



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 06:56 PM EDT

PDB ID : 6CUU  
Title : Thermus thermophiles RNA polymerase in complex with promoter DNA and antibiotic Kanglemycin A  
Authors : Molodtsov, V.; Murakami, K.S.  
Deposited on : 2018-03-26  
Resolution : 2.99 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>.

---

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)  
Xtriage (Phenix) : 1.20.1  
EDS : 2.37.1  
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) : 2.37.1

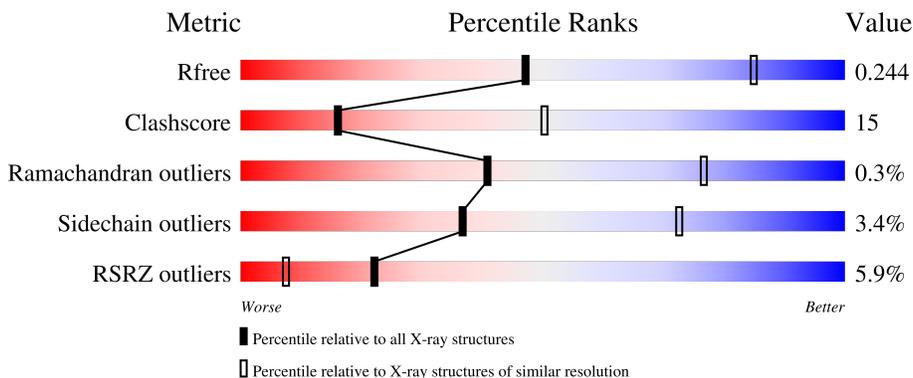
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.99 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	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	315	
1	B	315	
2	C	1119	
3	D	1524	
4	E	99	

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Length	Quality of chain
5	F	423	
6	G	22	
7	H	27	

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 28403 atoms, of which 62 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	227	1787	1141	311	333	2	0	0	0
1	B	223	1758	1124	305	327	2	0	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	1112	8717	5517	1555	1622	23	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	958	THR	PRO	conflict	UNP Q72HM5

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	D	1485	11652	7391	2046	2180	35	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	274	ARG	GLN	conflict	UNP Q72HM6
D	1041	LEU	MET	conflict	UNP Q72HM6
D	1313	VAL	ALA	conflict	UNP Q72HM6

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	E	94	Total 761	C 486	N 132	O 139	S 4	0	0	0

- Molecule 5 is a protein called RNA polymerase sigma factor SigA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	F	346	Total 2793	C 1763	N 508	O 518	S 4	0	0	0

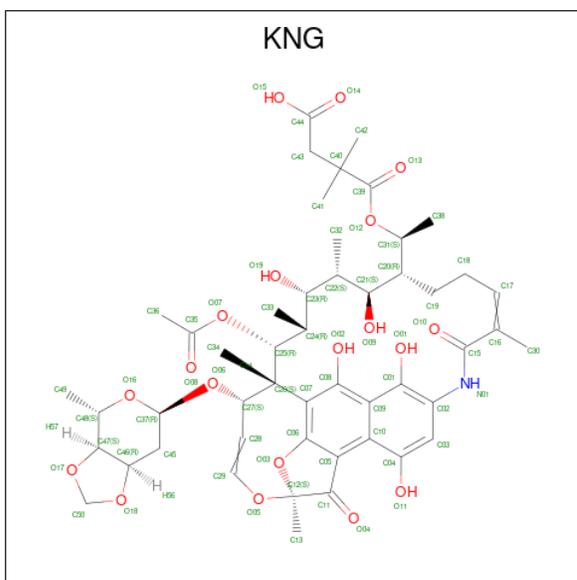
- Molecule 6 is a DNA chain called DNA (5'-D(P\*TP\*GP\*CP\*AP\*TP\*CP\*AP\*GP\*AP\*GP\*CP\*CP\*CP\*AP\*AP\*AP\*A)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
6	G	17	Total 348	C 165	N 69	O 97	P 17	0	0	0

- Molecule 7 is a DNA chain called DNA (5'-D(\*TP\*AP\*TP\*AP\*AP\*TP\*GP\*GP\*GP\*AP\*GP\*CP\*CP\*TP\*CP\*TP\*GP\*AP\*TP\*GP\*CP\*A)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
7	H	22	Total 451	C 216	N 84	O 130	P 21	0	0	0

- Molecule 8 is Kanglemycin A (three-letter code: KNG) (formula: C<sub>50</sub>H<sub>67</sub>NO<sub>19</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
8	C	1	132	50	62	1	19	0	0

- Molecule 9 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Zn		
9	D	2	2	2	0	0

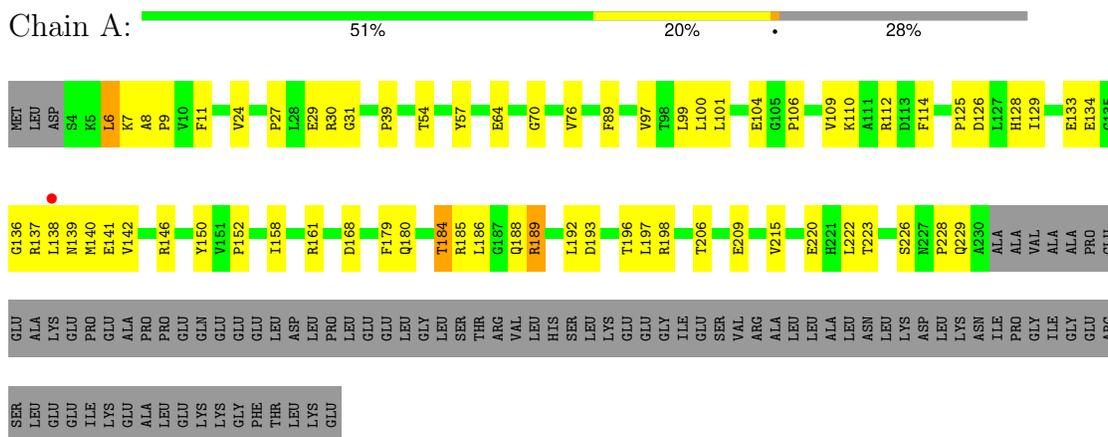
- Molecule 10 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
10	D	2	2	2	0	0

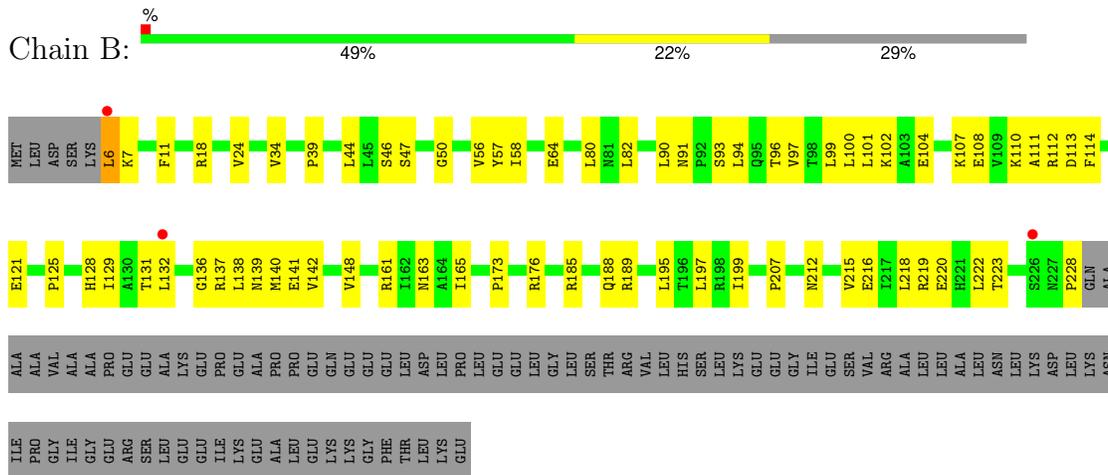
### 3 Residue-property plots i

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.

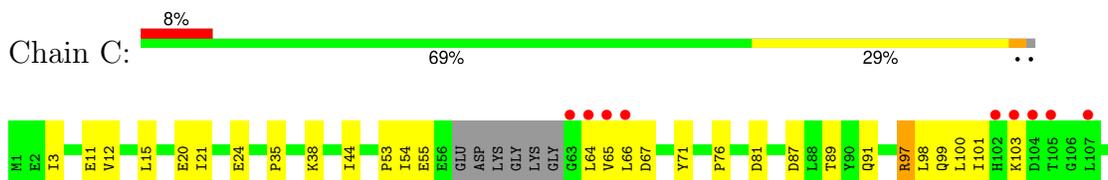
- Molecule 1: DNA-directed RNA polymerase subunit alpha

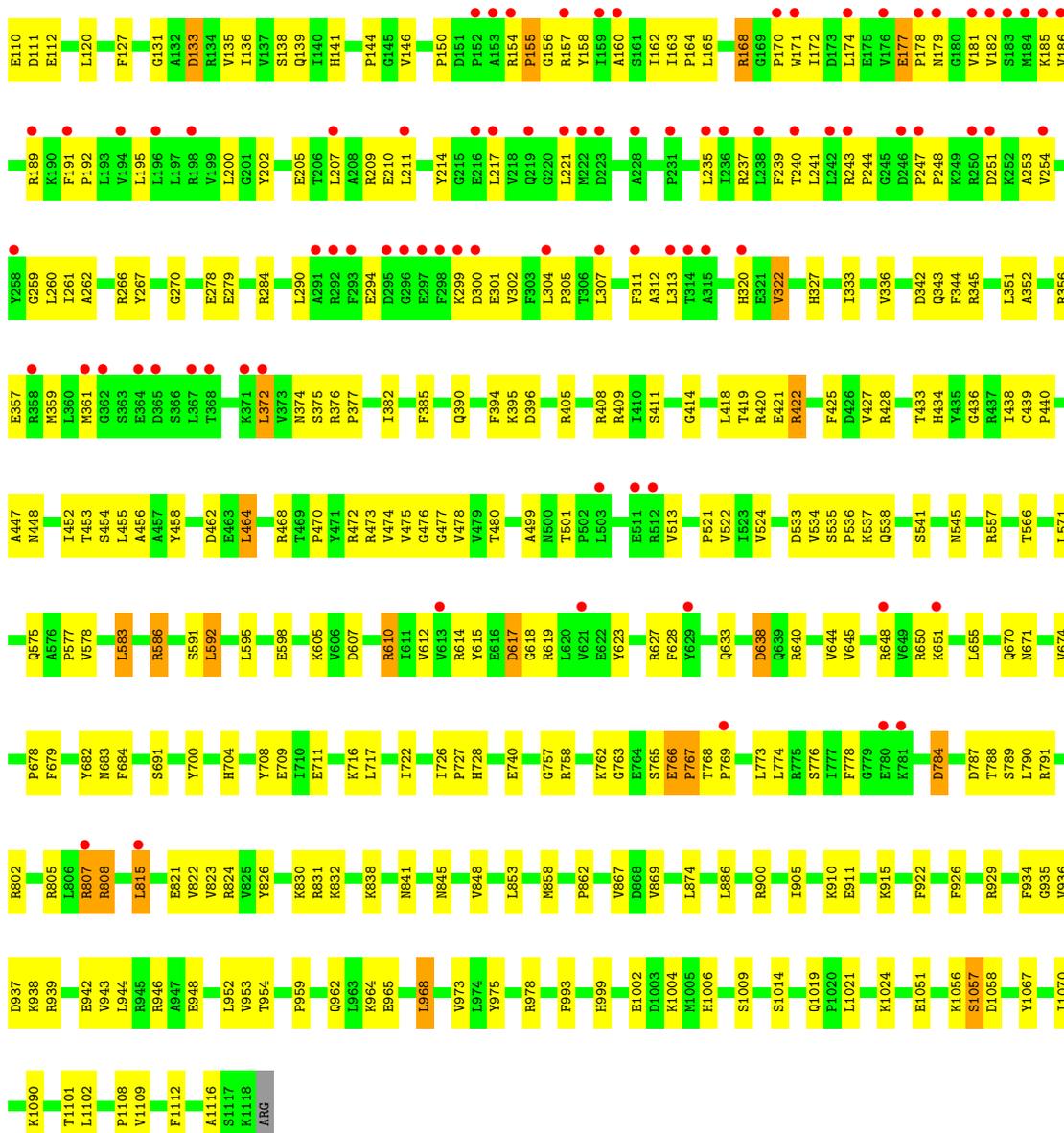


- Molecule 1: DNA-directed RNA polymerase subunit alpha

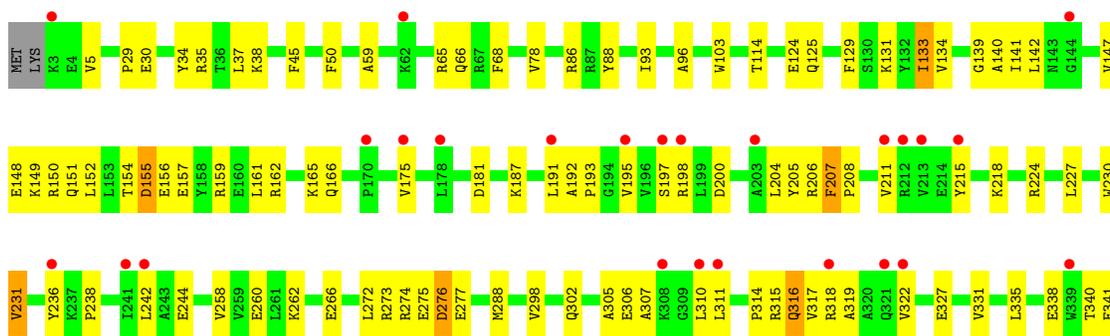


- Molecule 2: DNA-directed RNA polymerase subunit beta

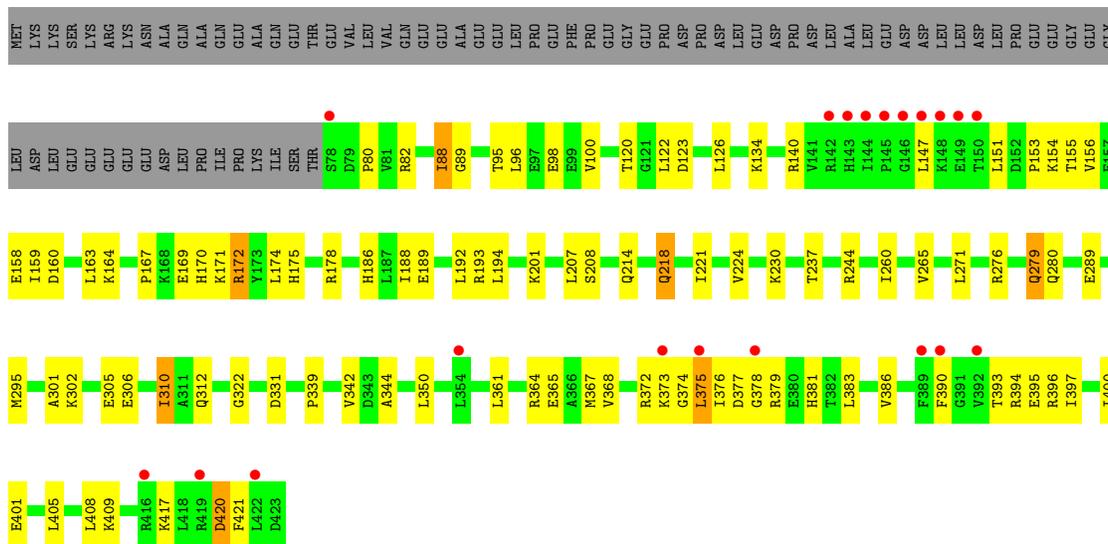




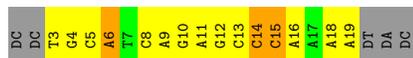
● Molecule 3: DNA-directed RNA polymerase subunit beta'







