



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 12:25 PM UTC

PDB ID : 1SL0 / pdb_00001sl0
Title : Ternary 3' complex of T7 DNA polymerase with a DNA primer/template containing a disordered cis-syn thymine dimer on the template and an incoming nucleotide
Authors : Li, Y.; Dutta, S.; Doublié, S.; Bdour, H.M.; Taylor, J.S.; Ellenberger, T.
Deposited on : 2004-03-05
Resolution : 3.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

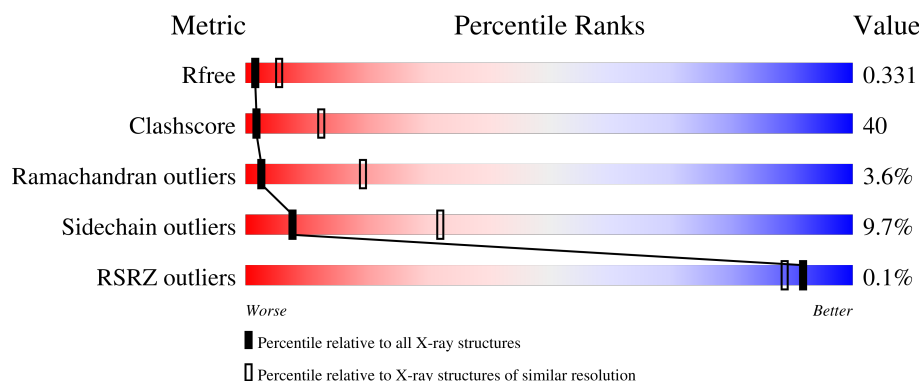
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 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.



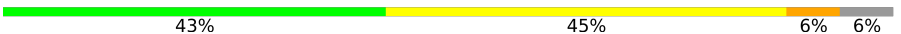
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1466 (3.20-3.20)
Clashscore	190562	1573 (3.20-3.20)
Ramachandran outliers	187476	1548 (3.20-3.20)
Sidechain outliers	187428	1547 (3.20-3.20)
RSRZ outliers	180081	1466 (3.20-3.20)

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

Mol	Chain	Length	Quality of chain
1	P	21	
1	Q	21	
2	T	25	
2	U	25	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
3	A	698	 41%46%8%6%
3	C	698	 43%45%6%6%
4	B	108	 37%54%6%...
4	D	108	 42%45%8%...

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	DAD	A	4004	X	-	-	-
6	DAD	C	4005	X	-	-	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 11904 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 DNA chain called 5'-D(*CP*GP*AP*AP*AP*AP*CP*GP*AP*CP*GP*GP*CP*CP*AP*GP*TP*GP*CP*CP*(2DT))-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	P	11	Total	C	N	O	P	0	0	0
			224	106	41	66	11			
1	Q	11	Total	C	N	O	P	0	0	0
			224	106	41	66	11			

- Molecule 2 is a DNA chain called 5'-D(*CP*CP*CP*(TTD)P*AP*GP*GP*CP*AP*CP*TP*GP*GP*CP*CP*GP*TP*CP*GP*TP*TP*TP*TP*CP*G)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	T	10	Total	C	N	O	P	0	0	0
			207	97	41	59	10			
2	U	10	Total	C	N	O	P	0	0	0
			207	97	41	59	10			

- Molecule 3 is a protein called DNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	A	658	Total	C	N	O	S	0	0	0
			4782	3042	831	889	20			
3	C	658	Total	C	N	O	S	0	0	0
			4772	3031	830	891	20			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	LYS	deletion	UNP P00581
A	?	-	ARG	deletion	UNP P00581
A	?	-	PHE	deletion	UNP P00581
A	?	-	GLY	deletion	UNP P00581
A	?	-	SER	deletion	UNP P00581
A	?	-	HIS	deletion	UNP P00581

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
C	?	-	LYS	deletion	UNP P00581
C	?	-	ARG	deletion	UNP P00581
C	?	-	PHE	deletion	UNP P00581
C	?	-	GLY	deletion	UNP P00581
C	?	-	SER	deletion	UNP P00581
C	?	-	HIS	deletion	UNP P00581

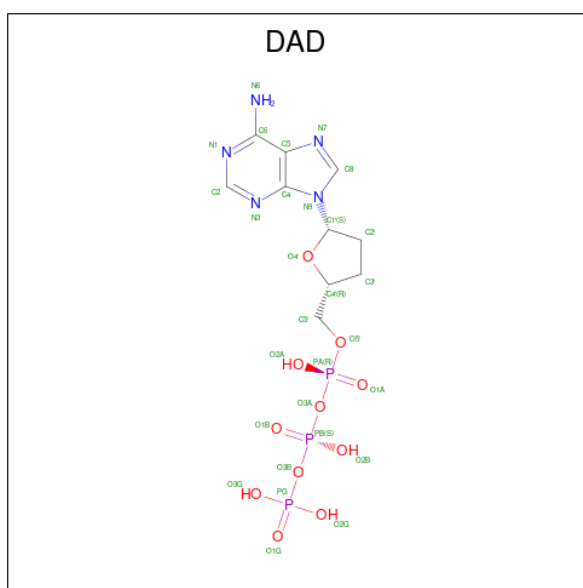
- Molecule 4 is a protein called Thioredoxin 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	B	105	Total	C	N	O	S	0	0	0
			716	461	118	135	2			
4	D	105	Total	C	N	O	S	0	0	0
			712	456	119	135	2			

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Mg	0	0
			1	1		
5	C	1	Total	Mg	0	0
			1	1		

- Molecule 6 is 2',3'-DIDEOXYADENOSINE-5'-TRIPHOSPHATE (CCD ID: DAD) (formula: C₁₀H₁₆N₅O₁₁P₃).

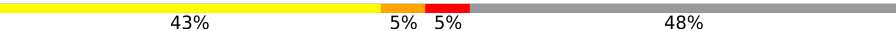


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	A	1	Total	C	N	O	P	0	0
			29	10	5	11	3		
6	C	1	Total	C	N	O	P	0	0
			29	10	5	11	3		

3 Residue-property plots

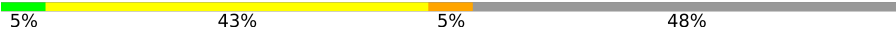
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: 5'-D(*CP*GP*AP*AP*AP*AP*CP*GP*AP*CP*GP*GP*CP*CP*AP*GP*TP*GP*CP*CP*(2DT))-3'

Chain P: 



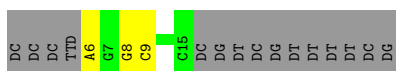
- Molecule 1: 5'-D(*CP*GP*AP*AP*AP*AP*CP*GP*AP*CP*GP*GP*CP*CP*AP*GP*TP*GP*CP*CP*(2DT))-3'

Chain Q: 



- Molecule 2: 5'-D(*CP*CP*CP*(TTD)P*AP*GP*GP*CP*AP*CP*TP*GP*GP*CP*CP*GP*TP*CP*GP*TP*TP*TP*TP*CP*G)-3'

Chain T: 



- Molecule 2: 5'-D(*CP*CP*CP*(TTD)P*AP*GP*GP*CP*AP*CP*TP*GP*GP*CP*CP*GP*TP*CP*GP*TP*TP*TP*TP*CP*G)-3'

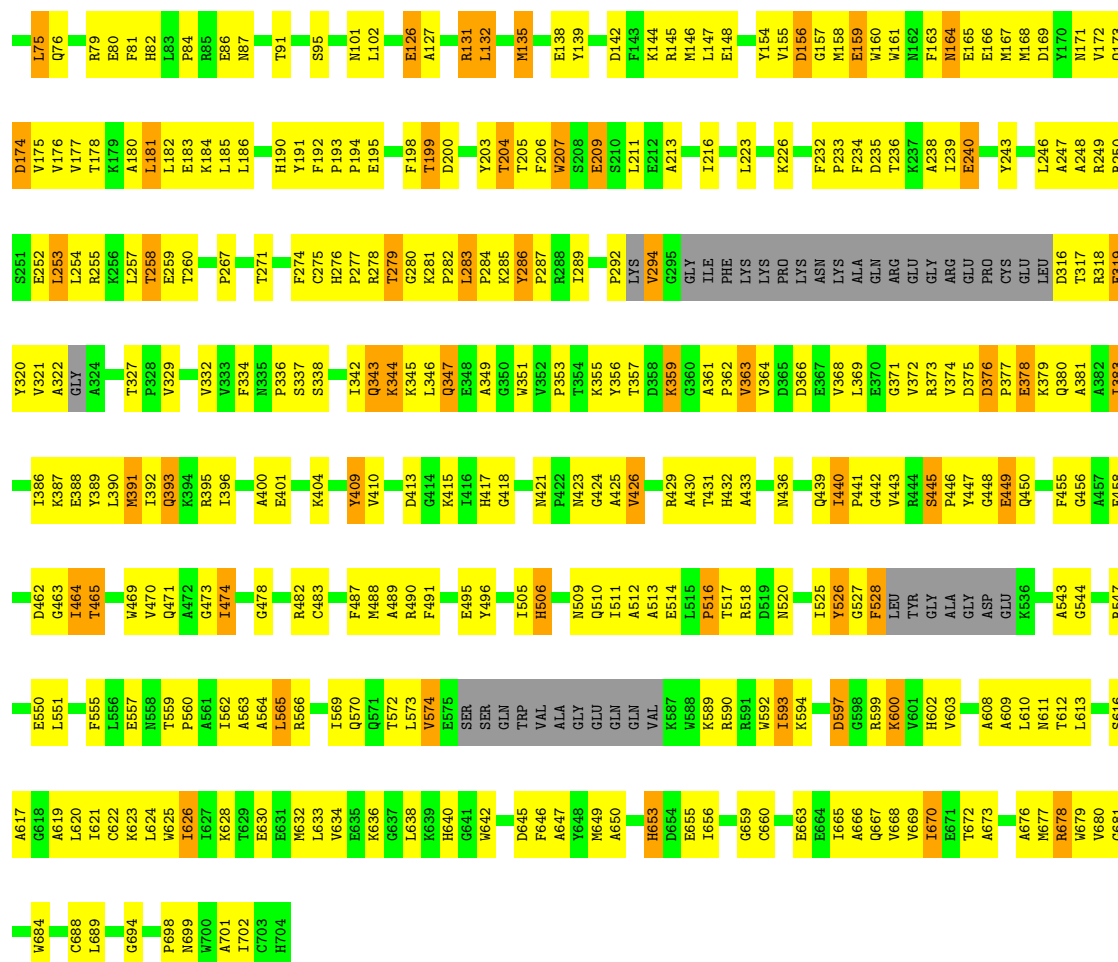
Chain U: 



- Molecule 3: DNA polymerase

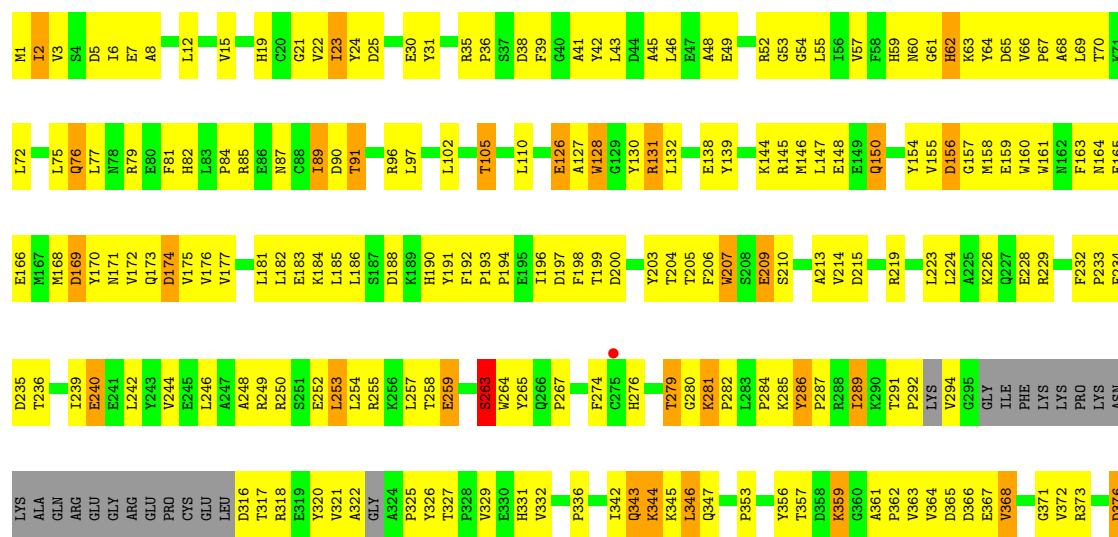
Chain A: 

