HIS:N	2.50	0.59
1:A:183:ILE:HG23	1:A:184:PRO:HD2	1.84	0.58
1:A:52:LEU:HA	1:A:260:PHE:HE1	1.68	0.58
1:A:49:PHE:CZ	1:A:216:LEU:HG	2.39	0.58
1:B:85:HIS:HB3	1:B:88:ASP:OD1	2.03	0.58
1:A:31:THR:HG22	1:A:242:TYR:CD1	2.39	0.58
1:A:176:PHE:CE1	1:B:176:PHE:CE1	2.92	0.58
1:A:204:GLY:HA2	4:A:1116:HOH:O	2.03	0.58
1:A:245:HIS:O	1:A:249:LEU:HD23	2.04	0.58
1:B:203:MET:SD	1:B:207:VAL:HG21	2.43	0.58
1:A:52:LEU:H	1:A:52:LEU:CD1	2.09	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:PRO:HG2	1:B:154:ARG:CZ	2.34	0.58
1:A:196:LEU:HD21	1:A:234:HIS:HA	1.86	0.57
1:A:223:HIS:CG	1:A:266:ASN:HD21	2.22	0.57
1:B:12:LEU:HD21	1:B:236:MET:HE3	1.85	0.57
1:B:196:LEU:HD23	1:B:196:LEU:H	1.67	0.57
1:B:271:ASP:HB3	1:B:274:ASP:CB	2.34	0.57
1:A:118:ARG:NH1	1:A:137:ASP:OD1	2.37	0.57
1:B:84:ILE:HG23	1:B:86:ILE:HG23	1.86	0.57
1:B:243:LYS:HA	1:B:246:ILE:HG13	1.85	0.57
1:B:9:TYR:O	1:B:13:VAL:HG23	2.04	0.57
1:A:3:ASN:O	1:A:4:ALA:HB3	2.05	0.57
1:A:150:PRO:HB2	1:A:181:VAL:HG11	1.87	0.57
1:A:195:GLN:NE2	1:B:197:TYR:CE1	2.73	0.57
1:B:183:ILE:CD1	1:B:189:ARG:N	2.67	0.57
1:B:77:LEU:HD23	1:B:80:ARG:NH1	2.19	0.57
1:A:104:ARG:HD3	1:A:108:ASP:O	2.04	0.57
1:B:41:LYS:NZ	1:B:41:LYS:HB3	2.19	0.57
1:B:189:ARG:HB3	1:B:190:PRO:HD2	1.87	0.57
1:A:89:ALA:C	1:A:91:GLY:H	2.09	0.56
1:B:63:ILE:O	1:B:67:LEU:HD13	2.05	0.56
1:A:210:ASN:HD21	3:A:768:CB3:CP3	2.19	0.56
1:B:86:ILE:HG13	1:B:87:TRP:CD1	2.40	0.56
1:A:151:TYR:CZ	1:A:183:ILE:HD12	2.41	0.56
1:A:64:GLU:CD	1:A:82:LYS:HD3	2.27	0.56
1:B:270:THR:O	1:B:270:THR:OG1	2.18	0.56
1:A:3:ASN:O	1:A:4:ALA:CB	2.54	0.55
1:A:243:LYS:HZ3	1:A:243:LYS:HB3	1.70	0.55
1:A:170:LEU:HD23	1:A:171:PRO:CD	2.35	0.55
1:A:267:ARG:O	1:A:269:ILE:HD12	2.06	0.55
1:A:25:ASP:OD1	1:A:27:THR:OG1	2.24	0.55
1:A:27:THR:HB	1:A:296:SER:O	2.07	0.55
1:A:243:LYS:O	1:A:245:HIS:N	2.39	0.55
1:A:105:GLN:NE2	1:A:106:GLU:N	2.54	0.55
1:A:58:PHE:HB2	3:A:768:CB3:CT	2.37	0.55
1:A:216:LEU:O	1:A:220:MET:HG3	2.06	0.54
1:A:217:LEU:O	1:A:221:ILE:HG22	2.07	0.54
1:B:146:ILE:CD1	1:B:221:ILE:HD11	2.36	0.54
1:A:181:VAL:HA	1:A:191:GLU:O	2.07	0.54
1:A:197:TYR:CD2	1:B:176:PHE:HZ	2.26	0.54
1:B:29:THR:HG21	1:B:296:SER:HB2	1.88	0.54
1:A:181:VAL:HG23	1:A:191:GLU:O	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:198:GLN:HE21	1:A:201:CYS:CA	2.20	0.54
1:B:258:ARG:HD3	1:B:288:TYR:CE1	2.43	0.54
1:A:55:LYS:HD2	1:A:291:ILE:HD12	1.89	0.54
1:B:82:LYS:O	1:B:83:ASN:HB2	2.07	0.54
1:B:295:MET:HG2	4:B:1107:HOH:O	2.08	0.54
1:A:100:GLY:O	1:A:102:THR:N	2.39	0.53
1:A:209:PHE:HD2	3:A:768:CB3:CP3	2.19	0.53
1:B:295:MET:HG2	1:B:296:SER:H	1.73	0.53
1:A:199:ARG:NH1	1:A:200:SER:HB2	2.24	0.53
1:A:223:HIS:CE1	1:A:266:ASN:HD21	2.24	0.53
1:B:248:ALA:O	1:B:249:LEU:HD22	2.07	0.53
1:A:289:GLU:OE2	1:A:289:GLU:N	2.37	0.53
1:B:26:ARG:C	1:B:28:GLY:H	2.11	0.53
1:A:219:CYS:HB3	1:A:265:LEU:HD21	1.90	0.53
1:B:56:ARG:HH11	1:B:287:PRO:CG	2.22	0.53
1:B:207:VAL:O	1:B:211:ILE:HG13	2.09	0.53
1:A:96:LEU:CD1	1:A:104:ARG:HD2	2.40	0.52
1:A:183:ILE:CD1	1:A:189:ARG:N	2.72	0.52