● Molecule 6: DNA (5'-D(P\*TP\*GP\*CP\*AP\*TP\*CP\*AP\*GP\*AP\*GP\*CP\*CP\*CP\*AP\*AP\*A P\*A)-3')



● Molecule 7: DNA (5'-D(\*TP\*AP\*TP\*AP\*AP\*TP\*GP\*GP\*GP\*AP\*GP\*CP\*CP\*TP\*CP\*TP \*GP\*AP\*TP\*GP\*CP\*A)-3')



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	185.22Å 101.31Å 294.28Å 90.00° 98.89° 90.00°	Depositor
Resolution (Å)	46.30 – 2.99 46.31 – 2.99	Depositor EDS
% Data completeness (in resolution range)	98.7 (46.30-2.99) 98.7 (46.31-2.99)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.75 (at 3.01Å)	Xtrriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
R, $R_{free}$	0.201 , 0.248 0.203 , 0.244	Depositor DCC
$R_{free}$ test set	1990 reflections (1.85%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	77.4	Xtrriage
Anisotropy	0.501	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 70.2	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	28403	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	95.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.94% 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 i

### 5.1 Standard geometry i

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

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	0.31	0/1819	0.61	0/2473
1	B	0.34	0/1790	0.64	0/2435
2	C	0.33	0/8883	0.60	2/12022 (0.0%)
3	D	0.35	1/11857 (0.0%)	0.61	3/16040 (0.0%)
4	E	0.33	0/775	0.55	0/1045
5	F	0.31	0/2838	0.56	0/3820
6	G	0.96	1/391 (0.3%)	1.25	4/600 (0.7%)
7	H	0.83	0/505	1.30	6/776 (0.8%)
All	All	0.37	2/28858 (0.0%)	0.64	15/39211 (0.0%)

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
2	C	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	875	THR	C-N	5.32	1.46	1.34
6	G	12	DG	C3'-O3'	-5.04	1.37	1.44

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
7	H	23	DG	O4'-C4'-C3'	-8.67	100.80	106.00
7	H	12	DC	O4'-C1'-N1	-8.29	102.20	108.00
6	G	14	DC	O4'-C1'-N1	-8.17	102.28	108.00

*Continued on next page...*

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	G	6	DA	O4'-C4'-C3'	-7.08	101.67	104.50
7	H	20	DG	O4'-C1'-N9	-7.04	103.07	108.00
2	C	765	SER	C-N-CA	6.76	138.60	121.70
7	H	23	DG	O4'-C1'-N9	6.46	112.53	108.00
2	C	650	ARG	NE-CZ-NH1	-5.37	117.62	120.30
3	D	983	LEU	CB-CG-CD1	5.30	120.01	111.00
6	G	11	DA	O4'-C1'-N9	5.28	111.69	108.00
6	G	15	DC	C1'-O4'-C4'	-5.11	104.99	110.10
7	H	23	DG	C3'-C2'-C1'	-5.09	96.39	102.50
7	H	25	DA	O4'-C1'-N9	5.09	111.56	108.00
3	D	1123	PHE	C-N-CA	5.03	134.28	121.70
3	D	934	LEU	CB-CG-CD2	-5.00	102.50	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	C	422	ARG	Mainchain

## 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	1787	0	1839	54	0
1	B	1758	0	1808	77	0
2	C	8717	0	8787	279	0
3	D	11652	0	11828	360	2
4	E	761	0	778	33	0
5	F	2793	0	2863	89	1
6	G	348	0	190	15	0
7	H	451	0	251	17	0
8	C	70	62	0	6	0
9	D	2	0	0	0	0
10	D	2	0	0	0	0
All	All	28341	62	28344	821	2

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 15.

All (821) 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)
2:C:678:PRO:HA	2:C:683:ASN:HD21	1.14	1.12
3:D:806:PHE:HB2	3:D:829:VAL:HG22	1.29	1.10
3:D:1048:PRO:O	3:D:1079:LYS:NZ	1.87	1.06
3:D:669:ASN:ND2	5:F:420:ASP:OD1	1.88	1.05
6:G:6:DA:H8	6:G:6:DA:H5'	1.19	1.03
3:D:361:VAL:HG23	3:D:365:ASP:HB2	1.43	0.98
2:C:97:ARG:NH1	2:C:110:GLU:OE1	1.97	0.97
6:G:6:DA:H5'	6:G:6:DA:C8	2.00	0.97
1:B:100:LEU:HD23	1:B:141:GLU:HG2	1.45	0.97
3:D:187:LYS:N	3:D:200:ASP:OD1	1.98	0.94
2:C:12:VAL:HG21	2:C:472:ARG:HD3	1.49	0.94
2:C:420:ARG:NH1	2:C:448:ASN:OD1	2.00	0.94
3:D:218:LYS:HG2	3:D:338:GLU:HG2	1.49	0.92
2:C:521:PRO:HB3	3:D:1068:LEU:HD21	1.51	0.92
2:C:628:PHE:H	2:C:638:ASP:HB2	1.36	0.91
1:A:222:LEU:HD21	1:B:218:LEU:HD23	1.54	0.90
2:C:615:TYR:HH	2:C:623:TYR:HH	0.96	0.89
1:B:56:VAL:HG22	1:B:142:VAL:HG12	1.53	0.89
2:C:674:VAL:HG12	2:C:869:VAL:HB	1.55	0.88
2:C:501:THR:HG21	2:C:513:VAL:HG23	1.54	0.87
3:D:181:ASP:HB2	3:D:205:TYR:CD1	2.10	0.87
3:D:238:PRO:HD3	3:D:318:ARG:HG3	1.55	0.87
5:F:361:LEU:HB3	5:F:365:GLU:HG3	1.56	0.86
2:C:420:ARG:HG3	2:C:420:ARG:HH11	1.40	0.86
1:B:188:GLN:HG3	3:D:685:ASP:OD2	1.75	0.85
3:D:274:ARG:O	3:D:276:ASP:N	2.10	0.85
3:D:1305:LEU:HD12	3:D:1309:ALA:HB3	1.59	0.85
3:D:133:ILE:HD12	3:D:152:LEU:HD23	1.59	0.84
3:D:1151:ARG:HH21	3:D:1151:ARG:HG2	1.43	0.83
2:C:294:GLU:HB3	2:C:299:LYS:HD2	1.60	0.82
3:D:65:ARG:CB	5:F:377:ASP:HA	2.10	0.81
3:D:1372:VAL:HA	3:D:1375:MET:HE3	1.61	0.81
2:C:408:ARG:NH1	2:C:456:ALA:O	2.13	0.81
2:C:709:GLU:OE2	2:C:824:ARG:NH1	2.14	0.80
1:B:100:LEU:CD2	1:B:141:GLU:HG2	2.12	0.80
3:D:664:LYS:NZ	3:D:693:GLU:OE1	2.14	0.80
1:A:198:ARG:HD3	2:C:934:PHE:CZ	2.17	0.79
1:B:112:ARG:HG3	1:B:125:PRO:HB2	1.64	0.79

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:485:SER:OG	6:G:3:DT:OP1	1.98	0.79
6:G:15:DC:H2'	6:G:16:DA:C8	2.17	0.79
2:C:211:LEU:HD23	2:C:311:PHE:CD2	2.18	0.79
2:C:614:ARG:NH2	2:C:618:GLY:O	2.17	0.78
3:D:658:LEU:HD23	3:D:661:MET:CE	2.13	0.78
3:D:1495:ILE:HG12	4:E:88:GLU:HG3	1.65	0.78
1:B:80:LEU:HD22	3:D:844:ALA:HA	1.66	0.78
2:C:200:LEU:HD13	2:C:300:ASP:HB2	1.67	0.78
2:C:978:ARG:HG3	2:C:978:ARG:HH11	1.49	0.77
5:F:147:LEU:HD23	5:F:151:LEU:HD13	1.66	0.77
2:C:182:VAL:HG11	2:C:221:LEU:HD13	1.64	0.77
1:B:56:VAL:HG21	1:B:82:LEU:HD13	1.67	0.76
3:D:266:GLU:HG3	3:D:314:PRO:HB3	1.65	0.76
3:D:204:LEU:HD22	3:D:441:ARG:CZ	2.16	0.76
3:D:1288:GLU:O	3:D:1288:GLU:HG2	1.87	0.75
2:C:853:LEU:HB2	2:C:858:MET:CE	2.17	0.75
4:E:50:THR:HG22	4:E:53:GLY:O	1.86	0.75
1:A:104:GLU:OE2	1:A:137:ARG:NH1	2.20	0.74
2:C:343:GLN:HG3	2:C:385:PHE:HB2	1.70	0.74
1:B:112:ARG:CG	1:B:125:PRO:HB2	2.18	0.73
4:E:33:HIS:NE2	4:E:89:MET:HB3	2.04	0.73
1:B:80:LEU:HD22	3:D:844:ALA:CA	2.18	0.73
2:C:678:PRO:CA	2:C:683:ASN:HD21	1.98	0.73
3:D:124:GLU:OE2	3:D:587:ARG:NH2	2.22	0.73
1:A:29:GLU:OE1	1:A:29:GLU:HA	1.90	0.72
1:A:206:THR:OG1	1:A:209:GLU:HG3	1.89	0.72
1:B:101:LEU:HD11	1:B:113:ASP:HB2	1.69	0.72
3:D:147:VAL:HG21	3:D:161:LEU:HD21	1.71	0.72
1:B:57:TYR:CD1	1:B:161:ARG:HD2	2.24	0.72
3:D:711:LEU:HD13	3:D:778:LEU:HD23	1.71	0.72
3:D:322:VAL:HG22	3:D:335:LEU:HD21	1.71	0.72
5:F:393:THR:HG22	5:F:395:GLU:H	1.55	0.72
3:D:205:TYR:CD2	3:D:390:PRO:HG3	2.25	0.71
2:C:853:LEU:HB2	2:C:858:MET:HE1	1.72	0.71
3:D:314:PRO:HB2	3:D:317:VAL:HG12	1.72	0.71
2:C:210:GLU:HB3	2:C:211:LEU:HD12	1.73	0.70
3:D:1314:LYS:H	3:D:1314:LYS:HD2	1.56	0.70
3:D:155:ASP:OD2	3:D:568:ARG:NH2	2.23	0.70
3:D:401:TYR:HB3	3:D:427:VAL:HG21	1.73	0.70
3:D:480:GLU:HG2	3:D:492:ALA:HB2	1.73	0.70
3:D:483:HIS:CE1	3:D:488:ARG:HD3	2.27	0.70

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:56:VAL:CG2	1:B:142:VAL:HG12	2.22	0.70
3:D:34:TYR:CZ	3:D:35:ARG:HG3	2.26	0.70
2:C:160:ALA:HB3	2:C:174:LEU:HB2	1.74	0.69
2:C:678:PRO:HA	2:C:683:ASN:ND2	1.99	0.69
2:C:475:VAL:O	2:C:478:VAL:HG22	1.93	0.69
3:D:1108:ARG:NH2	3:D:1198:TYR:O	2.25	0.69
3:D:361:VAL:CG2	3:D:365:ASP:HB2	2.23	0.68
3:D:134:VAL:HG22	3:D:151:GLN:H	1.59	0.68
3:D:322:VAL:HG22	3:D:335:LEU:CD2	2.24	0.68
2:C:617:ASP:OD2	2:C:619:ARG:NE	2.21	0.68
3:D:258:VAL:HG12	3:D:273:ARG:O	1.94	0.68
2:C:428:ARG:NH2	2:C:447:ALA:O	2.26	0.68
3:D:1044:LEU:HD23	3:D:1056:PRO:HB3	1.73	0.68
2:C:352:ALA:HB1	2:C:356:ARG:HH22	1.59	0.68
2:C:1002:GLU:HA	3:D:724:GLN:OE1	1.94	0.68
3:D:156:GLU:OE1	3:D:156:GLU:N	2.24	0.67
3:D:1339:LYS:HB3	3:D:1343:ALA:CB	2.24	0.67
5:F:82:ARG:HB2	7:H:8:DG:O6	1.95	0.67
1:B:80:LEU:HD13	3:D:867:ARG:HD3	1.77	0.67
3:D:1324:PRO:HG3	3:D:1330:ILE:HD11	1.77	0.67
3:D:399:ARG:HG2	3:D:431:VAL:HG22	1.76	0.67
1:A:106:PRO:HG3	1:A:134:GLU:HG2	1.75	0.67
2:C:136:ILE:HB	2:C:336:VAL:HG13	1.76	0.67
3:D:133:ILE:HD12	3:D:152:LEU:CD2	2.25	0.67
2:C:936:VAL:HG11	2:C:959:PRO:HB2	1.77	0.66
3:D:361:VAL:HG23	3:D:365:ASP:CB	2.23	0.66
3:D:661:MET:HE3	3:D:673:ALA:HB1	1.78	0.66
3:D:371:ILE:HG23	5:F:230:LYS:HD2	1.77	0.66
3:D:465:LEU:HD12	3:D:513:ILE:HD13	1.77	0.66
1:A:27:PRO:HG3	1:A:186:LEU:HD13	1.77	0.66
2:C:243:ARG:NH2	7:H:10:DA:N1	2.43	0.66
2:C:948:GLU:HG3	2:C:953:VAL:HG23	1.78	0.66
2:C:278:GLU:OE1	2:C:284:ARG:NH2	2.29	0.66
3:D:806:PHE:O	3:D:829:VAL:HA	1.96	0.65
5:F:397:ILE:HD12	5:F:400:ILE:HD11	1.78	0.65
2:C:537:LYS:HG2	2:C:905:ILE:HD11	1.79	0.65
2:C:787:ASP:OD2	2:C:791:ARG:NH2	2.30	0.65
3:D:399:ARG:HB2	3:D:401:TYR:CE1	2.32	0.65
4:E:70:THR:OG1	4:E:72:ARG:HG3	1.98	0.64
2:C:168:ARG:NH1	2:C:345:ARG:HD3	2.13	0.64
2:C:627:ARG:NH1	2:C:638:ASP:OD2	2.30	0.64