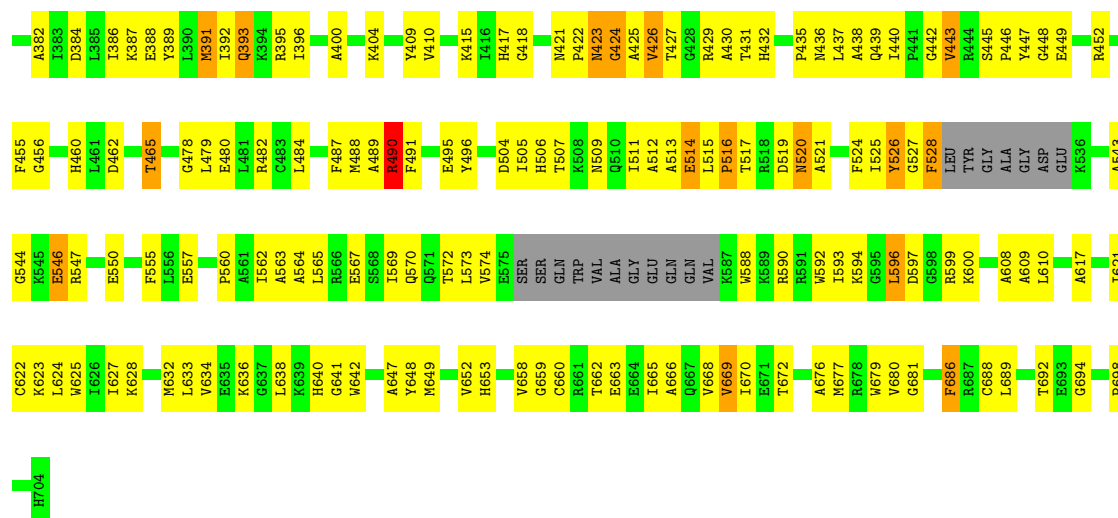




● Molecule 3: DNA polymerase

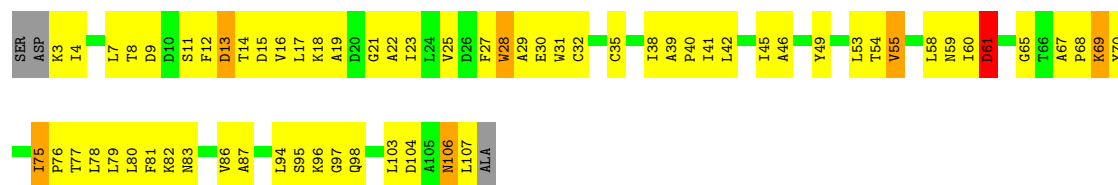
Chain C: 43% 45% 6% 6%





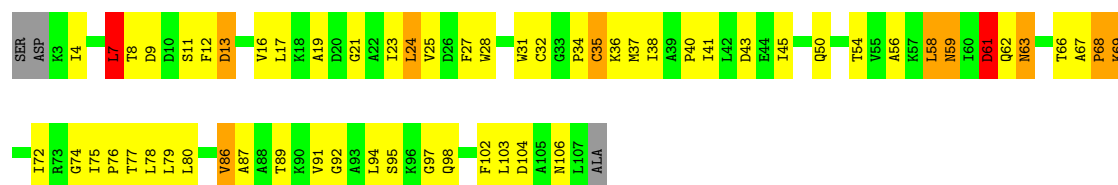
• Molecule 4: Thioredoxin 1

Chain B: 37% 54% 6% ..



• Molecule 4: Thioredoxin 1

Chain D: 42% 45% 8% ..



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	54.27Å 105.47Å 213.93Å 90.00° 91.57° 90.00°	Depositor
Resolution (Å)	50.00 – 3.20 50.00 – 3.20	Depositor EDS
% Data completeness (in resolution range)	99.3 (50.00-3.20) 91.6 (50.00-3.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.37 (at 3.18Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.282 , 0.351 0.272 , 0.331	Depositor DCC
R_{free} test set	1987 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	87.3	Xtriage
Anisotropy	0.771	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 114.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.52$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	0.136 for h,-k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	11904	wwPDB-VP
Average B, all atoms (Å ²)	77.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.38% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: DAD, MG, 2DT

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	P	0.47	0/229	0.79	1/351 (0.3%)
1	Q	0.40	0/229	0.75	0/351
2	T	0.41	0/232	0.67	0/356
2	U	0.36	0/232	0.60	0/356
3	A	0.59	0/4899	1.07	27/6701 (0.4%)
3	C	0.54	0/4887	1.04	19/6685 (0.3%)
4	B	0.48	0/730	1.02	3/1006 (0.3%)
4	D	0.49	0/725	0.98	4/998 (0.4%)
All	All	0.55	0/12163	1.02	54/16804 (0.3%)

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	P	0	2
1	Q	0	1
3	A	0	1
All	All	0	4

There are no bond length outliers.

All (54) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	440	ILE	N-CA-C	-9.05	100.85	108.63
4	B	61	ASP	N-CA-C	-8.77	102.72	113.41
3	A	550	GLU	N-CA-C	-7.95	105.56	114.62
3	C	550	GLU	N-CA-C	-7.92	105.60	114.62
3	A	199	THR	N-CA-C	-7.52	104.56	113.21

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	53	GLY	N-CA-C	-7.36	101.13	114.46
3	A	240	GLU	N-CA-C	-7.34	103.31	111.82
3	A	76	GLN	N-CA-C	7.25	120.04	111.71
4	D	61	ASP	N-CA-C	-7.24	104.57	113.41
3	A	376	ASP	CA-C-N	6.82	126.33	119.24
3	A	376	ASP	C-N-CA	6.82	126.33	119.24
3	C	240	GLU	N-CA-C	-6.75	103.99	111.82
3	C	76	GLN	N-CA-C	6.74	119.46	111.71
3	A	610	LEU	N-CA-C	6.73	118.27	111.07
3	C	207	TRP	N-CA-C	6.73	118.27	111.07
3	A	53	GLY	N-CA-C	-6.71	102.31	114.46
3	A	207	TRP	N-CA-C	6.65	118.19	111.07
3	A	132	LEU	N-CA-C	-6.51	107.20	114.62
3	A	400	ALA	N-CA-C	6.42	120.94	112.72
3	A	332	VAL	N-CA-C	6.25	116.88	107.75
3	C	400	ALA	N-CA-C	6.19	120.64	112.72
3	C	132	LEU	N-CA-C	-6.08	107.69	114.62
3	A	440	ILE	CA-C-N	-6.06	113.71	119.89
3	A	440	ILE	C-N-CA	-6.06	113.71	119.89
3	C	332	VAL	N-CA-C	6.06	116.60	107.75
3	A	286	TYR	CA-C-N	5.91	126.25	119.93
3	A	286	TYR	C-N-CA	5.91	126.25	119.93
3	C	610	LEU	N-CA-C	5.89	118.17	111.11
3	C	588	TRP	N-CA-C	5.76	119.05	110.52
4	B	28	TRP	N-CA-C	5.73	115.80	108.24
4	B	106	ASN	N-CA-C	-5.73	108.09	114.62
3	C	199	THR	N-CA-C	-5.68	105.53	113.37
3	A	600	LYS	N-CA-C	-5.63	101.37	110.32
4	D	28	TRP	N-CA-C	5.53	115.42	108.45
3	A	506	HIS	N-CA-C	5.49	116.94	111.07
3	C	286	TYR	CA-C-N	5.40	125.70	119.93
3	C	286	TYR	C-N-CA	5.40	125.70	119.93
1	P	19	DC	N1-C1'-C2'	-5.38	105.43	113.50
3	C	82	HIS	N-CA-C	5.36	116.16	107.32
3	A	449	GLU	N-CA-C	-5.33	107.33	113.88
3	C	130	TYR	N-CA-C	-5.28	106.10	112.54
3	A	82	HIS	N-CA-C	5.27	116.02	107.32
3	A	559	THR	CA-C-N	5.24	124.85	119.56
3	A	559	THR	C-N-CA	5.24	124.85	119.56
3	C	70	THR	N-CA-C	-5.16	105.55	111.07
3	A	589	LYS	N-CA-C	-5.14	103.21	111.02
3	A	32	VAL	CB-CA-C	-5.10	105.72	111.23

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	490	ARG	N-CA-C	-5.09	106.34	113.37
4	D	63	ASN	CA-C-N	5.09	125.54	120.04
4	D	63	ASN	C-N-CA	5.09	125.54	120.04
3	A	101	ASN	N-CA-C	5.07	119.52	113.23
3	A	401	GLU	N-CA-C	5.05	119.52	112.90
3	C	376	ASP	CA-C-N	5.03	124.47	119.24
3	C	376	ASP	C-N-CA	5.03	124.47	119.24

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	A	409	TYR	Sidechain
1	P	17	DT	Sidechain
1	P	19	DC	Sidechain
1	Q	20	DC	Sidechain

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	P	224	0	124	18	0
1	Q	224	0	124	17	0
2	T	207	0	112	5	0
2	U	207	0	112	6	0
3	A	4782	0	4271	358	0
3	C	4772	0	4237	366	0
4	B	716	0	647	80	0
4	D	712	0	647	76	0
5	A	1	0	0	0	0
5	C	1	0	0	0	0
6	A	29	0	12	0	0
6	C	29	0	12	0	0
All	All	11904	0	10298	890	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 40.

All (890) 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)
3:C:131:ARG:HH11	3:C:131:ARG:HA	1.21	1.01
3:A:131:ARG:HA	3:A:131:ARG:HH11	1.21	1.00
3:A:164:ASN:HD21	3:A:167:MET:H	1.12	0.97
3:C:126:GLU:HG2	3:C:127:ALA:H	1.26	0.96
3:A:164:ASN:C	3:A:164:ASN:HD22	1.74	0.94
3:C:525:ILE:HG23	3:C:526:TYR:H	1.35	0.92
4:B:39:ALA:HB3	4:B:40:PRO:HD3	1.51	0.89
3:C:131:ARG:HA	3:C:131:ARG:NH1	1.86	0.89
3:C:253:LEU:O	3:C:257:LEU:HG	1.71	0.89
3:C:35:ARG:HB3	3:C:36:PRO:HD2	1.53	0.87
3:C:440:ILE:HB	3:C:452:ARG:NH1	1.89	0.87
3:A:274:PHE:O	3:A:283:LEU:HD12	1.74	0.86
3:A:164:ASN:ND2	3:A:167:MET:H	1.71	0.86
4:B:41:ILE:O	4:B:45:ILE:HG12	1.76	0.85
3:A:154:TYR:OH	3:A:159:GLU:HG2	1.76	0.84
3:C:521:ALA:CB	3:C:521:ALA:C	2.50	0.84
3:C:274:PHE:HA	3:C:289:ILE:HD11	1.59	0.84
3:C:404:LYS:HA	3:C:409:TYR:HE2	1.42	0.84
3:C:3:VAL:HG12	3:C:175:VAL:HG13	1.61	0.83
3:C:346:LEU:HD13	3:C:372:VAL:HG11	1.61	0.82
3:A:91:THR:HB	3:A:181:LEU:HD13	1.60	0.81
4:D:23:ILE:HD13	4:D:54:THR:HB	1.61	0.81
3:C:521:ALA:CB	3:C:521:ALA:N	2.43	0.81
1:Q:14:DC:H5	2:U:13:DG:H22	1.28	0.80
3:C:325:PRO:O	4:D:92:GLY:HA2	1.82	0.80
3:C:517:THR:HG23	3:C:520:ASN:HB2	1.63	0.80
3:C:363:VAL:O	3:C:368:VAL:HG11	1.80	0.80
4:D:23:ILE:CD1	4:D:54:THR:HB	2.12	0.80
3:C:597:ASP:OD2	3:C:599:ARG:HD2	1.82	0.78
3:C:484:LEU:O	3:C:488:MET:HG2	1.81	0.78
3:A:569:ILE:HD11	3:A:613:LEU:HD22	1.66	0.78
3:C:59:HIS:ND1	3:C:91:THR:HG23	1.99	0.78
3:C:633:LEU:HD11	3:C:669:VAL:HG13	1.66	0.77
4:D:32:CYS:HB2	4:D:75:ILE:HD11	1.65	0.77
3:C:440:ILE:HB	3:C:452:ARG:HH11	1.47	0.76
3:C:68:ALA:O	3:C:72:LEU:HG	1.86	0.76
3:A:404:LYS:HA	3:A:409:TYR:HE2	1.51	0.76
3:A:131:ARG:HA	3:A:131:ARG:NH1	2.01	0.75
4:B:14:THR:HG22	4:B:18:LYS:HZ2	1.51	0.75
3:A:126:GLU:HG2	3:A:127:ALA:H	1.51	0.75

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:525:ILE:HG23	3:C:526:TYR:N	2.02	0.75
3:C:267:PRO:HA	3:C:329:VAL:HG12	1.68	0.75
3:C:521:ALA:C	3:C:521:ALA:N	2.45	0.75
4:D:41:ILE:O	4:D:45:ILE:HG12	1.87	0.75
1:Q:12:DG:H1'	1:Q:13:DC:H5'	1.69	0.74
4:B:14:THR:HA	4:B:18:LYS:HE3	1.70	0.74
3:C:676:ALA:O	3:C:680:VAL:HG23	1.88	0.74
3:A:355:LYS:O	3:A:363:VAL:HG23	1.89	0.73
3:A:525:ILE:HG23	3:A:526:TYR:N	2.03	0.73
1:P:16:DG:H1'	1:P:17:DT:H5''	1.70	0.73
4:B:38:ILE:CD1	4:B:78:LEU:HD11	2.19	0.73
4:D:67:ALA:HB3	4:D:68:PRO:HD3	1.70	0.72
4:D:4:ILE:HD11	4:D:43:ASP:HA	1.70	0.72
3:A:84:PRO:HG2	3:A:87:ASN:OD1	1.90	0.72
4:B:12:PHE:O	4:B:16:VAL:HG12	1.90	0.72
3:C:516:PRO:HG2	3:C:517:THR:H	1.54	0.72
3:A:190:HIS:CG	3:A:600:LYS:HE3	2.24	0.72
1:Q:16:DG:H1'	1:Q:17:DT:H5''	1.72	0.71
3:C:316:ASP:C	3:C:318:ARG:H	1.97	0.71
4:D:8:THR:HG22	4:D:11:SER:HB3	1.72	0.71
3:A:513:ALA:HB2	3:A:555:PHE:HB2	1.72	0.71
3:C:126:GLU:HG2	3:C:127:ALA:N	2.04	0.71
3:A:329:VAL:HG11	4:B:75:ILE:HD11	1.73	0.71
3:A:173:GLN:O	3:A:176:VAL:HG22	1.91	0.71
3:C:391:MET:HE2	3:C:392:ILE:HA	1.73	0.71
4:B:16:VAL:HG21	4:B:25:VAL:HG21	1.74	0.70
4:D:8:THR:HG23	4:D:11:SER:H	1.56	0.70
3:A:319:GLU:HB3	3:A:320:TYR:CE2	2.27	0.70
3:A:364:VAL:HG12	3:A:364:VAL:O	1.90	0.70
4:B:53:LEU:HD13	4:B:107:LEU:HD13	1.73	0.70
3:C:391:MET:HE1	3:C:392:ILE:HD13	1.74	0.70
3:A:363:VAL:O	3:A:368:VAL:HG21	1.91	0.69
3:A:487:PHE:O	3:A:565:LEU:HD11	1.92	0.69
3:C:670:ILE:HG23	3:C:694:GLY:HA3	1.73	0.69
4:D:80:LEU:O	4:D:87:ALA:HB3	1.93	0.69
3:A:173:GLN:NE2	3:A:176:VAL:HG21	2.07	0.69
3:A:316:ASP:C	3:A:318:ARG:H	2.00	0.69
3:A:456:GLY:HA2	3:A:471:GLN:OE1	1.92	0.69
3:C:45:ALA:O	3:C:48:ALA:HB3	1.93	0.69
3:C:173:GLN:O	3:C:176:VAL:HG22	1.93	0.69
3:A:393:GLN:HE21	3:A:393:GLN:HA	1.58	0.69

