Full wwPDB X-ray Structure Validation Report ⓘ

Feb 5, 2024 – 08:34 AM EST

PDB ID	:	1S77
Title	:	T7 RNAP product pyrophosphate elongation complex
Authors	:	Yin, Y.W.; Steitz, T.A.
Deposited on	:	2004-01-29
Resolution	:	2.69 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

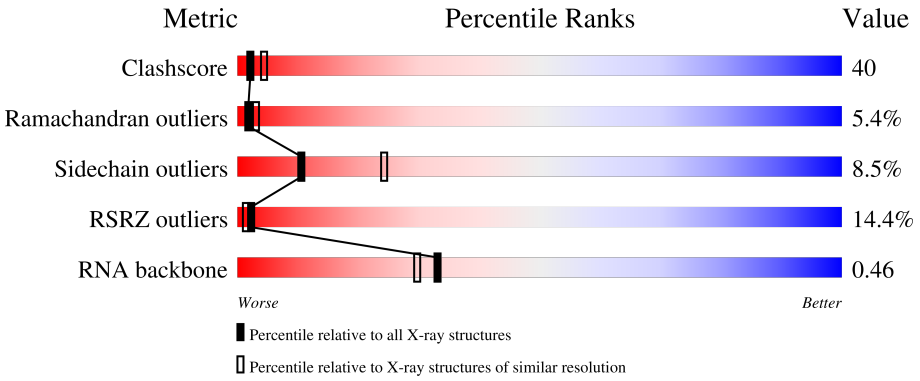
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.69 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)
RNA backbone	3102	1159 (3.00-2.40)

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

Mol	Chain	Length	Quality of chain
1	T	21	57%: 14%, 62%, 14%, 10%
2	N	17	65%: 18%, 82%
3	R	10	10%: 10%, 60%, 30%
4	D	883	12%: 40%, 45%, 8%, 6%

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 7540 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 DNA (5'-D(*GP*CP*CP*GP*TP*GP*CP*GP*CP*AP*TP*TP*CP*GP*CP*CP*GP*TP*GP*TP*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	T	21	425	203	73	129	20	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	N	17	344	165	60	103	16	0	0	0

- Molecule 3 is a RNA chain called RNA (5'-R(*AP*CP*AP*CP*GP*GP*CP*GP*AP*(3DA))-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	R	10	213	97	44	63	9	0	0	0

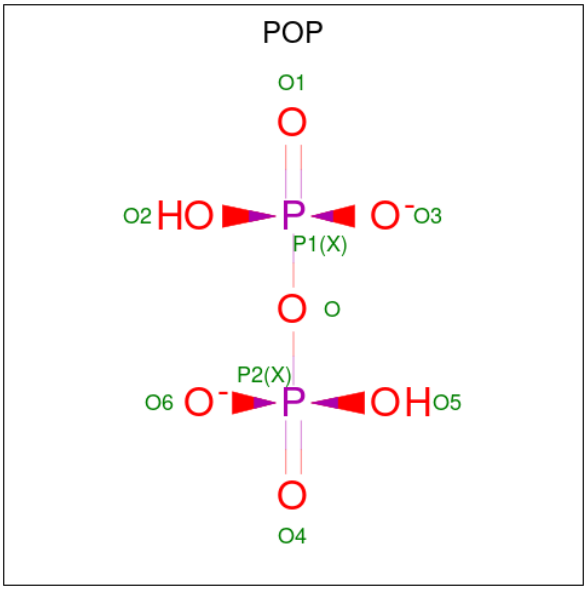
- Molecule 4 is a protein called DNA-directed RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	828	6546	4177	1139	1195	35	0	0	0

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
5	R	1	1	1	0	0
			Total	Mg		
5	D	1	1	1	0	0

- Molecule 6 is PYROPHOSPHATE 2- (three-letter code: POP) (formula: $H_2O_7P_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	D	1	Total O P 9 7 2	0	0