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:704:HIS:CD2	2:C:831:ARG:HD2	2.32	0.64
3:D:1151:ARG:HG2	3:D:1151:ARG:NH2	2.05	0.64
3:D:191:LEU:CD1	3:D:197:SER:HB2	2.28	0.64
5:F:339:PRO:HB2	5:F:344:ALA:HB2	1.78	0.64
3:D:206:ARG:HB2	3:D:392:SER:O	1.98	0.64
3:D:361:VAL:HG21	3:D:379:ALA:CB	2.27	0.64
3:D:1333:HIS:HE1	3:D:1421:LEU:O	1.81	0.63
2:C:607:ASP:HB2	2:C:610:ARG:NH1	2.13	0.63
1:B:111:ALA:HB3	1:B:125:PRO:HA	1.80	0.63
1:B:176:ARG:NH2	3:D:888:GLU:OE1	2.31	0.63
1:A:138:LEU:HD11	1:A:140:MET:HE2	1.80	0.63
2:C:221:LEU:HD21	2:C:307:LEU:HD21	1.80	0.63
1:A:112:ARG:HG3	1:A:125:PRO:HB2	1.81	0.63
5:F:361:LEU:HB3	5:F:365:GLU:CG	2.28	0.63
3:D:288:MET:HA	3:D:306:GLU:O	1.98	0.63
2:C:390:GLN:HA	8:C:2001:KNG:C49	2.29	0.62
2:C:915:LYS:NZ	3:D:952:ASP:OD2	2.31	0.62
2:C:1101:THR:OG1	2:C:1109:VAL:O	2.17	0.62
3:D:191:LEU:HD13	3:D:197:SER:HB2	1.82	0.62
3:D:963:TYR:CE2	3:D:1002:LYS:HD3	2.34	0.62
2:C:420:ARG:NH1	2:C:420:ARG:HG3	2.14	0.62
3:D:1147:ARG:HD3	3:D:1188:VAL:HG11	1.81	0.62
3:D:262:LYS:HE2	3:D:341:GLU:OE2	2.00	0.62
3:D:835:SER:OG	3:D:838:ARG:HG3	1.98	0.62
2:C:501:THR:CG2	2:C:513:VAL:HG23	2.28	0.62
2:C:396:ASP:HA	2:C:633:GLN:NE2	2.15	0.62
3:D:266:GLU:OE2	3:D:315:ARG:N	2.33	0.62
3:D:411:THR:HG23	3:D:436:GLU:HA	1.81	0.62
1:A:24:VAL:HG22	1:A:196:THR:HG23	1.80	0.61
4:E:50:THR:CG2	4:E:53:GLY:H	2.13	0.61
3:D:351:MET:HG2	3:D:370:ALA:HB2	1.82	0.61
3:D:397:LYS:HD3	3:D:448:GLU:OE2	1.99	0.61
2:C:150:PRO:HD3	2:C:322:VAL:HG11	1.81	0.61
3:D:563:PRO:HD2	3:D:566:ILE:HD12	1.81	0.61
4:E:49:GLN:OE1	4:E:54:LEU:HD12	1.99	0.61
2:C:312:ALA:HB1	2:C:320:HIS:CE1	2.35	0.61
3:D:639:LEU:HA	3:D:729:HIS:CD2	2.35	0.61
3:D:658:LEU:HA	3:D:661:MET:HE3	1.82	0.61
1:B:57:TYR:CE1	1:B:163:ASN:HB2	2.35	0.61
1:A:112:ARG:HG3	1:A:125:PRO:CB	2.31	0.61
2:C:11:GLU:OE2	2:C:537:LYS:HE2	2.01	0.61

*Continued on next page...*

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:134:VAL:HG23	3:D:149:LYS:HA	1.82	0.61
3:D:683:ILE:HG23	3:D:687:VAL:HG11	1.83	0.61
4:E:36:LYS:CG	4:E:93:TYR:HB3	2.29	0.61
1:B:101:LEU:HD11	1:B:113:ASP:CB	2.31	0.61
2:C:243:ARG:HH22	7:H:10:DA:N6	1.99	0.60
3:D:1267:ARG:NE	3:D:1331:ASP:OD2	2.34	0.60
3:D:142:LEU:HB2	3:D:161:LEU:HD11	1.83	0.60
1:B:47:SER:C	1:B:148:VAL:HG21	2.22	0.60
5:F:163:LEU:HD13	5:F:174:LEU:HD13	1.82	0.60
1:A:179:PHE:HB3	1:A:197:LEU:HD23	1.82	0.60
2:C:722:ILE:HD12	2:C:821:GLU:HG3	1.84	0.60
1:A:6:LEU:CD1	1:A:7:LYS:H	2.14	0.60
2:C:1019:GLN:NE2	3:D:617:ASN:HB3	2.16	0.60
4:E:37:ASN:ND2	4:E:89:MET:HE1	2.17	0.60
1:A:226:SER:O	1:A:228:PRO:HD3	2.01	0.60
2:C:545:ASN:HB3	2:C:583:LEU:HD22	1.83	0.60
3:D:658:LEU:HD23	3:D:661:MET:HE1	1.83	0.60
1:B:128:HIS:HD2	1:B:129:ILE:N	2.00	0.60
2:C:12:VAL:HG21	2:C:472:ARG:CD	2.28	0.60
2:C:758:ARG:HH21	2:C:788:THR:HB	1.65	0.60
4:E:44:GLU:OE1	4:E:72:ARG:NH2	2.34	0.60
3:D:399:ARG:HG2	3:D:431:VAL:CG2	2.32	0.60
3:D:277:GLU:OE1	3:D:277:GLU:HA	2.02	0.59
5:F:386:VAL:HG12	5:F:397:ILE:HG12	1.84	0.59
4:E:50:THR:HG23	4:E:52:GLU:N	2.18	0.59
2:C:182:VAL:HG11	2:C:221:LEU:CD1	2.33	0.59
5:F:405:LEU:O	5:F:409:LYS:HG3	2.03	0.59
2:C:146:VAL:HG22	2:C:162:ILE:HG12	1.84	0.59
2:C:591:SER:O	2:C:592:LEU:HB2	2.03	0.59
3:D:899:LEU:HD22	3:D:917:GLN:HB3	1.84	0.59
3:D:1277:ILE:HD13	3:D:1301:LYS:HE3	1.84	0.59
1:B:6:LEU:HD12	1:B:189:ARG:HH11	1.68	0.59
1:B:18:ARG:O	1:B:207:PRO:HD3	2.02	0.59
1:B:104:GLU:HA	1:B:132:LEU:HD23	1.82	0.59
2:C:711:GLU:HG2	2:C:822:VAL:HG22	1.85	0.59
2:C:858:MET:HG2	2:C:867:VAL:O	2.01	0.59
3:D:165:LYS:HG2	3:D:165:LYS:O	2.02	0.59
3:D:906:GLN:OE1	3:D:906:GLN:HA	2.03	0.59
3:D:1083:ASP:OD2	3:D:1087:ARG:NH1	2.34	0.59
4:E:37:ASN:HD22	4:E:89:MET:HE1	1.68	0.59
3:D:231:VAL:O	3:D:236:TYR:OH	2.21	0.58

Continued on next page...

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:65:ARG:CB	5:F:376:ILE:O	2.51	0.58
3:D:960:LYS:NZ	3:D:1063:GLU:OE2	2.36	0.58
1:B:6:LEU:HB2	1:B:189:ARG:NH1	2.18	0.58
2:C:3:ILE:HD13	2:C:900:ARG:HB2	1.85	0.58
3:D:1143:GLY:O	3:D:1147:ARG:HD2	2.02	0.58
2:C:259:GLY:HA3	2:C:266:ARG:HD3	1.84	0.58
2:C:521:PRO:HG2	3:D:1053:PHE:CZ	2.39	0.58
5:F:89:GLY:HA3	7:H:7:DG:C6	2.38	0.58
2:C:773:LEU:HB2	5:F:375:LEU:HD11	1.85	0.58
3:D:1281:VAL:HB	3:D:1317:ASP:H	1.68	0.58
5:F:188:ILE:HD13	5:F:221:ILE:HG12	1.85	0.58
3:D:258:VAL:HG13	3:D:273:ARG:HG3	1.85	0.58
2:C:54:ILE:HG23	2:C:356:ARG:HH21	1.68	0.58
3:D:808:THR:O	3:D:811:GLU:HB2	2.04	0.58
3:D:1087:ARG:HG3	3:D:1256:LEU:HD23	1.84	0.58
2:C:774:LEU:HD22	5:F:350:LEU:HD11	1.86	0.57
3:D:238:PRO:CD	3:D:318:ARG:HG3	2.32	0.57
2:C:617:ASP:OD1	2:C:617:ASP:N	2.35	0.57
3:D:676:MET:CE	3:D:684:LYS:HG2	2.34	0.57
8:C:2001:KNG:C33	8:C:2001:KNG:C34	2.82	0.57
2:C:210:GLU:HG2	2:C:304:LEU:HD21	1.85	0.57
3:D:1281:VAL:HG23	3:D:1317:ASP:O	2.04	0.57
2:C:1006:HIS:HB2	2:C:1024:LYS:HG3	1.87	0.57
1:B:58:ILE:CD1	1:B:140:MET:HE1	2.35	0.57
3:D:1093:TYR:OH	3:D:1441:GLN:NE2	2.37	0.57
1:B:46:SER:O	1:B:148:VAL:HG22	2.04	0.57
2:C:605:LYS:HE2	2:C:610:ARG:NH2	2.19	0.57
2:C:808:ARG:NH2	5:F:305:GLU:OE2	2.38	0.57
5:F:368:VAL:HG22	5:F:397:ILE:HD11	1.86	0.57
1:A:110:LYS:HD3	1:A:128:HIS:HA	1.87	0.57
2:C:259:GLY:HA3	2:C:266:ARG:HH11	1.70	0.57
3:D:401:TYR:HB3	3:D:427:VAL:CG2	2.34	0.57
1:B:58:ILE:HG12	1:B:140:MET:CB	2.34	0.57
2:C:200:LEU:HD13	2:C:300:ASP:CB	2.35	0.57
3:D:1048:PRO:HG3	3:D:1075:HIS:ND1	2.20	0.57
4:E:48:MET:N	4:E:55:PHE:O	2.33	0.57
3:D:260:GLU:OE1	3:D:273:ARG:NH1	2.36	0.56
2:C:1070:ILE:HG21	3:D:655:PRO:HB2	1.87	0.56
2:C:235:LEU:HD21	2:C:254:VAL:HG22	1.86	0.56
3:D:684:LYS:O	3:D:687:VAL:HG12	2.04	0.56
4:E:33:HIS:CD2	4:E:89:MET:HB3	2.41	0.56

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:390:GLN:HE21	2:C:414:GLY:HA2	1.69	0.56
1:A:100:LEU:CD2	1:A:141:GLU:HG2	2.36	0.56
2:C:805:ARG:HG3	2:C:823:VAL:HG22	1.88	0.56
1:A:11:PHE:O	1:B:228:PRO:HA	2.06	0.56
5:F:420:ASP:OD2	5:F:420:ASP:N	2.37	0.56
4:E:50:THR:HG22	4:E:53:GLY:H	1.71	0.55
2:C:163:ILE:HG23	2:C:171:TRP:NE1	2.21	0.55
2:C:195:LEU:CD2	2:C:241:LEU:HD12	2.35	0.55
2:C:279:GLU:OE2	2:C:279:GLU:HA	2.06	0.55
3:D:181:ASP:HB2	3:D:205:TYR:HD1	1.65	0.55
2:C:179:ASN:OD1	2:C:181:VAL:HG12	2.05	0.55
3:D:238:PRO:HD3	3:D:318:ARG:CG	2.33	0.55
3:D:530:VAL:HG22	3:D:534:ARG:O	2.07	0.55
3:D:658:LEU:HD23	3:D:661:MET:HE3	1.86	0.55
1:A:215:VAL:HG13	1:B:222:LEU:HD22	1.87	0.55
2:C:35:PRO:HG2	2:C:38:LYS:HD3	1.88	0.55
2:C:766:GLU:O	2:C:768:THR:N	2.40	0.55
2:C:726:ILE:HD11	2:C:757:GLY:HA3	1.87	0.55
2:C:452:ILE:HG21	8:C:2001:KNG:O10	2.06	0.55
2:C:937:ASP:OD1	2:C:939:ARG:HD3	2.06	0.55
3:D:689:ASP:OD2	4:E:51:LEU:HD11	2.07	0.55
5:F:156:VAL:O	5:F:160:ASP:HB2	2.06	0.55
1:B:188:GLN:CG	3:D:685:ASP:OD2	2.51	0.55
2:C:470:PRO:HB2	2:C:534:VAL:HG21	1.87	0.55
3:D:816:HIS:CG	3:D:836:VAL:HG11	2.42	0.55
2:C:905:ILE:HD12	2:C:905:ILE:O	2.07	0.55
2:C:521:PRO:HG2	3:D:1053:PHE:HZ	1.72	0.55
2:C:853:LEU:HB2	2:C:858:MET:HE2	1.87	0.54
2:C:862:PRO:HA	2:C:975:TYR:CE2	2.43	0.54
3:D:654:LYS:HB3	3:D:655:PRO:HD3	1.88	0.54
4:E:32:ARG:O	4:E:95:VAL:HG13	2.07	0.54
5:F:120:THR:HG22	5:F:122:LEU:HD13	1.90	0.54
2:C:239:PHE:CD2	2:C:253:ALA:HA	2.43	0.54
2:C:954:THR:HG23	2:C:965:GLU:OE2	2.07	0.54
3:D:1493:LYS:O	3:D:1497:GLU:HG2	2.08	0.54
2:C:1056:LYS:HE2	3:D:751:LEU:HG	1.89	0.54
3:D:661:MET:CE	3:D:673:ALA:HB1	2.38	0.54
2:C:499:ALA:HB2	2:C:533:ASP:HB2	1.90	0.54
5:F:167:PRO:HG2	5:F:170:HIS:HB2	1.90	0.54
1:B:80:LEU:HB3	3:D:867:ARG:NH1	2.23	0.54
2:C:261:ILE:HG22	2:C:262:ALA:N	2.23	0.54