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:22:VAL:HG23	3:C:171:ASN:CG	2.18	0.69
3:C:186:LEU:HA	3:C:192:PHE:CD2	2.27	0.69
3:A:15:VAL:HG22	3:A:72:LEU:HD21	1.74	0.69
3:A:276:HIS:HB3	3:A:279:THR:HB	1.74	0.69
3:C:342:ILE:O	3:C:346:LEU:HB2	1.93	0.69
3:C:640:HIS:CD2	3:C:647:ALA:HA	2.28	0.69
3:C:59:HIS:HA	3:C:91:THR:HG23	1.75	0.69
1:P:19:DC:H5'	1:P:19:DC:H6	1.57	0.68
3:A:626:ILE:CG2	3:A:656:ILE:HG21	2.24	0.68
3:C:61:GLY:O	3:C:66:VAL:HG23	1.93	0.68
3:A:338:SER:O	3:A:342:ILE:HG13	1.92	0.68
3:A:392:ILE:O	3:A:396:ILE:HG13	1.93	0.68
3:A:628:LYS:HD2	3:A:632:MET:HG3	1.76	0.68
3:C:57:VAL:HG22	3:C:89:ILE:HB	1.75	0.68
3:A:482:ARG:NH1	3:A:689:LEU:O	2.26	0.68
3:A:464:ILE:HG13	3:A:465:THR:H	1.57	0.68
3:A:209:GLU:OE2	3:C:490:ARG:NH1	2.27	0.68
3:C:670:ILE:CG2	3:C:694:GLY:HA3	2.24	0.68
3:A:670:ILE:HG23	3:A:694:GLY:HA3	1.76	0.68
3:C:169:ASP:O	3:C:172:VAL:HG12	1.92	0.68
1:P:11:DG:H2''	1:P:12:DG:C8	2.28	0.68
3:C:660:CYS:SG	3:C:666:ALA:HA	2.34	0.67
3:A:205:THR:O	3:A:209:GLU:HB2	1.94	0.67
3:C:425:ALA:O	3:C:426:VAL:HG13	1.95	0.67
3:A:127:ALA:O	3:A:131:ARG:HB2	1.94	0.67
4:D:8:THR:HG22	4:D:11:SER:CB	2.25	0.67
3:A:547:ARG:O	3:A:551:LEU:HG	1.94	0.67
3:A:525:ILE:CG2	3:A:526:TYR:N	2.57	0.67
4:B:14:THR:HG22	4:B:18:LYS:NZ	2.10	0.67
3:C:22:VAL:HG21	3:C:172:VAL:HA	1.76	0.67
3:C:440:ILE:O	3:C:452:ARG:NH1	2.28	0.67
3:A:489:ALA:C	3:A:491:PHE:H	2.03	0.67
3:A:24:TYR:HE1	3:A:29:ALA:HA	1.59	0.66
3:A:474:ILE:HD12	3:A:474:ILE:N	2.10	0.66
3:C:234:PHE:CZ	3:C:239:ILE:HG13	2.30	0.66
3:C:462:ASP:OD2	3:C:465:THR:HG23	1.95	0.66
3:A:425:ALA:O	3:A:426:VAL:HB	1.93	0.66
3:C:546:GLU:HG3	3:C:547:ARG:N	2.08	0.66
1:P:12:DG:H1'	1:P:13:DC:H5'	1.78	0.66
3:C:292:PRO:HB2	3:C:294:VAL:HG21	1.76	0.66
4:B:80:LEU:O	4:B:87:ALA:HB3	1.96	0.66

