



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 27, 2023 – 09:24 AM EDT

PDB ID : 3IL5  
Title : Structure of *E. faecalis* FabH in complex with 2-({4-bromo-3-[(diethylamino)sulfonyl]benzoyl}amino)benzoic acid  
Authors : Gajiwala, K.S.; Margosiak, S.; Lu, J.; Cortez, J.; Su, Y.; Nie, Z.; Appelt, K.  
Deposited on : 2009-08-06  
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](mailto: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>.

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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 : 2.35  
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) : 2.35

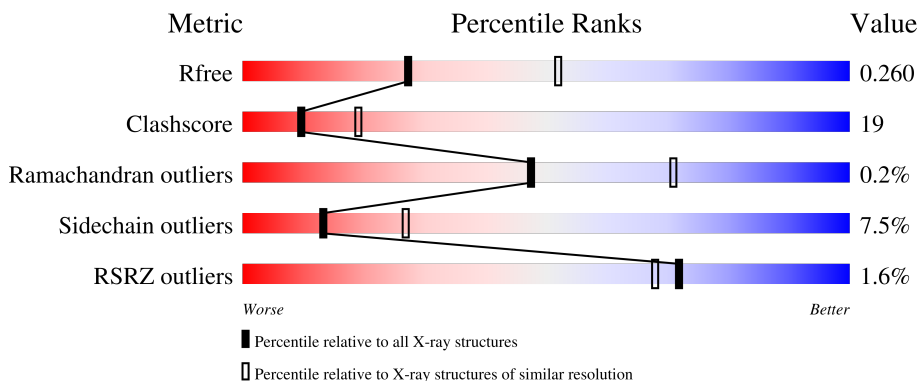
# 1 Overall quality at a glance

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))
$R_{free}$	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (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  $\geq 3$ , 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	343	
1	B	343	
1	C	343	
1	D	343	

## 2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 10074 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 3-oxoacyl-[acyl-carrier-protein] synthase 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	320	Total	C	N	O	S	0	0	0
			2461	1548	419	482	12			
1	B	319	Total	C	N	O	S	0	0	0
			2455	1545	418	480	12			
1	C	320	Total	C	N	O	S	0	0	0
			2461	1548	419	482	12			
1	D	320	Total	C	N	O	S	0	0	0
			2461	1548	419	482	12			

There are 88 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-15	MET	-	expression tag	UNP Q820T1
A	-14	GLY	-	expression tag	UNP Q820T1
A	-13	SER	-	expression tag	UNP Q820T1
A	-12	SER	-	expression tag	UNP Q820T1
A	-11	HIS	-	expression tag	UNP Q820T1
A	-10	HIS	-	expression tag	UNP Q820T1
A	-9	HIS	-	expression tag	UNP Q820T1
A	-8	HIS	-	expression tag	UNP Q820T1
A	-7	HIS	-	expression tag	UNP Q820T1
A	-6	HIS	-	expression tag	UNP Q820T1
A	-5	SER	-	expression tag	UNP Q820T1
A	-4	SER	-	expression tag	UNP Q820T1
A	-3	GLY	-	expression tag	UNP Q820T1
A	-2	LEU	-	expression tag	UNP Q820T1
A	-1	VAL	-	expression tag	UNP Q820T1
A	0	PRO	-	expression tag	UNP Q820T1
A	1	ARG	-	expression tag	UNP Q820T1
A	2	GLY	-	expression tag	UNP Q820T1
A	3	SER	-	expression tag	UNP Q820T1
A	4	HIS	-	expression tag	UNP Q820T1
A	326	GLU	-	expression tag	UNP Q820T1

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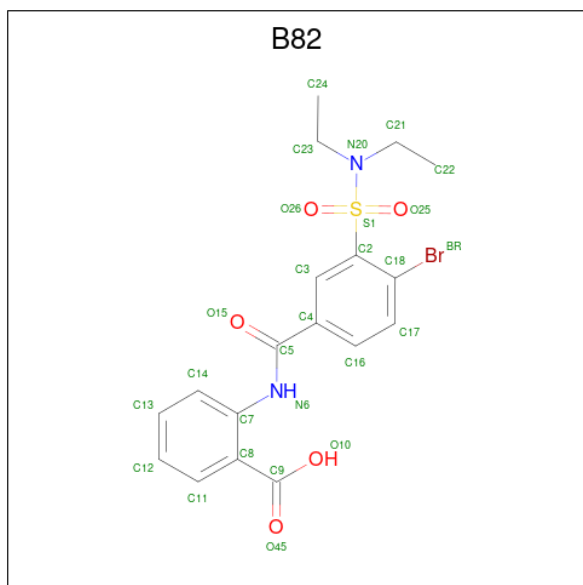
Chain	Residue	Modelled	Actual	Comment	Reference
A	327	PHE	-	expression tag	UNP Q820T1
B	-15	MET	-	expression tag	UNP Q820T1
B	-14	GLY	-	expression tag	UNP Q820T1
B	-13	SER	-	expression tag	UNP Q820T1
B	-12	SER	-	expression tag	UNP Q820T1
B	-11	HIS	-	expression tag	UNP Q820T1
B	-10	HIS	-	expression tag	UNP Q820T1
B	-9	HIS	-	expression tag	UNP Q820T1
B	-8	HIS	-	expression tag	UNP Q820T1
B	-7	HIS	-	expression tag	UNP Q820T1
B	-6	HIS	-	expression tag	UNP Q820T1
B	-5	SER	-	expression tag	UNP Q820T1
B	-4	SER	-	expression tag	UNP Q820T1
B	-3	GLY	-	expression tag	UNP Q820T1
B	-2	LEU	-	expression tag	UNP Q820T1
B	-1	VAL	-	expression tag	UNP Q820T1
B	0	PRO	-	expression tag	UNP Q820T1
B	1	ARG	-	expression tag	UNP Q820T1
B	2	GLY	-	expression tag	UNP Q820T1
B	3	SER	-	expression tag	UNP Q820T1
B	4	HIS	-	expression tag	UNP Q820T1
B	326	GLU	-	expression tag	UNP Q820T1
B	327	PHE	-	expression tag	UNP Q820T1
C	-15	MET	-	expression tag	UNP Q820T1
C	-14	GLY	-	expression tag	UNP Q820T1
C	-13	SER	-	expression tag	UNP Q820T1
C	-12	SER	-	expression tag	UNP Q820T1
C	-11	HIS	-	expression tag	UNP Q820T1
C	-10	HIS	-	expression tag	UNP Q820T1
C	-9	HIS	-	expression tag	UNP Q820T1
C	-8	HIS	-	expression tag	UNP Q820T1
C	-7	HIS	-	expression tag	UNP Q820T1
C	-6	HIS	-	expression tag	UNP Q820T1
C	-5	SER	-	expression tag	UNP Q820T1
C	-4	SER	-	expression tag	UNP Q820T1
C	-3	GLY	-	expression tag	UNP Q820T1
C	-2	LEU	-	expression tag	UNP Q820T1
C	-1	VAL	-	expression tag	UNP Q820T1
C	0	PRO	-	expression tag	UNP Q820T1
C	1	ARG	-	expression tag	UNP Q820T1
C	2	GLY	-	expression tag	UNP Q820T1
C	3	SER	-	expression tag	UNP Q820T1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	4	HIS	-	expression tag	UNP Q820T1
C	326	GLU	-	expression tag	UNP Q820T1
C	327	PHE	-	expression tag	UNP Q820T1
D	-15	MET	-	expression tag	UNP Q820T1
D	-14	GLY	-	expression tag	UNP Q820T1
D	-13	SER	-	expression tag	UNP Q820T1
D	-12	SER	-	expression tag	UNP Q820T1
D	-11	HIS	-	expression tag	UNP Q820T1
D	-10	HIS	-	expression tag	UNP Q820T1
D	-9	HIS	-	expression tag	UNP Q820T1
D	-8	HIS	-	expression tag	UNP Q820T1
D	-7	HIS	-	expression tag	UNP Q820T1
D	-6	HIS	-	expression tag	UNP Q820T1
D	-5	SER	-	expression tag	UNP Q820T1
D	-4	SER	-	expression tag	UNP Q820T1
D	-3	GLY	-	expression tag	UNP Q820T1
D	-2	LEU	-	expression tag	UNP Q820T1
D	-1	VAL	-	expression tag	UNP Q820T1
D	0	PRO	-	expression tag	UNP Q820T1
D	1	ARG	-	expression tag	UNP Q820T1
D	2	GLY	-	expression tag	UNP Q820T1
D	3	SER	-	expression tag	UNP Q820T1
D	4	HIS	-	expression tag	UNP Q820T1
D	326	GLU	-	expression tag	UNP Q820T1
D	327	PHE	-	expression tag	UNP Q820T1

- Molecule 2 is 2-({[4-bromo-3-(diethylsulfamoyl)phenyl]carbonyl}amino)benzoic acid (three-letter code: B82) (formula: C<sub>18</sub>H<sub>19</sub>BrN<sub>2</sub>O<sub>5</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	Br	C	N	O			S
2	A	1	Total	Br	C	N	O	S	0	0
			27	1	18	2	5	1		
2	B	1	Total	Br	C	N	O	S	0	0
			27	1	18	2	5	1		
2	C	1	Total	Br	C	N	O	S	0	0
			27	1	18	2	5	1		
2	D	1	Total	Br	C	N	O	S	0	0
			27	1	18	2	5	1		