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:319:ALA:HB1	3:D:335:LEU:HD22	1.90	0.54
3:D:1137:ARG:O	3:D:1141:GLU:HG3	2.07	0.54
2:C:243:ARG:HH22	7:H:10:DA:H61	1.55	0.54
1:A:57:TYR:CG	1:A:161:ARG:HD2	2.43	0.54
3:D:175:VAL:CG1	3:D:193:PRO:HD2	2.38	0.54
4:E:37:ASN:HD22	4:E:89:MET:CE	2.20	0.54
2:C:359:MET:HG2	2:C:372:LEU:HD21	1.90	0.53
2:C:440:PRO:HB2	3:D:1074:SER:OG	2.08	0.53
3:D:242:LEU:HB3	3:D:311:LEU:HD12	1.89	0.53
3:D:876:SER:OG	3:D:879:ARG:HG3	2.08	0.53
5:F:306:GLU:O	5:F:310:ILE:HG13	2.07	0.53
1:B:101:LEU:CD1	1:B:113:ASP:HB2	2.38	0.53
2:C:304:LEU:HB3	2:C:305:PRO:HD3	1.90	0.53
3:D:1101:VAL:HG13	3:D:1102:THR:HG23	1.91	0.53
5:F:386:VAL:CG1	5:F:397:ILE:HG12	2.39	0.53
2:C:390:GLN:NE2	2:C:414:GLY:HA2	2.24	0.53
1:B:57:TYR:HE1	1:B:163:ASN:HB2	1.73	0.53
2:C:111:ASP:OD2	2:C:112:GLU:N	2.42	0.53
2:C:943:VAL:HG11	2:C:973:VAL:HG22	1.89	0.53
2:C:999:HIS:HB3	2:C:1004:LYS:HZ2	1.73	0.53
4:E:36:LYS:HG3	4:E:93:TYR:HB3	1.90	0.53
1:B:136:GLY:C	1:B:137:ARG:HG3	2.28	0.53
2:C:259:GLY:CA	2:C:266:ARG:HD3	2.39	0.53
3:D:1042:ARG:HG2	3:D:1045:MET:HE2	1.89	0.53
3:D:34:TYR:HD1	5:F:310:ILE:HG22	1.72	0.53
3:D:1099:VAL:O	3:D:1103:HIS:HB3	2.09	0.53
1:A:6:LEU:HD13	1:A:7:LYS:H	1.74	0.53
1:B:47:SER:HA	1:B:148:VAL:HG21	1.91	0.53
2:C:1070:ILE:CG2	3:D:655:PRO:HB2	2.39	0.53
3:D:231:VAL:HG13	3:D:242:LEU:O	2.09	0.53
3:D:483:HIS:CG	3:D:484:PRO:HD2	2.43	0.53
3:D:487:ALA:O	3:D:491:LYS:HG2	2.09	0.53
2:C:598:GLU:O	2:C:651:LYS:HG3	2.09	0.52
2:C:922:PHE:CE2	2:C:964:LYS:HB2	2.44	0.52
3:D:711:LEU:HD13	3:D:778:LEU:CD2	2.39	0.52
3:D:840:LYS:HE3	3:D:841:TYR:OH	2.09	0.52
5:F:154:LYS:O	5:F:158:GLU:HG3	2.08	0.52
3:D:96:ALA:HB3	3:D:554:LEU:HD23	1.90	0.52
3:D:999:THR:O	3:D:1003:VAL:HG13	2.09	0.52
2:C:766:GLU:CB	2:C:767:PRO:CD	2.87	0.52
3:D:654:LYS:HD3	3:D:674:ARG:HH12	1.75	0.52

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:844:ALA:O	3:D:867:ARG:HB3	2.09	0.52
1:A:150:TYR:CE2	1:A:152:PRO:HG3	2.45	0.52
1:B:58:ILE:HG12	1:B:140:MET:HB2	1.92	0.52
2:C:135:VAL:HG23	2:C:395:LYS:HG3	1.91	0.52
2:C:784:ASP:OD2	2:C:784:ASP:N	2.37	0.52
2:C:243:ARG:HH12	7:H:10:DA:H61	1.57	0.52
3:D:288:MET:HG2	3:D:307:ALA:HB2	1.90	0.52
3:D:437:VAL:HG11	5:F:175:HIS:CD2	2.44	0.52
5:F:169:GLU:O	5:F:172:ARG:HG2	2.10	0.52
5:F:367:MET:HB3	5:F:390:PHE:HZ	1.75	0.52
1:B:58:ILE:HD11	1:B:140:MET:HE1	1.92	0.52
3:D:485:SER:HB3	3:D:488:ARG:HB2	1.91	0.52
5:F:377:ASP:OD2	5:F:381:HIS:HE1	1.93	0.52
2:C:211:LEU:HD23	2:C:311:PHE:HD2	1.74	0.52
5:F:368:VAL:HG21	5:F:400:ILE:CD1	2.40	0.52
6:G:3:DT:H2 <sup>?</sup>	6:G:4:DG:C8	2.45	0.52
3:D:134:VAL:CG2	3:D:151:GLN:H	2.21	0.52
3:D:645:PRO:HB3	3:D:723:GLY:O	2.10	0.52
3:D:1493:LYS:NZ	3:D:1493:LYS:HA	2.25	0.52
3:D:103:TRP:HB3	3:D:1448:THR:CG2	2.40	0.51
3:D:398:ALA:HA	3:D:446:VAL:O	2.10	0.51
3:D:1313:VAL:HG11	3:D:1319:VAL:HG11	1.91	0.51
2:C:172:ILE:HG13	2:C:186:VAL:HG22	1.92	0.51
2:C:405:ARG:HD2	2:C:566:THR:OG1	2.11	0.51
3:D:227:LEU:HD13	3:D:331:VAL:HG22	1.92	0.51
6:G:4:DG:H2 <sup>?</sup>	6:G:5:DC:OP2	2.10	0.51
1:A:229:GLN:HB3	1:B:11:PHE:O	2.10	0.51
2:C:757:GLY:HA2	2:C:789:SER:OG	2.09	0.51
3:D:140:ALA:HA	3:D:450:TYR:CE2	2.46	0.51
3:D:215:TYR:O	3:D:340:THR:HA	2.11	0.51
3:D:396:VAL:HG12	3:D:397:LYS:N	2.26	0.51
3:D:474:GLU:OE2	3:D:1388:ARG:NH1	2.43	0.51
3:D:945:SER:OG	3:D:947:ILE:HG12	2.10	0.51
2:C:1058:ASP:OD2	3:D:621:LYS:HE3	2.10	0.51
3:D:556:LYS:HD3	5:F:218:GLN:OE1	2.10	0.51
3:D:949:ILE:HD11	3:D:1023:MET:CE	2.40	0.51
1:B:128:HIS:CD2	1:B:129:ILE:N	2.78	0.51
2:C:11:GLU:HG2	2:C:535:SER:HB2	1.93	0.51
2:C:501:THR:HG21	2:C:513:VAL:CG2	2.32	0.51
3:D:211:VAL:HG22	3:D:387:LEU:HD12	1.92	0.51
1:A:128:HIS:HD2	1:A:129:ILE:N	2.09	0.51

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:136:ILE:CB	2:C:336:VAL:HG13	2.38	0.51
3:D:1313:VAL:HG11	3:D:1319:VAL:CG1	2.40	0.51
5:F:364:ARG:HH22	5:F:396:ARG:NH2	2.09	0.51
3:D:50:PHE:CD2	3:D:522:PRO:HD3	2.45	0.51
3:D:704:ARG:HB2	3:D:745:MET:HG2	1.91	0.51
1:B:104:GLU:OE1	1:B:137:ARG:NH1	2.44	0.51
3:D:275:GLU:O	3:D:276:ASP:HB3	2.11	0.51
1:B:94:LEU:HD12	1:B:96:THR:H	1.76	0.51
8:C:2001:KNG:C38	8:C:2001:KNG:O13	2.59	0.51
2:C:978:ARG:HG3	2:C:978:ARG:NH1	2.21	0.50
2:C:999:HIS:HB3	2:C:1004:LYS:NZ	2.26	0.50
3:D:654:LYS:HD3	3:D:674:ARG:NH1	2.26	0.50
2:C:684:PHE:HE1	3:D:783:ARG:HB2	1.76	0.50
3:D:1379:VAL:HG21	3:D:1400:VAL:HG11	1.93	0.50
4:E:50:THR:HG23	4:E:52:GLU:H	1.77	0.50
1:A:57:TYR:CD1	1:A:161:ARG:HD2	2.46	0.50
1:B:108:GLU:HG2	1:B:131:THR:HG22	1.94	0.50
2:C:926:PHE:HE1	2:C:929:ARG:HH21	1.60	0.50
4:E:54:LEU:O	4:E:55:PHE:HD1	1.93	0.50
2:C:312:ALA:CB	2:C:320:HIS:CE1	2.95	0.50
3:D:175:VAL:HG13	3:D:193:PRO:HG2	1.94	0.50
3:D:262:LYS:CE	3:D:341:GLU:OE2	2.59	0.50
3:D:343:LYS:HD3	3:D:345:TYR:OH	2.11	0.50
3:D:407:VAL:HA	3:D:422:ALA:CB	2.41	0.50
3:D:432:TYR:O	3:D:448:GLU:HA	2.12	0.50
4:E:95:VAL:HG12	4:E:95:VAL:O	2.11	0.50
1:A:133:GLU:HG2	1:A:134:GLU:N	2.27	0.50
2:C:64:LEU:HD22	2:C:100:LEU:HD11	1.93	0.50
2:C:221:LEU:CD2	2:C:307:LEU:HD21	2.41	0.50
1:A:185:ARG:HH21	1:A:188:GLN:HA	1.75	0.50
1:B:58:ILE:HG12	1:B:140:MET:HB3	1.93	0.50
2:C:352:ALA:HB1	2:C:356:ARG:NH2	2.25	0.50
3:D:134:VAL:HG21	3:D:148:GLU:O	2.11	0.50
3:D:1486:VAL:CG2	4:E:22:VAL:HG13	2.42	0.50
5:F:372:ARG:NH2	5:F:381:HIS:O	2.45	0.50
2:C:396:ASP:HA	2:C:633:GLN:HE22	1.75	0.50
2:C:578:VAL:HG23	2:C:671:ASN:CG	2.33	0.50
1:B:90:LEU:N	1:B:90:LEU:HD22	2.27	0.49
1:B:57:TYR:O	1:B:140:MET:HA	2.12	0.49
3:D:1036:ARG:O	3:D:1040:GLY:N	2.45	0.49
3:D:1211:MET:SD	4:E:16:LYS:HE3	2.52	0.49

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:134:LYS:HG3	5:F:178:ARG:NH2	2.27	0.49
1:B:44:LEU:HD13	1:B:199:ILE:HD13	1.94	0.49
2:C:211:LEU:HD21	2:C:307:LEU:HG	1.93	0.49
3:D:236:TYR:CD2	3:D:322:VAL:HG21	2.48	0.49
2:C:150:PRO:CD	2:C:322:VAL:HG11	2.42	0.49
2:C:214:TYR:HB3	2:C:217:LEU:HD12	1.93	0.49
2:C:740:GLU:HB3	2:C:805:ARG:NH1	2.28	0.49
3:D:1312:LEU:HD21	3:D:1327:ARG:HG2	1.95	0.49
5:F:374:GLY:C	5:F:376:ILE:H	2.15	0.49
1:A:228:PRO:HA	1:B:11:PHE:CD2	2.47	0.49
2:C:774:LEU:HD11	2:C:778:PHE:HE2	1.77	0.49
5:F:383:LEU:HD12	5:F:394:ARG:NH2	2.28	0.49
1:B:47:SER:C	1:B:148:VAL:CG2	2.81	0.49
1:B:57:TYR:CG	1:B:161:ARG:HD2	2.48	0.49
2:C:44:ILE:HD11	2:C:71:TYR:CZ	2.48	0.49
3:D:65:ARG:CB	5:F:377:ASP:CA	2.87	0.49
3:D:134:VAL:HG22	3:D:151:GLN:N	2.26	0.49
3:D:1479:ASP:OD1	3:D:1482:ARG:NE	2.38	0.49
5:F:155:THR:O	5:F:159:ILE:HG12	2.12	0.49
2:C:1019:GLN:HE22	3:D:617:ASN:CA	2.26	0.49
2:C:1051:GLU:HB3	2:C:1056:LYS:HE3	1.95	0.49
3:D:828:LYS:HA	3:D:832:ARG:O	2.12	0.49
7:H:21:DA:H5'	7:H:21:DA:C8	2.48	0.49
2:C:177:GLU:HB3	2:C:179:ASN:ND2	2.27	0.48
2:C:513:VAL:HG12	2:C:524:VAL:O	2.13	0.48
3:D:208:PRO:HG2	3:D:353:VAL:HG21	1.95	0.48
1:B:212:ASN:O	1:B:215:VAL:HG22	2.13	0.48
2:C:874:LEU:HD23	3:D:1023:MET:SD	2.54	0.48
3:D:1122:LEU:HD13	3:D:1178:ALA:HB2	1.95	0.48
1:B:185:ARG:NH1	3:D:692:GLU:OE2	2.46	0.48
2:C:716:LYS:HD2	3:D:37:LEU:HD12	1.95	0.48
3:D:1283:ILE:HG12	3:D:1315:ASP:CG	2.32	0.48
1:A:220:GLU:O	1:A:223:THR:HB	2.14	0.48
2:C:351:LEU:HD12	2:C:375:SER:HA	1.95	0.48
2:C:802:ARG:HB2	2:C:826:TYR:HB2	1.94	0.48
3:D:1040:GLY:O	3:D:1060:SER:HB3	2.12	0.48
3:D:1288:GLU:O	3:D:1307:LYS:HE3	2.12	0.48
1:A:97:VAL:HG12	1:A:99:LEU:HD12	1.96	0.48
2:C:302:VAL:O	2:C:305:PRO:HD2	2.13	0.48
2:C:727:PRO:HB2	2:C:728:HIS:HD2	1.79	0.48
3:D:155:ASP:OD1	3:D:159:ARG:NH2	2.46	0.48