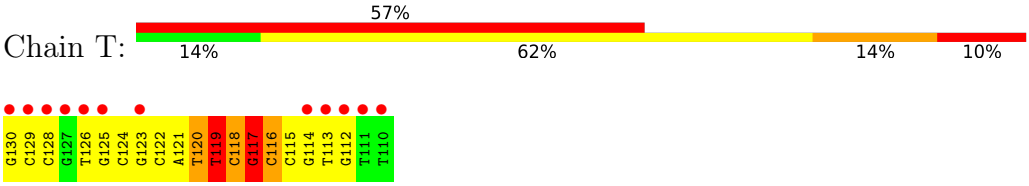
- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	D	1	Total O 1 1	0	0

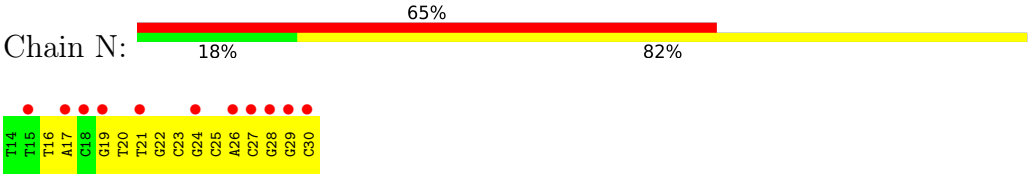
3 Residue-property plots (i)

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.

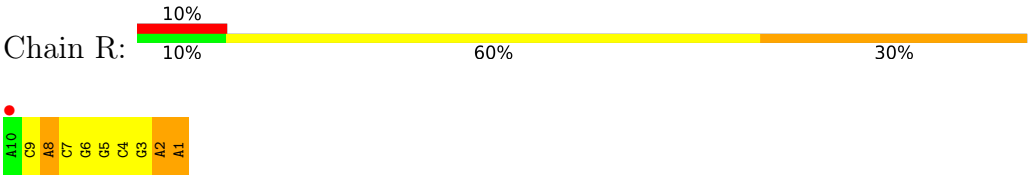
• Molecule 1: DNA (5'-D(*GP*CP*CP*GP*TP*GP*CP*GP*CP*AP*TP*TP*CP*GP*CP*CP *GP*TP*GP*TP*T)-3')



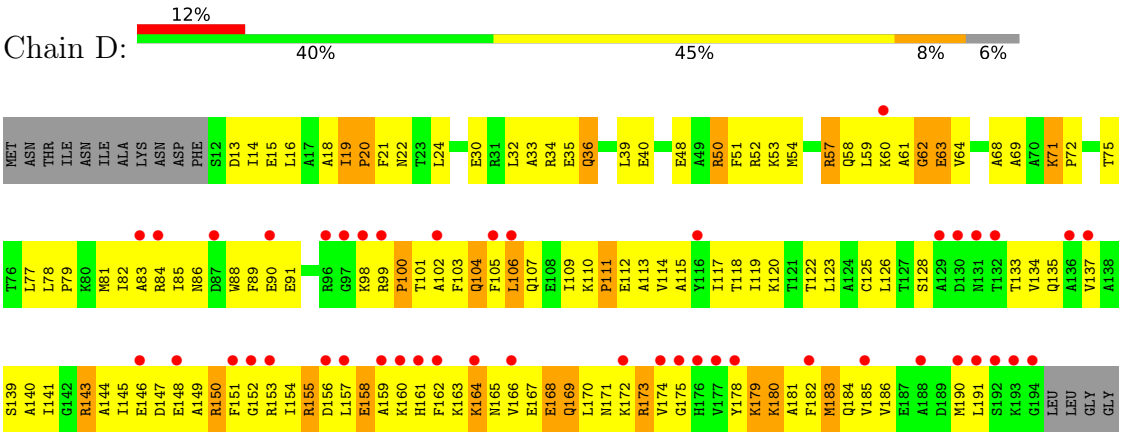
• Molecule 2: DNA (5'-D(*TP*TP*TP*AP*CP*GP*TP*TP*GP*CP*GP*CP*AP*CP*GP*GP *C)-3')