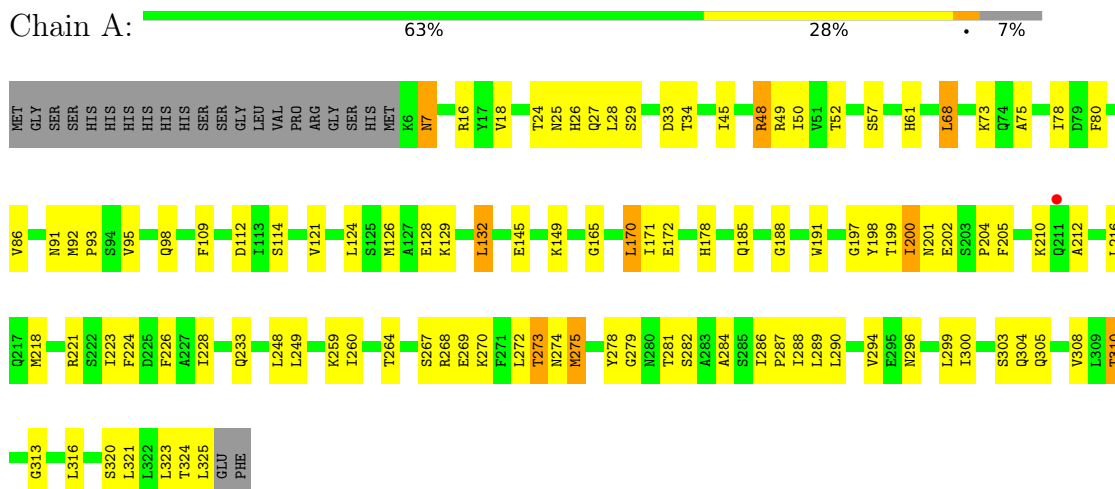
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	40	Total	O	0	0
			40	40		
3	B	40	Total	O	0	0
			40	40		
3	C	26	Total	O	0	0
			26	26		
3	D	22	Total	O	0	0
			22	22		

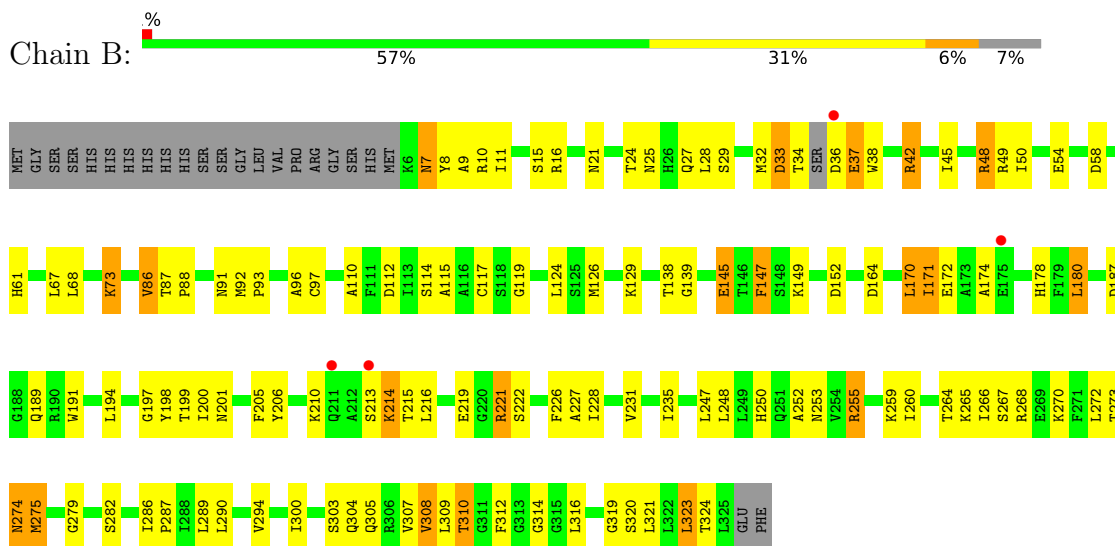
### 3 Residue-property plots

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: 3-oxoacyl-[acyl-carrier-protein] synthase 3

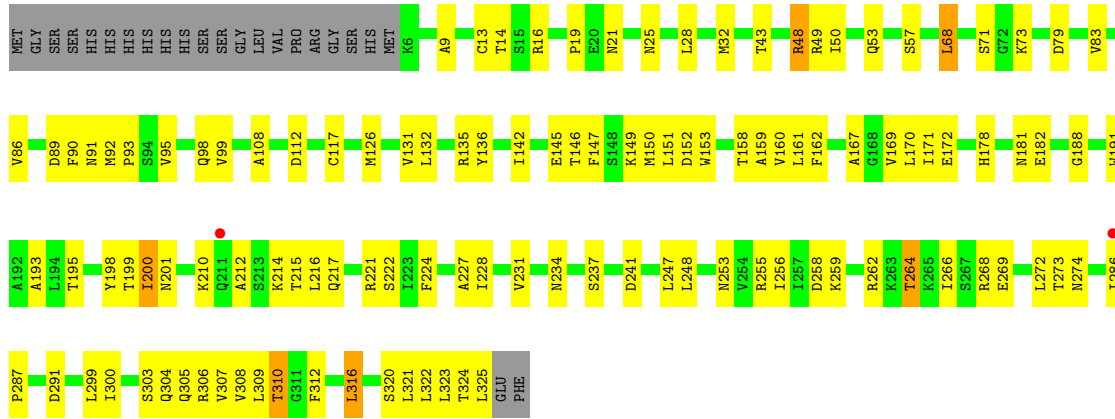


- Molecule 1: 3-oxoacyl-[acyl-carrier-protein] synthase 3

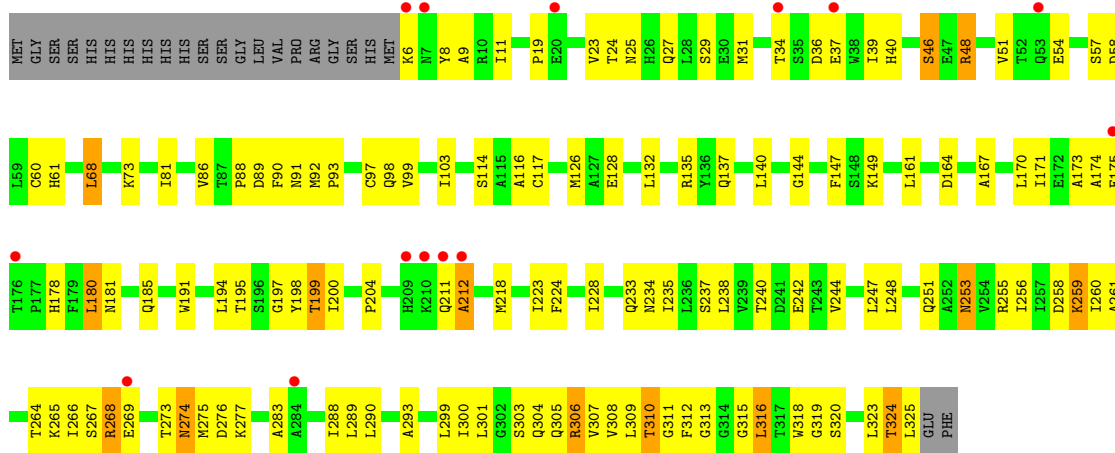


- Molecule 1: 3-oxoacyl-[acyl-carrier-protein] synthase 3





● Molecule 1: 3-oxoacyl-[acyl-carrier-protein] synthase 3





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	66.59Å 84.97Å 114.39Å 90.00° 98.50° 90.00°	Depositor
Resolution (Å)	25.00 – 2.60 24.95 – 2.60	Depositor EDS
% Data completeness (in resolution range)	94.4 (25.00-2.60) 94.7 (24.95-2.60)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	0.12	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.07 (at 2.60Å)	Xtrriage
Refinement program	CNX	Depositor
R, $R_{free}$	0.189 , 0.260 0.191 , 0.260	Depositor DCC
$R_{free}$ test set	3835 reflections (10.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	39.7	Xtrriage
Anisotropy	0.770	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 50.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	10074	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	43.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.05% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: B82

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	0.34	0/2501	0.52	0/3386
1	B	0.37	0/2494	0.54	0/3375
1	C	0.34	0/2501	0.53	0/3386
1	D	0.32	0/2501	0.52	0/3386
All	All	0.34	0/9997	0.53	0/13533

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	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	273	THR	Peptide

### 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2461	0	2446	93	0
1	B	2455	0	2440	109	0
1	C	2461	0	2446	101	0
1	D	2461	0	2446	118	0
2	A	27	0	18	2	0
2	B	27	0	18	1	0
2	C	27	0	18	1	0
2	D	27	0	18	3	0
3	A	40	0	0	2	0
3	B	40	0	0	2	0
3	C	26	0	0	2	0
3	D	22	0	0	4	0
All	All	10074	0	9850	384	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 19.