1:A:66:LEU:O	1:A:70:ILE:HG13	2.09	0.52
1:A:16:ILE:O	1:A:20:GLY:HA3	2.09	0.52
1:B:125:ILE:O	1:B:125:ILE:HG13	2.10	0.52
1:A:151:TYR:CD1	1:B:24:PRO:HD2	2.44	0.52
1:B:271:ASP:OD1	1:B:273:GLU:HB2	2.10	0.52
1:B:93:ARG:HB2	1:B:93:ARG:NH1	2.23	0.52
1:B:144:GLN:HA	1:B:144:GLN:NE2	2.23	0.52
1:A:13:VAL:O	1:A:17:ILE:HG13	2.10	0.52
1:A:25:ASP:HB3	1:A:29:THR:O	2.10	0.52
1:A:41:LYS:NZ	1:A:41:LYS:HB3	2.24	0.52
1:A:76:SER:OG	1:A:107:GLY:HA2	2.10	0.52
1:B:124:TYR:O	1:B:125:ILE:CG2	2.58	0.52
1:A:77:LEU:O	1:A:81:GLU:HG3	2.10	0.52
1:A:209:PHE:CD2	3:A:768:CB3:CP2	2.92	0.52
1:A:255:ARG:HH21	1:A:288:TYR:CB	2.22	0.52
1:B:243:LYS:O	1:B:245:HIS:N	2.43	0.52
1:B:54:THR:O	1:B:55:LYS:HB2	2.09	0.52
1:B:251:GLN:HG3	1:B:252:GLN:N	2.25	0.52
1:A:4:ALA:CA	1:A:7:GLN:HB3	2.33	0.51
1:B:205:LEU:HD21	1:B:293:MET:HB2	1.92	0.51
1:B:52:LEU:H	1:B:52:LEU:CD1	2.17	0.51
1:B:247:GLU:H	1:B:247:GLU:CD	2.13	0.51
1:A:99:ILE:CD1	1:A:101:LEU:HD12	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:104:ARG:HD3	1:B:108:ASP:O	2.10	0.51
1:B:252:GLN:O	1:B:255:ARG:HB2	2.10	0.51
1:B:265:LEU:HD23	4:B:1143:HOH:O	2.10	0.51
3:A:768:CB3:CP2	3:A:768:CB3:C12	2.85	0.51
1:B:109:LEU:HB3	1:B:112:ILE:HD13	1.92	0.51
1:B:77:LEU:CD2	1:B:80:ARG:HH11	2.22	0.51
1:B:180:TYR:HE2	1:B:182:HIS:CD2	2.29	0.51
1:A:181:VAL:HG13	1:A:181:VAL:O	2.10	0.51
1:A:261:PRO:HB3	1:A:284:ASN:O	2.11	0.51
1:B:16:ILE:O	1:B:20:GLY:HA3	2.11	0.51
1:B:21:GLU:O	1:B:32:LEU:HA	2.11	0.51
3:A:768:CB3:CP3	3:A:768:CB3:H12	2.41	0.51
1:B:41:LYS:HG2	1:B:233:ILE:HB	1.92	0.51
1:A:67:LEU:O	1:A:71:ARG:HG3	2.11	0.50
1:A:160:TRP:CZ2	1:B:156:ILE:HB	2.46	0.50
1:B:183:ILE:HG21	4:B:1083:HOH:O	2.10	0.50
1:B:155:LEU:C	1:B:156:ILE:HD12	2.31	0.50
1:B:152:ASP:OD1	1:B:154:ARG:N	2.33	0.50
1:A:210:ASN:ND2	3:A:768:CB3:HP3	2.26	0.50
1:A:26:ARG:NH1	1:A:27:THR:HG22	2.27	0.50
1:A:139:LEU:O	1:A:143:ILE:HG12	2.11	0.50
1:B:143:ILE:HD13	1:B:221:ILE:HG13	1.94	0.50
1:B:295:MET:HG2	1:B:296:SER:N	2.27	0.50
1:B:90:ASN:HA	1:B:95:TYR:CD2	2.47	0.50
1:A:183:ILE:HD11	1:A:189:ARG:N	2.27	0.50
1:B:33:SER:HB3	1:B:240:HIS:HB3	1.93	0.50
1:B:3:ASN:O	1:B:4:ALA:HB3	2.11	0.49
1:A:58:PHE:HB2	3:A:768:CB3:CA	2.42	0.49
1:A:261:PRO:HB3	1:A:284:ASN:C	2.32	0.49
4:A:1063:HOH:O	1:B:235:VAL:HG13	2.12	0.49
1:B:181:VAL:HA	1:B:191:GLU:O	2.11	0.49
1:A:89:ALA:O	1:A:91:GLY:N	2.46	0.49
1:A:117:TRP:CG	1:A:157:LEU:HD11	2.47	0.49
1:B:276:THR:N	1:B:279:ASP:OD2	2.46	0.49
1:B:39:PRO:HA	4:B:1136:HOH:O	2.11	0.49
1:A:243:LYS:HB3	1:A:243:LYS:NZ	2.28	0.49
1:A:184:PRO:HD2	1:A:189:ARG:CB	2.42	0.49
1:A:190:PRO:O	1:A:191:GLU:HB2	2.13	0.49
1:B:59:ILE:HG13	1:B:59:ILE:O	2.12	0.49
1:B:216:LEU:CD2	1:B:263:LEU:HD22	2.43	0.49
1:B:26:ARG:C	1:B:28:GLY:N	2.66	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:199:ARG:NH1	2:B:765:UMP:OP1	2.45	0.49
1:B:263:LEU:HG	1:B:265:LEU:HD22	1.95	0.49
1:A:182:HIS:HB3	1:B:21:GLU:OE2	2.13	0.48
1:A:183:ILE:HG12	1:A:189:ARG:HB2	1.94	0.48
1:A:199:ARG:HG3	1:A:199:ARG:HH11	1.77	0.48