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:16:VAL:HG21	4:D:25:VAL:CG2	2.25	0.66
3:A:250:ARG:NH1	3:A:396:ILE:HD13	2.10	0.65
3:A:24:TYR:CE1	3:A:29:ALA:HA	2.30	0.65
3:A:250:ARG:HH12	3:A:396:ILE:HG21	1.61	0.65
3:A:488:MET:HE3	3:A:496:TYR:CB	2.25	0.65
3:C:57:VAL:HG22	3:C:89:ILE:CG2	2.26	0.65
3:A:186:LEU:HA	3:A:192:PHE:CD2	2.32	0.65
3:C:144:LYS:HE3	3:C:154:TYR:CD2	2.32	0.65
3:C:326:TYR:HB2	4:D:91:VAL:HG12	1.77	0.65
3:C:592:TRP:CD2	3:C:600:LYS:HG3	2.32	0.65
3:A:473:GLY:C	3:A:474:ILE:HD12	2.21	0.65
3:C:665:ILE:O	3:C:669:VAL:HG23	1.96	0.65
3:C:265:TYR:CE1	4:D:68:PRO:HG3	2.31	0.65
3:C:22:VAL:HG21	3:C:172:VAL:N	2.12	0.65
3:C:617:ALA:O	3:C:621:ILE:HD12	1.97	0.65
3:C:426:VAL:HG23	3:C:427:THR:HG23	1.78	0.64
3:A:404:LYS:HA	3:A:409:TYR:CE2	2.31	0.64
3:A:442:GLY:O	3:A:448:GLY:HA3	1.97	0.64
3:A:391:MET:HE2	3:A:392:ILE:N	2.13	0.64
4:B:95:SER:OG	4:B:98:GLN:HG3	1.98	0.64
3:A:488:MET:HB3	3:A:565:LEU:HD22	1.80	0.64
3:A:525:ILE:C	3:A:527:GLY:H	2.06	0.64
4:D:58:LEU:HD11	4:D:63:ASN:HB2	1.80	0.64
3:A:458:GLU:CD	3:A:698:PRO:HB2	2.23	0.63
3:A:279:THR:HG22	3:A:280:GLY:N	2.14	0.63
3:A:357:THR:N	3:A:361:ALA:O	2.31	0.63
3:C:24:TYR:CG	3:C:31:TYR:HE2	2.15	0.63
3:A:446:PRO:C	3:A:447:TYR:HD2	2.05	0.63
3:C:593:ILE:HG22	3:C:594:LYS:N	2.14	0.63
3:C:489:ALA:C	3:C:491:PHE:H	2.05	0.63
3:A:525:ILE:CG2	3:A:526:TYR:H	2.12	0.63
3:A:562:ILE:HD12	3:A:562:ILE:H	1.63	0.63
3:A:617:ALA:O	3:A:621:ILE:HG13	1.99	0.63
3:A:19:HIS:O	3:A:36:PRO:HG3	2.00	0.62
4:D:59:ASN:OD1	4:D:62:GLN:N	2.25	0.62
1:Q:13:DC:H42	2:U:14:DG:H1	1.48	0.62
3:A:373:ARG:CD	3:A:380:GLN:HE22	2.12	0.62
3:A:660:CYS:SG	3:A:666:ALA:HA	2.39	0.62
3:C:442:GLY:O	3:C:448:GLY:HA3	2.00	0.62
4:B:12:PHE:CE2	4:B:16:VAL:HG11	2.35	0.62
3:C:624:LEU:HD12	3:C:680:VAL:HG22	1.81	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:11:DG:H2"	1:P:12:DG:H8	1.65	0.61
4:B:4:ILE:HD12	4:B:4:ILE:N	2.15	0.61
3:C:513:ALA:HB2	3:C:555:PHE:HB2	1.82	0.61
3:A:22:VAL:HG23	3:A:171:ASN:CG	2.25	0.61
3:A:236:THR:HG22	3:A:240:GLU:CD	2.25	0.61
4:B:16:VAL:HG21	4:B:25:VAL:CG2	2.30	0.61
3:C:525:ILE:C	3:C:527:GLY:H	2.08	0.61
3:A:626:ILE:HG22	3:A:656:ILE:HG21	1.82	0.61
3:C:246:LEU:HD21	3:C:447:TYR:CE1	2.36	0.61
3:A:12:LEU:O	3:A:15:VAL:HG12	2.01	0.61
4:D:75:ILE:HA	4:D:77:THR:H	1.65	0.61
3:C:59:HIS:HA	3:C:91:THR:CG2	2.31	0.61
4:D:16:VAL:HG21	4:D:25:VAL:HG22	1.83	0.61
3:A:223:LEU:O	3:A:226:LYS:HB3	2.01	0.61
3:C:353:PRO:HB2	3:C:356:TYR:CZ	2.36	0.61
3:A:45:ALA:O	3:A:48:ALA:HB3	2.01	0.61
3:A:236:THR:HG22	3:A:240:GLU:OE1	2.01	0.61
3:A:35:ARG:HB3	3:A:36:PRO:CD	2.31	0.61
3:C:404:LYS:HA	3:C:409:TYR:CE2	2.30	0.61
3:C:198:PHE:C	3:C:200:ASP:H	2.09	0.60
4:D:95:SER:HB2	4:D:98:GLN:HG3	1.83	0.60
3:A:373:ARG:HD3	3:A:380:GLN:HE22	1.66	0.60
4:D:37:MET:O	4:D:40:PRO:HD2	2.01	0.60
3:C:391:MET:CE	3:C:392:ILE:HD13	2.31	0.60
3:C:425:ALA:O	3:C:426:VAL:HG22	2.01	0.60
3:A:488:MET:HA	3:A:565:LEU:CD1	2.31	0.60
3:A:628:LYS:HD2	3:A:632:MET:SD	2.41	0.60
4:D:58:LEU:HD12	4:D:63:ASN:HD22	1.67	0.60
3:A:9:ASN:OD1	3:A:17:LYS:N	2.34	0.60
3:A:139:TYR:OH	3:A:167:MET:HB2	2.02	0.60
3:C:357:THR:N	3:C:361:ALA:O	2.33	0.60
3:C:528:PHE:C	3:C:528:PHE:CD2	2.79	0.60
3:A:15:VAL:O	3:A:71:LYS:NZ	2.34	0.60
3:A:429:ARG:NH1	3:A:653:HIS:CE1	2.69	0.60
3:A:35:ARG:HB3	3:A:36:PRO:HD2	1.83	0.60
3:C:624:LEU:HD13	3:C:624:LEU:O	2.01	0.60
3:A:276:HIS:HD2	3:A:278:ARG:H	1.50	0.59
3:A:319:GLU:HB3	3:A:320:TYR:CD2	2.37	0.59
3:C:24:TYR:HB2	3:C:31:TYR:CE2	2.36	0.59
3:C:265:TYR:OH	4:D:68:PRO:HG3	2.03	0.59
3:C:562:ILE:HD12	3:C:562:ILE:H	1.67	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:198:PHE:C	3:A:200:ASP:H	2.10	0.59
3:A:429:ARG:HD2	3:A:653:HIS:ND1	2.15	0.59
4:B:75:ILE:HA	4:B:77:THR:H	1.68	0.59
3:A:7:GLU:O	3:A:19:HIS:HB2	2.01	0.59
3:C:279:THR:HG22	3:C:280:GLY:N	2.17	0.59
3:C:382:ALA:O	3:C:386:ILE:HG13	2.01	0.59
3:A:43:LEU:HD22	3:A:81:PHE:CD1	2.38	0.59
3:C:22:VAL:HG21	3:C:172:VAL:CA	2.31	0.59
3:C:223:LEU:HD21	3:C:648:TYR:CE2	2.37	0.59
4:D:7:LEU:HD21	4:D:56:ALA:HB1	1.84	0.59
3:A:490:ARG:HD2	3:C:196:ILE:HG12	1.85	0.59
3:C:242:LEU:HD11	3:C:447:TYR:HD1	1.67	0.59
3:C:289:ILE:HG21	4:D:34:PRO:HG2	1.85	0.59
4:D:78:LEU:C	4:D:79:LEU:HD12	2.27	0.59
3:A:223:LEU:O	3:A:223:LEU:HD12	2.02	0.59
3:C:366:ASP:CG	3:C:387:LYS:HZ2	2.11	0.59
3:C:572:THR:HG22	3:C:572:THR:O	2.02	0.59
4:B:78:LEU:C	4:B:79:LEU:HD12	2.29	0.58
3:C:2:ILE:HD11	3:C:49:GLU:CD	2.28	0.58
3:C:274:PHE:HA	3:C:289:ILE:CD1	2.33	0.58
3:A:488:MET:HA	3:A:565:LEU:HD13	1.85	0.58
3:C:207:TRP:HZ3	3:C:214:VAL:HG12	1.67	0.58
3:A:436:ASN:ND2	3:A:439:GLN:HG2	2.18	0.58
3:C:205:THR:HG23	3:C:209:GLU:HG3	1.85	0.58
3:C:521:ALA:O	3:C:525:ILE:HG22	2.03	0.58
4:D:4:ILE:CD1	4:D:43:ASP:HA	2.33	0.58
3:C:425:ALA:HB2	3:C:429:ARG:O	2.03	0.58
3:C:39:PHE:HD2	3:C:77:LEU:HD11	1.68	0.58
3:C:223:LEU:HD21	3:C:648:TYR:HE2	1.67	0.58
3:A:23:ILE:O	3:A:31:TYR:HA	2.04	0.58
3:C:649:MET:HE2	3:C:659:GLY:N	2.19	0.58
4:B:29:ALA:HB1	4:B:31:TRP:NE1	2.18	0.58
3:C:65:ASP:O	3:C:69:LEU:HG	2.03	0.57
4:B:19:ALA:C	4:B:21:GLY:H	2.12	0.57
3:C:250:ARG:HH11	3:C:393:GLN:CD	2.12	0.57
3:C:391:MET:HE3	3:C:395:ARG:HG3	1.86	0.57
4:D:19:ALA:C	4:D:21:GLY:H	2.11	0.57
3:A:223:LEU:HD12	3:A:223:LEU:C	2.30	0.57
4:D:67:ALA:O	4:D:69:LYS:N	2.37	0.57
4:D:102:PHE:O	4:D:106:ASN:ND2	2.34	0.57
3:A:446:PRO:C	3:A:447:TYR:CD2	2.83	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:633:LEU:HD21	3:A:669:VAL:HA	1.86	0.57
3:C:91:THR:OG1	3:C:181:LEU:HD12	2.05	0.57
3:A:135:MET:HG3	3:A:135:MET:O	2.03	0.57
3:A:516:PRO:HG2	3:A:517:THR:H	1.69	0.57
3:C:128:TRP:HB2	3:C:181:LEU:HD23	1.86	0.57
3:C:525:ILE:CG2	3:C:526:TYR:H	2.13	0.57
1:Q:19:DC:H6	1:Q:19:DC:H5'	1.68	0.57
3:A:342:ILE:O	3:A:346:LEU:HB2	2.05	0.57
4:B:13:ASP:OD1	4:B:18:LYS:HE2	2.05	0.57
3:A:2:ILE:HD13	3:A:49:GLU:HG3	1.86	0.57
4:B:58:LEU:HD23	4:B:59:ASN:O	2.05	0.57
4:B:75:ILE:HA	4:B:77:THR:N	2.20	0.57
3:C:487:PHE:HB3	3:C:565:LEU:HD11	1.86	0.57
3:A:249:ARG:HD2	3:A:249:ARG:O	2.04	0.56
3:A:372:VAL:O	3:A:373:ARG:HD3	2.05	0.56
3:C:371:GLY:O	3:C:373:ARG:HG2	2.05	0.56
3:A:474:ILE:HG21	3:A:673:ALA:HB1	1.87	0.56
3:C:145:ARG:C	3:C:147:LEU:H	2.13	0.56
3:C:182:LEU:HD12	3:C:182:LEU:O	2.05	0.56
4:D:75:ILE:HA	4:D:77:THR:N	2.20	0.56
3:C:57:VAL:HG22	3:C:89:ILE:CB	2.35	0.56
3:A:250:ARG:NH1	3:A:396:ILE:CD1	2.69	0.56
3:C:128:TRP:HA	3:C:131:ARG:HB2	1.88	0.56
3:A:203:TYR:CE1	3:A:204:THR:HG23	2.41	0.56
3:A:61:GLY:O	3:A:66:VAL:HB	2.05	0.56
3:C:22:VAL:HG23	3:C:171:ASN:OD1	2.06	0.56
3:C:23:ILE:O	3:C:31:TYR:HA	2.06	0.56
3:C:281:LYS:HG3	3:C:282:PRO:HD2	1.88	0.56
4:B:39:ALA:CB	4:B:40:PRO:HD3	2.32	0.55
3:A:195:GLU:HG3	3:C:572:THR:OG1	2.06	0.55
3:A:329:VAL:CG1	4:B:75:ILE:HD11	2.37	0.55
3:C:505:ILE:HG23	3:C:506:HIS:N	2.21	0.55
3:C:7:GLU:O	3:C:19:HIS:HB2	2.06	0.55
3:C:365:ASP:OD1	3:C:367:GLU:HB3	2.07	0.55
3:A:181:LEU:HD22	3:A:185:LEU:HD11	1.87	0.55
3:A:235:ASP:OD2	3:A:238:ALA:HB2	2.06	0.55
4:B:67:ALA:O	4:B:69:LYS:N	2.39	0.55
3:A:171:ASN:O	3:A:174:ASP:HB2	2.06	0.55
3:A:597:ASP:OD2	3:A:599:ARG:HD2	2.06	0.55
3:C:205:THR:O	3:C:209:GLU:HB2	2.07	0.55
3:A:276:HIS:CD2	3:A:277:PRO:HD2	2.41	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:478:GLY:O	3:C:482:ARG:HG3	2.07	0.55
3:A:145:ARG:C	3:A:147:LEU:H	2.14	0.55
4:B:4:ILE:HD12	4:B:4:ILE:H	1.72	0.55
3:C:181:LEU:HD13	3:C:185:LEU:HG	1.89	0.55
3:A:13:GLU:H	3:A:13:GLU:CD	2.15	0.54
3:A:213:ALA:HB2	3:A:597:ASP:OD1	2.07	0.54
3:A:525:ILE:O	3:A:527:GLY:N	2.40	0.54
3:A:670:ILE:CG2	3:A:694:GLY:HA3	2.36	0.54
4:B:95:SER:N	4:B:98:GLN:HB2	2.22	0.54
3:C:445:SER:O	3:C:448:GLY:N	2.34	0.54
4:B:23:ILE:HA	4:B:54:THR:O	2.06	0.54
3:C:60:ASN:OD1	3:C:60:ASN:O	2.26	0.54
3:A:144:LYS:O	3:A:148:GLU:N	2.40	0.54
3:A:443:VAL:HA	3:A:448:GLY:O	2.06	0.54
3:A:699:ASN:OD1	3:A:701:ALA:HB3	2.08	0.54
4:D:79:LEU:HD23	4:D:86:VAL:CG2	2.38	0.54
4:D:38:ILE:HD11	4:D:78:LEU:HD11	1.90	0.54
3:C:105:THR:HG22	3:C:110:LEU:O	2.08	0.54
3:C:346:LEU:CD1	3:C:372:VAL:HG11	2.33	0.54
4:B:70:TYR:CZ	4:B:81:PHE:HZ	2.24	0.54
3:C:236:THR:O	3:C:240:GLU:HG3	2.08	0.54
3:A:28:THR:HG22	3:A:30:GLU:HB2	1.88	0.54
4:D:23:ILE:HA	4:D:54:THR:O	2.06	0.54
2:T:9:DC:H4'	3:A:432:HIS:O	2.08	0.54
3:A:593:ILE:CG2	3:A:594:LYS:N	2.71	0.54
3:A:622:CYS:O	3:A:626:ILE:HG12	2.08	0.54
3:C:1:MET:C	3:C:2:ILE:HG13	2.33	0.54
3:C:224:LEU:HD12	3:C:422:PRO:HB3	1.90	0.54
3:C:228:GLU:O	3:C:417:HIS:HD2	1.90	0.54
4:D:79:LEU:HG	4:D:89:THR:HG22	1.89	0.54
4:B:41:ILE:HG23	4:B:96:LYS:HA	1.90	0.53
4:B:53:LEU:HD13	4:B:107:LEU:CD1	2.38	0.53
3:C:264:TRP:CZ3	3:C:345:LYS:HE2	2.43	0.53
3:C:649:MET:HE2	3:C:659:GLY:CA	2.38	0.53
4:D:13:ASP:O	4:D:17:LEU:HB2	2.08	0.53
3:A:145:ARG:O	3:A:147:LEU:N	2.42	0.53
3:A:393:GLN:HE21	3:A:393:GLN:CA	2.22	0.53
3:A:489:ALA:C	3:A:491:PHE:N	2.66	0.53
3:A:628:LYS:CD	3:A:632:MET:HG3	2.37	0.53
3:C:525:ILE:O	3:C:527:GLY:N	2.42	0.53
3:A:624:LEU:HD22	3:A:684:TRP:CH2	2.43	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:207:TRP:HA	3:C:207:TRP:CE3	2.42	0.53
4:B:16:VAL:HG13	4:B:17:LEU:N	2.23	0.53
3:C:145:ARG:O	3:C:147:LEU:N	2.41	0.53
4:D:72:ILE:CD1	4:D:77:THR:HG21	2.38	0.53
3:C:592:TRP:CE3	3:C:600:LYS:HG3	2.44	0.53
1:P:21:2DT:OP2	1:P:21:2DT:H6	2.08	0.53
3:A:355:LYS:C	3:A:363:VAL:HG23	2.34	0.53
3:A:597:ASP:OD1	3:A:597:ASP:C	2.51	0.53
3:A:628:LYS:HD2	3:A:632:MET:CG	2.38	0.53
3:C:506:HIS:HA	3:C:509:ASN:HD22	1.73	0.53
2:U:8:DG:H4'	3:C:431:THR:HG22	1.91	0.53
3:A:182:LEU:O	3:A:186:LEU:HG	2.09	0.53
3:A:469:TRP:CE3	3:A:660:CYS:C	2.87	0.53
3:A:474:ILE:N	3:A:474:ILE:CD1	2.72	0.53
3:C:62:HIS:HB2	3:C:90:ASP:OD2	2.09	0.53
3:C:159:GLU:HG2	3:C:160:TRP:CD1	2.43	0.53
3:C:435:PRO:O	3:C:437:LEU:HD12	2.09	0.53
3:A:2:ILE:HG22	3:A:25:ASP:HA	1.91	0.53
3:A:364:VAL:HA	3:A:368:VAL:HG21	1.90	0.53
3:A:698:PRO:HG2	3:A:702:ILE:HD12	1.91	0.53
4:B:35:CYS:SG	4:B:75:ILE:HB	2.49	0.53
3:C:353:PRO:O	3:C:356:TYR:HE1	1.91	0.53
3:A:154:TYR:HH	3:A:159:GLU:HG2	1.70	0.52
3:A:232:PHE:CE1	3:A:455:PHE:HB3	2.44	0.52
3:A:378:GLU:O	3:A:381:ALA:HB3	2.08	0.52
1:P:16:DG:H2''	1:P:17:DT:C5'	2.39	0.52
1:Q:21:2DT:OP2	1:Q:21:2DT:H6	2.10	0.52
3:A:423:ASN:O	3:A:425:ALA:N	2.43	0.52
3:C:276:HIS:HB3	3:C:279:THR:HB	1.90	0.52
3:A:158:MET:HA	3:A:161:TRP:CD1	2.44	0.52
3:A:250:ARG:NH1	3:A:396:ILE:HG21	2.25	0.52
4:B:39:ALA:HB3	4:B:40:PRO:CD	2.33	0.52
3:A:343:GLN:O	3:A:347:GLN:HB2	2.10	0.52
3:C:55:LEU:HD21	3:C:203:TYR:HA	1.90	0.52
3:A:65:ASP:O	3:A:69:LEU:HG	2.08	0.52
3:A:164:ASN:C	3:A:164:ASN:ND2	2.49	0.52
3:A:267:PRO:HD3	4:B:31:TRP:CZ3	2.44	0.52
3:C:265:TYR:HE1	4:D:68:PRO:HG3	1.74	0.52
3:C:395:ARG:HH11	3:C:395:ARG:HG2	1.74	0.52
3:C:15:VAL:HG22	3:C:72:LEU:HD21	1.91	0.52
3:C:49:GLU:OE1	3:C:52:ARG:HD2	2.10	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:233:PRO:HB2	3:A:456:GLY:O	2.10	0.52
3:A:321:VAL:CG1	4:B:98:GLN:NE2	2.73	0.52
4:B:82:LYS:O	4:B:83:ASN:HB2	2.09	0.52
3:C:168:MET:HE3	3:C:168:MET:HA	1.91	0.52
3:C:264:TRP:CE3	3:C:345:LYS:HE2	2.44	0.52
3:C:326:TYR:CB	4:D:91:VAL:HG12	2.40	0.52
3:C:421:ASN:OD1	3:C:423:ASN:N	2.36	0.52
1:P:12:DG:H2''	1:P:13:DC:O5'	2.10	0.52
3:A:525:ILE:C	3:A:527:GLY:N	2.66	0.52
3:A:447:TYR:CD2	3:A:447:TYR:N	2.77	0.52
3:C:76:GLN:O	3:C:77:LEU:HD23	2.10	0.52
3:C:389:TYR:CD1	3:C:389:TYR:C	2.87	0.52
4:D:95:SER:N	4:D:98:GLN:HB2	2.25	0.52
3:A:158:MET:HA	3:A:161:TRP:CE2	2.45	0.51
3:A:317:THR:HG22	3:A:317:THR:O	2.11	0.51
3:A:569:ILE:HD11	3:A:613:LEU:CD2	2.37	0.51
4:D:32:CYS:HB3	4:D:35:CYS:HB2	1.91	0.51
3:A:252:GLU:O	3:A:253:LEU:C	2.53	0.51
3:C:233:PRO:HB2	3:C:456:GLY:O	2.10	0.51
3:C:443:VAL:HA	3:C:448:GLY:O	2.10	0.51
3:A:366:ASP:OD2	3:A:387:LYS:HE3	2.09	0.51
3:C:223:LEU:O	3:C:226:LYS:HB3	2.11	0.51
3:A:478:GLY:O	3:A:482:ARG:HG3	2.10	0.51
3:A:597:ASP:OD2	3:A:599:ARG:NH1	2.40	0.51
3:C:343:GLN:OE1	3:C:343:GLN:C	2.54	0.51
3:A:35:ARG:O	3:A:38:ASP:N	2.43	0.51
3:C:213:ALA:HB2	3:C:597:ASP:OD1	2.11	0.51
1:Q:16:DG:H2''	1:Q:17:DT:C5'	2.41	0.51
3:A:234:PHE:CE2	3:A:239:ILE:HG13	2.46	0.51
3:A:235:ASP:O	3:A:236:THR:C	2.51	0.51
3:A:389:TYR:CD1	3:A:389:TYR:C	2.88	0.51
3:C:235:ASP:O	3:C:236:THR:C	2.52	0.51
3:C:252:GLU:O	3:C:253:LEU:C	2.53	0.51
3:C:336:PRO:O	3:C:342:ILE:HD11	2.11	0.51
4:D:9:ASP:OD2	4:D:63:ASN:HA	2.11	0.51
3:A:198:PHE:HB3	3:A:206:PHE:HD2	1.76	0.51
3:A:445:SER:O	3:A:446:PRO:C	2.52	0.51
3:A:505:ILE:HG23	3:A:506:HIS:N	2.26	0.51
3:C:144:LYS:O	3:C:148:GLU:N	2.44	0.51
3:A:624:LEU:HD23	3:A:680:VAL:HG13	1.93	0.50
3:C:3:VAL:HG12	3:C:3:VAL:O	2.10	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:64:TYR:CD2	3:C:65:ASP:N	2.79	0.50
3:C:440:ILE:CB	3:C:452:ARG:HH11	2.22	0.50
3:C:35:ARG:HG3	3:C:35:ARG:HH11	1.76	0.50
3:C:246:LEU:CD2	3:C:447:TYR:CE1	2.94	0.50
3:C:410:VAL:HG23	3:C:410:VAL:O	2.10	0.50
3:A:243:TYR:CD1	3:A:243:TYR:O	2.64	0.50
3:A:392:ILE:HG22	3:A:396:ILE:HD11	1.93	0.50
3:C:5:ASP:OD2	3:C:171:ASN:ND2	2.44	0.50
3:C:489:ALA:C	3:C:491:PHE:N	2.69	0.50
4:D:72:ILE:HD12	4:D:77:THR:HG21	1.92	0.50
3:A:357:THR:O	3:A:359:LYS:N	2.42	0.50
4:B:45:ILE:O	4:B:49:TYR:HB2	2.12	0.50
4:D:31:TRP:NE1	4:D:61:ASP:OD2	2.43	0.50
3:A:608:ALA:O	3:A:609:ALA:C	2.55	0.50
4:D:23:ILE:HD12	4:D:54:THR:HB	1.93	0.50
3:C:2:ILE:HG22	3:C:3:VAL:N	2.26	0.50
3:C:8:ALA:HB3	3:C:64:TYR:OH	2.11	0.50
3:C:155:VAL:O	3:C:156:ASP:C	2.55	0.50
3:C:234:PHE:CE1	3:C:239:ILE:HG13	2.46	0.50
3:A:24:TYR:HA	3:A:30:GLU:O	2.11	0.50
3:C:24:TYR:CG	3:C:31:TYR:CE2	2.99	0.50
3:C:150:GLN:CD	3:C:150:GLN:N	2.69	0.50
3:C:633:LEU:HD21	3:C:669:VAL:HA	1.94	0.50
3:A:321:VAL:HG11	4:B:98:GLN:NE2	2.27	0.50
3:C:253:LEU:HD11	3:C:388:GLU:HG2	1.92	0.50
3:C:608:ALA:O	3:C:609:ALA:C	2.55	0.50
2:U:9:DC:H4'	3:C:432:HIS:O	2.12	0.49
3:C:446:PRO:C	3:C:447:TYR:HD2	2.20	0.49
3:A:165:GLU:O	3:A:166:GLU:C	2.56	0.49
3:A:349:ALA:HB3	3:A:374:VAL:HG11	1.93	0.49
3:C:391:MET:HE2	3:C:392:ILE:CA	2.42	0.49
4:D:16:VAL:HG13	4:D:17:LEU:N	2.26	0.49
4:D:38:ILE:CD1	4:D:78:LEU:HD11	2.41	0.49
4:B:11:SER:O	4:B:15:ASP:HB2	2.11	0.49
1:P:11:DG:C2'	1:P:12:DG:C8	2.96	0.49
1:P:21:2DT:OP2	1:P:21:2DT:H71	2.13	0.49
3:A:250:ARG:HH11	3:A:396:ILE:CD1	2.25	0.49
3:C:234:PHE:CD2	3:C:410:VAL:HG12	2.48	0.49
3:C:421:ASN:HB3	3:C:431:THR:OG1	2.12	0.49
3:A:336:PRO:HB2	3:A:389:TYR:CD1	2.47	0.49
3:C:625:TRP:CD2	3:C:677:MET:HE2	2.47	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:155:VAL:O	3:A:156:ASP:C	2.56	0.49
3:A:267:PRO:HB3	4:B:31:TRP:HZ3	1.78	0.49
3:A:490:ARG:CG	3:A:490:ARG:O	2.61	0.49
3:C:207:TRP:HA	3:C:207:TRP:HE3	1.78	0.49
3:C:563:ALA:O	3:C:567:GLU:OE1	2.30	0.49
2:T:8:DG:H4'	3:A:431:THR:HG22	1.95	0.49
3:A:336:PRO:HB2	3:A:389:TYR:CE1	2.48	0.49
3:C:206:PHE:O	3:C:210:SER:OG	2.21	0.49
3:A:445:SER:O	3:A:448:GLY:N	2.33	0.49
4:B:3:LYS:CB	4:B:4:ILE:HD12	2.43	0.49
4:B:103:LEU:O	4:B:106:ASN:N	2.42	0.49
3:C:84:PRO:HG2	3:C:87:ASN:OD1	2.13	0.49
3:C:257:LEU:C	3:C:259:GLU:N	2.70	0.49
3:A:592:TRP:HE3	3:A:593:ILE:C	2.20	0.48
3:C:265:TYR:CZ	4:D:68:PRO:HG3	2.48	0.48
4:D:59:ASN:OD1	4:D:59:ASN:C	2.55	0.48
3:A:22:VAL:HG12	3:A:23:ILE:N	2.29	0.48
3:A:392:ILE:HG22	3:A:396:ILE:CD1	2.43	0.48
3:A:392:ILE:CG2	3:A:396:ILE:HD11	2.43	0.48
3:A:592:TRP:HE3	3:A:593:ILE:O	1.96	0.48
3:A:640:HIS:CD2	3:A:647:ALA:HA	2.48	0.48
3:C:357:THR:O	3:C:359:LYS:N	2.43	0.48
3:A:257:LEU:C	3:A:259:GLU:N	2.70	0.48
4:B:77:THR:HG22	4:B:79:LEU:CD1	2.43	0.48
3:C:6:ILE:HG22	3:C:42:TYR:OH	2.14	0.48
3:C:445:SER:O	3:C:446:PRO:C	2.54	0.48
3:C:525:ILE:C	3:C:527:GLY:N	2.68	0.48
3:A:371:GLY:O	3:A:373:ARG:HG2	2.13	0.48
3:C:163:PHE:CD1	3:C:164:ASN:N	2.81	0.48
4:D:104:ASP:C	4:D:106:ASN:H	2.22	0.48
1:P:16:DG:C1'	1:P:17:DT:H5''	2.42	0.48
1:P:20:DC:H42	2:T:6:DA:H61	1.62	0.48
3:A:22:VAL:HG21	3:A:172:VAL:N	2.28	0.48
3:C:127:ALA:O	3:C:131:ARG:HB2	2.12	0.48
3:A:421:ASN:O	3:A:430:ALA:HB1	2.13	0.48
3:C:203:TYR:CD1	3:C:204:THR:N	2.81	0.48
3:A:590:ARG:C	3:A:592:TRP:H	2.22	0.48
3:C:76:GLN:C	3:C:77:LEU:HD23	2.38	0.48
3:A:329:VAL:HG11	4:B:31:TRP:HH2	1.78	0.48
3:C:2:ILE:HG23	3:C:25:ASP:HA	1.94	0.48
3:C:35:ARG:O	3:C:38:ASP:N	2.45	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:423:ASN:O	3:C:425:ALA:N	2.47	0.48
3:C:55:LEU:HD22	3:C:89:ILE:CD1	2.44	0.48
3:C:660:CYS:SG	3:C:669:VAL:HG21	2.54	0.48
1:Q:18:DG:C4	1:Q:19:DC:C5	3.02	0.48
3:A:276:HIS:CB	3:A:279:THR:HB	2.43	0.48
3:A:346:LEU:HD11	3:A:383:ILE:HG12	1.96	0.48
3:A:676:ALA:O	3:A:679:TRP:HB3	2.14	0.48
3:C:155:VAL:O	3:C:157:GLY:N	2.47	0.48
3:A:59:HIS:CD2	3:A:132:LEU:HD13	2.50	0.47
3:C:320:TYR:CE1	4:D:91:VAL:HB	2.49	0.47
3:C:365:ASP:OD1	3:C:368:VAL:HG12	2.13	0.47
3:A:12:LEU:HD13	3:A:68:ALA:HB2	1.97	0.47
3:C:176:VAL:HG23	3:C:177:VAL:N	2.29	0.47
1:Q:12:DG:H2''	1:Q:13:DC:O5'	2.14	0.47
3:A:425:ALA:O	3:A:426:VAL:CB	2.61	0.47
3:A:678:ARG:HG2	3:A:678:ARG:HH11	1.79	0.47
3:C:624:LEU:HD11	3:C:679:TRP:HZ3	1.78	0.47