All (384) 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:D:211:GLN:HB3	1:D:212:ALA:HB2	1.35	1.09
1:C:200:ILE:HB	1:C:212:ALA:HB2	1.43	1.00
1:D:274:ASN:HB2	1:D:289:LEU:HD13	1.43	0.98
1:C:91:ASN:HB3	1:D:86:VAL:HG22	1.49	0.94
1:A:274:ASN:HB2	1:A:289:LEU:HD13	1.52	0.92
1:A:212:ALA:H	1:C:221:ARG:NH2	1.70	0.88
1:D:306:ARG:HB3	1:D:306:ARG:HH21	1.37	0.87
1:A:200:ILE:HD13	1:A:212:ALA:HB3	1.55	0.86
1:A:300:ILE:H	1:A:305:GLN:HE22	1.20	0.84
1:D:211:GLN:CB	1:D:212:ALA:HB2	2.08	0.83
1:A:126:MET:HB3	1:B:126:MET:HE1	1.61	0.82
1:A:300:ILE:H	1:A:305:GLN:NE2	1.76	0.82
1:C:300:ILE:H	1:C:305:GLN:HE22	1.29	0.81
1:C:178:HIS:HA	1:C:324:THR:HG22	1.62	0.80
1:A:178:HIS:HA	1:A:324:THR:HG22	1.64	0.80
1:C:9:ALA:HB1	1:C:171:ILE:HD11	1.64	0.79
1:C:91:ASN:HD22	1:D:197:GLY:HA3	1.47	0.79
1:D:211:GLN:HB3	1:D:212:ALA:CB	2.12	0.79
1:B:219:GLU:HB3	3:B:362:HOH:O	1.83	0.79
1:A:126:MET:HB3	1:B:126:MET:CE	2.14	0.78
1:D:178:HIS:HA	1:D:324:THR:HG23	1.65	0.77
1:A:248:LEU:HD21	1:A:272:LEU:HD12	1.68	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:258:ASP:OD2	1:C:268:ARG:NH2	2.19	0.76
1:A:198:TYR:HD2	1:A:212:ALA:HB1	1.50	0.75
1:C:300:ILE:H	1:C:305:GLN:NE2	1.85	0.74
1:B:38:TRP:O	1:B:42:ARG:HB2	1.87	0.74
1:A:260:ILE:O	1:A:264:THR:HG22	1.88	0.73
1:A:273:THR:HG23	1:A:275:MET:SD	2.29	0.72
1:A:112:ASP:HB2	1:B:114:SER:HB3	1.71	0.72
1:B:36:ASP:N	1:B:38:TRP:HD1	1.88	0.71
1:C:264:THR:HG21	1:C:266:ILE:HD12	1.72	0.71
1:D:274:ASN:HB2	1:D:289:LEU:CD1	2.18	0.71
1:A:86:VAL:HG21	1:B:92:MET:HB2	1.71	0.71
1:A:228:ILE:HD12	1:A:259:LYS:HB2	1.74	0.70
1:C:14:THR:HG22	1:C:169:VAL:HG12	1.74	0.70
1:B:247:LEU:HG	1:B:308:VAL:HG13	1.73	0.70
1:B:255:ARG:CG	1:B:255:ARG:HH21	2.05	0.70
1:A:197:GLY:HA3	1:B:91:ASN:HD22	1.57	0.70
1:B:96:ALA:HB1	1:B:110:ALA:HB1	1.75	0.69
1:D:23:VAL:HG13	1:D:27:GLN:NE2	2.08	0.69
1:C:200:ILE:HB	1:C:212:ALA:CB	2.23	0.68
1:D:303:SER:OG	1:D:305:GLN:HG3	1.93	0.68
1:A:7:ASN:N	1:A:7:ASN:HD22	1.92	0.68
1:A:7:ASN:HD22	1:A:7:ASN:H	1.42	0.67
1:C:228:ILE:HD12	1:C:259:LYS:HB2	1.76	0.67
1:A:248:LEU:HD22	1:A:289:LEU:HG	1.74	0.67
1:A:129:LYS:HB3	1:B:129:LYS:HB3	1.75	0.67
1:A:198:TYR:OH	1:A:210:LYS:HD3	1.95	0.67
1:A:93:PRO:HG3	1:B:191:TRP:HB2	1.76	0.67
1:C:73:LYS:HE3	1:C:172:GLU:OE1	1.95	0.66
1:A:28:LEU:HD11	1:A:48:ARG:NH1	2.11	0.66
1:B:24:THR:OG1	1:B:27:GLN:HG3	1.96	0.66
1:A:200:ILE:HG23	1:A:212:ALA:HB2	1.78	0.66
1:B:250:HIS:CD2	1:B:252:ALA:HB2	2.31	0.66
1:B:214:LYS:HG3	1:B:215:THR:N	2.10	0.65
1:A:303:SER:O	1:A:304:GLN:HB2	1.96	0.65
1:B:206:TYR:OH	1:B:210:LYS:HD2	1.97	0.65
1:D:116:ALA:HB1	3:D:349:HOH:O	1.95	0.65
1:A:299:LEU:HB3	1:A:325:LEU:CD2	2.27	0.65
1:B:10:ARG:HG2	1:B:174:ALA:HB2	1.79	0.65
1:C:181:ASN:HA	1:D:135:ARG:HH12	1.61	0.64
1:D:9:ALA:HB1	1:D:171:ILE:HD11	1.79	0.64
1:B:29:SER:HA	1:B:34:THR:HG22	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:255:ARG:O	1:C:259:LYS:HG2	1.97	0.64
1:C:307:VAL:HG21	1:C:325:LEU:HD22	1.78	0.64
1:D:51:VAL:HG22	1:D:164:ASP:OD2	1.98	0.64
1:D:251:GLN:HB3	1:D:275:MET:HE3	1.80	0.64
1:B:255:ARG:HH21	1:B:255:ARG:HG3	1.61	0.64
1:D:300:ILE:HB	1:D:303:SER:HB3	1.80	0.64
1:B:147:PHE:HE2	1:B:282:SER:HB2	1.63	0.63
1:D:303:SER:O	1:D:304:GLN:HB2	1.98	0.63
1:C:253:ASN:HB3	1:C:256:ILE:HD12	1.81	0.63
1:D:48:ARG:HD3	3:D:348:HOH:O	1.98	0.63
1:B:274:ASN:HB2	1:B:289:LEU:HD13	1.81	0.63
1:A:300:ILE:N	1:A:305:GLN:HE22	1.96	0.63
1:A:52:THR:HG22	1:B:205:PHE:O	1.99	0.62
1:A:281:THR:HB	1:A:284:ALA:HB3	1.81	0.62
1:C:248:LEU:HD21	1:C:272:LEU:HD12	1.81	0.62
1:D:276:ASP:OD2	1:D:277:LYS:HG2	2.00	0.62
1:A:129:LYS:HD2	1:A:129:LYS:N	2.14	0.61
1:D:244:VAL:HG21	1:D:308:VAL:HG12	1.81	0.61
1:A:212:ALA:H	1:C:221:ARG:HH21	1.44	0.61
1:A:200:ILE:HG23	1:A:212:ALA:CB	2.31	0.61
1:D:178:HIS:HA	1:D:324:THR:CG2	2.31	0.60
1:C:90:PHE:CE2	1:D:198:TYR:HB2	2.37	0.60
1:D:132:LEU:HD13	1:D:132:LEU:O	2.01	0.60
1:D:6:LYS:HZ1	1:D:173:ALA:C	2.05	0.60
1:A:267:SER:HB3	1:A:270:LYS:HE3	1.84	0.60
1:B:228:ILE:HD12	1:B:259:LYS:HB2	1.83	0.60
1:C:43:THR:HG22	1:C:161:LEU:HD23	1.83	0.60
1:A:299:LEU:HB3	1:A:325:LEU:HD21	1.84	0.60
1:C:131:VAL:HA	1:C:136:TYR:O	2.02	0.60
1:D:293:ALA:HB1	1:D:299:LEU:HG	1.83	0.59
1:A:48:ARG:HE	1:A:48:ARG:N	2.01	0.59
1:A:308:VAL:HG22	1:A:310:THR:HG22	1.85	0.59
1:B:129:LYS:HD2	1:B:129:LYS:N	2.17	0.59
1:C:86:VAL:HG21	1:D:92:MET:HB2	1.85	0.59
1:A:92:MET:HB2	1:B:86:VAL:HG21	1.83	0.59
1:B:264:THR:HG23	1:B:266:ILE:H	1.67	0.59
1:C:323:LEU:HD12	1:C:323:LEU:O	2.02	0.59
1:C:95:VAL:HA	1:C:98:GLN:HE21	1.66	0.59
1:B:28:LEU:O	1:B:32:MET:HB2	2.02	0.59
1:D:306:ARG:HH21	1:D:306:ARG:CB	2.13	0.59
1:B:49:ARG:O	1:B:50:ILE:HD13	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:115:ALA:HB3	1:B:119:GLY:HA2	1.84	0.58
1:A:198:TYR:HD2	1:A:212:ALA:CB	2.14	0.58
1:C:303:SER:OG	1:C:305:GLN:HG3	2.04	0.58
1:C:93:PRO:HG3	1:D:191:TRP:HB2	1.84	0.58
1:D:73:LYS:HG3	1:D:170:LEU:HD11	1.84	0.58
1:C:25:ASN:OD1	1:C:48:ARG:NH2	2.36	0.58
1:A:124:LEU:HB3	1:A:321:LEU:HD11	1.84	0.58
1:C:57:SER:HA	1:C:95:VAL:HG13	1.85	0.58
1:C:198:TYR:OH	1:C:210:LYS:HE2	2.04	0.57
1:A:212:ALA:H	1:C:221:ARG:HH22	1.51	0.57
1:B:300:ILE:H	1:B:305:GLN:HE22	1.52	0.57
1:C:9:ALA:HB1	1:C:171:ILE:CD1	2.34	0.57
1:C:146:THR:O	1:C:149:LYS:HG2	2.04	0.57
1:D:23:VAL:HA	1:D:27:GLN:HE22	1.68	0.57
1:A:310:THR:HB	1:A:320:SER:OG	2.05	0.57
1:D:273:THR:HG23	1:D:275:MET:SD	2.44	0.57
1:D:19:PRO:HG3	1:D:51:VAL:HG12	1.87	0.57
1:B:267:SER:HB3	1:B:270:LYS:HG3	1.87	0.57
1:B:25:ASN:HB2	1:B:37:GLU:OE2	2.04	0.56
1:B:260:ILE:O	1:B:264:THR:HG22	2.05	0.56
1:C:146:THR:OG1	1:C:149:LYS:HE2	2.05	0.56
1:C:264:THR:CG2	1:C:266:ILE:HD12	2.35	0.56
1:A:91:ASN:ND2	1:B:197:GLY:HA3	2.19	0.56
1:C:112:ASP:HB2	1:D:114:SER:HB3	1.88	0.56