1:B:59:ILE:HD12	1:B:62:VAL:HB	1.95	0.48
1:A:77:LEU:HA	1:A:80:ARG:HD2	1.95	0.48
1:B:170:LEU:HD23	1:B:171:PRO:N	2.29	0.48
1:B:264:SER:HB2	1:B:281:ASN:HB3	1.94	0.48
1:A:68:TRP:CD1	1:A:73:GLU:HB2	2.48	0.48
1:A:272:ILE:HA	1:A:275:PHE:CE1	2.48	0.48
1:B:7:GLN:O	1:B:10:LEU:N	2.47	0.48
1:B:28:GLY:O	1:B:29:THR:HG23	2.14	0.48
1:B:139:LEU:O	1:B:143:ILE:HG12	2.13	0.48
1:B:161:ASN:O	1:B:165:LEU:HD13	2.12	0.48
1:A:75:ASP:HB3	1:A:78:LYS:HD3	1.96	0.48
1:A:173:CYS:SG	2:A:767:UMP:H2'	2.53	0.48
1:A:251:GLN:O	1:A:254:THR:OG1	2.31	0.48
1:A:192:LEU:HD21	1:A:221:ILE:HG23	1.96	0.48
1:A:295:MET:HG2	1:A:296:SER:N	2.28	0.48
1:B:216:LEU:HD23	1:B:263:LEU:HD22	1.95	0.48
1:B:251:GLN:NE2	1:B:291:ILE:HD11	2.29	0.48
1:A:161:ASN:O	1:A:165:LEU:HD13	2.14	0.48
1:B:258:ARG:HD3	1:B:288:TYR:HE1	1.78	0.48
1:A:125:ILE:O	1:A:125:ILE:CG1	2.58	0.48
1:B:198:GLN:HB3	1:B:201:CYS:SG	2.53	0.48
1:A:118:ARG:NH1	1:A:137:ASP:OD2	2.46	0.47
1:A:196:LEU:HD21	1:A:234:HIS:CG	2.49	0.47
1:A:224:VAL:HG12	1:A:224:VAL:O	2.13	0.47
1:A:16:ILE:O	1:A:20:GLY:CA	2.62	0.47
1:A:294:LYS:O	1:A:295:MET:O	2.32	0.47
1:A:294:LYS:H	1:A:294:LYS:CD	2.03	0.47
1:A:120:PHE:CZ	1:B:162:PRO:HD2	2.50	0.47
1:A:136:VAL:HG11	1:B:162:PRO:HB2	1.96	0.47
1:A:16:ILE:O	1:A:20:GLY:N	2.47	0.47
1:A:118:ARG:NH1	1:A:137:ASP:CG	2.68	0.47
1:A:198:GLN:HG2	1:A:201:CYS:SG	2.55	0.47
1:B:92:SER:O	1:B:96:LEU:HD23	2.15	0.47
1:B:129:THR:OG1	1:B:131:TYR:CZ	2.67	0.47
1:B:150:PRO:HB2	1:B:181:VAL:HG11	1.97	0.47
1:A:60:ARG:NH1	1:A:84:ILE:HD11	2.27	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:82:LYS:O	1:A:83:ASN:HB2	2.14	0.47
1:A:197:TYR:OH	1:B:195:GLN:NE2	2.48	0.47
1:A:80:ARG:NH2	1:A:88:ASP:HA	2.11	0.47
1:A:119:HIS:O	1:A:135:GLY:HA3	2.15	0.47
1:A:243:LYS:C	1:A:245:HIS:N	2.67	0.46
1:B:26:ARG:HD3	1:B:27:THR:N	2.30	0.46
1:A:55:LYS:HZ2	1:A:291:ILE:H	1.63	0.46
1:A:68:TRP:CG	1:A:79:LEU:HD13	2.50	0.46
1:B:272:ILE:CG2	1:B:273:GLU:N	2.78	0.46
1:A:237:GLY:HA2	1:B:195:GLN:HE22	1.80	0.46
1:B:294:LYS:HD2	1:B:294:LYS:N	2.20	0.46
1:B:175:MET:O	1:B:176:PHE:HB3	2.15	0.46
1:A:132:ILE:HG23	1:A:132:ILE:O	2.16	0.46
1:B:68:TRP:CD1	1:B:73:GLU:HB2	2.50	0.46
4:A:1071:HOH:O	1:B:26:ARG:HB3	2.15	0.46
1:A:171:PRO:HG2	1:B:154:ARG:HD3	1.98	0.46
1:A:153:ARG:HD2	4:B:1109:HOH:O	2.14	0.46
1:A:155:LEU:C	1:A:156:ILE:HD12	2.37	0.46
1:A:160:TRP:CZ2	1:A:165:LEU:HD21	2.52	0.46
1:A:201:CYS:SG	1:A:236:MET:CG	3.04	0.46
1:A:151:TYR:HE2	1:A:183:ILE:HG13	1.80	0.45
1:B:42:PHE:CE2	1:B:211:ILE:HD13	2.51	0.45
1:B:271:ASP:HB3	1:B:274:ASP:CG	2.36	0.45
1:A:193:SER:HA	1:A:231:ASP:O	2.17	0.45
1:B:82:LYS:O	1:B:84:ILE:HD12	2.15	0.45
1:A:198:GLN:NE2	1:A:201:CYS:HA	2.26	0.45
1:B:40:LEU:HG	4:B:1136:HOH:O	2.17	0.45
1:B:183:ILE:HD13	1:B:189:ARG:N	2.31	0.45
1:A:162:PRO:HD2	1:B:120:PHE:CZ	2.50	0.45
1:A:176:PHE:HE2	1:B:175:MET:HE1	1.80	0.45
1:A:126:ASP:OD1	1:A:129:THR:HG23	2.17	0.45
1:A:295:MET:CG	1:A:296:SER:H	2.25	0.45
1:B:12:LEU:HD21	1:B:236:MET:CE	2.46	0.45
1:B:184:PRO:HD2	1:B:189:ARG:CB	2.46	0.45
1:A:31:THR:HB	1:A:241:ILE:O	2.17	0.45