4:D:12:PHE:O	4:D:16:VAL:HG12	2.14	0.47
3:A:139:TYR:CE1	3:A:167:MET:HA	2.50	0.47
3:C:165:GLU:O	3:C:166:GLU:C	2.58	0.47
3:A:64:TYR:O	3:A:65:ASP:C	2.57	0.47
3:A:351:TRP:O	3:A:353:PRO:HD3	2.14	0.47
3:C:2:ILE:HG22	3:C:3:VAL:H	1.78	0.47
3:C:421:ASN:O	3:C:430:ALA:HB1	2.14	0.47
3:C:633:LEU:CD1	3:C:669:VAL:HG13	2.42	0.47
1:P:16:DG:C2'	1:P:17:DT:H5''	2.44	0.47
1:Q:13:DC:N4	2:U:14:DG:H1	2.10	0.47
3:A:246:LEU:HD21	3:A:447:TYR:CE1	2.49	0.47
3:C:24:TYR:HA	3:C:30:GLU:O	2.14	0.47
3:C:223:LEU:HD11	3:C:648:TYR:CD2	2.49	0.47
3:A:49:GLU:OE2	3:A:54:GLY:HA3	2.14	0.47
3:A:191:TYR:CD2	3:A:211:LEU:HD23	2.50	0.47
3:A:347:GLN:OE1	3:A:353:PRO:HG2	2.15	0.47
3:A:415:LYS:HE3	3:A:642:TRP:NE1	2.28	0.47
4:B:27:PHE:CD1	4:B:27:PHE:N	2.82	0.47
3:C:224:LEU:O	3:C:228:GLU:HG3	2.14	0.47
3:C:253:LEU:CD1	3:C:388:GLU:HG2	2.44	0.47
3:C:316:ASP:C	3:C:318:ARG:N	2.65	0.47
3:C:625:TRP:CG	3:C:677:MET:HE2	2.50	0.47
3:C:649:MET:HE2	3:C:658:VAL:C	2.39	0.47
4:D:103:LEU:O	4:D:106:ASN:N	2.42	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:20:DC:N4	2:T:6:DA:H61	2.12	0.47
3:C:22:VAL:HG12	3:C:23:ILE:N	2.30	0.47
3:A:190:HIS:NE2	3:A:600:LYS:HG3	2.30	0.47
3:A:698:PRO:CG	3:A:702:ILE:HD12	2.45	0.47
4:B:42:LEU:HA	4:B:45:ILE:CG1	2.44	0.47
4:D:16:VAL:CG1	4:D:17:LEU:N	2.76	0.47
4:D:59:ASN:OD1	4:D:61:ASP:N	2.46	0.47
3:A:59:HIS:O	3:A:60:ASN:HB3	2.14	0.47
3:A:356:TYR:HA	3:A:362:PRO:HA	1.97	0.47
3:C:246:LEU:C	3:C:248:ALA:N	2.72	0.47
3:C:590:ARG:C	3:C:592:TRP:H	2.23	0.47
3:A:216:ILE:CD1	3:A:624:LEU:HD13	2.45	0.46
3:A:391:MET:HE1	3:A:392:ILE:HD13	1.97	0.46
3:C:479:LEU:HD11	3:C:621:ILE:HG21	1.96	0.46
3:C:625:TRP:CZ2	3:C:692:THR:HG21	2.50	0.46
1:Q:16:DG:C1'	1:Q:17:DT:H5''	2.44	0.46
3:A:569:ILE:O	3:A:570:GLN:C	2.58	0.46
3:C:3:VAL:CG1	3:C:175:VAL:HG13	2.40	0.46
3:C:392:ILE:O	3:C:396:ILE:HG13	2.15	0.46
3:C:517:THR:HG23	3:C:520:ASN:CB	2.40	0.46
3:A:353:PRO:O	3:A:356:TYR:HE1	1.98	0.46
3:A:642:TRP:HA	3:A:642:TRP:CE3	2.51	0.46
3:C:634:VAL:C	3:C:636:LYS:H	2.23	0.46
3:A:2:ILE:CD1	3:A:49:GLU:HG3	2.45	0.46
3:A:321:VAL:HG12	3:A:322:ALA:N	2.31	0.46
3:A:569:ILE:O	3:A:572:THR:N	2.47	0.46
3:C:21:GLY:HA3	3:C:42:TYR:CE1	2.51	0.46
3:C:24:TYR:HB2	3:C:31:TYR:HE2	1.79	0.46
3:A:155:VAL:O	3:A:157:GLY:N	2.49	0.46
3:A:462:ASP:OD2	3:A:463:GLY:N	2.49	0.46
3:C:336:PRO:HB2	3:C:389:TYR:CD1	2.50	0.46
3:C:353:PRO:O	3:C:356:TYR:CE1	2.69	0.46
3:A:91:THR:O	3:A:95:SER:HB2	2.16	0.46
3:A:267:PRO:HB3	4:B:31:TRP:CZ3	2.51	0.46
3:A:666:ALA:O	3:A:670:ILE:HG13	2.16	0.46
3:A:458:GLU:OE2	3:A:699:ASN:ND2	2.46	0.46
4:B:42:LEU:HA	4:B:45:ILE:HG13	1.98	0.46
3:C:327:THR:O	4:D:74:GLY:HA2	2.16	0.46
3:A:66:VAL:HG12	3:A:67:PRO:N	2.29	0.46
3:A:376:ASP:HB3	3:A:379:LYS:HD2	1.97	0.46
3:A:570:GLN:O	3:A:574:VAL:HG23	2.15	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:57:VAL:HG22	3:C:89:ILE:HG21	1.98	0.46
3:C:364:VAL:HG12	3:C:364:VAL:O	2.15	0.46
3:C:436:ASN:CG	3:C:439:GLN:HG2	2.41	0.46
4:D:27:PHE:N	4:D:27:PHE:CD1	2.83	0.46
1:P:20:DC:H42	2:T:6:DA:N6	2.13	0.46
3:A:22:VAL:HG21	3:A:172:VAL:HA	1.97	0.46
3:A:246:LEU:C	3:A:248:ALA:N	2.74	0.46
3:A:257:LEU:O	3:A:259:GLU:N	2.49	0.46
3:A:395:ARG:HG2	3:A:395:ARG:HH11	1.81	0.46
3:C:8:ALA:HB1	3:C:15:VAL:CG2	2.46	0.46
3:C:139:TYR:HB2	3:C:170:TYR:CD1	2.50	0.46
3:C:321:VAL:CG1	3:C:322:ALA:N	2.80	0.46
1:P:13:DC:H2''	1:P:14:DC:OP2	2.16	0.45
3:A:292:PRO:HB2	3:A:294:VAL:HG21	1.97	0.45
4:B:38:ILE:O	4:B:38:ILE:HG12	2.17	0.45
3:C:321:VAL:HG12	3:C:322:ALA:O	2.16	0.45
3:C:524:PHE:O	3:C:524:PHE:CD1	2.69	0.45
1:P:14:DC:H2''	1:P:15:DA:O5'	2.16	0.45
3:A:649:MET:HE2	3:A:659:GLY:CA	2.47	0.45
4:B:65:GLY:O	4:B:68:PRO:HG2	2.16	0.45
4:B:104:ASP:C	4:B:106:ASN:H	2.24	0.45
3:C:39:PHE:CD2	3:C:77:LEU:HD11	2.48	0.45
3:C:425:ALA:C	3:C:426:VAL:HG22	2.41	0.45
1:Q:16:DG:C2'	1:Q:17:DT:H5''	2.46	0.45
3:A:126:GLU:HG2	3:A:127:ALA:N	2.26	0.45
3:A:602:HIS:CG	3:A:603:VAL:N	2.85	0.45
3:C:145:ARG:C	3:C:147:LEU:N	2.74	0.45
4:D:77:THR:HG22	4:D:79:LEU:CD1	2.47	0.45
3:A:620:LEU:H	3:A:620:LEU:HG	1.57	0.45
3:C:97:LEU:O	3:C:97:LEU:HG	2.14	0.45
3:A:181:LEU:O	3:A:182:LEU:C	2.60	0.45
3:A:279:THR:HG22	3:A:281:LYS:H	1.80	0.45
3:A:366:ASP:CG	3:A:387:LYS:HE3	2.42	0.45
3:A:373:ARG:HD3	3:A:380:GLN:NE2	2.30	0.45
3:A:391:MET:CE	3:A:392:ILE:HD13	2.46	0.45
3:A:688:CYS:O	3:A:689:LEU:C	2.60	0.45
4:B:22:ALA:HB3	4:B:53:LEU:HD12	1.99	0.45
3:C:415:LYS:HE2	3:C:642:TRP:NE1	2.32	0.45
4:D:8:THR:HG22	4:D:11:SER:OG	2.17	0.45
4:D:95:SER:C	4:D:97:GLY:N	2.73	0.45
3:A:145:ARG:C	3:A:147:LEU:N	2.74	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:158:MET:HA	3:A:161:TRP:NE1	2.32	0.45
3:A:177:VAL:O	3:A:180:ALA:HB3	2.16	0.45
3:A:368:VAL:HG23	3:A:369:LEU:N	2.31	0.45
3:C:22:VAL:HG11	3:C:172:VAL:HA	1.97	0.45
3:C:171:ASN:O	3:C:174:ASP:HB2	2.16	0.45
3:C:257:LEU:O	3:C:258:THR:C	2.59	0.45
3:C:443:VAL:HG12	3:C:449:GLU:HA	1.98	0.45
3:A:183:GLU:O	3:A:185:LEU:N	2.49	0.45
3:A:257:LEU:O	3:A:258:THR:C	2.60	0.45
4:B:12:PHE:CZ	4:B:16:VAL:HG11	2.52	0.45
4:B:67:ALA:N	4:B:68:PRO:HD2	2.32	0.45
4:B:95:SER:C	4:B:97:GLY:N	2.72	0.45
3:C:436:ASN:C	3:C:436:ASN:OD1	2.60	0.45
3:C:555:PHE:C	3:C:557:GLU:H	2.25	0.45
3:C:2:ILE:HD11	3:C:49:GLU:HB2	1.98	0.45
3:C:55:LEU:HD11	3:C:206:PHE:HB2	1.98	0.45
3:C:284:PRO:HG2	3:C:285:LYS:H	1.82	0.45
3:C:286:TYR:HA	3:C:287:PRO:HD3	1.84	0.45
3:A:163:PHE:CG	3:A:164:ASN:N	2.84	0.45
3:A:668:VAL:O	3:A:672:THR:N	2.45	0.45
4:B:59:ASN:OD1	4:B:61:ASP:N	2.32	0.45
4:B:94:LEU:N	4:B:94:LEU:HD23	2.32	0.45
3:C:188:ASP:OD1	3:C:191:TYR:HD1	1.99	0.45
3:C:504:ASP:OD2	3:C:507:THR:HG23	2.17	0.45
3:A:267:PRO:HA	3:A:329:VAL:HG12	1.99	0.45
3:A:440:ILE:O	3:A:441:PRO:C	2.59	0.45
3:C:23:ILE:HD11	3:C:46:LEU:HD21	1.99	0.45
3:C:384:ASP:HA	3:C:387:LYS:HD3	1.99	0.45
3:A:183:GLU:C	3:A:185:LEU:N	2.75	0.44
4:B:13:ASP:O	4:B:17:LEU:HB2	2.16	0.44
3:A:395:ARG:HG2	3:A:395:ARG:NH1	2.32	0.44
3:C:59:HIS:O	3:C:60:ASN:HB3	2.18	0.44
3:C:246:LEU:HD21	3:C:447:TYR:CD1	2.52	0.44
3:A:160:TRP:CE3	3:A:167:MET:HE2	2.52	0.44
3:A:560:PRO:O	3:A:564:ALA:N	2.49	0.44
3:C:57:VAL:HG21	3:C:182:LEU:HD22	1.99	0.44
3:C:59:HIS:ND1	3:C:91:THR:CG2	2.77	0.44
3:C:64:TYR:O	3:C:65:ASP:C	2.59	0.44
3:C:198:PHE:C	3:C:200:ASP:N	2.71	0.44
3:C:593:ILE:CG2	3:C:594:LYS:N	2.81	0.44
4:B:29:ALA:HB1	4:B:31:TRP:CD1	2.52	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:19:HIS:O	3:C:36:PRO:HD3	2.17	0.44
3:C:513:ALA:HB2	3:C:524:PHE:HE2	1.82	0.44
3:C:524:PHE:CD1	3:C:524:PHE:C	2.93	0.44
3:A:166:GLU:O	3:A:169:ASP:HB2	2.18	0.44
3:A:506:HIS:HA	3:A:509:ASN:ND2	2.33	0.44
3:A:560:PRO:O	3:A:563:ALA:HB3	2.18	0.44
3:A:666:ALA:O	3:A:670:ILE:CG1	2.66	0.44
4:B:19:ALA:C	4:B:21:GLY:N	2.75	0.44
3:C:321:VAL:HG12	3:C:322:ALA:N	2.31	0.44
4:D:74:GLY:O	4:D:77:THR:OG1	2.25	0.44
1:Q:16:DG:C6	1:Q:17:DT:C4	3.05	0.44
4:B:95:SER:H	4:B:98:GLN:HB2	1.82	0.44
3:C:96:ARG:HG3	3:C:96:ARG:HH11	1.82	0.44
3:C:511:ILE:O	3:C:512:ALA:C	2.61	0.44
3:C:596:LEU:HD13	3:C:621:ILE:HG13	2.00	0.44
1:Q:14:DC:H2''	1:Q:15:DA:O5'	2.18	0.44
3:A:176:VAL:HG23	3:A:177:VAL:N	2.32	0.44
3:A:421:ASN:HB3	3:A:431:THR:OG1	2.17	0.44
3:C:12:LEU:HD21	3:C:229:ARG:HD3	2.00	0.44
3:C:628:LYS:HE3	3:C:632:MET:HE3	1.99	0.44
3:C:668:VAL:O	3:C:672:THR:N	2.45	0.44
3:C:688:CYS:O	3:C:689:LEU:C	2.61	0.44
3:A:155:VAL:HG11	3:A:161:TRP:HH2	1.82	0.44
3:A:198:PHE:HB3	3:A:206:PHE:CD2	2.53	0.44
3:A:483:CYS:O	3:A:487:PHE:HD2	2.00	0.44
3:A:625:TRP:CD2	3:A:677:MET:HE2	2.53	0.44
3:C:181:LEU:O	3:C:182:LEU:C	2.61	0.44
3:A:630:GLU:O	3:A:634:VAL:HG23	2.18	0.44
4:B:38:ILE:HD12	4:B:78:LEU:HD11	1.98	0.44
3:C:128:TRP:HA	3:C:128:TRP:CE3	2.53	0.44
3:C:276:HIS:CB	3:C:279:THR:HB	2.47	0.44
3:C:356:TYR:HA	3:C:362:PRO:HA	2.00	0.44
3:C:569:ILE:HG21	3:C:609:ALA:HB1	2.00	0.44
3:C:640:HIS:NE2	3:C:647:ALA:HA	2.32	0.44
3:C:640:HIS:HD2	3:C:641:GLY:N	2.16	0.44
3:C:666:ALA:O	3:C:670:ILE:HG13	2.17	0.44
3:A:24:TYR:CD1	3:A:31:TYR:CE1	3.06	0.43
3:A:138:GLU:O	3:A:142:ASP:HB2	2.18	0.43
3:A:205:THR:HG23	3:A:209:GLU:HG3	2.00	0.43
3:A:250:ARG:HH11	3:A:396:ILE:HD12	1.80	0.43
3:A:528:PHE:CD2	3:A:528:PHE:C	2.94	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:8:THR:O	4:B:9:ASP:C	2.61	0.43
3:C:43:LEU:HB3	3:C:79:ARG:NH1	2.32	0.43
3:C:49:GLU:OE1	3:C:49:GLU:HA	2.17	0.43
3:C:386:ILE:O	3:C:387:LYS:C	2.61	0.43
3:A:60:ASN:O	3:A:60:ASN:CG	2.61	0.43
3:A:327:THR:CB	4:B:32:CYS:HG	2.26	0.43
3:C:3:VAL:HG22	3:C:57:VAL:HB	2.01	0.43
3:C:624:LEU:HD12	3:C:680:VAL:HG13	2.00	0.43
3:A:198:PHE:C	3:A:200:ASP:N	2.73	0.43
3:A:447:TYR:C	3:A:449:GLU:H	2.25	0.43
4:B:30:GLU:O	4:B:30:GLU:HG3	2.18	0.43
3:C:232:PHE:CE1	3:C:455:PHE:HB3	2.53	0.43
3:C:395:ARG:HG2	3:C:395:ARG:NH1	2.34	0.43
3:C:447:TYR:N	3:C:447:TYR:CD2	2.85	0.43
3:A:436:ASN:ND2	3:A:439:GLN:CG	2.80	0.43
4:B:14:THR:CG2	4:B:18:LYS:NZ	2.80	0.43
4:B:28:TRP:O	4:B:60:ILE:HG12	2.19	0.43
3:C:219:ARG:HB2	3:C:627:ILE:HD13	2.00	0.43
3:A:22:VAL:HG21	3:A:172:VAL:CA	2.47	0.43
3:A:329:VAL:HG11	4:B:31:TRP:CH2	2.53	0.43
3:A:505:ILE:HG23	3:A:506:HIS:H	1.83	0.43
3:A:634:VAL:C	3:A:636:LYS:H	2.26	0.43
4:B:19:ALA:O	4:B:21:GLY:N	2.45	0.43
3:C:8:ALA:HB1	3:C:15:VAL:HG23	2.00	0.43
3:C:63:LYS:HE2	3:C:228:GLU:CD	2.43	0.43
3:C:263:SER:CB	3:C:331:HIS:NE2	2.81	0.43
4:D:19:ALA:O	4:D:21:GLY:N	2.45	0.43
1:Q:19:DC:H5'	1:Q:19:DC:C6	2.52	0.43
3:A:616:SER:O	3:A:619:ALA:HB3	2.19	0.43
3:C:128:TRP:CE3	3:C:128:TRP:CA	3.02	0.43
3:A:58:PHE:HB3	3:A:61:GLY:HA3	2.01	0.43
3:A:421:ASN:C	3:A:421:ASN:OD1	2.61	0.43
3:A:510:GLN:HE22	3:A:518:ARG:HB2	1.84	0.43
3:A:640:HIS:HB2	3:A:646:PHE:CZ	2.54	0.43
3:C:676:ALA:O	3:C:679:TRP:HB3	2.18	0.43
4:D:19:ALA:C	4:D:21:GLY:N	2.75	0.43
1:Q:20:DC:H2''	3:C:438:ALA:O	2.19	0.43
3:A:368:VAL:O	3:A:372:VAL:HG23	2.19	0.43
3:C:6:ILE:HG22	3:C:42:TYR:CZ	2.54	0.43
3:C:317:THR:HG22	3:C:317:THR:O	2.19	0.43
3:C:596:LEU:HD12	3:C:617:ALA:HA	2.00	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:624:LEU:HD13	3:C:624:LEU:C	2.43	0.43
3:A:252:GLU:O	3:A:254:LEU:N	2.52	0.43
3:A:555:PHE:C	3:A:557:GLU:H	2.27	0.43
3:A:676:ALA:O	3:A:680:VAL:HG23	2.19	0.43
4:B:27:PHE:CE2	4:B:67:ALA:HA	2.54	0.43
3:C:43:LEU:HD13	3:C:81:PHE:CD1	2.53	0.43
3:A:376:ASP:C	3:A:376:ASP:OD2	2.62	0.43
3:A:490:ARG:HH11	3:C:196:ILE:HG12	1.82	0.43
4:B:27:PHE:HD1	4:B:27:PHE:H	1.67	0.43
3:C:35:ARG:HB3	3:C:36:PRO:CD	2.38	0.43
3:C:35:ARG:HG3	3:C:35:ARG:NH1	2.34	0.43
3:C:182:LEU:HD11	3:C:186:LEU:HD11	2.01	0.43
3:C:252:GLU:O	3:C:254:LEU:N	2.51	0.43
3:A:38:ASP:O	3:A:39:PHE:C	2.61	0.42
3:A:562:ILE:O	3:A:566:ARG:HG3	2.18	0.42
3:C:190:HIS:HD1	3:C:190:HIS:C	2.27	0.42
3:C:193:PRO:HA	3:C:194:PRO:HD3	1.89	0.42
3:C:417:HIS:O	3:C:418:GLY:C	2.62	0.42
4:D:32:CYS:SG	4:D:75:ILE:HG13	2.59	0.42
1:Q:13:DC:H2"	1:Q:14:DC:OP2	2.19	0.42
3:A:23:ILE:HG22	3:A:24:TYR:N	2.33	0.42
3:A:79:ARG:HG2	3:A:80:GLU:N	2.34	0.42
3:A:364:VAL:HA	3:A:368:VAL:CG2	2.49	0.42
3:C:183:GLU:C	3:C:185:LEU:N	2.77	0.42
3:C:249:ARG:O	3:C:253:LEU:HG	2.19	0.42
4:D:12:PHE:CZ	4:D:16:VAL:HG11	2.54	0.42
3:A:289:ILE:C	3:A:289:ILE:HD12	2.45	0.42
3:A:511:ILE:O	3:A:512:ALA:C	2.62	0.42
3:C:24:TYR:HB2	3:C:31:TYR:CD2	2.53	0.42
3:C:64:TYR:O	3:C:67:PRO:HD2	2.20	0.42
3:C:488:MET:HE2	3:C:496:TYR:CB	2.50	0.42
3:C:560:PRO:O	3:C:564:ALA:N	2.52	0.42
3:C:569:ILE:HG22	3:C:570:GLN:N	2.33	0.42
3:A:487:PHE:C	3:A:565:LEU:HD11	2.43	0.42
3:C:63:LYS:HE2	3:C:228:GLU:OE2	2.19	0.42
3:C:257:LEU:O	3:C:259:GLU:N	2.53	0.42
3:C:325:PRO:O	4:D:92:GLY:CA	2.59	0.42
3:C:418:GLY:HA3	3:C:437:LEU:HD13	2.02	0.42
3:C:516:PRO:CG	3:C:517:THR:H	2.28	0.42
3:C:621:ILE:HD11	3:C:686:PHE:CE1	2.54	0.42
3:A:391:MET:SD	3:A:446:PRO:HB2	2.59	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:376:ASP:OD2	3:C:376:ASP:C	2.63	0.42
4:D:95:SER:H	4:D:98:GLN:HB2	1.83	0.42
4:B:46:ALA:HA	4:B:55:VAL:HG21	2.01	0.42
3:C:423:ASN:HB3	3:C:424:GLY:H	1.59	0.42
3:A:190:HIS:CD2	3:A:600:LYS:HG3	2.55	0.42
3:A:206:PHE:HE1	3:A:207:TRP:CZ3	2.36	0.42
4:B:27:PHE:HE2	4:B:67:ALA:HA	1.84	0.42
3:C:155:VAL:O	3:C:158:MET:HG2	2.20	0.42
3:C:436:ASN:HB3	3:C:439:GLN:OE1	2.19	0.42
4:D:94:LEU:H	4:D:94:LEU:HG	1.64	0.42
3:A:175:VAL:O	3:A:178:THR:HB	2.19	0.42
3:A:281:LYS:HA	3:A:282:PRO:HD3	1.91	0.42
3:A:284:PRO:HG2	3:A:285:LYS:H	1.84	0.42
3:C:263:SER:O	3:C:264:TRP:HB3	2.20	0.42
3:C:622:CYS:O	3:C:623:LYS:C	2.63	0.42
1:P:18:DG:C4	1:P:19:DC:C5	3.07	0.42
3:A:417:HIS:O	3:A:418:GLY:C	2.63	0.42
3:A:158:MET:HB3	3:A:161:TRP:CZ2	2.55	0.42
4:B:16:VAL:HG23	4:B:23:ILE:HB	2.02	0.42
3:C:38:ASP:O	3:C:39:PHE:C	2.63	0.42
3:C:233:PRO:CG	3:C:460:HIS:HB2	2.50	0.42
3:A:386:ILE:O	3:A:387:LYS:C	2.63	0.41
4:B:19:ALA:HB1	4:B:23:ILE:HD11	2.02	0.41
3:C:158:MET:HB3	3:C:161:TRP:CZ3	2.55	0.41
3:C:569:ILE:O	3:C:570:GLN:C	2.62	0.41
3:C:663:GLU:O	3:C:666:ALA:HB3	2.20	0.41
3:A:334:PHE:CE1	3:A:345:LYS:HG3	2.55	0.41
3:A:388:GLU:O	3:A:392:ILE:HG12	2.19	0.41
3:A:436:ASN:HD22	3:A:439:GLN:CD	2.27	0.41
3:C:128:TRP:HA	3:C:128:TRP:HE3	1.85	0.41
3:C:391:MET:HE2	3:C:391:MET:C	2.44	0.41
3:C:513:ALA:O	3:C:515:LEU:N	2.53	0.41
3:A:216:ILE:HD11	3:A:624:LEU:HD13	2.02	0.41
3:A:257:LEU:O	3:A:260:THR:N	2.52	0.41
3:A:316:ASP:C	3:A:318:ARG:N	2.68	0.41
3:A:638:LEU:HA	3:A:645:ASP:OD2	2.20	0.41
3:C:368:VAL:O	3:C:372:VAL:HG23	2.20	0.41
3:C:628:LYS:O	3:C:632:MET:HG3	2.20	0.41
3:A:193:PRO:HA	3:A:194:PRO:HD3	1.91	0.41
4:B:95:SER:OG	4:B:98:GLN:N	2.44	0.41
4:D:36:LYS:O	4:D:36:LYS:HG2	2.20	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:234:PHE:CZ	3:A:239:ILE:HG13	2.54	0.41
3:A:506:HIS:HB2	3:A:518:ARG:HE	1.86	0.41
3:C:55:LEU:HD22	3:C:89:ILE:HD11	2.01	0.41
3:A:1:MET:HA	3:A:55:LEU:O	2.21	0.41
3:A:33:SER:HB3	3:A:168:MET:HE2	2.02	0.41
3:A:183:GLU:C	3:A:185:LEU:H	2.27	0.41
3:A:369:LEU:HB3	3:A:387:LYS:HD3	2.02	0.41
3:A:488:MET:HA	3:A:565:LEU:HD11	2.00	0.41
3:A:611:ASN:O	3:A:612:THR:C	2.62	0.41
3:C:57:VAL:CG2	3:C:89:ILE:HB	2.48	0.41
3:C:61:GLY:C	3:C:66:VAL:HG23	2.45	0.41
3:C:343:GLN:HG3	3:C:362:PRO:HG2	2.01	0.41
3:C:344:LYS:O	3:C:345:LYS:C	2.64	0.41
3:C:509:ASN:O	3:C:512:ALA:HB3	2.20	0.41
4:D:8:THR:O	4:D:9:ASP:C	2.64	0.41
4:D:58:LEU:CD1	4:D:63:ASN:HD22	2.32	0.41
2:U:8:DG:C6	2:U:9:DC:N4	2.88	0.41
3:A:232:PHE:CE2	3:A:650:ALA:HB2	2.56	0.41
3:A:246:LEU:O	3:A:247:ALA:C	2.63	0.41
3:A:349:ALA:CB	3:A:374:VAL:HG11	2.50	0.41
3:A:517:THR:HG23	3:A:520:ASN:CB	2.51	0.41
4:B:58:LEU:HD23	4:B:58:LEU:C	2.44	0.41
3:C:252:GLU:O	3:C:255:ARG:N	2.54	0.41
3:C:292:PRO:HB2	3:C:294:VAL:CG2	2.47	0.41
3:A:622:CYS:O	3:A:623:LYS:C	2.63	0.41
3:A:665:ILE:O	3:A:669:VAL:HG23	2.21	0.41
3:C:418:GLY:HA3	3:C:437:LEU:CD1	2.51	0.41
3:A:15:VAL:C	3:A:16:THR:CG2	2.93	0.41
3:A:31:TYR:CE2	3:A:176:VAL:HG12	2.56	0.41
3:A:168:MET:O	3:A:172:VAL:HG23	2.21	0.41
3:A:390:LEU:O	3:A:393:GLN:HB2	2.20	0.41
3:A:429:ARG:HH11	3:A:653:HIS:CE1	2.38	0.41
3:A:527:GLY:O	3:A:528:PHE:CB	2.67	0.41
3:A:663:GLU:O	3:A:666:ALA:HB3	2.21	0.41
4:B:95:SER:C	4:B:97:GLY:H	2.29	0.41
3:C:186:LEU:HD23	3:C:192:PHE:CE2	2.56	0.41
3:C:624:LEU:HD22	3:C:624:LEU:HA	1.85	0.41
4:D:27:PHE:CE2	4:D:67:ALA:HA	2.56	0.41
3:A:252:GLU:C	3:A:254:LEU:N	2.77	0.41
3:A:275:CYS:O	3:A:276:HIS:C	2.64	0.41
3:C:679:TRP:C	3:C:681:GLY:N	2.77	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:9:ASP:OD1	4:D:66:THR:N	2.50	0.41
4:D:27:PHE:HD1	4:D:27:PHE:H	1.68	0.41
3:A:344:LYS:O	3:A:345:LYS:C	2.64	0.40
3:A:376:ASP:HA	3:A:377:PRO:HD2	1.87	0.40
4:B:79:LEU:HD12	4:B:79:LEU:N	2.35	0.40
3:C:38:ASP:O	3:C:41:ALA:HB3	2.21	0.40
3:C:138:GLU:C	3:C:170:TYR:OH	2.64	0.40
3:C:392:ILE:HA	3:C:392:ILE:HD13	1.86	0.40
3:A:22:VAL:HG23	3:A:171:ASN:OD1	2.20	0.40
3:A:43:LEU:HD13	3:A:79:ARG:HD2	2.02	0.40
3:A:286:TYR:HA	3:A:287:PRO:HD3	1.87	0.40
3:A:679:TRP:C	3:A:681:GLY:N	2.78	0.40
3:C:155:VAL:HB	3:C:158:MET:SD	2.61	0.40
3:C:421:ASN:OD1	3:C:421:ASN:C	2.64	0.40
3:A:252:GLU:O	3:A:255:ARG:N	2.55	0.40
3:A:470:VAL:CG1	3:A:666:ALA:HB2	2.52	0.40
3:A:667:GLN:HA	3:A:670:ILE:HG13	2.03	0.40
3:C:24:TYR:CB	3:C:31:TYR:HE2	2.34	0.40
3:C:316:ASP:O	3:C:318:ARG:N	2.54	0.40
4:D:38:ILE:O	4:D:41:ILE:HB	2.21	0.40
3:A:7:GLU:OE1	3:A:7:GLU:HA	2.22	0.40
3:A:464:ILE:HG13	3:A:465:THR:N	2.32	0.40
3:C:49:GLU:HG3	3:C:54:GLY:HA3	2.02	0.40
4:D:80:LEU:O	4:D:87:ALA:CB	2.66	0.40
3:A:68:ALA:O	3:A:72:LEU:HG	2.22	0.40
3:A:432:HIS:O	3:A:433:ALA:HB2	2.21	0.40
3:A:678:ARG:HH11	3:A:678:ARG:CG	2.33	0.40
3:C:85:ARG:NH2	3:C:215:ASP:OD2	2.54	0.40
3:C:569:ILE:O	3:C:572:THR:N	2.48	0.40
4:D:24:LEU:O	4:D:24:LEU:HG	2.21	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	
3	A	646/698 (93%)	513 (79%)	111 (17%)	22 (3%)	3	20
3	C	645/698 (92%)	505 (78%)	117 (18%)	23 (4%)	2	19
4	B	103/108 (95%)	76 (74%)	23 (22%)	4 (4%)	2	18
4	D	103/108 (95%)	77 (75%)	21 (20%)	5 (5%)	1	13
All	All	1497/1612 (93%)	1171 (78%)	272 (18%)	54 (4%)	2	19