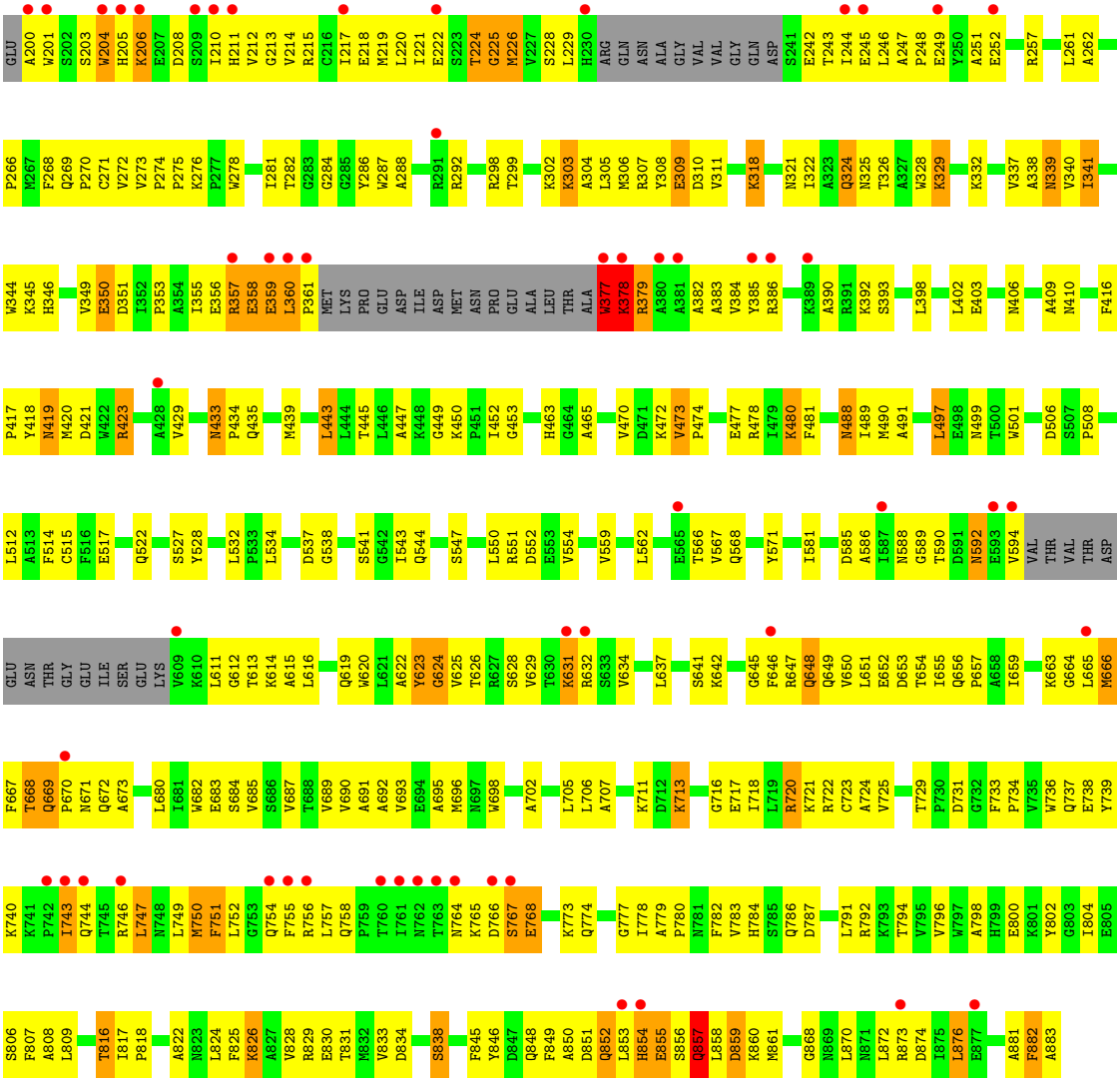


• Molecule 3: RNA (5'-R(*AP*CP*AP*CP*GP*GP*CP*GP*AP*(3DA))-3')