1:A:89:ALA:C	1:A:91:GLY:N	2.70	0.45
1:B:13:VAL:CG1	1:B:249:LEU:HD12	2.45	0.45
1:A:95:TYR:HE2	1:A:169:ALA:O	2.00	0.45
1:B:142:ILE:HD11	1:B:157:LEU:HB2	1.98	0.45
1:B:147:ARG:NH1	1:B:147:ARG:HG2	2.31	0.45
1:B:200:SER:OG	2:B:765:UMP:H3'	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:23:ARG:HA	1:A:24:PRO:HD3	1.80	0.45
1:A:41:LYS:HG2	1:A:233:ILE:HG12	1.98	0.45
1:A:130:ASN:ND2	1:A:132:ILE:HG22	2.32	0.45
1:B:115:PHE:CE2	1:B:124:TYR:HD1	2.35	0.45
1:B:143:ILE:O	1:B:147:ARG:HD3	2.17	0.45
1:B:192:LEU:CD2	1:B:221:ILE:HG23	2.47	0.45
1:A:131:TYR:HA	1:A:134:GLN:NE2	2.31	0.44
1:A:119:HIS:O	1:A:120:PHE:C	2.55	0.44
1:A:171:PRO:HG2	1:B:154:ARG:NE	2.32	0.44
1:B:41:LYS:NZ	1:B:41:LYS:CB	2.80	0.44
1:A:216:LEU:HD23	1:A:263:LEU:CD2	2.47	0.44
1:A:237:GLY:HA3	1:B:178:GLN:OE1	2.18	0.44
1:B:243:LYS:C	1:B:245:HIS:N	2.70	0.44
1:A:58:PHE:O	1:A:59:ILE:C	2.55	0.44
1:A:156:ILE:HD12	1:A:156:ILE:N	2.32	0.44
1:A:296:SER:HB3	3:A:768:CB3:NA2	2.32	0.44
1:A:174:HIS:ND1	1:A:174:HIS:O	2.51	0.44
1:B:224:VAL:HG21	1:B:272:ILE:HB	1.99	0.44
1:A:201:CYS:HB3	1:A:207:VAL:CG2	2.48	0.44
1:A:297:ILE:H	1:A:297:ILE:HG13	1.55	0.44
1:B:184:PRO:HD2	1:B:189:ARG:HB3	1.99	0.44
1:A:13:VAL:HG13	1:A:241:ILE:HD11	1.99	0.44
1:A:84:ILE:N	1:A:84:ILE:HD12	2.33	0.44
1:B:25:ASP:OD1	1:B:27:THR:N	2.51	0.44
1:B:26:ARG:NH1	1:B:27:THR:HG22	2.33	0.44
1:B:196:LEU:HD22	1:B:232:PHE:CE1	2.53	0.44
1:A:13:VAL:HB	1:A:253:LEU:HD21	1.99	0.43
1:A:200:SER:HB3	2:A:767:UMP:H2'	2.00	0.43
1:B:146:ILE:HD12	1:B:221:ILE:HD11	2.00	0.43
1:B:168:MET:SD	1:B:172:PRO:HD3	2.58	0.43
1:B:182:HIS:CE1	1:B:193:SER:OG	2.66	0.43
1:A:211:ILE:O	1:A:215:ALA:HB2	2.18	0.43
1:A:252:GLN:HA	1:A:255:ARG:HG3	2.00	0.43
1:B:196:LEU:CD2	1:B:234:HIS:HA	2.48	0.43
1:A:43:SER:OG	1:A:45:ARG:HB2	2.17	0.43
1:A:152:ASP:HB3	1:A:155:LEU:HD21	2.00	0.43
1:B:266:ASN:HB3	1:B:267:ARG:H	0.97	0.43
1:A:183:ILE:HG23	1:A:189:ARG:CB	2.46	0.43
1:B:247:GLU:N	1:B:247:GLU:OE1	2.52	0.43
1:A:27:THR:CB	1:A:296:SER:O	2.67	0.43
1:A:124:TYR:C	1:A:125:ILE:HG23	2.38	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:93:ARG:NH1	1:B:106:GLU:OE1	2.52	0.43
1:B:183:ILE:HD11	1:B:189:ARG:N	2.33	0.43
1:A:53:THR:O	1:A:287:PRO:HA	2.18	0.43
1:A:233:ILE:HD12	1:B:36:ALA:HB1	2.00	0.43
1:B:89:ALA:C	1:B:91:GLY:H	2.21	0.43
1:B:143:ILE:CD1	1:B:221:ILE:HG13	2.49	0.43
1:A:176:PHE:CZ	1:B:176:PHE:CE1	3.07	0.43
1:A:3:ASN:HA	4:A:1198:HOH:O	2.19	0.43
1:A:246:ILE:HG22	1:A:250:GLN:HE22	1.84	0.43
1:B:251:GLN:HG3	1:B:252:GLN:H	1.83	0.43
1:B:66:LEU:O	1:B:69:PHE:HB2	2.19	0.42
1:B:104:ARG:NH2	1:B:167:LYS:O	2.52	0.42
1:A:128:LYS:CB	1:A:128:LYS:NZ	2.82	0.42
1:A:255:ARG:HH21	1:A:288:TYR:HB2	1.83	0.42
1:B:151:TYR:O	1:B:152:ASP:C	2.57	0.42
1:A:3:ASN:ND2	1:A:260:PHE:CD2	2.87	0.42
1:A:52:LEU:HD12	1:A:52:LEU:N	2.13	0.42
1:A:181:VAL:HG21	1:A:227:LEU:HD13	2.00	0.42
1:A:192:LEU:HD23	1:A:221:ILE:HG23	2.02	0.42
1:A:267:ARG:O	1:A:268:SER:C	2.56	0.42
1:A:295:MET:O	1:A:296:SER:CB	2.65	0.42
1:B:31:THR:HG22	1:B:242:TYR:CD1	2.55	0.42