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:376:ILE:HG22	5:F:377:ASP:N	2.28	0.48
1:A:39:PRO:HG3	1:B:39:PRO:HG3	1.96	0.48
3:D:643:GLY:HA3	3:D:727:GLN:HB2	1.95	0.48
3:D:841:TYR:HB2	3:D:864:VAL:HG22	1.95	0.48
4:E:33:HIS:HD2	4:E:89:MET:HE1	1.78	0.48
5:F:120:THR:HG21	5:F:122:LEU:HD22	1.95	0.48
5:F:368:VAL:HG21	5:F:400:ILE:HD11	1.95	0.48
1:A:64:GLU:HG2	1:A:76:VAL:HG22	1.96	0.48
1:B:101:LEU:HB2	1:B:114:PHE:CD1	2.49	0.48
2:C:769:PRO:CB	5:F:375:LEU:HA	2.43	0.48
3:D:103:TRP:HB3	3:D:1448:THR:HG21	1.96	0.48
3:D:298:VAL:HA	3:D:302:GLN:OE1	2.14	0.48
3:D:485:SER:HG	6:G:3:DT:P	2.30	0.48
3:D:959:GLU:N	3:D:959:GLU:OE1	2.44	0.48
1:B:90:LEU:HD21	1:B:121:GLU:HB2	1.94	0.48
1:B:216:GLU:OE1	1:B:219:ARG:NH2	2.47	0.48
2:C:290:LEU:O	2:C:301:GLU:HB2	2.14	0.48
2:C:425:PHE:CE2	3:D:1086:LEU:HD12	2.49	0.48
3:D:566:ILE:HD11	5:F:192:LEU:HD21	1.96	0.48
5:F:377:ASP:OD2	5:F:379:ARG:HG2	2.13	0.48
2:C:21:ILE:HD12	2:C:455:LEU:HD22	1.96	0.48
2:C:419:THR:HG22	2:C:420:ARG:H	1.78	0.48
2:C:910:LYS:HD3	2:C:910:LYS:HA	1.54	0.48
2:C:359:MET:CG	2:C:372:LEU:HD21	2.43	0.47
3:D:1011:PHE:CE1	3:D:1018:ASN:ND2	2.82	0.47
3:D:1217:ILE:HD12	3:D:1480:PHE:CE2	2.48	0.47
3:D:1495:ILE:CG1	4:E:88:GLU:HG3	2.42	0.47
2:C:462:ASP:HB3	2:C:468:ARG:HD2	1.96	0.47
2:C:769:PRO:HG3	5:F:378:GLY:HA2	1.96	0.47
2:C:76:PRO:HG3	2:C:120:LEU:CD1	2.45	0.47
2:C:439:CYS:HB2	2:C:541:SER:HB3	1.95	0.47
2:C:464:LEU:HD12	2:C:464:LEU:HA	1.68	0.47
3:D:480:GLU:CG	3:D:492:ALA:HB2	2.44	0.47
3:D:1272:ALA:HA	3:D:1326:THR:HB	1.97	0.47
5:F:123:ASP:HB3	5:F:126:LEU:HB3	1.96	0.47
5:F:289:GLU:HG3	5:F:301:ALA:HB2	1.96	0.47
5:F:401:GLU:HG2	5:F:405:LEU:HD13	1.94	0.47
2:C:422:ARG:HD2	7:H:16:DC:C5	2.48	0.47
3:D:319:ALA:HB1	3:D:335:LEU:CD2	2.44	0.47
1:B:138:LEU:HD11	1:B:140:MET:HE2	1.97	0.47
2:C:144:PRO:HG2	2:C:165:LEU:HD23	1.96	0.47

*Continued on next page...*

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:202:TYR:HD2	2:C:207:LEU:HD21	1.78	0.47
1:B:94:LEU:HD11	1:B:96:THR:O	2.14	0.47
3:D:262:LYS:NZ	3:D:341:GLU:OE2	2.47	0.47
2:C:577:PRO:HB3	2:C:993:PHE:CG	2.50	0.47
3:D:1042:ARG:HB3	3:D:1057:VAL:HB	1.96	0.47
3:D:1140:ILE:CG2	3:D:1144:LEU:HD12	2.45	0.47
3:D:1336:LEU:HB2	3:D:1344:VAL:HG21	1.96	0.47
1:A:89:PHE:HB2	1:A:146:ARG:NH2	2.29	0.47
2:C:595:LEU:HD11	2:C:623:TYR:HB3	1.97	0.47
3:D:50:PHE:CG	3:D:522:PRO:HD3	2.50	0.47
3:D:586:ARG:NH1	6:G:10:DG:OP1	2.44	0.47
3:D:1087:ARG:HD2	3:D:1236:LEU:O	2.15	0.47
3:D:1261:GLU:OE1	3:D:1268:PRO:HA	2.14	0.47
1:A:39:PRO:HG3	1:B:39:PRO:CG	2.45	0.47
2:C:89:THR:O	2:C:91:GLN:HG2	2.15	0.47
3:D:806:PHE:HD1	3:D:811:GLU:HB3	1.79	0.47
3:D:890:VAL:HB	3:D:922:LEU:HD13	1.97	0.47
3:D:1459:LEU:HD23	3:D:1464:GLU:HB3	1.96	0.47
2:C:769:PRO:HB3	5:F:374:GLY:C	2.35	0.47
2:C:1067:TYR:CZ	5:F:342:VAL:HG22	2.49	0.47
3:D:191:LEU:HD11	3:D:197:SER:HB2	1.97	0.47
3:D:438:ASP:OD1	3:D:441:ARG:NH2	2.47	0.47
3:D:483:HIS:ND1	3:D:488:ARG:HD3	2.29	0.47
3:D:816:HIS:CB	3:D:836:VAL:HG11	2.45	0.47
1:A:180:GLN:NE2	2:C:935:GLY:O	2.48	0.46
2:C:158:TYR:CE2	2:C:313:LEU:HG	2.50	0.46
3:D:5:VAL:O	3:D:1470:ARG:NH2	2.46	0.46
3:D:224:ARG:HA	3:D:331:VAL:O	2.16	0.46
3:D:316:GLN:OE1	3:D:340:THR:OG1	2.30	0.46
3:D:662:GLU:HG3	3:D:669:ASN:HA	1.96	0.46
3:D:1277:ILE:HD13	3:D:1299:PHE:CE1	2.50	0.46
2:C:922:PHE:CD2	2:C:964:LYS:HD2	2.50	0.46
3:D:34:TYR:CE2	3:D:35:ARG:HG3	2.49	0.46
2:C:170:PRO:HD2	2:C:267:TYR:CE1	2.50	0.46
3:D:236:TYR:CZ	3:D:242:LEU:HD12	2.51	0.46
3:D:576:GLU:OE2	5:F:80:PRO:HG3	2.15	0.46
7:H:22:DT:H2"	7:H:23:DG:C8	2.50	0.46
2:C:177:GLU:HG3	2:C:178:PRO:HD2	1.97	0.46
2:C:237:ARG:O	2:C:240:THR:OG1	2.31	0.46
2:C:716:LYS:HE3	3:D:35:ARG:O	2.16	0.46
3:D:59:ALA:HB2	3:D:78:VAL:HG21	1.98	0.46

Continued on next page...

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:201:LYS:HZ1	5:F:244:ARG:HH22	1.64	0.46
3:D:266:GLU:OE2	3:D:315:ARG:HG3	2.15	0.46
3:D:1208:ASP:OD1	3:D:1208:ASP:C	2.54	0.46
5:F:207:LEU:HD23	5:F:207:LEU:HA	1.68	0.46
2:C:3:ILE:CD1	2:C:900:ARG:HB2	2.45	0.46
2:C:421:GLU:OE2	2:C:421:GLU:N	2.41	0.46
2:C:473:ARG:HG3	2:C:474:VAL:N	2.31	0.46
3:D:316:GLN:O	3:D:316:GLN:HG3	2.14	0.46
5:F:164:LYS:HA	5:F:171:LYS:HE3	1.98	0.46
2:C:260:LEU:O	2:C:261:ILE:HD12	2.15	0.46
3:D:311:LEU:HD12	3:D:311:LEU:O	2.15	0.46
7:H:23:DG:O5'	7:H:23:DG:H2'	2.14	0.46
1:B:197:LEU:HD22	1:B:199:ILE:HD11	1.97	0.46
2:C:205:GLU:O	2:C:209:ARG:HG2	2.16	0.46
2:C:586:ARG:HD2	2:C:586:ARG:HA	1.74	0.46
2:C:607:ASP:HB3	2:C:610:ARG:H	1.81	0.46
3:D:288:MET:HE2	3:D:305:ALA:HB3	1.97	0.46
3:D:1402:ALA:O	3:D:1405:GLU:HG2	2.16	0.46
2:C:127:PHE:O	2:C:133:ASP:HA	2.16	0.46
2:C:682:TYR:CE1	3:D:635:PRO:HD2	2.50	0.46
2:C:838:LYS:HE3	3:D:741:ASP:O	2.16	0.46
3:D:731:LEU:CD1	3:D:931:LEU:HB3	2.45	0.46
2:C:53:PRO:HB3	2:C:67:ASP:OD1	2.15	0.46
2:C:55:GLU:O	2:C:359:MET:HE1	2.16	0.46
2:C:185:LYS:HA	2:C:189:ARG:O	2.15	0.46
3:D:394:LEU:HG	3:D:396:VAL:HG23	1.98	0.46
3:D:356:PRO:HB3	3:D:441:ARG:HA	1.98	0.45
2:C:211:LEU:HD23	2:C:311:PHE:CE2	2.52	0.45
2:C:513:VAL:HG13	2:C:524:VAL:HG23	1.99	0.45
1:B:132:LEU:HD21	1:B:138:LEU:HB2	1.97	0.45
3:D:1490:LYS:HD3	4:E:93:TYR:OH	2.17	0.45
5:F:147:LEU:CD2	5:F:151:LEU:HD22	2.46	0.45
2:C:1102:LEU:HD23	2:C:1108:PRO:HA	1.98	0.45
3:D:34:TYR:HD1	5:F:310:ILE:CG2	2.30	0.45
3:D:1283:ILE:HD13	3:D:1315:ASP:HB2	1.98	0.45
6:G:3:DT:H6	6:G:3:DT:O5'	1.98	0.45
1:A:104:GLU:HA	1:A:136:GLY:O	2.16	0.45
1:A:198:ARG:HD3	2:C:934:PHE:CE1	2.51	0.45
2:C:150:PRO:HD3	2:C:322:VAL:CG1	2.44	0.45
2:C:911:GLU:O	2:C:915:LYS:HG2	2.16	0.45
3:D:93:ILE:HD13	3:D:548:ILE:HG12	1.99	0.45

*Continued on next page...*

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:664:LYS:CE	3:D:693:GLU:OE1	2.65	0.45
3:D:875:THR:HG23	3:D:876:SER:N	2.31	0.45
1:A:99:LEU:HB3	1:A:114:PHE:CD2	2.52	0.45
2:C:617:ASP:HB2	2:C:619:ARG:HG2	1.99	0.45
3:D:236:TYR:HD2	3:D:322:VAL:HG21	1.82	0.45
3:D:417:PRO:HA	3:D:429:SER:O	2.17	0.45
3:D:419:ASP:O	3:D:421:LEU:HD13	2.17	0.45
3:D:1191:PRO:HD2	3:D:1369:GLU:OE1	2.17	0.45
2:C:150:PRO:HG3	2:C:322:VAL:HG11	1.99	0.45
2:C:776:SER:HB2	5:F:373:LYS:NZ	2.32	0.45
1:B:107:LYS:HE2	1:B:113:ASP:OD1	2.16	0.45
2:C:65:VAL:CG2	2:C:103:LYS:HE3	2.47	0.45
2:C:717:LEU:HD23	2:C:762:LYS:O	2.17	0.45
3:D:351:MET:HG2	3:D:370:ALA:CB	2.47	0.45
3:D:709:HIS:CD2	3:D:1231:GLU:HG3	2.52	0.45
2:C:405:ARG:CZ	2:C:409:ARG:NH1	2.79	0.45
3:D:662:GLU:OE2	3:D:670:VAL:HG23	2.17	0.45
3:D:1353:GLN:HG2	3:D:1368:ILE:HD12	1.99	0.45
2:C:65:VAL:HG21	2:C:103:LYS:HE3	1.98	0.45
2:C:99:GLN:OE1	2:C:101:ILE:HD11	2.16	0.45
2:C:158:TYR:CD2	2:C:313:LEU:HG	2.51	0.45
2:C:774:LEU:HD21	5:F:421:PHE:HB2	1.99	0.45
3:D:396:VAL:CG1	3:D:447:VAL:HG13	2.47	0.45
5:F:279:GLN:HG3	5:F:280:GLN:N	2.31	0.45
3:D:684:LYS:HE2	3:D:684:LYS:HB3	1.61	0.44
3:D:741:ASP:OD1	3:D:743:ASP:OD1	2.35	0.44
1:A:101:LEU:HD11	1:A:109:VAL:CG1	2.47	0.44
1:A:168:ASP:OD2	2:C:832:LYS:NZ	2.36	0.44
2:C:595:LEU:HD22	2:C:655:LEU:HB2	1.99	0.44
2:C:1116:ALA:HB2	3:D:88:TYR:HB3	1.99	0.44
3:D:771:SER:HA	3:D:778:LEU:HD22	1.97	0.44
3:D:29:PRO:HG3	3:D:549:ASN:OD1	2.17	0.44
3:D:45:PHE:O	3:D:86:ARG:NH2	2.50	0.44
1:B:220:GLU:O	1:B:223:THR:OG1	2.23	0.44
2:C:191:PHE:HB2	2:C:192:PRO:HD2	1.98	0.44
2:C:536:PRO:HB2	2:C:905:ILE:HD13	1.99	0.44
3:D:972:LEU:HD23	3:D:972:LEU:HA	1.60	0.44
1:B:24:VAL:HA	1:B:195:LEU:O	2.17	0.44
2:C:170:PRO:HD2	2:C:267:TYR:HE1	1.83	0.44
2:C:211:LEU:HD22	2:C:221:LEU:HD22	2.00	0.44
3:D:288:MET:HE2	3:D:305:ALA:CB	2.48	0.44

Continued on next page...