• Molecule 4: DNA-directed RNA polymerase




GLU A200 W201 S202 S203 W204 H205 K206 E207 D208 S209 I210 H211 V212 G213 V214 R215 C216 I217 E218 M219 L220 I221 E222 S223 T224 G225 M226 V227 S228 L229 H230 ARG GLN ASN ALA GLY VAL VAL GLY GLN ASP S241 E242 T243 I244 E245 L246 A247 P248 E249 Y250 A251 E252 R257 L261 A262
P266 M267 F268 Q269 P270 C271 V272 V273 P274 P275 K276 P277 W278 I281 T282 G283 G284 G285 Y286 W287 A288 H291 R292 R298 T299 K302 K303 A304 L305 M306 R307 Y308 E309 D310 V311 K318 N321 I322 A323 Q324 N325 T326 A327 W328 K329 K332 V337 A338 M339 V340 I341
W344 K345 H346 V349 E350 D351 I352 P353 A354 I355 E356 R357 E358 E359 L360 P361 MET LYS PRO GLU ASP ILE ASP MET ASN PRO GLU ALA LEU THR ALA W377 K378 R379 A380 A381 A382 A383 V384 Y385 R386 K389 A390 R391 K392 S393 L398 L402 E403 N406 A409 N410 F416
P417 Y418 N419 M420 D421 W422 R423 A428 V429 N433 P434 Q435 M439 L443 L444 T445 L446 A447 K448 G449 K450 P451 I452 G453 H463 G464 A465 V470 D471 K472 V473 P474 E477 R478 I479 K480 F481 N488 I489 M490 A491 L497 E498 N499 T500 W501 D506 S507 P508
L512 A513 F514 C515 F516 E517 Q522 S527 Y528 L532 P533 L534 D537 G538 S541 G542 I543 Q544 S547 L550 R551 D552 E553 V554 V559 L562 E565 T566 V567 Q568 Y571 I581 D585 A586 I587 N588 G589 T590 D591 N592 E593 V594 VAL THR VAL THR ASP
GLU ASN THR GLY GLU ILE SER GLU LYS V609 K610 L611 G612 T613 K614 A615 L616 Q619 W620 L621 A622 Y623 G624 V625 T626 R627 S628 V629 T630 K631 R632 S633 V634 L637 S641 K642 G645 F646 R647 Q648 Q649 V650 L651 E652 D653 T654 I655 Q656 P657 A658 I659 K663 G664 L665 M666
F667 T668 Q669 P670 N671 Q672 A673 L680 I681 W682 E683 S684 V685 S686 V687 T688 V689 V690 A691 A692 V693 E694 A695 M696 N697 W698 A702 L705 L706 A707 K711 D712 K713 G716 E717 I718 L719 R720 K721 R722 C723 A724 V725 T729 P730 D731 G732 F733 P734 V735 W736 Q737 E738 Y739
K740 K741 P742 I743 Q744 T745 R746 L747 N748 L749 M750 F751 L752 G753 Q754 F755 R756 L757 Q758 P759 T760 I761 N762 T763 N764 K765 D766 S767 E768 K773 Q774 G777 I778 A779 P780 N781 F782 V783 H784 S785 Q786 D787 L791 R792 K793 T794 V795 V796 W797 A798 H799 E800 K801 Y802 G803 I804 E805
S806 F807 A808 L809 T816 I817 P818 A822 N823 L824 F825 K826 A827 V828 R829 E830 T831 M832 V833 D834 S838 F845 Y846 D847 Q848 F849 A850 D851 Q852 L853 H854 E855 S856 Q857 L858 D859 K860 M861 G868 N869 L870 N871 L872 R873 D874 I875 L876 E877 A881 F882 A883

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	127.74Å 141.84Å 142.86Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.69 29.15 – 2.70	Depositor EDS
% Data completeness (in resolution range)	99.9 (30.00-2.69) 92.4 (29.15-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.27 (at 2.72Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.251 , 0.285 0.255 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å^2)	53.3	Xtriage
Anisotropy	0.444	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 59.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	7540	wwPDB-VP
Average B, all atoms (Å^2)	72.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.07% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: POP, MG, 3DA