1:B:147:ARG:HG2	1:B:147:ARG:HH11	1.84	0.42
1:B:199:ARG:HG3	1:B:200:SER:N	2.34	0.42
1:A:7:GLN:OE1	1:A:10:LEU:HD12	2.19	0.42
1:A:49:PHE:O	1:A:51:LEU:N	2.47	0.42
1:A:160:TRP:HE1	1:A:162:PRO:HG3	1.83	0.42
1:B:65:GLU:OE1	1:B:209:PHE:HE2	2.03	0.42
1:B:77:LEU:O	1:B:81:GLU:HG3	2.19	0.42
1:A:143:ILE:HD13	1:A:221:ILE:HG13	2.02	0.42
1:B:43:SER:HB3	4:B:1137:HOH:O	2.18	0.42
1:A:3:ASN:HB2	1:A:6:GLU:H	1.85	0.42
1:A:26:ARG:HD2	2:A:767:UMP:OP3	2.19	0.42
1:A:60:ARG:HH12	1:A:84:ILE:CD1	2.31	0.42
1:A:143:ILE:CD1	1:A:221:ILE:HG13	2.49	0.42
1:A:199:ARG:NH1	1:A:199:ARG:HG3	2.35	0.42
1:B:3:ASN:OD1	1:B:258:ARG:O	2.37	0.42
1:A:12:LEU:HD23	1:A:203:MET:HE1	2.01	0.42
1:A:122:ALA:HB2	1:A:134:GLN:C	2.40	0.42
1:B:162:PRO:HA	1:B:165:LEU:HD22	2.02	0.42
1:B:182:HIS:O	1:B:190:PRO:O	2.37	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:243:LYS:HZ3	1:B:243:LYS:HB3	1.85	0.42
1:A:41:LYS:HE2	1:A:233:ILE:CD1	2.49	0.42
1:A:189:ARG:O	1:A:227:LEU:HD22	2.19	0.42
1:A:272:ILE:HA	1:A:275:PHE:HE1	1.85	0.42
1:B:190:PRO:O	1:B:191:GLU:CB	2.60	0.41
1:A:21:GLU:O	1:A:32:LEU:HA	2.20	0.41
1:A:22:ASP:HA	1:A:32:LEU:HD23	2.02	0.41
1:A:266:ASN:OD1	1:A:269:ILE:HB	2.20	0.41
1:A:138:GLN:O	1:A:142:ILE:HG13	2.20	0.41
1:A:86:ILE:HB	3:A:768:CB3:C16	2.50	0.41
1:A:177:CYS:SG	1:A:214:TYR:HE1	2.41	0.41
1:A:216:LEU:HD23	1:A:263:LEU:HD21	2.02	0.41
1:A:243:LYS:NZ	1:A:244:ASP:N	2.67	0.41
1:B:245:HIS:HB3	1:B:249:LEU:HD23	2.03	0.41
1:A:65:GLU:OE2	1:A:69:PHE:CZ	2.73	0.41
1:A:283:GLN:O	1:A:284:ASN:HB2	2.20	0.41
1:B:41:LYS:HB3	1:B:41:LYS:HZ3	1.84	0.41
1:B:42:PHE:HD2	1:B:232:PHE:HD2	1.67	0.41
1:A:55:LYS:NZ	1:A:291:ILE:H	2.19	0.41
1:A:128:LYS:NZ	1:A:128:LYS:HB2	2.36	0.41
1:B:146:ILE:HD11	1:B:221:ILE:HD11	2.01	0.41
1:B:271:ASP:O	1:B:271:ASP:OD1	2.39	0.41
1:A:6:GLU:O	1:A:9:TYR:HB3	2.19	0.41
1:B:171:PRO:HA	1:B:172:PRO:HD3	1.95	0.41
1:A:38:SER:HA	1:A:39:PRO:HD2	1.91	0.41
1:A:196:LEU:HD23	1:A:196:LEU:O	2.20	0.41
1:A:206:GLY:O	1:A:207:VAL:C	2.59	0.41
1:B:39:PRO:HB2	1:B:233:ILE:HD11	2.02	0.41
1:B:42:PHE:CZ	1:B:211:ILE:HD13	2.56	0.41
1:B:112:ILE:O	1:B:113:TYR:C	2.59	0.41
1:B:119:HIS:O	1:B:120:PHE:C	2.58	0.41
1:A:12:LEU:O	1:A:16:ILE:HG13	2.21	0.40
1:A:91:GLY:HA2	1:A:96:LEU:HD21	2.03	0.40
1:A:160:TRP:CG	1:A:175:MET:HE3	2.56	0.40
1:B:182:HIS:O	1:B:191:GLU:HB2	2.21	0.40
1:A:243:LYS:HZ3	1:A:243:LYS:CB	2.33	0.40
1:B:243:LYS:O	1:B:246:ILE:HG13	2.21	0.40
1:B:272:ILE:HA	1:B:275:PHE:HE1	1.83	0.40
1:A:183:ILE:HD13	1:A:189:ARG:HG2	2.03	0.40
1:B:16:ILE:HD12	1:B:203:MET:HG3	2.02	0.40
1:B:205:LEU:HD21	1:B:293:MET:CB	2.52	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:266:ASN:HB3	1:B:269:ILE:HD13	2.03	0.40
1:A:49:PHE:HZ	1:A:216:LEU:HG	1.83	0.40
1:A:209:PHE:CG	3:A:768:CB3:CP3	3.04	0.40
1:B:77:LEU:CD2	1:B:80:ARG:NH1	2.83	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	288/297 (97%)	235 (82%)	36 (12%)	17 (6%)	1	1
1	B	288/297 (97%)	244 (85%)	32 (11%)	12 (4%)	3	3
All	All	576/594 (97%)	479 (83%)	68 (12%)	29 (5%)	2	2