1:D:211:GLN:CA	1:D:212:ALA:HB2	2.35	0.56
1:D:323:LEU:HD12	1:D:323:LEU:O	2.05	0.56
1:D:307:VAL:HG21	1:D:325:LEU:HD22	1.88	0.56
1:B:194:LEU:HD23	1:B:314:GLY:N	2.21	0.56
1:C:269:GLU:H	1:C:269:GLU:CD	2.09	0.56
1:C:86:VAL:HG22	1:D:91:ASN:HB3	1.88	0.56
1:C:135:ARG:HD3	3:C:337:HOH:O	2.06	0.56
1:B:308:VAL:CG2	1:B:310:THR:HG22	2.37	0.55
1:C:200:ILE:CB	1:C:212:ALA:HB2	2.26	0.55
1:C:248:LEU:CD2	1:C:272:LEU:HD12	2.36	0.55
1:B:32:MET:O	1:B:33:ASP:HB2	2.06	0.55
1:C:9:ALA:CB	1:C:171:ILE:HD11	2.35	0.55
1:C:92:MET:HB2	1:D:86:VAL:HG21	1.87	0.55
1:D:60:CYS:SG	1:D:144:GLY:HA3	2.47	0.55
1:A:91:ASN:HD22	1:B:197:GLY:HA3	1.70	0.55
1:A:224:PHE:O	1:A:228:ILE:HG12	2.06	0.55
2:D:401:B82:H18	2:D:401:B82:BR	2.61	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:117:CYS:HB2	1:D:312:PHE:O	2.07	0.54
1:D:299:LEU:HA	1:D:305:GLN:HE22	1.73	0.54
1:B:221:ARG:HG3	1:B:222:SER:N	2.21	0.54
1:C:91:ASN:CB	1:D:86:VAL:HG22	2.33	0.54
1:C:170:LEU:HD23	1:C:171:ILE:N	2.23	0.54
1:B:250:HIS:NE2	1:B:252:ALA:HB2	2.23	0.54
2:A:401:B82:H18	2:A:401:B82:BR	2.62	0.54
1:A:16:ARG:HD2	1:A:288:ILE:HG23	1.90	0.54
1:D:8:TYR:O	1:D:174:ALA:N	2.41	0.54
1:D:81:ILE:HG12	1:D:140:LEU:HD12	1.90	0.54
1:B:303:SER:O	1:B:304:GLN:HB2	2.08	0.54
1:B:247:LEU:HG	1:B:308:VAL:CG1	2.38	0.53
1:D:29:SER:HA	1:D:34:THR:CG2	2.38	0.53
1:A:313:GLY:HA2	2:A:401:B82:H12	1.90	0.53
1:C:151:LEU:HD11	1:C:162:PHE:HB2	1.91	0.53
1:A:198:TYR:CD2	1:A:212:ALA:CB	2.91	0.53
1:A:49:ARG:O	1:A:50:ILE:HD13	2.09	0.53
1:D:235:ILE:HG12	1:D:310:THR:HG21	1.91	0.53
1:A:249:LEU:HG	1:A:310:THR:OG1	2.09	0.53
1:A:128:GLU:O	1:A:132:LEU:HB2	2.09	0.53
1:D:260:ILE:O	1:D:264:THR:HG22	2.09	0.53
1:D:88:PRO:HB2	1:D:90:PHE:O	2.09	0.53
1:B:290:LEU:O	1:B:294:VAL:HG23	2.09	0.52
1:C:221:ARG:HG3	1:C:222:SER:N	2.24	0.52
1:A:216:LEU:HD21	1:A:218:MET:HB2	1.91	0.52
1:A:48:ARG:HB2	1:A:278:TYR:O	2.10	0.52
1:A:114:SER:HB3	1:B:112:ASP:HB2	1.91	0.52
1:D:199:THR:HG22	3:D:340:HOH:O	2.08	0.52
1:A:57:SER:HA	1:A:95:VAL:HG13	1.90	0.52
1:A:171:ILE:O	1:A:171:ILE:HG13	2.08	0.52
1:A:191:TRP:HB2	1:B:93:PRO:HG3	1.92	0.52
1:B:307:VAL:O	1:B:323:LEU:HD12	2.10	0.52
1:C:259:LYS:HD3	1:C:262:ARG:HH12	1.74	0.52
1:B:178:HIS:HA	1:B:324:THR:HG22	1.92	0.52
1:C:178:HIS:HA	1:C:324:THR:CG2	2.36	0.52
1:A:178:HIS:HA	1:A:324:THR:CG2	2.37	0.51
1:B:253:ASN:OD1	1:B:255:ARG:HB2	2.10	0.51
1:C:28:LEU:HB3	1:C:32:MET:HE1	1.93	0.51
1:C:216:LEU:HD23	1:C:217:GLN:N	2.25	0.51
1:B:32:MET:O	1:B:33:ASP:CB	2.58	0.51
1:C:150:MET:O	1:C:215:THR:HA	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:57:SER:HA	1:C:95:VAL:CG1	2.41	0.51
1:C:32:MET:HE1	1:C:160:VAL:HG12	1.92	0.51
1:C:300:ILE:N	1:C:305:GLN:HE22	2.04	0.51
1:C:306:ARG:NH2	1:C:322:LEU:HD21	2.26	0.51
1:C:286:ILE:N	1:C:287:PRO:HD2	2.25	0.51
1:A:303:SER:OG	1:A:305:GLN:HG3	2.10	0.51
1:C:86:VAL:N	1:C:145:GLU:OE2	2.37	0.51
1:C:195:THR:HG22	1:D:93:PRO:HD3	1.93	0.51
1:C:201:ASN:HA	1:D:149:LYS:HB2	1.92	0.51
1:A:29:SER:HB2	1:A:34:THR:O	2.12	0.50
1:A:201:ASN:HA	1:B:149:LYS:HB2	1.94	0.50
1:D:23:VAL:HA	1:D:27:GLN:NE2	2.27	0.50
1:D:273:THR:CG2	1:D:274:ASN:N	2.74	0.50
1:D:261:ALA:O	1:D:264:THR:HG22	2.11	0.50
1:C:91:ASN:ND2	1:D:197:GLY:HA3	2.22	0.50
1:D:25:ASN:HD22	1:D:39:ILE:HB	1.77	0.50
1:D:19:PRO:HG3	1:D:51:VAL:CG1	2.42	0.50
1:B:54:GLU:HG2	1:B:58:ASP:HB3	1.94	0.50
1:B:273:THR:HG23	1:B:275:MET:SD	2.52	0.50
1:D:310:THR:HB	1:D:320:SER:OG	2.12	0.49
1:B:138:THR:HG23	1:B:170:LEU:HD21	1.94	0.49
1:C:308:VAL:HG12	1:C:322:LEU:HD13	1.94	0.49
1:B:86:VAL:N	1:B:145:GLU:OE2	2.44	0.49
1:D:170:LEU:HD23	1:D:171:ILE:N	2.26	0.49
1:A:24:THR:OG1	1:A:27:GLN:HG3	2.13	0.49
1:B:227:ALA:O	1:B:231:VAL:HB	2.12	0.49
1:B:308:VAL:HA	1:B:321:LEU:O	2.12	0.49
1:A:228:ILE:HD12	1:A:259:LYS:CB	2.41	0.49
1:C:224:PHE:CE1	1:C:256:ILE:HG13	2.47	0.49
1:C:227:ALA:O	1:C:231:VAL:HB	2.12	0.49
1:C:193:ALA:HB3	1:C:316:LEU:HD11	1.95	0.48
1:C:83:VAL:HA	1:C:142:ILE:O	2.13	0.48
1:C:247:LEU:HG	1:C:308:VAL:HG22	1.94	0.48
1:D:6:LYS:NZ	1:D:173:ALA:C	2.66	0.48
1:B:16:ARG:HG2	1:B:16:ARG:HH11	1.79	0.48
1:D:40:HIS:C	1:D:40:HIS:HD1	2.15	0.48
1:D:248:LEU:HD11	1:D:290:LEU:HD13	1.95	0.48
1:D:161:LEU:HD12	1:D:218:MET:HE3	1.96	0.48
1:C:57:SER:HB3	1:C:98:GLN:NE2	2.28	0.48
1:C:181:ASN:HA	1:D:135:ARG:NH1	2.29	0.48
1:D:315:GLY:N	1:D:316:LEU:HA	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:310:THR:HB	1:B:320:SER:OG	2.14	0.48
1:B:198:TYR:HB3	1:B:213:SER:O	2.14	0.47
1:C:300:ILE:HG22	1:C:303:SER:HB3	1.95	0.47
1:D:194:LEU:HD13	1:D:218:MET:HB2	1.96	0.47
1:C:95:VAL:O	1:C:99:VAL:HG23	2.14	0.47
1:B:303:SER:OG	1:B:305:GLN:NE2	2.48	0.47
1:C:126:MET:SD	1:D:126:MET:SD	3.12	0.47
2:C:401:B82:BR	2:C:401:B82:H18	2.70	0.47
1:B:147:PHE:N	1:B:164:ASP:OD1	2.47	0.47
2:B:401:B82:BR	2:B:401:B82:H18	2.70	0.47
1:D:264:THR:HG23	1:D:266:ILE:HB	1.95	0.47
1:A:185:GLN:HA	3:A:363:HOH:O	2.14	0.47
1:B:48:ARG:NE	1:B:48:ARG:H	2.13	0.47
1:B:200:ILE:O	1:B:200:ILE:HG13	2.15	0.47
1:B:214:LYS:HB3	3:B:363:HOH:O	2.14	0.47
1:D:253:ASN:HB3	1:D:256:ILE:HG13	1.97	0.47
1:D:273:THR:HG22	1:D:274:ASN:N	2.29	0.47
1:A:197:GLY:HA3	1:B:91:ASN:ND2	2.28	0.47
1:C:93:PRO:HD3	1:D:195:THR:HG22	1.95	0.47
1:D:24:THR:H	1:D:27:GLN:CD	2.19	0.46
1:D:57:SER:HB3	1:D:98:GLN:NE2	2.31	0.46
1:A:95:VAL:HA	1:A:98:GLN:HE21	1.80	0.46
1:B:7:ASN:N	1:B:7:ASN:ND2	2.62	0.46
1:C:191:TRP:CE3	1:D:93:PRO:HG3	2.50	0.46
1:A:296:ASN:ND2	3:A:332:HOH:O	2.47	0.46
1:B:34:THR:OG1	1:B:38:TRP:HZ2	1.97	0.46
1:C:21:ASN:HB3	1:C:50:ILE:O	2.16	0.46
1:D:11:ILE:O	1:D:301:LEU:HD22	2.16	0.46
1:D:25:ASN:ND2	1:D:39:ILE:HB	2.30	0.46
1:B:21:ASN:HB3	1:B:50:ILE:O	2.15	0.46
1:C:188:GLY:HA3	1:D:97:CYS:O	2.15	0.46
1:C:16:ARG:NH1	1:C:291:ASP:OD2	2.48	0.46
1:B:38:TRP:HZ3	1:B:42:ARG:HD3	1.81	0.46