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	T	0.44	0/474	0.89	2/730 (0.3%)
2	N	0.23	0/384	0.67	0/591
3	R	0.36	0/215	0.68	0/334
4	D	0.42	2/6698 (0.0%)	0.71	8/9060 (0.1%)
All	All	0.41	2/7771 (0.0%)	0.72	10/10715 (0.1%)

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	T	0	5
4	D	0	2
All	All	0	7

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	377	TRP	C-N	-5.54	1.21	1.34
4	D	180	LYS	C-N	5.40	1.46	1.34

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	378	LYS	CA-C-N	-22.62	67.43	117.20
4	D	378	LYS	C-N-CA	-15.25	83.57	121.70
4	D	378	LYS	O-C-N	12.16	142.15	122.70
4	D	377	TRP	O-C-N	-8.27	109.48	122.70
4	D	377	TRP	C-N-CA	7.20	139.69	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	D	377	TRP	CA-C-N	5.58	129.47	117.20
4	D	808	ALA	N-CA-C	-5.40	96.41	111.00
1	T	117	DG	N9-C1'-C2'	-5.33	102.47	112.60
1	T	119	DT	C5'-C4'-C3'	-5.32	104.52	114.10
4	D	179	LYS	C-N-CA	-5.12	108.90	121.70

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	D	377	TRP	Peptide
4	D	378	LYS	Mainchain
1	T	116	DC	Sidechain
1	T	117	DG	Sidechain
1	T	118	DC	Sidechain
1	T	119	DT	Sidechain
1	T	120	DT	Sidechain