All (29) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	125	ILE
1	A	184	PRO
1	A	244	ASP
1	A	267	ARG
1	A	272	ILE
1	A	295	MET
1	A	296	SER
1	B	113	TYR
1	B	125	ILE
1	B	267	ARG
1	A	90	ASN
1	A	113	TYR
1	A	120	PHE
1	A	206	GLY

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Mol	Chain	Res	Type
1	B	4	ALA
1	B	55	LYS
1	B	120	PHE
1	B	190	PRO
1	B	191	GLU
1	B	244	ASP
1	B	295	MET
1	A	268	SER
1	B	148	THR
1	A	4	ALA
1	A	289	GLU
1	A	246	ILE
1	A	190	PRO
1	A	50	PRO
1	B	50	PRO

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	263/268 (98%)	244 (93%)	19 (7%)	14	29
1	B	263/268 (98%)	239 (91%)	24 (9%)	9	18
All	All	526/536 (98%)	483 (92%)	43 (8%)	11	22

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	ARG
1	A	44	LEU
1	A	45	ARG
1	A	66	LEU
1	A	96	LEU
1	A	105	GLN
1	A	118	ARG
1	A	147	ARG

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Mol	Chain	Res	Type
1	A	164	ASP
1	A	166	GLU
1	A	176	PHE
1	A	182	HIS
1	A	243	LYS
1	A	247	GLU
1	A	251	GLN
1	A	258	ARG
1	A	267	ARG
1	A	270	THR
1	A	294	LYS
1	B	25	ASP
1	B	26	ARG
1	B	66	LEU
1	B	93	ARG
1	B	105	GLN
1	B	118	ARG
1	B	126	ASP
1	B	136	VAL
1	B	147	ARG
1	B	153	ARG
1	B	165	LEU
1	B	176	PHE
1	B	182	HIS
1	B	226	ASP
1	B	233	ILE
1	B	243	LYS
1	B	247	GLU
1	B	251	GLN
1	B	258	ARG
1	B	267	ARG
1	B	270	THR
1	B	277	LEU
1	B	290	THR
1	B	294	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3	ASN
1	A	105	GLN
1	A	130	ASN

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Mol	Chain	Res	Type
1	A	134	GLN
1	A	144	GLN
1	A	182	HIS
1	A	198	GLN
1	A	234	HIS
1	A	252	GLN
1	A	266	ASN
1	B	3	ASN
1	B	85	HIS
1	B	90	ASN
1	B	105	GLN
1	B	144	GLN
1	B	182	HIS
1	B	195	GLN
1	B	210	ASN
1	B	234	HIS
1	B	252	GLN
1	B	266	ASN
1	B	286	HIS

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](#)

3 ligands are modelled in this entry.

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	UMP	A	767	-	21,21,21	3.39	7 (33%)	30,31,31	3.31	10 (33%)
3	CB3	A	768	-	36,37,37	27.83	18 (50%)	48,51,51	10.09	18 (37%)
2	UMP	B	765	-	21,21,21	2.03	6 (28%)	30,31,31	2.26	4 (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
3	CB3	A	768	-	1/1/5/6	9/27/28/28	0/3/3/3
2	UMP	B	765	-	-	4/10/22/22	0/2/2/2
2	UMP	A	767	-	-	4/10/22/22	0/2/2/2