All (54) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	156	ASP
3	A	279	THR
3	A	359	LYS
3	A	426	VAL
3	A	543	ALA
3	A	573	LEU
3	C	156	ASP
3	C	279	THR
3	C	359	LYS
3	C	426	VAL
3	C	543	ALA
3	A	75	LEU
3	A	102	LEU
3	A	146	MET
3	A	344	LYS
3	A	424	GLY
3	A	495	GLU
3	A	516	PRO
3	A	526	TYR
4	B	13	ASP
4	B	69	LYS
3	C	102	LEU
3	C	146	MET
3	C	424	GLY
3	C	495	GLU
3	C	514	GLU
3	C	516	PRO
3	C	526	TYR
3	C	573	LEU
4	D	13	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	D	69	LYS
3	A	126	GLU
3	A	184	LYS
3	C	184	LYS
3	C	344	LYS
3	C	596	LEU
3	A	209	GLU
3	A	514	GLU
3	C	126	GLU
3	C	209	GLU
3	C	253	LEU
4	D	76	PRO
3	A	86	GLU
4	B	7	LEU
3	C	75	LEU
3	C	263	SER
3	C	544	GLY
4	D	7	LEU
3	A	253	LEU
3	A	544	GLY
3	A	653	HIS
3	C	653	HIS
4	D	68	PRO
4	B	76	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	A	430/579 (74%)	388 (90%)	42 (10%)	7	31
3	C	427/579 (74%)	386 (90%)	41 (10%)	8	32
4	B	62/87 (71%)	58 (94%)	4 (6%)	15	47
4	D	62/87 (71%)	54 (87%)	8 (13%)	4	20
All	All	981/1332 (74%)	886 (90%)	95 (10%)	8	32