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:534:ARG:HD2	5:F:312:GLN:OE1	2.18	0.44
2:C:138:SER:HB3	2:C:333:ILE:CG2	2.48	0.44
2:C:740:GLU:HB3	2:C:805:ARG:HH12	1.83	0.44
2:C:807:ARG:HG3	2:C:821:GLU:HB3	1.98	0.44
3:D:204:LEU:HD22	3:D:441:ARG:NH1	2.33	0.44
3:D:1031:ASN:O	3:D:1035:ILE:HG12	2.18	0.44
4:E:54:LEU:O	4:E:55:PHE:CD1	2.69	0.44
5:F:377:ASP:OD2	5:F:381:HIS:CE1	2.71	0.44
1:B:6:LEU:HD23	1:B:7:LYS:HG3	2.00	0.44
3:D:66:GLN:C	3:D:68:PHE:H	2.20	0.44
3:D:129:PHE:CZ	3:D:571:LYS:HB3	2.53	0.44
3:D:166:GLN:HB2	3:D:396:VAL:HG22	1.98	0.44
3:D:619:LEU:HD11	3:D:1439:SER:HB2	1.99	0.44
3:D:1102:THR:HG21	3:D:1371:VAL:HG22	1.99	0.44
2:C:374:ASN:OD1	2:C:376:ARG:HG2	2.18	0.44
2:C:944:LEU:HD22	2:C:962:GLN:HB3	2.00	0.44
3:D:671:LYS:HD3	5:F:420:ASP:O	2.18	0.44
3:D:1087:ARG:HG3	3:D:1256:LEU:CD2	2.47	0.44
1:A:196:THR:HG21	2:C:934:PHE:HE2	1.83	0.44
2:C:1021:LEU:HD22	5:F:331:ASP:O	2.18	0.44
8:C:2001:KNG:C18	8:C:2001:KNG:O09	2.66	0.44
3:D:1053:PHE:CE1	3:D:1055:VAL:HG23	2.53	0.43
1:B:80:LEU:HD23	1:B:80:LEU:HA	1.81	0.43
2:C:165:LEU:HD11	2:C:270:GLY:HA2	1.99	0.43
2:C:376:ARG:N	2:C:377:PRO:HD2	2.33	0.43
2:C:691:SER:HA	2:C:858:MET:CE	2.48	0.43
3:D:134:VAL:HG23	3:D:134:VAL:O	2.18	0.43
3:D:288:MET:CE	3:D:305:ALA:HB3	2.48	0.43
3:D:638:LYS:HA	3:D:638:LYS:HD3	1.82	0.43
5:F:373:LYS:HA	5:F:373:LYS:HD3	1.73	0.43
1:A:185:ARG:HB2	1:A:189:ARG:O	2.18	0.43
1:B:99:LEU:HB2	1:B:142:VAL:CG2	2.48	0.43
2:C:97:ARG:HE	2:C:97:ARG:HB3	1.57	0.43
2:C:154:ARG:HH12	2:C:178:PRO:HB3	1.82	0.43
2:C:805:ARG:NH2	2:C:821:GLU:OE1	2.49	0.43
3:D:563:PRO:HB3	5:F:189:GLU:CG	2.48	0.43
3:D:565:ILE:HG21	5:F:88:ILE:CD1	2.47	0.43
4:E:87:LYS:HD3	4:E:87:LYS:HA	1.64	0.43
5:F:153:PRO:HA	5:F:156:VAL:HG22	2.00	0.43
5:F:271:LEU:HD12	5:F:295:MET:SD	2.59	0.43
1:B:112:ARG:HG2	1:B:125:PRO:HB2	1.96	0.43

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:76:PRO:HG3	2:C:120:LEU:HD12	2.00	0.43
2:C:164:PRO:HD2	2:C:171:TRP:CD1	2.53	0.43
2:C:644:VAL:HG22	2:C:645:VAL:N	2.33	0.43
3:D:125:GLN:HB3	3:D:131:LYS:HB2	2.01	0.43
3:D:356:PRO:HG2	3:D:359:ALA:HB2	2.01	0.43
3:D:1018:ASN:OD1	3:D:1019:PRO:HD2	2.19	0.43
3:D:1068:LEU:HD12	3:D:1068:LEU:HA	1.85	0.43
3:D:1364:HIS:ND1	3:D:1366:LYS:HB2	2.33	0.43
2:C:214:TYR:CB	2:C:217:LEU:HD12	2.49	0.43
2:C:521:PRO:CG	3:D:1053:PHE:CZ	3.02	0.43
3:D:192:ALA:HB3	3:D:195:VAL:HB	2.00	0.43
3:D:468:LEU:HD23	3:D:468:LEU:HA	1.85	0.43
3:D:632:VAL:O	3:D:727:GLN:HA	2.19	0.43
3:D:1305:LEU:HD23	3:D:1305:LEU:N	2.33	0.43
3:D:1314:LYS:HD2	3:D:1314:LYS:N	2.27	0.43
2:C:522:VAL:HG13	2:C:524:VAL:HG13	2.00	0.43
3:D:230:TRP:CE3	3:D:331:VAL:HG21	2.54	0.43
3:D:1286:THR:HG22	3:D:1287:GLU:N	2.34	0.43
2:C:1009:SER:HB3	3:D:651:GLU:O	2.18	0.43
3:D:530:VAL:CG2	3:D:534:ARG:HB2	2.49	0.43
3:D:996:TRP:CD2	3:D:1056:PRO:HG3	2.54	0.43
5:F:193:ARG:HB3	7:H:7:DG:H5''	2.01	0.43
5:F:260:ILE:HG22	5:F:265:VAL:HG23	2.00	0.43
1:A:110:LYS:CD	1:A:128:HIS:HA	2.48	0.43
1:A:206:THR:HG1	1:A:209:GLU:HG3	1.83	0.43
1:B:110:LYS:C	1:B:129:ILE:HD13	2.39	0.43
2:C:87:ASP:HA	2:C:131:GLY:HA3	2.01	0.43
2:C:243:ARG:NH1	7:H:9:DG:O6	2.51	0.43
2:C:679:PHE:HA	3:D:943:THR:HG23	2.01	0.43
3:D:916:TYR:CE1	3:D:920:LEU:HD11	2.54	0.43
6:G:18:DA:H2'	6:G:19:DA:C8	2.54	0.43
2:C:769:PRO:HB3	5:F:375:LEU:N	2.34	0.43
3:D:154:THR:OG1	3:D:157:GLU:HG3	2.19	0.43
3:D:1042:ARG:HG2	3:D:1045:MET:CE	2.49	0.43
3:D:1347:TYR:CZ	3:D:1351:GLU:HG3	2.54	0.43
5:F:408:LEU:HD23	5:F:408:LEU:HA	1.79	0.43
6:G:8:DC:H2''	6:G:9:DA:C8	2.53	0.43
1:A:196:THR:HG21	2:C:934:PHE:CE2	2.54	0.42
2:C:139:GLN:HA	2:C:411:SER:O	2.19	0.42
2:C:327:HIS:CD2	2:C:433:THR:HG21	2.54	0.42
2:C:815:LEU:N	2:C:815:LEU:HD13	2.33	0.42

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1090:LYS:HE2	2:C:1112:PHE:CZ	2.54	0.42
3:D:114:THR:HG21	3:D:498:VAL:HG21	2.01	0.42
3:D:787:LEU:HD21	3:D:947:ILE:HG21	2.00	0.42
3:D:1003:VAL:O	3:D:1007:VAL:HG23	2.18	0.42
2:C:763:GLY:O	2:C:766:GLU:CB	2.67	0.42
3:D:205:TYR:CE2	3:D:390:PRO:HG3	2.53	0.42
3:D:553:ARG:HD3	5:F:214:GLN:HB3	2.01	0.42
3:D:610:LYS:HE2	3:D:610:LYS:HB2	1.91	0.42
3:D:780:LYS:HE3	3:D:912:LYS:HD3	2.02	0.42
4:E:83:ASP:OD1	4:E:83:ASP:N	2.52	0.42
5:F:88:ILE:HG23	5:F:193:ARG:HG2	2.01	0.42
5:F:237:THR:OG1	7:H:4:DA:H8	2.02	0.42
2:C:422:ARG:NH1	6:G:13:DC:O2	2.45	0.42
3:D:1028:ALA:O	3:D:1029:ARG:HG2	2.18	0.42
5:F:95:THR:HB	5:F:98:GLU:HG3	2.00	0.42
1:A:139:ASN:OD1	1:A:139:ASN:C	2.57	0.42
1:B:50:GLY:HA3	1:B:173:PRO:HD3	2.01	0.42
1:B:102:LYS:HE3	1:B:139:ASN:OD1	2.20	0.42
2:C:571:LEU:HD22	2:C:700:TYR:HA	2.00	0.42
2:C:841:ASN:ND2	2:C:845:ASN:HB3	2.34	0.42
3:D:277:GLU:OE1	3:D:277:GLU:CA	2.68	0.42
3:D:773:ALA:HA	3:D:1367:HIS:NE2	2.34	0.42
3:D:1088:THR:CG2	6:G:14:DC:C2	3.02	0.42
1:B:138:LEU:HD11	1:B:140:MET:CE	2.49	0.42
2:C:66:LEU:HD11	2:C:98:LEU:HB3	2.02	0.42
1:A:31:GLY:N	1:A:193:ASP:OD1	2.42	0.42
3:D:586:ARG:HH12	6:G:10:DG:H5 <sup>''</sup>	1.84	0.42
2:C:15:LEU:HD23	2:C:458:TYR:CZ	2.54	0.42
2:C:44:ILE:HD11	2:C:71:TYR:CE1	2.55	0.42
3:D:314:PRO:HD2	3:D:317:VAL:HG13	2.01	0.42
3:D:561:GLY:HA2	5:F:140:ARG:NH1	2.34	0.42
3:D:580:ALA:O	3:D:584:ASN:HB2	2.20	0.42
1:A:70:GLY:N	2:C:607:ASP:OD1	2.52	0.42
1:B:47:SER:CA	1:B:148:VAL:HG21	2.50	0.42
2:C:154:ARG:NH1	2:C:178:PRO:HB3	2.35	0.42
2:C:168:ARG:O	2:C:267:TYR:HA	2.20	0.42
2:C:769:PRO:HB2	5:F:375:LEU:HA	2.02	0.42
3:D:322:VAL:HG22	3:D:335:LEU:HD23	2.01	0.42
3:D:1314:LYS:O	3:D:1317:ASP:HB2	2.19	0.42
1:A:184:THR:O	1:A:192:LEU:HB2	2.20	0.42
1:A:193:ASP:OD2	2:C:938:LYS:HD2	2.19	0.42

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:247:PRO:HA	2:C:248:PRO:HD3	1.75	0.42
3:D:38:LYS:HA	3:D:38:LYS:HD3	1.82	0.42
3:D:1444:THR:O	3:D:1448:THR:HG23	2.20	0.42
2:C:182:VAL:CG1	2:C:221:LEU:CD1	2.97	0.42
2:C:964:LYS:O	2:C:968:LEU:HD13	2.20	0.42
3:D:162:ARG:O	3:D:449:SER:HB2	2.20	0.42
3:D:361:VAL:HG21	3:D:379:ALA:HB2	2.01	0.42
2:C:344:PHE:CD2	2:C:382:ILE:HD11	2.55	0.41
2:C:1019:GLN:HE22	3:D:617:ASN:HB3	1.82	0.41
3:D:557:LEU:HD13	3:D:566:ILE:HG22	2.01	0.41
3:D:816:HIS:HB2	3:D:836:VAL:HG11	2.02	0.41
1:B:97:VAL:HG12	1:B:99:LEU:HD12	2.01	0.41
3:D:147:VAL:HG21	3:D:161:LEU:CD2	2.43	0.41
3:D:553:ARG:HD2	3:D:570:GLU:OE2	2.20	0.41
3:D:719:VAL:O	3:D:721:VAL:HG13	2.20	0.41
3:D:949:ILE:HD11	3:D:1023:MET:HE1	2.02	0.41
4:E:36:LYS:HG2	4:E:93:TYR:HB3	2.02	0.41
2:C:394:PHE:O	8:C:2001:KNG:C32	2.68	0.41
2:C:1090:LYS:HA	2:C:1090:LYS:HD3	1.77	0.41
3:D:1277:ILE:CD1	3:D:1299:PHE:CE1	3.02	0.41
2:C:376:ARG:HE	5:F:276:ARG:HD3	1.85	0.41
3:D:175:VAL:CG1	3:D:193:PRO:HG2	2.50	0.41
4:E:50:THR:HG23	4:E:53:GLY:H	1.86	0.41
1:A:8:ALA:HA	1:A:9:PRO:HD3	1.86	0.41
2:C:195:LEU:HD23	2:C:241:LEU:HD12	2.02	0.41
2:C:605:LYS:HB2	2:C:612:VAL:HB	2.01	0.41
2:C:20:GLU:O	2:C:24:GLU:HB2	2.21	0.41
2:C:886:LEU:HD21	3:D:951:ILE:HG12	2.02	0.41
2:C:1057:SER:HB3	2:C:1058:ASP:H	1.49	0.41
3:D:405:ASP:HB3	3:D:423:ASP:OD1	2.21	0.41
2:C:422:ARG:HD2	7:H:16:DC:C6	2.56	0.41
3:D:206:ARG:HD2	3:D:206:ARG:HA	1.89	0.41
3:D:236:TYR:CE1	3:D:242:LEU:HD12	2.56	0.41
5:F:194:LEU:HB2	7:H:6:DT:C2	2.56	0.41
3:D:133:ILE:CG2	3:D:460:ALA:HB1	2.50	0.41
3:D:879:ARG:HD3	3:D:902:LEU:O	2.20	0.41
6:G:15:DC:H2'	6:G:16:DA:H8	1.79	0.41
1:A:128:HIS:CD2	1:A:129:ILE:N	2.88	0.41
1:B:56:VAL:HG21	1:B:82:LEU:CD1	2.46	0.41
2:C:211:LEU:HD12	2:C:211:LEU:N	2.35	0.41
2:C:344:PHE:HD2	2:C:382:ILE:HD11	1.86	0.41