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	768	CB3	C11-C	128.85	4.33	1.50
3	A	768	CB3	C14-N10	105.27	4.28	1.38
2	A	767	UMP	C6-C5	12.77	1.64	1.35
3	A	768	CB3	O4-C4	6.27	1.39	1.24
2	B	765	UMP	O4'-C1'	5.05	1.53	1.42
2	A	767	UMP	O4'-C1'	4.54	1.52	1.42
3	A	768	CB3	C8-C7	3.94	1.45	1.36
2	A	767	UMP	C5-C4	3.90	1.52	1.43
3	A	768	CB3	C12-C11	3.87	1.45	1.39
3	A	768	CB3	C16-C11	3.85	1.45	1.39
3	A	768	CB3	C5-C6	3.81	1.46	1.37
3	A	768	CB3	C4-N3	3.63	1.39	1.33
3	A	768	CB3	C13-C12	3.48	1.44	1.38
2	B	765	UMP	C2-N1	3.37	1.43	1.38
3	A	768	CB3	C4A-C8A	3.36	1.47	1.41
2	A	767	UMP	O4-C4	-3.32	1.18	1.24
2	B	765	UMP	O4'-C4'	3.29	1.52	1.45
2	A	767	UMP	O4'-C4'	3.29	1.52	1.45
2	B	765	UMP	C6-C5	3.28	1.42	1.35
3	A	768	CB3	C16-C15	3.05	1.43	1.38
3	A	768	CB3	C13-C14	2.96	1.44	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	768	CB3	C7-C6	2.89	1.44	1.38
3	A	768	CB3	CP1-N10	2.85	1.48	1.46
3	A	768	CB3	C9-N10	2.73	1.50	1.46
2	A	767	UMP	P-O5'	-2.44	1.52	1.60
3	A	768	CB3	C8-C8A	2.19	1.45	1.41
2	B	765	UMP	C5-C4	2.17	1.48	1.43
3	A	768	CB3	C5-C4A	2.17	1.45	1.41
2	B	765	UMP	P-OP3	-2.10	1.47	1.54
3	A	768	CB3	C15-C14	2.08	1.43	1.39
2	A	767	UMP	P-OP3	-2.00	1.47	1.54

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	768	CB3	C15-C14-N10	-44.65	59.38	121.39
3	A	768	CB3	C13-C14-N10	-43.81	60.54	121.39
3	A	768	CB3	C16-C11-C	-19.32	58.01	120.60
3	A	768	CB3	C12-C11-C	-18.62	60.25	120.60
2	A	767	UMP	O4'-C1'-N1	10.98	127.34	107.86
2	B	765	UMP	O4'-C1'-N1	9.53	124.77	107.86
2	A	767	UMP	C5-C6-N1	-7.43	109.76	121.84
3	A	768	CB3	N1-C2-N3	-6.73	118.66	127.21
2	A	767	UMP	C1'-N1-C6	-6.34	109.06	121.53
2	A	767	UMP	C6-C5-C4	-6.33	111.44	119.53
3	A	768	CB3	C4A-C8A-N1	-6.29	119.90	123.56
3	A	768	CB3	CP1-N10-C9	-5.53	111.62	117.19
3	A	768	CB3	C2-N3-C4	4.73	122.55	115.96
2	A	767	UMP	C1'-N1-C2	4.25	125.98	117.66
3	A	768	CB3	CB-CA-N	4.25	119.32	110.91
3	A	768	CB3	C4A-C4-N3	-4.03	120.56	124.68
3	A	768	CB3	C8A-C4A-C4	-3.83	115.31	118.58
3	A	768	CB3	CA-N-C	3.42	129.77	121.56
2	B	765	UMP	O4'-C4'-C3'	-3.35	98.01	105.65
2	B	765	UMP	O4'-C1'-C2'	-3.32	100.04	106.25
2	A	767	UMP	O4'-C1'-C2'	-3.29	100.09	106.25
3	A	768	CB3	C9-N10-C14	3.17	126.21	120.72
3	A	768	CB3	C6-C9-N10	2.80	118.67	114.13
3	A	768	CB3	C2-N1-C8A	2.73	122.80	116.35
2	A	767	UMP	N3-C2-N1	2.62	118.30	114.89
2	A	767	UMP	O4'-C4'-C3'	-2.55	99.82	105.65
2	B	765	UMP	OP2-P-O5'	2.46	113.09	106.67
2	A	767	UMP	O4-C4-C5	-2.34	121.13	125.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	767	UMP	O4-C4-N3	2.19	122.45	119.27
3	A	768	CB3	NA2-C2-N1	2.08	121.03	117.79
3	A	768	CB3	C9-C6-C7	-2.07	116.94	120.75
3	A	768	CB3	NA2-C2-N3	2.06	120.31	117.22

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	A	768	CB3	CA

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	767	UMP	C5'-O5'-P-OP2
2	A	767	UMP	C5'-O5'-P-OP3
2	B	765	UMP	C5'-O5'-P-OP1
2	B	765	UMP	C5'-O5'-P-OP2
2	B	765	UMP	C5'-O5'-P-OP3
3	A	768	CB3	CB-CA-N-C
3	A	768	CB3	C13-C14-N10-CP1
3	A	768	CB3	C15-C14-N10-CP1
3	A	768	CB3	CP2-CP1-N10-C9
2	A	767	UMP	C5'-O5'-P-OP1
2	A	767	UMP	C2'-C1'-N1-C2
3	A	768	CB3	CB-CA-CT-O1
3	A	768	CB3	CB-CA-CT-O2
3	A	768	CB3	CT-CA-CB-CG
3	A	768	CB3	OE2-CD-CG-CB
3	A	768	CB3	OE1-CD-CG-CB
2	B	765	UMP	O4'-C4'-C5'-O5'