All (95) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	A	14	SER
3	A	62	HIS
3	A	66	VAL
3	A	75	LEU
3	A	131	ARG
3	A	135	MET
3	A	159	GLU
3	A	164	ASN
3	A	174	ASP
3	A	181	LEU
3	A	199	THR
3	A	204	THR
3	A	258	THR
3	A	271	THR
3	A	283	LEU
3	A	294	VAL
3	A	319	GLU
3	A	337	SER
3	A	343	GLN
3	A	347	GLN
3	A	363	VAL
3	A	375	ASP
3	A	378	GLU
3	A	383	ILE
3	A	391	MET
3	A	393	GLN
3	A	410	VAL
3	A	413	ASP
3	A	445	SER
3	A	450	GLN
3	A	464	ILE
3	A	465	THR
3	A	474	ILE
3	A	528	PHE
3	A	565	LEU
3	A	574	VAL
3	A	593	ILE
3	A	597	ASP
3	A	626	ILE
3	A	655	GLU
3	A	670	ILE
3	A	678	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	B	55	VAL
4	B	61	ASP
4	B	75	ILE
4	B	86	VAL
3	C	2	ILE
3	C	23	ILE
3	C	62	HIS
3	C	89	ILE
3	C	91	THR
3	C	105	THR
3	C	128	TRP
3	C	131	ARG
3	C	150	GLN
3	C	169	ASP
3	C	174	ASP
3	C	197	ASP
3	C	244	VAL
3	C	259	GLU
3	C	263	SER
3	C	281	LYS
3	C	289	ILE
3	C	291	THR
3	C	343	GLN
3	C	346	LEU
3	C	347	GLN
3	C	368	VAL
3	C	391	MET
3	C	393	GLN
3	C	423	ASN
3	C	443	VAL
3	C	465	THR
3	C	480	GLU
3	C	490	ARG
3	C	514	GLU
3	C	519	ASP
3	C	520	ASN
3	C	528	PHE
3	C	546	GLU
3	C	574	VAL
3	C	638	LEU
3	C	652	VAL
3	C	662	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	C	669	VAL
3	C	686	PHE
3	C	698	PRO
4	D	7	LEU
4	D	24	LEU
4	D	35	CYS
4	D	50	GLN
4	D	58	LEU
4	D	59	ASN
4	D	61	ASP
4	D	86	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
3	A	60	ASN
3	A	164	ASN
3	A	171	ASN
3	A	173	GLN
3	A	266	GLN
3	A	276	HIS
3	A	343	GLN
3	A	380	GLN
3	A	393	GLN
3	A	423	ASN
3	A	509	ASN
3	A	510	GLN
3	A	611	ASN
3	A	683	HIS
4	B	6	HIS
3	C	60	ASN
3	C	82	HIS
3	C	171	ASN
3	C	417	HIS
3	C	450	GLN
3	C	509	ASN
3	C	510	GLN
3	C	611	ASN
3	C	653	HIS
3	C	657	GLN
4	D	50	GLN
4	D	63	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues 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	$\# Z > 2$
1	2DT	P	21	1,2	17,20,21	0.49	0	22,28,31	0.54	0
1	2DT	Q	21	1,2	17,20,21	0.37	0	22,28,31	0.49	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	2DT	P	21	1,2	-	1/7/18/19	0/2/2/2
1	2DT	Q	21	1,2	-	1/7/18/19	0/2/2/2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	P	21	2DT	O4'-C4'-C5'-O5'
1	Q	21	2DT	O4'-C4'-C5'-O5'