1:B:139:GLY:O	1:B:170:LEU:HD23	2.16	0.46
1:B:309:LEU:O	1:B:320:SER:HA	2.16	0.46
1:D:228:ILE:HD12	1:D:259:LYS:HB3	1.96	0.46
1:A:7:ASN:N	1:A:7:ASN:ND2	2.59	0.46
1:B:38:TRP:CZ3	1:B:42:ARG:CZ	2.99	0.46
1:C:241:ASP:HA	1:C:266:ILE:HG12	1.98	0.46
1:C:158:THR:HA	1:C:161:LEU:HD12	1.98	0.45
1:D:167:ALA:HB2	1:D:288:ILE:HG12	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:48:ARG:NH1	1:C:160:VAL:O	2.48	0.45
1:D:9:ALA:CB	1:D:171:ILE:HD11	2.46	0.45
1:C:182:GLU:HB3	1:C:321:LEU:HD23	1.98	0.45
3:C:332:HOH:O	1:D:199:THR:HG21	2.16	0.45
1:D:25:ASN:OD1	1:D:48:ARG:NH2	2.50	0.45
1:A:45:ILE:HD13	1:A:279:GLY:HA2	1.99	0.45
1:D:117:CYS:HB2	1:D:313:GLY:HA3	1.97	0.45
1:D:247:LEU:HG	1:D:308:VAL:CG1	2.47	0.45
1:A:75:ALA:O	1:A:78:ILE:HG12	2.17	0.45
1:A:299:LEU:HA	1:A:305:GLN:HE22	1.81	0.45
1:A:223:ILE:HA	1:A:226:PHE:HB3	1.99	0.45
1:B:11:ILE:HD11	1:B:124:LEU:HD21	1.99	0.45
1:A:28:LEU:CD1	1:A:48:ARG:NH1	2.78	0.45
1:C:201:ASN:CG	1:D:149:LYS:HB3	2.38	0.45
1:C:308:VAL:HG12	1:C:322:LEU:CD1	2.47	0.45
1:A:188:GLY:HA3	1:B:97:CYS:O	2.16	0.44
1:D:99:VAL:O	1:D:103:ILE:HG12	2.17	0.44
1:C:299:LEU:HA	1:C:305:GLN:HE22	1.81	0.44
1:A:68:LEU:HD21	1:A:75:ALA:HB2	2.00	0.44
1:C:13:CYS:HB3	1:C:170:LEU:HB2	1.99	0.44
1:C:153:TRP:CD1	1:D:204:PRO:HD2	2.53	0.44
1:B:86:VAL:HG13	1:B:86:VAL:O	2.16	0.44
1:C:19:PRO:HD2	1:C:49:ARG:CB	2.48	0.44
1:D:29:SER:HA	1:D:34:THR:HG22	1.99	0.44
1:D:128:GLU:O	1:D:132:LEU:HB2	2.18	0.44
1:D:258:ASP:OD2	1:D:268:ARG:NH2	2.51	0.44
1:A:73:LYS:HE3	1:A:172:GLU:OE1	2.17	0.43
1:B:87:THR:OG1	1:B:145:GLU:HG3	2.18	0.43
1:D:6:LYS:HZ2	1:D:173:ALA:HB1	1.83	0.43
1:D:29:SER:HA	1:D:34:THR:HG23	2.00	0.43
1:D:178:HIS:O	1:D:180:LEU:HD13	2.18	0.43
1:A:121:VAL:HG13	1:A:321:LEU:HG	2.01	0.43
1:B:324:THR:HG23	1:B:324:THR:O	2.17	0.43
1:B:178:HIS:HA	1:B:324:THR:CG2	2.48	0.43
1:B:178:HIS:O	1:B:323:LEU:HA	2.18	0.43
1:D:223:ILE:O	2:D:401:B82:H14	2.18	0.43
1:B:7:ASN:ND2	1:B:7:ASN:H	2.15	0.43
1:B:286:ILE:N	1:B:287:PRO:HD2	2.33	0.43
1:D:54:GLU:HB3	1:D:58:ASP:HB2	2.00	0.43
1:A:286:ILE:N	1:A:287:PRO:HD2	2.34	0.43
1:C:79:ASP:O	1:C:108:ALA:HA	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:117:CYS:HB2	1:C:312:PHE:O	2.18	0.43
1:D:25:ASN:OD1	1:D:46:SER:O	2.36	0.43
1:D:269:GLU:CD	1:D:269:GLU:H	2.22	0.43
1:D:300:ILE:H	1:D:305:GLN:NE2	2.16	0.43
1:B:300:ILE:HB	1:B:303:SER:HB3	2.00	0.43
1:C:310:THR:HB	1:C:320:SER:OG	2.18	0.43
1:A:80:PHE:HA	1:A:109:PHE:O	2.19	0.42
1:B:16:ARG:HG2	1:B:16:ARG:NH1	2.34	0.42
1:B:138:THR:CG2	1:B:170:LEU:HD21	2.49	0.42
1:B:228:ILE:HD12	1:B:259:LYS:CB	2.49	0.42
1:C:300:ILE:CG2	1:C:303:SER:HB3	2.49	0.42
1:A:24:THR:HG1	1:A:27:GLN:HG3	1.84	0.42
1:B:117:CYS:HB2	1:B:312:PHE:O	2.19	0.42
1:D:283:ALA:HB2	3:D:329:HOH:O	2.19	0.42
1:B:308:VAL:HG22	1:B:310:THR:HG22	2.01	0.42
1:C:167:ALA:HB3	1:C:287:PRO:HB2	2.02	0.42
1:A:124:LEU:HD12	1:A:124:LEU:HA	1.83	0.42
1:B:264:THR:HG23	1:B:266:ILE:N	2.34	0.42
1:D:224:PHE:CE1	1:D:256:ILE:HG12	2.54	0.42
1:D:240:THR:O	1:D:244:VAL:HG12	2.20	0.42
1:A:281:THR:O	1:A:284:ALA:HB3	2.19	0.42
1:C:234:ASN:O	1:C:237:SER:HB2	2.20	0.42
1:C:323:LEU:HD12	1:C:323:LEU:C	2.39	0.42
1:A:145:GLU:HG2	1:A:282:SER:HB2	2.01	0.42
1:B:8:TYR:O	1:B:174:ALA:N	2.53	0.42
1:B:9:ALA:HB1	1:B:171:ILE:HD11	2.01	0.42
1:B:308:VAL:HG22	1:B:310:THR:CG2	2.49	0.42
1:C:68:LEU:HD12	1:C:68:LEU:HA	1.63	0.42
1:C:91:ASN:HB3	1:D:86:VAL:CG2	2.36	0.42
1:B:248:LEU:HD21	1:B:272:LEU:HD12	2.01	0.42
1:C:147:PHE:CE1	1:C:216:LEU:HD12	2.55	0.42
1:B:187:ASP:OD1	1:B:189:GLN:HB2	2.20	0.41
1:D:185:GLN:HB2	1:D:318:TRP:CE2	2.55	0.41
1:A:149:LYS:HB2	1:B:201:ASN:HA	2.02	0.41
1:B:178:HIS:O	1:B:180:LEU:HD13	2.20	0.41
1:C:43:THR:HG22	1:C:161:LEU:CD2	2.48	0.41
1:A:198:TYR:HE2	1:A:200:ILE:HG23	1.85	0.41
1:B:273:THR:CG2	1:B:274:ASN:N	2.84	0.41
1:B:34:THR:OG1	1:B:38:TRP:CZ2	2.74	0.41
1:C:152:ASP:O	1:C:159:ALA:HB2	2.20	0.41
1:D:27:GLN:O	1:D:31:MET:HG3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:180:LEU:HD13	1:D:180:LEU:N	2.35	0.41
1:A:290:LEU:O	1:A:294:VAL:HG23	2.21	0.41
1:B:87:THR:N	1:B:88:PRO:CD	2.83	0.41
1:C:71:SER:CB	1:C:170:LEU:HD12	2.50	0.41
1:D:310:THR:HA	1:D:319:GLY:O	2.20	0.41
1:A:18:VAL:HG12	1:A:165:GLY:HA3	2.02	0.41
1:B:15:SER:HB3	1:B:67:LEU:HG	2.02	0.41
1:A:323:LEU:HD12	1:A:323:LEU:C	2.41	0.41
1:B:152:ASP:C	1:B:152:ASP:OD1	2.59	0.41
1:B:210:LYS:H	1:B:210:LYS:HG3	1.54	0.41
1:D:37:GLU:HA	1:D:40:HIS:HB3	2.03	0.41
1:D:68:LEU:HA	1:D:68:LEU:HD12	1.77	0.41
1:D:309:LEU:O	1:D:320:SER:HA	2.21	0.41
1:A:7:ASN:H	1:A:7:ASN:ND2	2.12	0.41
1:A:25:ASN:O	1:A:26:HIS:C	2.59	0.41
1:A:68:LEU:HD12	1:A:68:LEU:HA	1.88	0.41
1:A:73:LYS:HG3	1:A:170:LEU:HD11	2.03	0.41
1:B:45:ILE:HG12	1:B:279:GLY:HA2	2.03	0.41
1:D:180:LEU:HD12	1:D:180:LEU:HA	1.89	0.41
1:D:247:LEU:HG	1:D:308:VAL:HG13	2.01	0.41
1:D:247:LEU:N	1:D:247:LEU:HD12	2.36	0.41
1:B:198:TYR:OH	1:B:210:LYS:HD3	2.21	0.41
1:D:255:ARG:HH21	2:D:401:B82:H22	1.85	0.40
1:D:267:SER:OG	1:D:269:GLU:OE2	2.40	0.40
1:D:311:GLY:O	1:D:318:TRP:HA	2.22	0.40
1:A:200:ILE:H	1:A:200:ILE:HG12	1.37	0.40
1:A:204:PRO:HG2	1:A:205:PHE:CD2	2.56	0.40
1:D:234:ASN:O	1:D:237:SER:HB2	2.21	0.40
1:B:216:LEU:C	1:B:216:LEU:HD23	2.41	0.40
1:D:181:ASN:HD22	1:D:238:LEU:HD22	1.86	0.40
1:B:38:TRP:CZ3	1:B:42:ARG:HD3	2.56	0.40
1:B:73:LYS:HE2	1:B:172:GLU:OE1	2.22	0.40
1:B:235:ILE:HG12	1:B:310:THR:HG21	2.04	0.40
1:B:310:THR:HA	1:B:319:GLY:O	2.22	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	318/343 (93%)	299 (94%)	19 (6%)	0	100	100
1	B	315/343 (92%)	298 (95%)	16 (5%)	1 (0%)	41	64
1	C	318/343 (93%)	299 (94%)	19 (6%)	0	100	100
1	D	318/343 (93%)	297 (93%)	19 (6%)	2 (1%)	25	47
All	All	1269/1372 (92%)	1193 (94%)	73 (6%)	3 (0%)	47	71