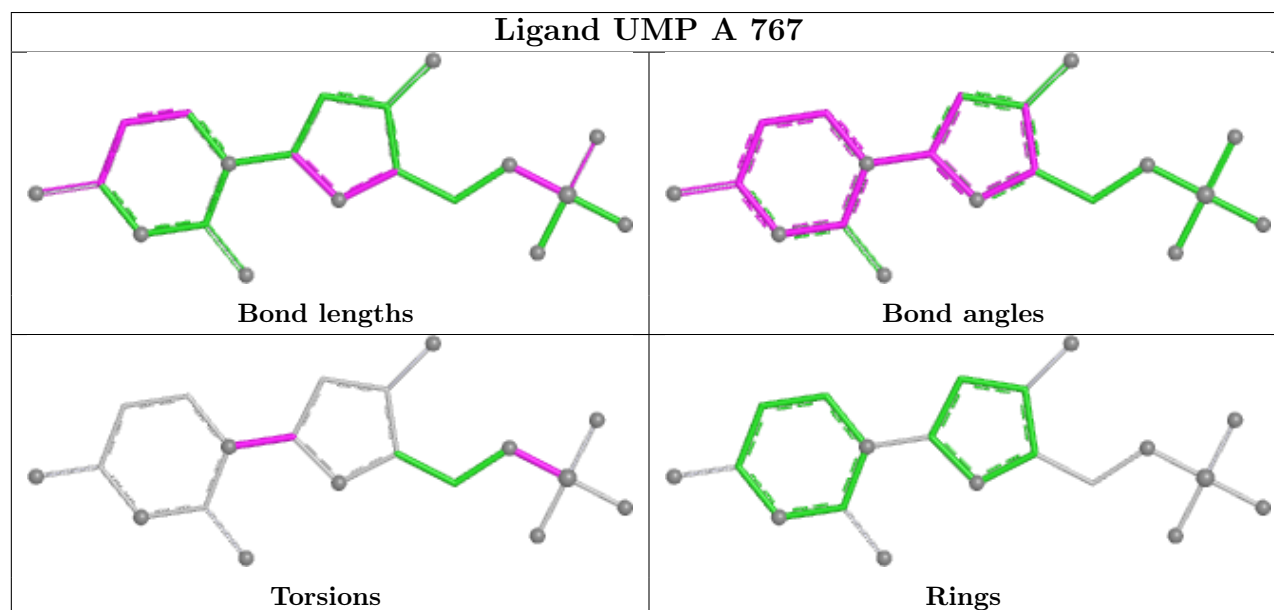
There are no ring outliers.

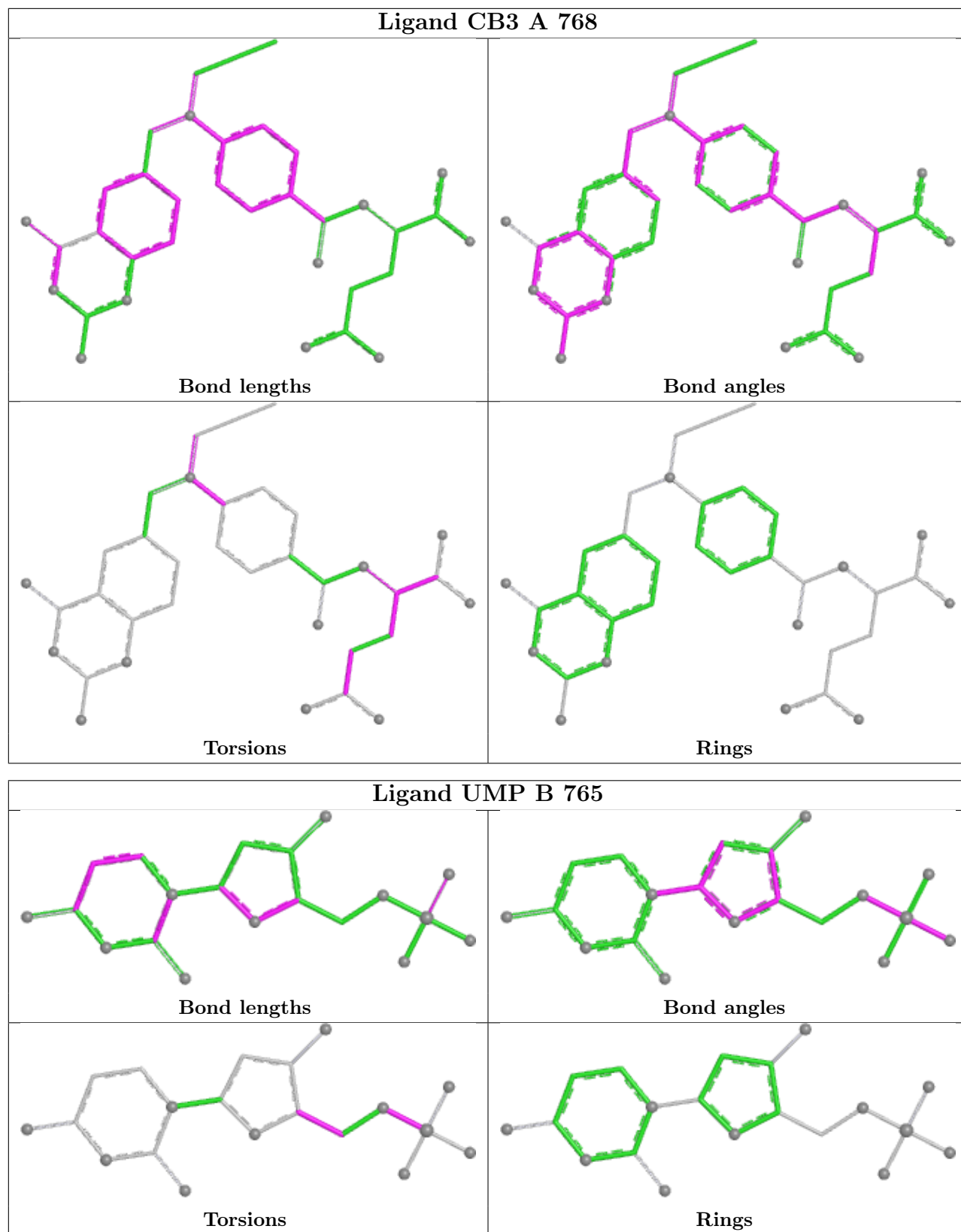
3 monomers are involved in 24 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	767	UMP	3	0
3	A	768	CB3	18	0
2	B	765	UMP	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 [i](#)

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

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.