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:438:ILE:CG2	2:C:453:THR:HB	2.51	0.41
3:D:139:GLY:O	3:D:141:ILE:HD12	2.20	0.41
3:D:149:LYS:O	3:D:150:ARG:HB2	2.21	0.41
3:D:474:GLU:HG3	3:D:496:LEU:HD11	2.01	0.41
3:D:561:GLY:HA2	5:F:140:ARG:HH11	1.85	0.41
3:D:1161:GLU:CD	3:D:1164:ARG:HB2	2.41	0.41
3:D:1165:TYR:HB3	3:D:1207:TYR:CE1	2.56	0.41
3:D:1459:LEU:CD2	3:D:1464:GLU:HB3	2.51	0.41
5:F:96:LEU:O	5:F:100:VAL:HG23	2.20	0.41
5:F:163:LEU:HD13	5:F:174:LEU:CD1	2.48	0.41
7:H:21:DA:H5'	7:H:21:DA:H8	1.85	0.41
1:B:101:LEU:HB2	1:B:114:PHE:CE1	2.56	0.41
2:C:155:PRO:O	2:C:157:ARG:N	2.54	0.41
2:C:708:TYR:HB3	2:C:790:LEU:HD21	2.03	0.41
3:D:1208:ASP:OD2	3:D:1211:MET:HE2	2.21	0.41
1:A:54:THR:HB	1:A:158:ILE:HD12	2.02	0.40
2:C:357:GLU:O	2:C:361:MET:HG2	2.21	0.40
3:D:618:LEU:HD13	3:D:618:LEU:HA	1.86	0.40
3:D:778:LEU:HD12	3:D:778:LEU:HA	1.79	0.40
3:D:1112:CYS:HB3	3:D:1196:THR:OG1	2.22	0.40
3:D:1339:LYS:HB3	3:D:1343:ALA:HB3	2.02	0.40
3:D:1364:HIS:CE1	3:D:1366:LYS:HB2	2.56	0.40
5:F:193:ARG:HB3	7:H:7:DG:C5'	2.52	0.40
5:F:397:ILE:CD1	5:F:400:ILE:HD11	2.47	0.40
1:B:91:ASN:HD21	1:B:93:SER:HB2	1.85	0.40
3:D:1154:GLU:HA	3:D:1158:VAL:O	2.21	0.40
4:E:46:PRO:HB2	4:E:57:ASP:HB3	2.03	0.40
5:F:188:ILE:HG12	5:F:224:VAL:HG21	2.03	0.40
1:A:30:ARG:NH2	3:D:855:HIS:HD2	2.19	0.40
1:B:64:GLU:HA	1:B:165:ILE:HD13	2.03	0.40
2:C:418:LEU:CD1	2:C:427:VAL:HG21	2.51	0.40
2:C:473:ARG:O	2:C:480:THR:HG23	2.21	0.40
3:D:875:THR:HG23	3:D:876:SER:O	2.20	0.40
2:C:189:ARG:NH2	2:C:244:PRO:CD	2.84	0.40
2:C:259:GLY:O	2:C:266:ARG:HB2	2.22	0.40
2:C:436:GLY:HA2	2:C:538:GLN:O	2.22	0.40
3:D:207:PHE:HA	3:D:208:PRO:HD2	1.96	0.40
3:D:544:TYR:O	3:D:548:ILE:HG13	2.22	0.40
3:D:786:ILE:HD13	3:D:908:LYS:HB2	2.03	0.40
1:A:27:PRO:HB2	1:A:192:LEU:HD13	2.04	0.40
2:C:946:ARG:NH2	3:D:859:ASP:HB3	2.37	0.40

*Continued on next page...*

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:231:VAL:O	3:D:231:VAL:HG22	2.22	0.40
3:D:244:GLU:HG3	3:D:310:LEU:HG	2.03	0.40
3:D:1237:THR:HG23	3:D:1359:GLN:NE2	2.37	0.40
4:E:45:ARG:NH1	4:E:56:ASP:OD2	2.54	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:34:TYR:OH	3:D:327:GLU:OE1[4_1359]	1.95	0.25
3:D:1287:GLU:OE1	5:F:302:LYS:NZ[3_445]	2.03	0.17

## 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	225/315 (71%)	222 (99%)	3 (1%)	0	100	100
1	B	221/315 (70%)	217 (98%)	4 (2%)	0	100	100
2	C	1108/1119 (99%)	1080 (98%)	22 (2%)	6 (0%)	29	68
3	D	1481/1524 (97%)	1444 (98%)	34 (2%)	3 (0%)	47	82
4	E	92/99 (93%)	89 (97%)	2 (2%)	1 (1%)	14	50
5	F	344/423 (81%)	337 (98%)	5 (2%)	2 (1%)	25	64
All	All	3471/3795 (92%)	3389 (98%)	70 (2%)	12 (0%)	41	76

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	C	766	GLU
2	C	156	GLY
5	F	322	GLY

Continued on next page...

*Continued from previous page...*

Mol	Chain	Res	Type
2	C	477	GLY
3	D	276	ASP
5	F	375	LEU
2	C	767	PRO
2	C	155	PRO
4	E	94	PRO
3	D	207	PHE
2	C	476	GLY
3	D	530	VAL

### 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	199/273 (73%)	194 (98%)	5 (2%)	47	79
1	B	196/273 (72%)	194 (99%)	2 (1%)	76	91
2	C	922/941 (98%)	887 (96%)	35 (4%)	33	69
3	D	1233/1279 (96%)	1184 (96%)	49 (4%)	31	68
4	E	83/88 (94%)	83 (100%)	0	100	100
5	F	297/370 (80%)	288 (97%)	9 (3%)	41	75
All	All	2930/3224 (91%)	2830 (97%)	100 (3%)	37	72

All (100) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	LEU
1	A	126	ASP
1	A	142	VAL
1	A	184	THR
1	A	189	ARG
1	B	6	LEU
1	B	34	VAL
2	C	81	ASP
2	C	97	ARG

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	133	ASP
2	C	141	HIS
2	C	168	ARG
2	C	177	GLU
2	C	251	ASP
2	C	322	VAL
2	C	342	ASP
2	C	372	LEU
2	C	434	HIS
2	C	454	SER
2	C	464	LEU
2	C	557	ARG
2	C	575	GLN
2	C	583	LEU
2	C	586	ARG
2	C	592	LEU
2	C	610	ARG
2	C	617	ASP
2	C	638	ASP
2	C	640	ARG
2	C	648	ARG
2	C	670	GLN
2	C	784	ASP
2	C	807	ARG
2	C	808	ARG
2	C	815	LEU
2	C	830	LYS
2	C	848	VAL
2	C	942	GLU
2	C	952	LEU
2	C	968	LEU
2	C	1014	SER
2	C	1057	SER
3	D	30	GLU
3	D	133	ILE
3	D	155	ASP
3	D	198	ARG
3	D	231	VAL
3	D	272	LEU
3	D	316	GLN
3	D	387	LEU
3	D	399	ARG

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	411	THR
3	D	421	LEU
3	D	500	ARG
3	D	572	ARG
3	D	587	ARG
3	D	618	LEU
3	D	632	VAL
3	D	646	LYS
3	D	650	LEU
3	D	675	ARG
3	D	709	HIS
3	D	754	PHE
3	D	778	LEU
3	D	808	THR
3	D	810	GLU
3	D	864	VAL
3	D	875	THR
3	D	894	LYS
3	D	924	MET
3	D	970	LYS
3	D	972	LEU
3	D	983	LEU
3	D	1041	LEU
3	D	1053	PHE
3	D	1062	ARG
3	D	1155	VAL
3	D	1184	GLN
3	D	1188	VAL
3	D	1208	ASP
3	D	1219	GLU
3	D	1221	VAL
3	D	1234	THR
3	D	1290	LEU
3	D	1299	PHE
3	D	1305	LEU
3	D	1307	LYS
3	D	1313	VAL
3	D	1317	ASP
3	D	1455	LYS
3	D	1470	ARG
5	F	88	ILE
5	F	172	ARG

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
5	F	186	HIS
5	F	208	SER
5	F	218	GLN
5	F	279	GLN
5	F	310	ILE
5	F	417	LYS
5	F	420	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	128	HIS
1	B	91	ASN
1	B	128	HIS
2	C	390	GLN
2	C	683	ASN
2	C	728	HIS
2	C	1019	GLN
3	D	350	HIS
3	D	709	HIS
3	D	768	ASN
3	D	1172	HIS
3	D	1184	GLN
3	D	1333	HIS
3	D	1441	GLN
5	F	269	ASN
5	F	381	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

Of 5 ligands modelled in this entry, 4 are monoatomic - leaving 1 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
8	KNG	C	2001	-	75,75,75	3.82	28 (37%)	107,114,114	2.38	28 (26%)

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
8	KNG	C	2001	-	-	23/76/113/113	0/5/6/6

All (28) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	C	2001	KNG	O18-C46	-14.12	1.21	1.44
8	C	2001	KNG	O03-C06	11.12	1.58	1.37
8	C	2001	KNG	O17-C47	-10.88	1.20	1.43
8	C	2001	KNG	C04-C10	8.42	1.57	1.43
8	C	2001	KNG	O16-C37	7.74	1.62	1.42
8	C	2001	KNG	O17-C50	6.13	1.51	1.41
8	C	2001	KNG	O11-C04	-5.94	1.19	1.36
8	C	2001	KNG	C15-N01	5.82	1.47	1.35
8	C	2001	KNG	C12-C11	-5.64	1.32	1.54
8	C	2001	KNG	C01-C09	5.60	1.59	1.43
8	C	2001	KNG	C03-C02	5.54	1.48	1.39
8	C	2001	KNG	O18-C50	5.37	1.50	1.41
8	C	2001	KNG	C03-C04	5.19	1.50	1.37
8	C	2001	KNG	O01-C01	-5.13	1.19	1.35
8	C	2001	KNG	C02-C01	5.04	1.54	1.40
8	C	2001	KNG	O12-C39	4.93	1.43	1.34
8	C	2001	KNG	C19-C18	-4.90	1.37	1.53
8	C	2001	KNG	C47-C48	4.12	1.59	1.52

*Continued on next page...*

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	C	2001	KNG	O06-C37	-3.89	1.31	1.41
8	C	2001	KNG	O07-C25	-3.87	1.39	1.44
8	C	2001	KNG	C47-C46	3.83	1.62	1.52
8	C	2001	KNG	C02-N01	3.72	1.49	1.41
8	C	2001	KNG	O10-C15	-2.96	1.18	1.23
8	C	2001	KNG	O07-C35	2.36	1.40	1.35
8	C	2001	KNG	O16-C48	2.23	1.49	1.44
8	C	2001	KNG	C18-C17	2.12	1.56	1.50
8	C	2001	KNG	C49-C48	-2.04	1.46	1.51
8	C	2001	KNG	C45-C37	2.01	1.55	1.50

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	C	2001	KNG	C33-C24-C23	-8.30	95.10	111.43
8	C	2001	KNG	C25-O07-C35	-7.77	105.64	117.72
8	C	2001	KNG	O03-C06-C07	7.50	133.87	121.16
8	C	2001	KNG	C23-C24-C25	5.65	121.36	110.58
8	C	2001	KNG	C18-C19-C20	5.16	124.92	114.56
8	C	2001	KNG	C12-C11-C05	5.00	116.97	107.30
8	C	2001	KNG	O07-C35-C36	4.77	119.59	111.09
8	C	2001	KNG	O04-C11-C05	-4.62	123.12	131.63
8	C	2001	KNG	C37-O06-C27	4.41	121.19	113.84
8	C	2001	KNG	C34-C26-C27	-4.40	102.04	110.95
8	C	2001	KNG	C01-C02-N01	4.38	129.63	117.46
8	C	2001	KNG	C03-C02-N01	-3.89	111.76	121.95
8	C	2001	KNG	O07-C25-C26	3.84	116.37	107.52
8	C	2001	KNG	C45-C46-C47	-3.83	109.65	114.66
8	C	2001	KNG	C26-C25-C24	-3.42	107.78	114.68
8	C	2001	KNG	C24-C23-C22	3.23	120.80	115.41
8	C	2001	KNG	C49-C48-C47	-3.18	108.66	113.39
8	C	2001	KNG	C12-O03-C06	-3.16	102.40	107.69
8	C	2001	KNG	C31-O12-C39	2.99	121.01	117.62
8	C	2001	KNG	C19-C18-C17	2.89	119.75	112.16
8	C	2001	KNG	O10-C15-C16	-2.86	116.23	121.49
8	C	2001	KNG	O16-C48-C47	2.86	114.48	109.19
8	C	2001	KNG	O12-C39-C40	2.85	118.21	112.03
8	C	2001	KNG	O12-C31-C38	2.85	113.89	108.20
8	C	2001	KNG	C30-C16-C17	-2.65	117.92	123.64
8	C	2001	KNG	O03-C06-C05	-2.61	106.41	113.56
8	C	2001	KNG	C05-C06-C07	-2.31	119.72	125.29
8	C	2001	KNG	C23-C22-C21	-2.22	108.09	112.55

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	C	2001	KNG	C21-C22-C23-O19
8	C	2001	KNG	C23-C24-C25-O07
8	C	2001	KNG	C33-C24-C25-C26
8	C	2001	KNG	C33-C24-C25-O07
8	C	2001	KNG	O06-C27-C28-C29
8	C	2001	KNG	C38-C31-O12-C39
8	C	2001	KNG	C36-C35-O07-C25
8	C	2001	KNG	O08-C35-O07-C25
8	C	2001	KNG	C23-C24-C25-C26
8	C	2001	KNG	C03-C02-N01-C15
8	C	2001	KNG	C32-C22-C23-C24
8	C	2001	KNG	O09-C21-C22-C32
8	C	2001	KNG	C32-C22-C23-O19
8	C	2001	KNG	C21-C22-C23-C24
8	C	2001	KNG	O09-C21-C22-C23
8	C	2001	KNG	O19-C23-C24-C25
8	C	2001	KNG	C26-C27-C28-C29
8	C	2001	KNG	C20-C21-C22-C23
8	C	2001	KNG	O19-C23-C24-C33
8	C	2001	KNG	C20-C21-C22-C32
8	C	2001	KNG	C01-C02-N01-C15
8	C	2001	KNG	C22-C23-C24-C33
8	C	2001	KNG	C31-C20-C21-O09