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	33	ASP
1	D	212	ALA
1	D	253	ASN

### 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	268/288 (93%)	251 (94%)	17 (6%)	18	36
1	B	267/288 (93%)	241 (90%)	26 (10%)	8	15
1	C	268/288 (93%)	253 (94%)	15 (6%)	21	42
1	D	268/288 (93%)	246 (92%)	22 (8%)	11	22
All	All	1071/1152 (93%)	991 (92%)	80 (8%)	13	27

All (80) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	ASN
1	A	33	ASP
1	A	48	ARG
1	A	61	HIS
1	A	68	LEU
1	A	132	LEU
1	A	170	LEU
1	A	199	THR
1	A	200	ILE
1	A	202	GLU
1	A	221	ARG
1	A	233	GLN
1	A	268	ARG
1	A	269	GLU
1	A	275	MET
1	A	310	THR
1	A	316	LEU
1	B	7	ASN
1	B	37	GLU
1	B	42	ARG
1	B	48	ARG
1	B	61	HIS
1	B	68	LEU
1	B	73	LYS
1	B	86	VAL
1	B	145	GLU
1	B	147	PHE
1	B	170	LEU
1	B	171	ILE
1	B	180	LEU
1	B	199	THR
1	B	214	LYS
1	B	221	ARG
1	B	226	PHE
1	B	255	ARG
1	B	265	LYS
1	B	268	ARG
1	B	274	ASN
1	B	275	MET
1	B	308	VAL
1	B	310	THR
1	B	316	LEU
1	B	323	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	48	ARG
1	C	53	GLN
1	C	68	LEU
1	C	89	ASP
1	C	132	LEU
1	C	199	THR
1	C	200	ILE
1	C	214	LYS
1	C	264	THR
1	C	273	THR
1	C	274	ASN
1	C	304	GLN
1	C	309	LEU
1	C	310	THR
1	C	316	LEU
1	D	36	ASP
1	D	46	SER
1	D	48	ARG
1	D	61	HIS
1	D	68	LEU
1	D	89	ASP
1	D	137	GLN
1	D	147	PHE
1	D	175	GLU
1	D	180	LEU
1	D	199	THR
1	D	200	ILE
1	D	233	GLN
1	D	242	GLU
1	D	259	LYS
1	D	265	LYS
1	D	268	ARG
1	D	274	ASN
1	D	306	ARG
1	D	310	THR
1	D	316	LEU
1	D	324	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	7	ASN

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Mol	Chain	Res	Type
1	A	91	ASN
1	A	98	GLN
1	A	137	GLN
1	A	274	ASN
1	A	304	GLN
1	A	305	GLN
1	B	7	ASN
1	B	74	GLN
1	B	91	ASN
1	B	98	GLN
1	B	189	GLN
1	B	211	GLN
1	B	305	GLN
1	C	53	GLN
1	C	91	ASN
1	C	98	GLN
1	C	189	GLN
1	C	274	ASN
1	C	304	GLN
1	C	305	GLN
1	D	27	GLN
1	D	66	GLN
1	D	98	GLN
1	D	137	GLN
1	D	189	GLN
1	D	211	GLN
1	D	274	ASN
1	D	305	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

4 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	B82	D	401	-	27,28,28	3.20	15 (55%)	37,40,40	1.37	3 (8%)
2	B82	B	401	-	27,28,28	3.54	17 (62%)	37,40,40	1.34	4 (10%)
2	B82	C	401	-	27,28,28	3.28	15 (55%)	37,40,40	1.24	4 (10%)
2	B82	A	401	-	27,28,28	3.17	13 (48%)	37,40,40	1.30	6 (16%)

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	B82	D	401	-	-	1/28/28/28	0/2/2/2
2	B82	B	401	-	-	1/28/28/28	0/2/2/2
2	B82	C	401	-	-	1/28/28/28	0/2/2/2
2	B82	A	401	-	-	1/28/28/28	0/2/2/2

All (60) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	401	B82	S1-N20	10.09	1.77	1.63
2	A	401	B82	S1-N20	9.72	1.77	1.63
2	D	401	B82	S1-N20	9.54	1.77	1.63
2	C	401	B82	S1-N20	9.06	1.76	1.63
2	B	401	B82	C2-S1	5.95	1.85	1.78
2	C	401	B82	C2-S1	5.64	1.85	1.78
2	B	401	B82	C8-C7	5.62	1.49	1.41
2	B	401	B82	C3-C4	5.09	1.46	1.39
2	D	401	B82	C8-C7	5.03	1.49	1.41
2	A	401	B82	C2-S1	5.00	1.84	1.78
2	C	401	B82	C3-C2	4.98	1.46	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	B82	C8-C7	4.86	1.48	1.41
2	B	401	B82	C3-C2	4.66	1.46	1.39
2	B	401	B82	C11-C8	4.61	1.47	1.39
2	C	401	B82	C8-C7	4.58	1.48	1.41
2	C	401	B82	C3-C4	4.53	1.46	1.39
2	D	401	B82	C11-C8	4.50	1.47	1.39
2	B	401	B82	C14-C7	4.39	1.47	1.39
2	C	401	B82	C11-C8	4.27	1.46	1.39
2	A	401	B82	C3-C4	4.17	1.45	1.39
2	D	401	B82	C3-C2	4.08	1.45	1.39
2	D	401	B82	C14-C7	4.07	1.46	1.39
2	A	401	B82	C11-C8	4.02	1.46	1.39
2	A	401	B82	C3-C2	3.97	1.45	1.39
2	D	401	B82	C17-C18	3.83	1.46	1.38
2	B	401	B82	C17-C18	3.79	1.46	1.38
2	C	401	B82	C17-C18	3.69	1.46	1.38
2	C	401	B82	C14-C7	3.64	1.45	1.39
2	A	401	B82	C14-C7	3.63	1.45	1.39
2	D	401	B82	C16-C4	3.50	1.45	1.39
2	D	401	B82	C2-S1	3.50	1.82	1.78
2	D	401	B82	C3-C4	3.42	1.44	1.39
2	C	401	B82	C16-C4	3.37	1.45	1.39
2	A	401	B82	C17-C18	3.37	1.45	1.38
2	A	401	B82	C16-C4	3.34	1.45	1.39
2	B	401	B82	C16-C4	3.27	1.44	1.39
2	D	401	B82	C16-C17	3.00	1.44	1.38
2	B	401	B82	C16-C17	2.57	1.43	1.38
2	C	401	B82	C16-C17	2.51	1.43	1.38
2	D	401	B82	C8-C9	2.51	1.55	1.49
2	D	401	B82	C12-C11	2.44	1.44	1.38
2	C	401	B82	C5-N6	2.40	1.42	1.35
2	B	401	B82	C21-N20	2.37	1.58	1.48
2	A	401	B82	C21-N20	2.36	1.57	1.48
2	B	401	B82	C5-N6	2.33	1.41	1.35
2	B	401	B82	C7-N6	2.33	1.46	1.41
2	C	401	B82	C13-C14	2.32	1.43	1.38
2	B	401	B82	C13-C14	2.28	1.43	1.38
2	D	401	B82	C21-N20	2.26	1.57	1.48
2	C	401	B82	C21-N20	2.24	1.57	1.48
2	C	401	B82	C7-N6	2.23	1.46	1.41
2	C	401	B82	BR-C18	2.20	1.94	1.89
2	B	401	B82	C12-C11	2.20	1.43	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	B82	C12-C11	2.19	1.43	1.38
2	B	401	B82	C12-C13	2.17	1.43	1.38
2	D	401	B82	C13-C14	2.14	1.43	1.38
2	D	401	B82	C12-C13	2.10	1.43	1.38
2	B	401	B82	C8-C9	2.02	1.54	1.49
2	A	401	B82	C8-C9	2.02	1.54	1.49
2	A	401	B82	C5-N6	2.01	1.41	1.35

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	401	B82	O26-S1-N20	4.10	110.42	106.69
2	A	401	B82	O25-S1-N20	3.03	109.45	106.69
2	C	401	B82	O25-S1-N20	2.96	109.39	106.69
2	B	401	B82	O25-S1-N20	2.89	109.33	106.69
2	B	401	B82	C7-C8-C9	2.77	124.99	121.72
2	B	401	B82	BR-C18-C17	-2.63	112.67	117.81
2	A	401	B82	O26-S1-N20	2.59	109.05	106.69
2	A	401	B82	BR-C18-C17	-2.55	112.83	117.81
2	C	401	B82	O26-S1-N20	2.50	108.97	106.69
2	A	401	B82	C7-C8-C9	2.35	124.49	121.72
2	C	401	B82	BR-C18-C17	-2.31	113.30	117.81
2	B	401	B82	O26-S1-N20	2.27	108.76	106.69
2	C	401	B82	C21-N20-S1	-2.21	108.66	117.73
2	D	401	B82	C21-N20-S1	-2.10	109.13	117.73
2	A	401	B82	C21-N20-S1	-2.10	109.14	117.73
2	D	401	B82	C7-C8-C9	2.08	124.18	121.72
2	A	401	B82	O15-C5-N6	2.01	128.30	123.71

There are no chirality outliers.