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	P	21	2DT	2	0
1	Q	21	2DT	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
6	DAD	C	4005	-	30,31,31	0.56	0	42,48,48	0.77	2 (4%)
6	DAD	A	4004	-	30,31,31	0.58	0	42,48,48	0.75	1 (2%)

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
6	DAD	C	4005	-	2/2/5/5	7/22/31/31	0/3/3/3
6	DAD	A	4004	-	2/2/5/5	2/22/31/31	0/3/3/3

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	C	4005	DAD	O2G-PG-O1G	2.25	119.61	110.83
6	A	4004	DAD	O2G-PG-O1G	2.24	119.55	110.83
6	C	4005	DAD	C2'-C1'-N9	2.24	116.69	112.48

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
6	A	4004	DAD	C4'
6	A	4004	DAD	C1'
6	C	4005	DAD	C4'
6	C	4005	DAD	C1'

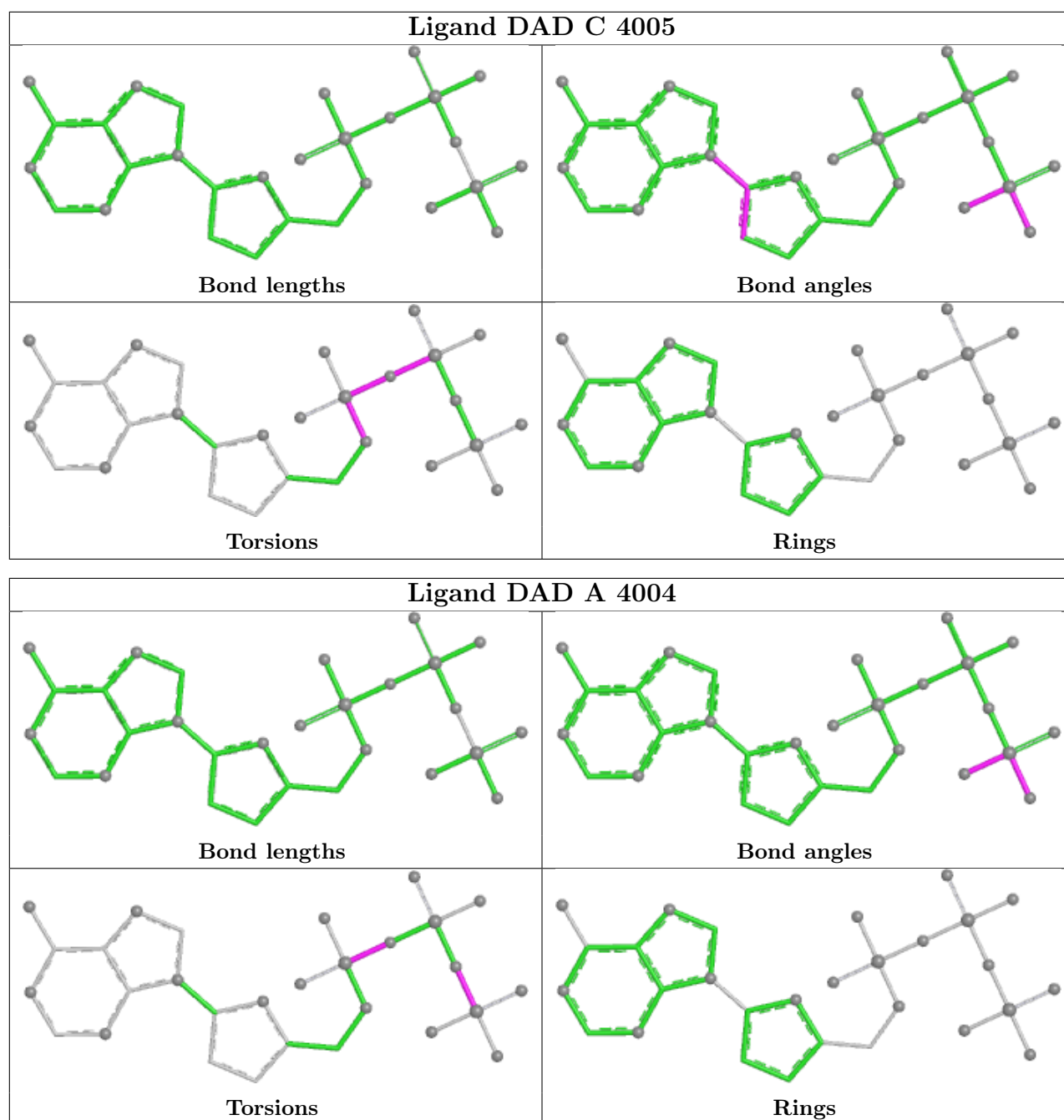
All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	C	4005	DAD	C5'-O5'-PA-O1A
6	C	4005	DAD	C5'-O5'-PA-O2A
6	C	4005	DAD	C5'-O5'-PA-O3A
6	C	4005	DAD	PA-O3A-PB-O1B
6	C	4005	DAD	PB-O3A-PA-O1A
6	C	4005	DAD	PA-O3A-PB-O2B
6	C	4005	DAD	PB-O3A-PA-O2A
6	A	4004	DAD	PB-O3B-PG-O2G
6	A	4004	DAD	PB-O3A-PA-O2A

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2		OWAB(Å ²)	Q<0.9
1	P	10/21 (47%)	-1.35	0	100 100	53, 64, 118, 140	0
1	Q	10/21 (47%)	-0.96	0	100 100	70, 95, 153, 171	0
2	T	10/25 (40%)	-1.29	0	100 100	43, 56, 91, 100	0
2	U	10/25 (40%)	-1.28	0	100 100	65, 95, 116, 139	0
3	A	658/698 (94%)	-1.09	0	100 100	23, 65, 125, 182	0
3	C	658/698 (94%)	-1.04	1 (0%)	91 85	35, 76, 130, 198	0
4	B	105/108 (97%)	-1.15	0	100 100	48, 80, 127, 163	0
4	D	105/108 (97%)	-1.14	0	100 100	53, 92, 122, 155	0
All	All	1566/1704 (91%)	-1.08	1 (0%)	92 89	23, 74, 130, 198	0

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	275	CYS	2.6

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
1	2DT	Q	21	19/20	0.98	0.07	70,70,70,70	0
1	2DT	P	21	19/20	0.99	0.05	70,70,70,70	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

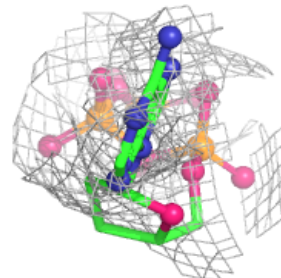
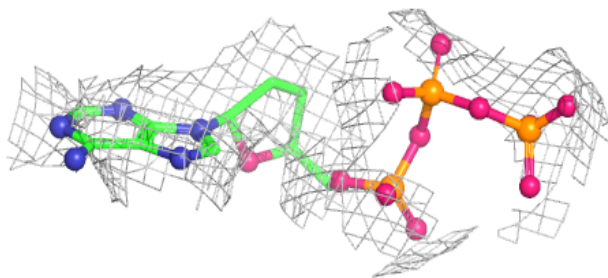
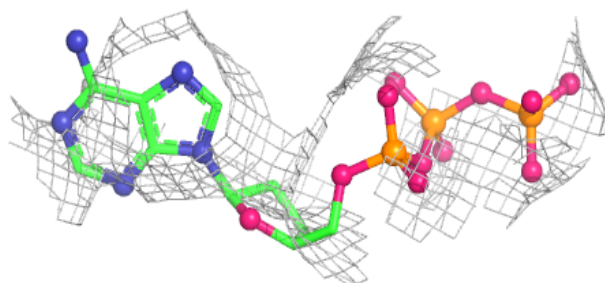
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
6	DAD	A	4004	29/29	0.94	0.07	131,131,207,207	0
5	MG	C	4004	1/1	0.96	0.14	70,70,70,70	0
6	DAD	C	4005	29/29	0.98	0.05	132,132,188,188	0
5	MG	A	4003	1/1	0.99	0.11	70,70,70,70	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.

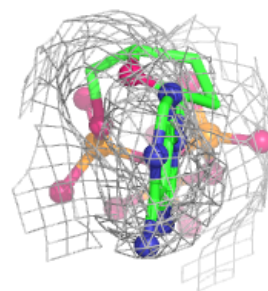
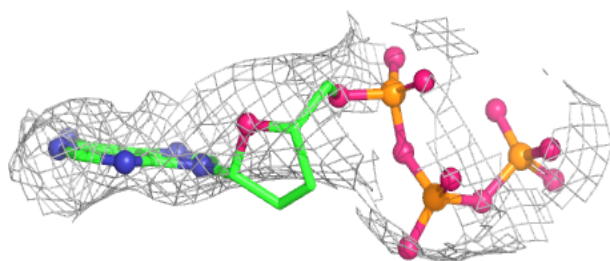
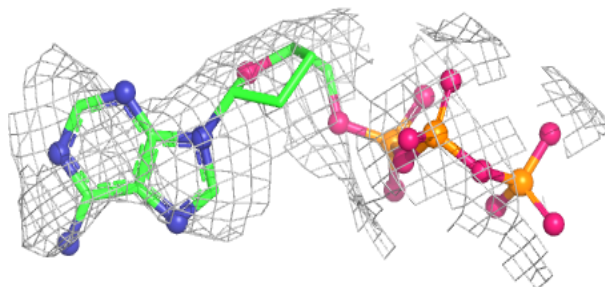
Electron density around DAD A 4004:

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 DAD C 4005:

$2mF_o - DF_c$ (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.