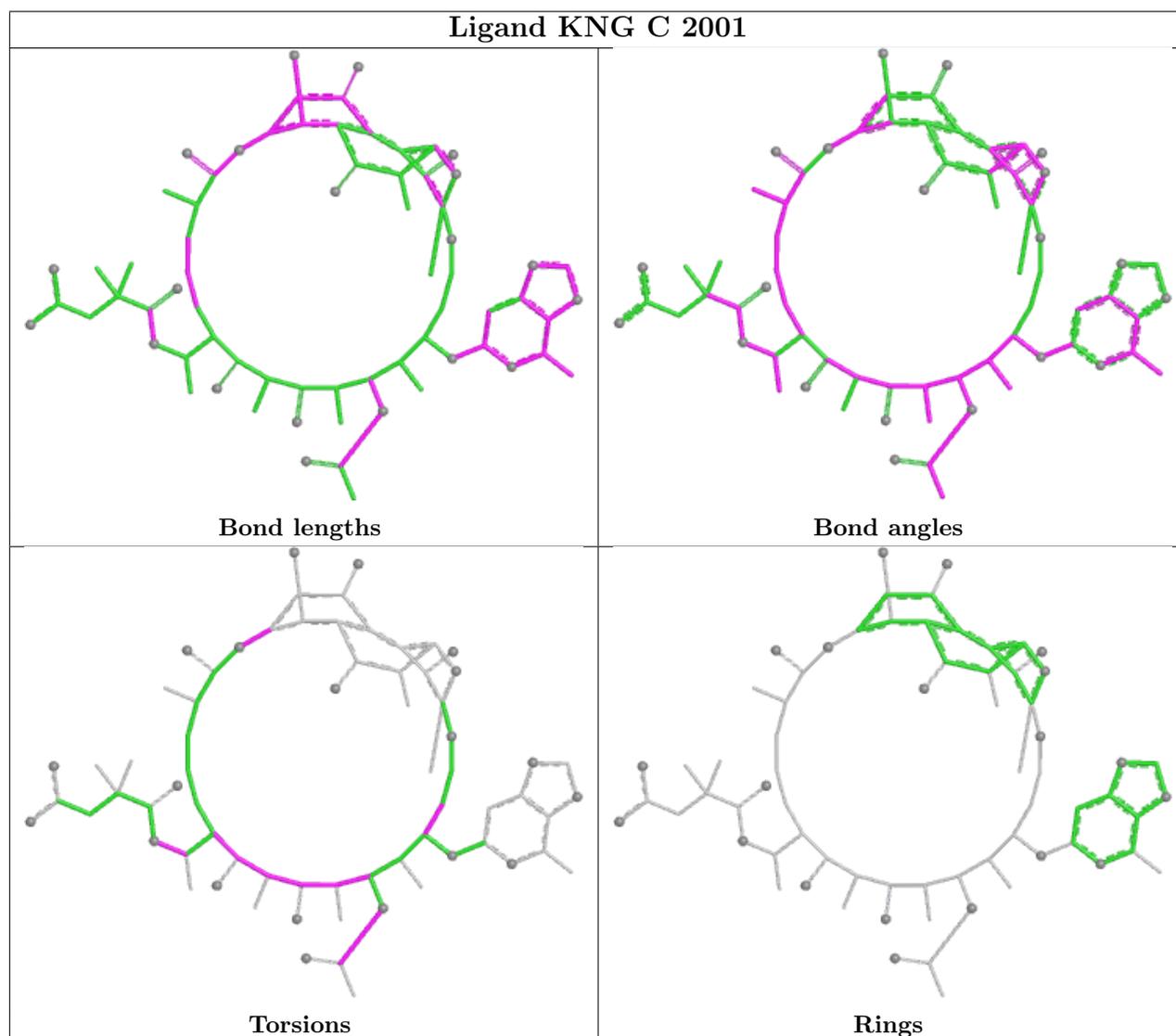
There are no ring outliers.

1 monomer is involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	C	2001	KNG	6	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	227/315 (72%)	0.05	1 (0%) 92 79	67, 92, 127, 170	0
1	B	223/315 (70%)	0.21	3 (1%) 77 51	64, 101, 158, 189	0
2	C	1112/1119 (99%)	0.30	92 (8%) 11 3	40, 82, 174, 268	0
3	D	1485/1524 (97%)	0.16	83 (5%) 24 8	36, 80, 163, 253	0
4	E	94/99 (94%)	0.19	7 (7%) 14 4	47, 83, 155, 175	0
5	F	346/423 (81%)	0.26	20 (5%) 23 7	50, 102, 172, 240	0
6	G	17/22 (77%)	-0.35	0 100 100	75, 94, 187, 191	0
7	H	22/27 (81%)	-0.28	1 (4%) 33 12	79, 113, 202, 219	0
All	All	3526/3844 (91%)	0.21	207 (5%) 22 7	36, 86, 167, 268	0

All (207) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	C	64	LEU	9.0
5	F	149	GLU	8.8
2	C	311	PHE	8.3
3	D	1497	GLU	7.9
5	F	148	LYS	7.7
5	F	146	GLY	7.5
2	C	315	ALA	7.4
5	F	147	LEU	7.2
3	D	1287	GLU	6.9
2	C	365	ASP	6.6
2	C	242	LEU	6.4
2	C	254	VAL	6.3
2	C	221	LEU	5.8
3	D	977	ALA	5.5
5	F	145	PRO	5.4
3	D	1318	TYR	5.3

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
3	D	211	VAL	5.2
3	D	1495	ILE	5.2
3	D	1319	VAL	5.2
2	C	66	LEU	5.2
2	C	243	ARG	5.1
2	C	207	LEU	5.0
2	C	186	VAL	5.0
2	C	246	ASP	5.0
2	C	191	PHE	4.9
3	D	1502	ALA	4.9
2	C	362	GLY	4.9
2	C	781	LYS	4.9
1	B	6	LEU	4.9
5	F	150	THR	4.8
2	C	179	ASN	4.7
2	C	153	ALA	4.6
2	C	189	ARG	4.4
3	D	360	ARG	4.4
3	D	191	LEU	4.3
3	D	322	VAL	4.3
2	C	251	ASP	4.2
2	C	181	VAL	4.2
2	C	314	THR	4.2
3	D	241	ILE	4.1
2	C	307	LEU	4.1
2	C	231	PRO	4.0
2	C	299	LYS	4.1
3	D	1499	ARG	4.0
3	D	974	ILE	4.0
3	D	321	GLN	4.0
3	D	1494	ALA	4.0
3	D	175	VAL	3.9
2	C	216	GLU	3.9
3	D	1294	VAL	3.8
2	C	368	THR	3.8
2	C	154	ARG	3.8
2	C	102	HIS	3.7
2	C	296	GLY	3.7
3	D	3	LYS	3.7
2	C	174	LEU	3.6
2	C	219	GLN	3.6
3	D	1311	LEU	3.5

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	C	217	LEU	3.5
2	C	65	VAL	3.5
2	C	247	PRO	3.5
3	D	1312	LEU	3.5
2	C	364	GLU	3.5
3	D	484	PRO	3.5
3	D	1280	VAL	3.4
2	C	159	ILE	3.4
3	D	1272	ALA	3.4
3	D	1297	GLU	3.4
3	D	1501	GLU	3.4
3	D	1500	LYS	3.4
3	D	1301	LYS	3.3
3	D	213	VAL	3.3
2	C	769	PRO	3.3
2	C	250	ARG	3.3
5	F	142	ARG	3.3
5	F	378	GLY	3.3
2	C	372	LEU	3.2
2	C	107	LEU	3.2
3	D	1292	VAL	3.1
2	C	157	ARG	3.1
2	C	297	GLU	3.1
4	E	91	ARG	3.1
3	D	1131	SER	3.0
5	F	416	ARG	3.0
3	D	1313	VAL	3.0
3	D	212	ARG	3.0
3	D	821	VAL	3.0
3	D	1054	GLU	3.0
2	C	235	LEU	3.0
3	D	808	THR	3.0
2	C	295	ASP	3.0
3	D	198	ARG	2.9
2	C	223	ASP	2.9
2	C	222	MET	2.9
4	E	95	VAL	2.9
2	C	228	ALA	2.9
2	C	103	LYS	2.9
3	D	195	VAL	2.9
2	C	320	HIS	2.9
2	C	182	VAL	2.9

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	C	152	PRO	2.9
2	C	176	VAL	2.9
3	D	1490	LYS	2.9
3	D	1310	ARG	2.9
2	C	194	VAL	2.8
2	C	198	ARG	2.8
1	B	132	LEU	2.8
4	E	89	MET	2.8
2	C	240	THR	2.8
5	F	390	PHE	2.8
2	C	367	LEU	2.8
5	F	392	VAL	2.8
2	C	361	MET	2.8
2	C	196	LEU	2.8
3	D	1408	ILE	2.7
2	C	300	ASP	2.7
2	C	815	LEU	2.7
3	D	236	TYR	2.7
5	F	389	PHE	2.7
2	C	503	LEU	2.7
4	E	86	GLN	2.7
3	D	1327	ARG	2.7
2	C	651	LYS	2.6
2	C	63	GLY	2.6
4	E	84	ARG	2.6
3	D	1320	GLU	2.6
3	D	1275	SER	2.6
3	D	1293	PHE	2.6
2	C	780	GLU	2.6
3	D	983	LEU	2.6
2	C	313	LEU	2.5
3	D	1132	LEU	2.5
2	C	105	THR	2.5
3	D	1491	THR	2.5
7	H	11	DG	2.5
3	D	976	GLN	2.5
3	D	178	LEU	2.5
3	D	980	MET	2.4
3	D	982	PHE	2.4
3	D	978	TYR	2.4
2	C	184	MET	2.4
3	D	170	PRO	2.4

*Continued on next page...*

*Continued from previous page...*

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	C	104	ASP	2.4
3	D	397	LYS	2.4
2	C	621	VAL	2.4
3	D	339	TRP	2.4
3	D	347	VAL	2.4
2	C	371	LYS	2.4
2	C	236	ILE	2.4
2	C	358	ARG	2.4
5	F	419	ARG	2.4
3	D	310	LEU	2.4
4	E	90	GLU	2.4
3	D	432	TYR	2.4
3	D	1296	SER	2.4
3	D	394	LEU	2.3
3	D	308	LYS	2.3
2	C	304	LEU	2.3
3	D	470	LEU	2.3
5	F	375	LEU	2.3
2	C	185	LYS	2.3
3	D	1299	PHE	2.3
2	C	170	PRO	2.3
2	C	171	TRP	2.3
2	C	292	ARG	2.3
3	D	384	VAL	2.3
4	E	94	PRO	2.3
2	C	238	LEU	2.3
3	D	1314	LYS	2.3
1	B	226	SER	2.3
2	C	512	ARG	2.3
5	F	422	LEU	2.3
3	D	371	ILE	2.3
5	F	144	ILE	2.3
3	D	486	ARG	2.2
2	C	291	ALA	2.2
3	D	215	TYR	2.2
5	F	373	LYS	2.2
1	A	138	LEU	2.2
2	C	298	PHE	2.2
3	D	242	LEU	2.2
2	C	211	LEU	2.2
2	C	183	SER	2.2
3	D	144	GLY	2.2

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	RSRZ
3	D	318	ARG	2.2
3	D	1278	ASP	2.2
2	C	160	ALA	2.2
2	C	629	TYR	2.2
3	D	383	GLY	2.1
5	F	143	HIS	2.1
3	D	62	LYS	2.1
3	D	311	LEU	2.1
3	D	203	ALA	2.1
2	C	178	PRO	2.1
5	F	354	LEU	2.1
3	D	1323	GLN	2.1
2	C	293	PHE	2.1
2	C	511	GLU	2.1
3	D	197	SER	2.0
2	C	648	ARG	2.0
5	F	78	SER	2.0
3	D	1498	ALA	2.0
3	D	380	GLU	2.0
2	C	258	TYR	2.0
2	C	613	VAL	2.0
2	C	807	ARG	2.0
3	D	379	ALA	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

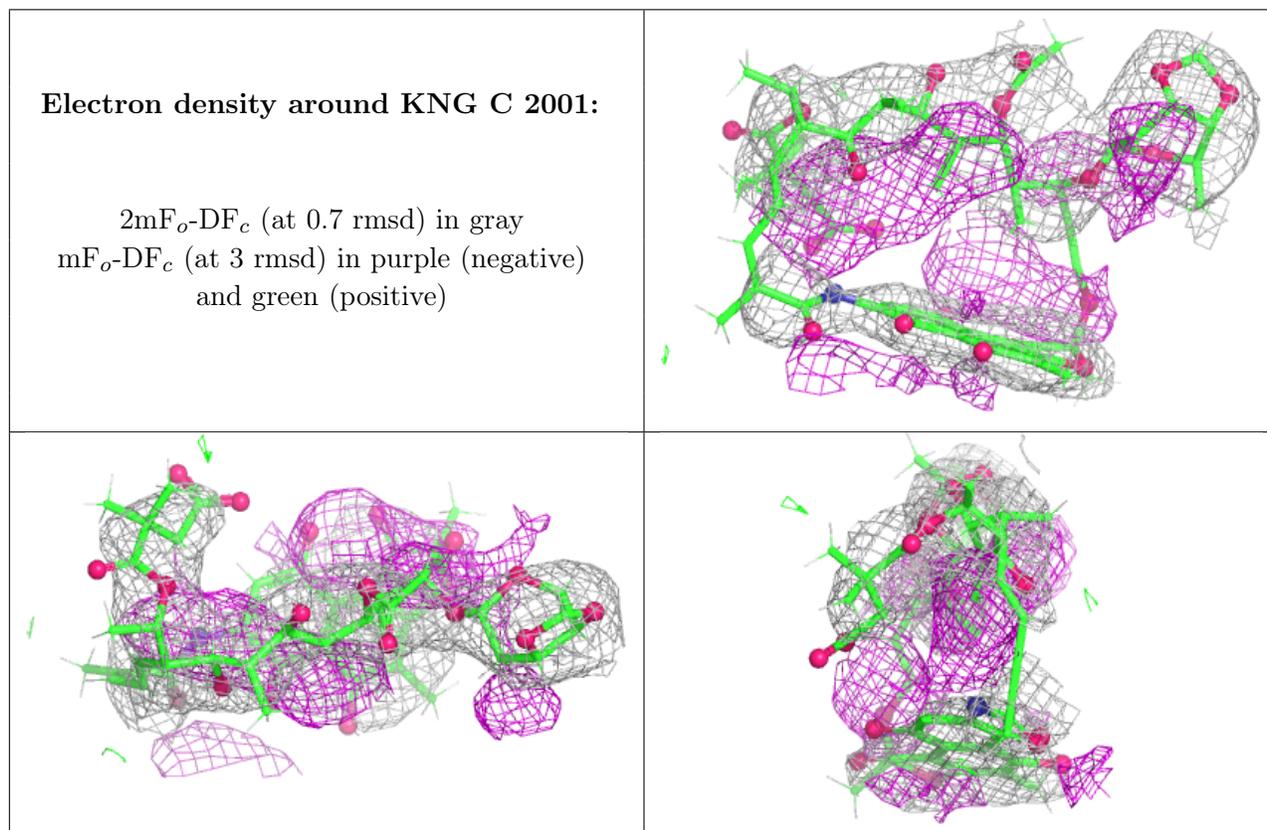
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

*Continued on next page...*

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
8	KNG	C	2001	70/70	0.86	0.47	87,141,186,187	0
9	ZN	D	2002	1/1	0.96	0.09	91,91,91,91	0
10	MG	D	2003	1/1	0.96	0.56	120,120,120,120	0
10	MG	D	2004	1/1	0.98	0.53	70,70,70,70	0
9	ZN	D	2001	1/1	0.99	0.20	65,65,65,65	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.



## 6.5 Other polymers [i](#)

There are no such residues in this entry.