All (4) torsion outliers are listed below:

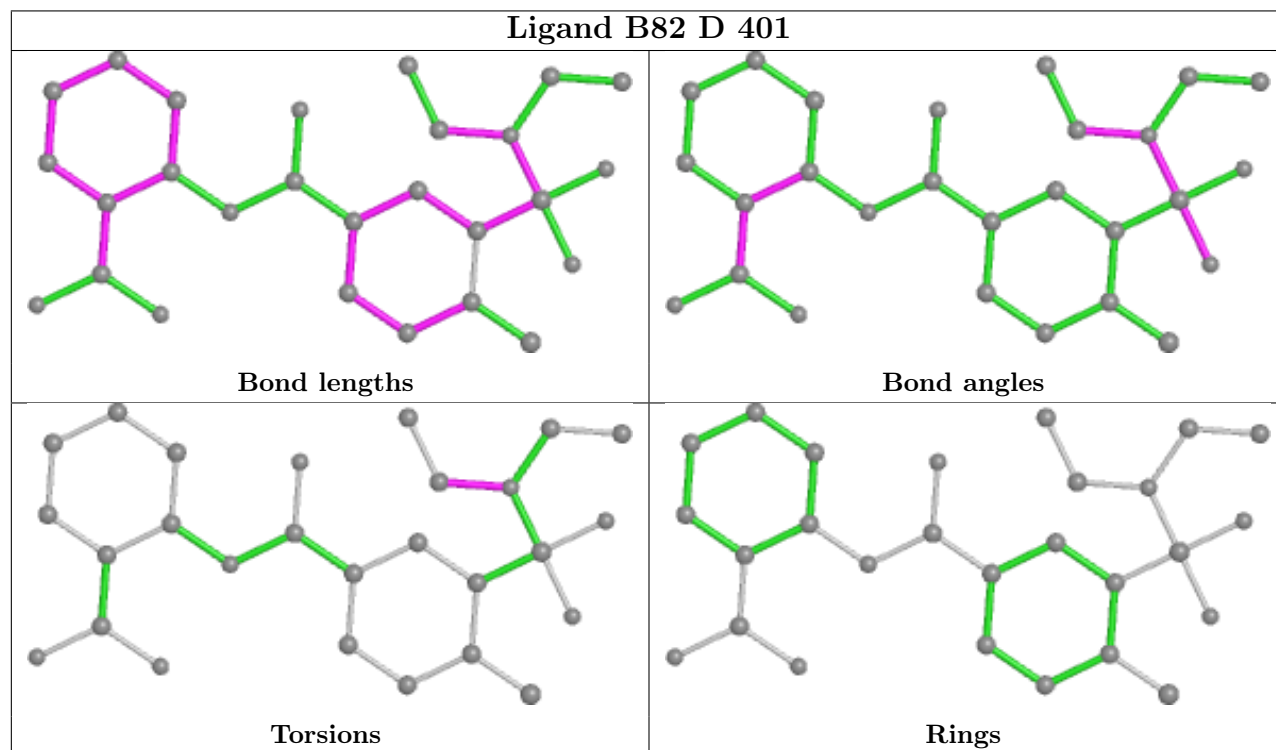
Mol	Chain	Res	Type	Atoms
2	A	401	B82	C22-C21-N20-C23
2	B	401	B82	C22-C21-N20-C23
2	C	401	B82	C22-C21-N20-C23
2	D	401	B82	C22-C21-N20-C23

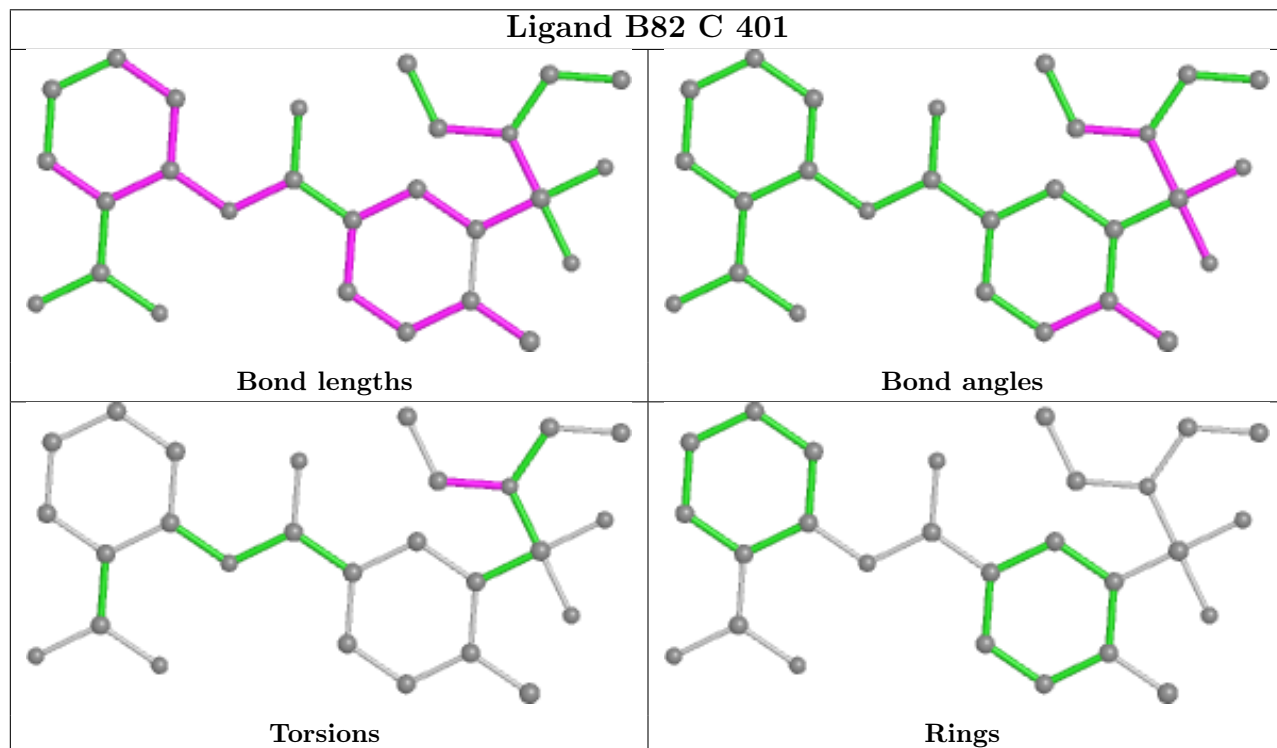
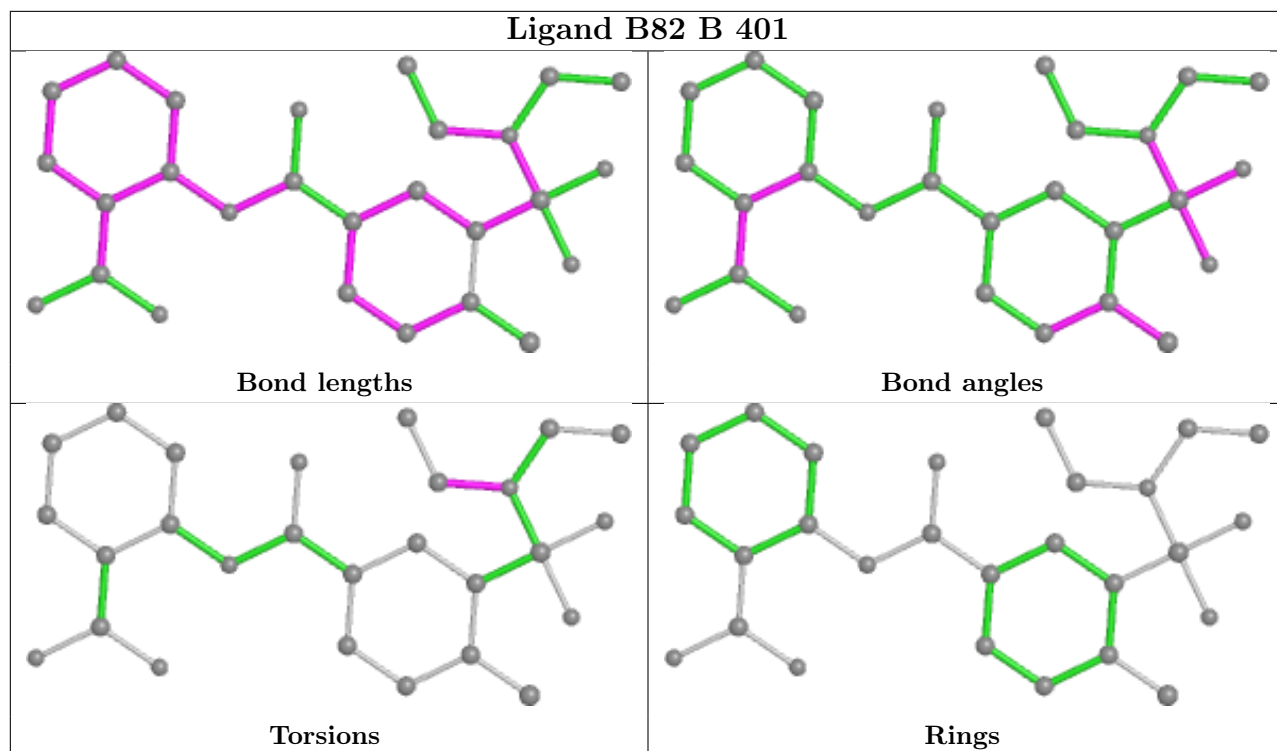
There are no ring outliers.

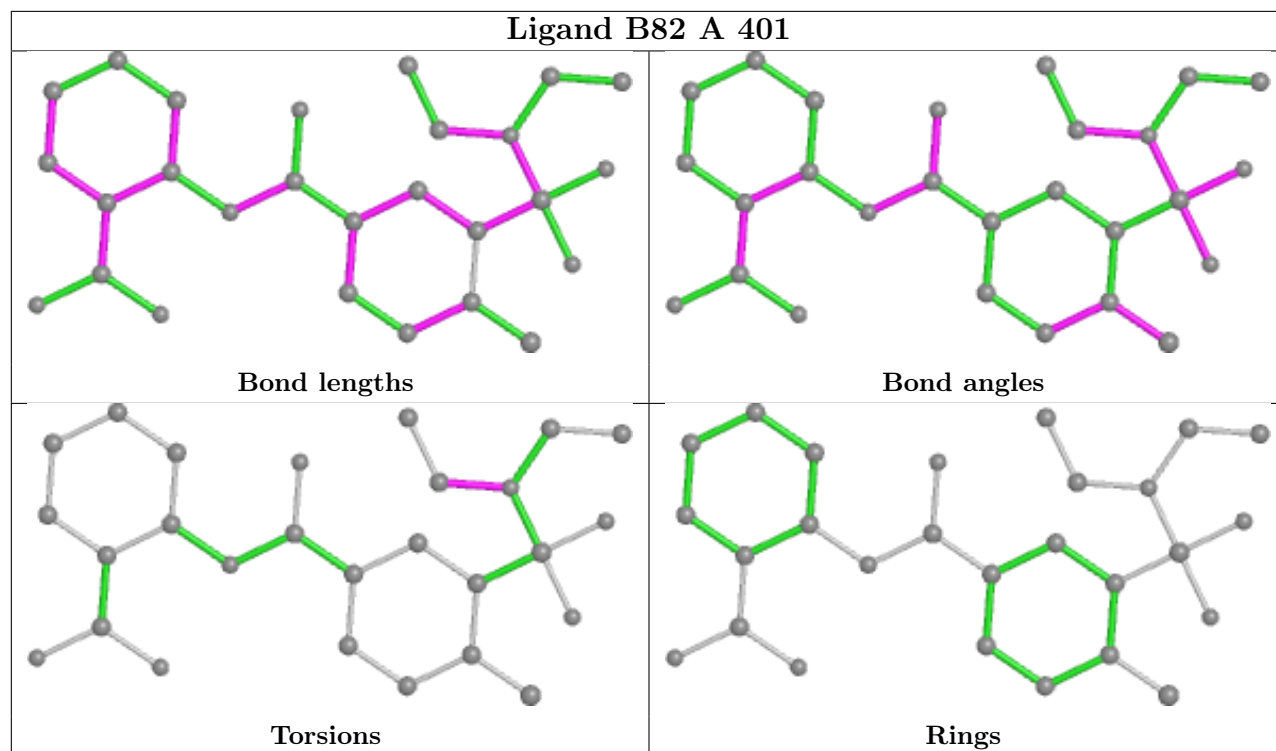
4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	401	B82	3	0
2	B	401	B82	1	0
2	C	401	B82	1	0
2	A	401	B82	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 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	320/343 (93%)	-0.23	1 (0%) 94 93	26, 41, 58, 79	0
1	B	319/343 (93%)	-0.37	4 (1%) 77 73	22, 37, 60, 84	0
1	C	320/343 (93%)	-0.29	2 (0%) 89 88	26, 40, 58, 88	0
1	D	320/343 (93%)	0.00	14 (4%) 34 27	27, 46, 76, 96	0
All	All	1279/1372 (93%)	-0.22	21 (1%) 72 68	22, 41, 65, 96	0

All (21) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	209	HIS	4.3
1	A	211	GLN	3.9
1	D	210	LYS	3.8
1	B	175	GLU	3.6
1	D	7	ASN	3.4
1	B	211	GLN	3.1
1	D	37	GLU	3.1
1	D	6	LYS	2.6
1	B	213	SER	2.6
1	C	211	GLN	2.5
1	D	20	GLU	2.4
1	D	53	GLN	2.4
1	D	34	THR	2.4
1	D	212	ALA	2.4
1	B	36	ASP	2.3
1	D	284	ALA	2.3
1	D	211	GLN	2.2
1	C	286	ILE	2.2
1	D	176	THR	2.1
1	D	175	GLU	2.1
1	D	269	GLU	2.1

## 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, 95<sup>th</sup> 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.

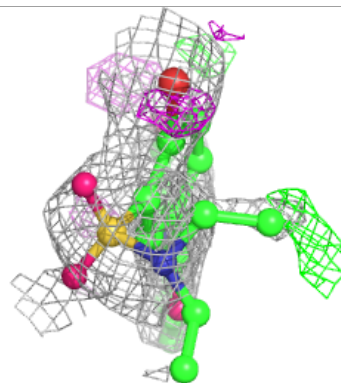
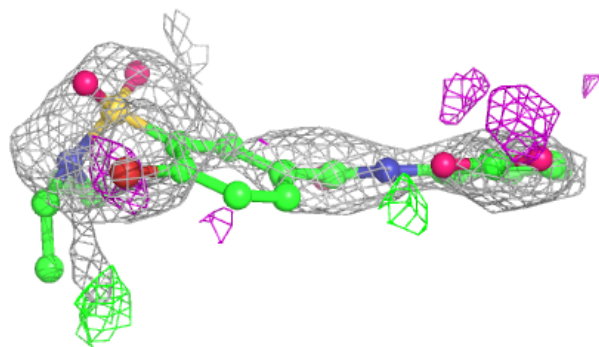
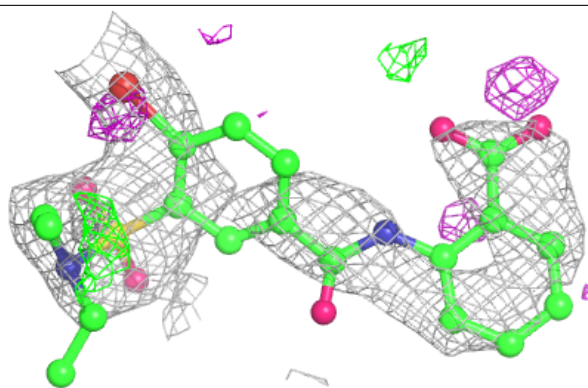
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	B82	B	401	27/27	0.74	0.36	93,108,113,123	0
2	B82	D	401	27/27	0.87	0.26	70,84,91,102	0
2	B82	C	401	27/27	0.89	0.21	46,62,69,86	0
2	B82	A	401	27/27	0.89	0.19	47,69,77,92	0

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.

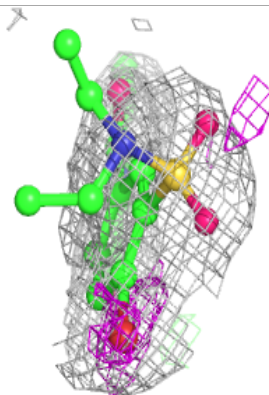
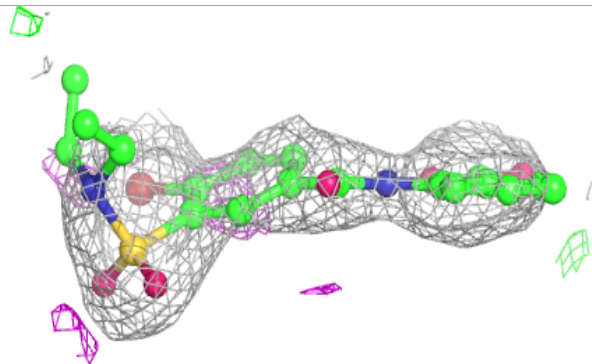
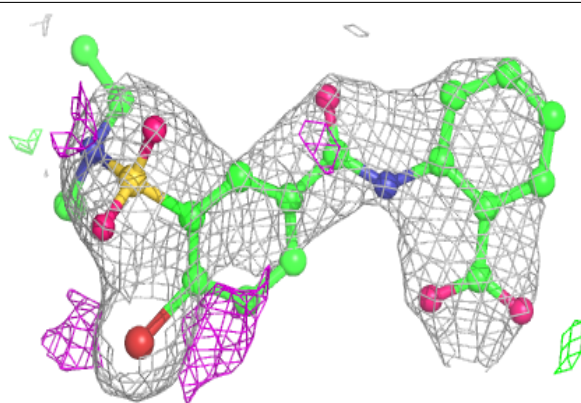


**Electron density around B82 B 401:**

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

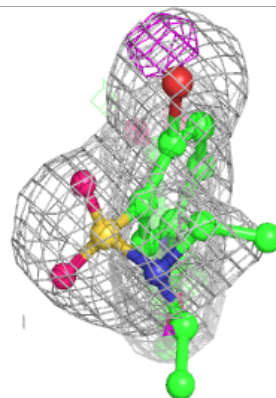
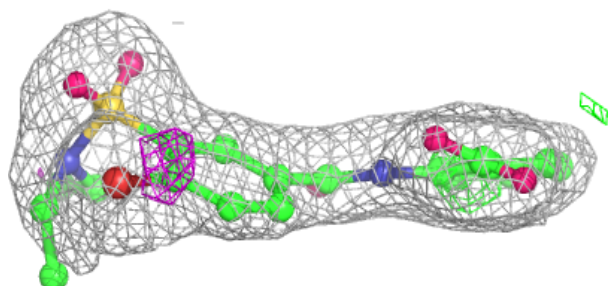
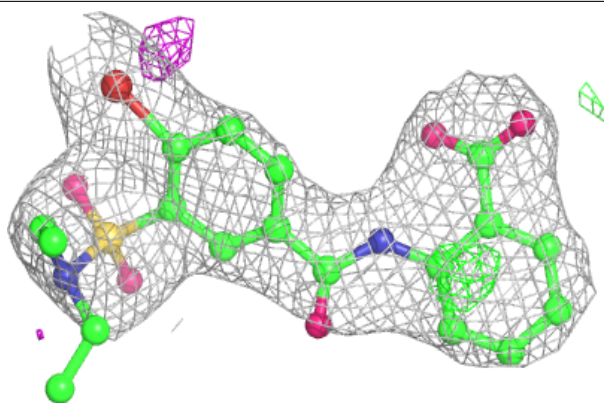
**Electron density around B82 D 401:**

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

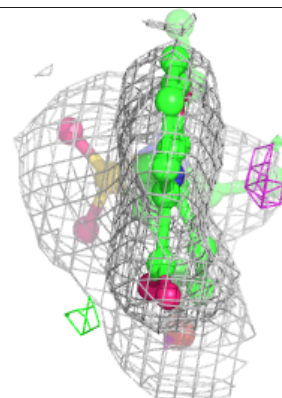
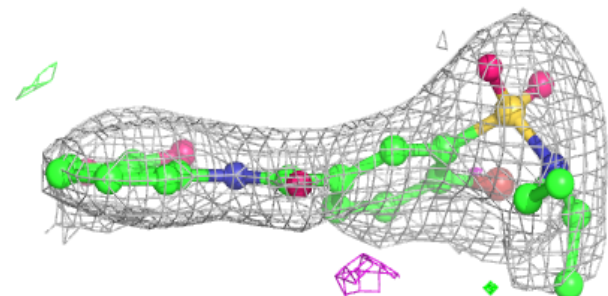


**Electron density around B82 C 401:**

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

**Electron density around B82 A 401:**

$2mF_o-DF_c$  (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.