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	T	425	0	239	30	0
2	N	344	0	194	25	0
3	R	213	0	112	19	0
4	D	6546	0	6518	538	0
5	D	1	0	0	0	0
5	R	1	0	0	0	0
6	D	9	0	0	0	0
7	D	1	0	0	1	0
All	All	7540	0	7063	584	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 (584) 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)
4:D:377:TRP:O	4:D:379:ARG:N	1.61	1.32
4:D:147:ASP:OD1	4:D:180:LYS:NZ	1.77	1.15
4:D:378:LYS:O	4:D:379:ARG:O	1.75	1.04
4:D:298:ARG:NH2	4:D:419:ASN:HD21	1.55	1.03
4:D:164:LYS:HB3	4:D:166:VAL:HG23	1.40	1.02
4:D:433:ASN:HD22	4:D:435:GLN:H	1.05	0.99
2:N:17:DA:OP2	4:D:378:LYS:HE3	1.62	0.98
4:D:298:ARG:HH21	4:D:419:ASN:ND2	1.63	0.96
4:D:873:ARG:HH11	4:D:873:ARG:HB2	1.30	0.95
4:D:856:SER:O	4:D:857:GLN:HB3	1.66	0.95
3:R:9:C:H2'	3:R:8:A:H5"	1.48	0.95
4:D:613:THR:HG22	4:D:614:LYS:H	1.32	0.94
4:D:278:TRP:H	4:D:321:ASN:HD21	0.95	0.94
2:N:16:DT:H4'	4:D:378:LYS:HD3	1.51	0.93
4:D:298:ARG:HH21	4:D:419:ASN:HD21	0.99	0.93
4:D:133:THR:HG22	4:D:243:THR:HG22	1.48	0.92
4:D:739:TYR:H	4:D:774:GLN:NE2	1.70	0.89
4:D:581:ILE:HG21	4:D:680:LEU:HD22	1.53	0.89
4:D:281:ILE:HG13	4:D:282:THR:HG23	1.54	0.89
4:D:340:VAL:HG23	4:D:341:ILE:H	1.37	0.88
4:D:175:GLY:HA3	4:D:178:TYR:HB2	1.53	0.88
4:D:167:GLU:HB2	4:D:170:LEU:HA	1.56	0.87
4:D:173:ARG:H	4:D:173:ARG:HD3	1.43	0.83
4:D:592:ASN:HD22	4:D:592:ASN:N	1.74	0.83
4:D:473:VAL:HG21	4:D:477:GLU:OE1	1.80	0.82
4:D:873:ARG:HB2	4:D:873:ARG:NH1	1.95	0.81
4:D:798:ALA:HB1	4:D:804:ILE:HD12	1.60	0.81
4:D:278:TRP:H	4:D:321:ASN:ND2	1.77	0.80
4:D:183:MET:HE2	4:D:186:VAL:HG21	1.64	0.79
3:R:9:C:C2'	3:R:8:A:H5"	2.13	0.79
1:T:112:DG:H2'	4:D:57:ARG:HH22	1.48	0.78
4:D:377:TRP:O	4:D:379:ARG:CA	2.32	0.78
4:D:377:TRP:O	4:D:379:ARG:CB	2.32	0.77
4:D:210:ILE:O	4:D:214:VAL:HG23	1.85	0.77
4:D:816:THR:OG1	4:D:824:LEU:HD22	1.85	0.77
4:D:78:LEU:HB3	4:D:79:PRO:HD3	1.66	0.77
4:D:378:LYS:C	4:D:379:ARG:O	2.20	0.77
4:D:473:VAL:HG22	4:D:474:PRO:HD2	1.66	0.77
4:D:739:TYR:H	4:D:774:GLN:HE21	1.30	0.76
4:D:829:ARG:NH2	4:D:882:PHE:H	1.83	0.76
1:T:116:DC:H2"	1:T:115:DC:OP2	1.83	0.76
4:D:139:SER:O	4:D:143:ARG:HB2	1.86	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:16:DT:C4'	4:D:378:LYS:HD3	2.15	0.76
4:D:713:LYS:H	4:D:713:LYS:HD2	1.50	0.75
4:D:340:VAL:HG23	4:D:341:ILE:N	2.02	0.74
4:D:834:ASP:O	4:D:838:SER:HB2	1.87	0.74
4:D:215:ARG:O	4:D:219:MET:HG2	1.88	0.73
4:D:275:PRO:HB2	4:D:324:GLN:HG3	1.70	0.73
1:T:119:DT:H2"	1:T:118:DC:OP2	1.85	0.73
4:D:298:ARG:CZ	4:D:419:ASN:HD21	2.01	0.73
4:D:791:LEU:HD21	4:D:809:LEU:HD13	1.71	0.72
4:D:826:LYS:O	4:D:830:GLU:HG3	1.90	0.72
4:D:796:VAL:O	4:D:800:GLU:HG3	1.90	0.72
4:D:303:LYS:HE2	4:D:303:LYS:H	1.55	0.71
4:D:180:LYS:O	4:D:184:GLN:HB3	1.91	0.71
2:N:27:DC:H2"	2:N:28:DG:O5'	1.89	0.71
4:D:551:ARG:HG3	4:D:551:ARG:HH11	1.53	0.71
4:D:54:MET:O	4:D:57:ARG:HG3	1.91	0.70
4:D:450:LYS:HG3	4:D:817:ILE:CD1	2.20	0.70
4:D:853:LEU:O	4:D:854:HIS:HB2	1.90	0.70
4:D:53:LYS:HD3	4:D:54:MET:N	2.06	0.70
4:D:497:LEU:HD12	4:D:497:LEU:H	1.57	0.70
4:D:180:LYS:O	4:D:180:LYS:HG3	1.91	0.70
4:D:36:GLN:HE21	4:D:272:VAL:H	1.40	0.69
4:D:117:ILE:HG12	4:D:752:LEU:HD22	1.75	0.69
4:D:201:TRP:HZ2	4:D:204:TRP:HE1	1.41	0.69
4:D:740:LYS:HD3	4:D:767:SER:HB3	1.75	0.69
4:D:79:PRO:O	4:D:82:ILE:HG22	1.93	0.69
4:D:747:LEU:HD23	4:D:747:LEU:H	1.58	0.68
4:D:286:TYR:CZ	4:D:417:PRO:HG3	2.29	0.68
4:D:592:ASN:N	4:D:592:ASN:ND2	2.42	0.68
3:R:4:C:H2'	3:R:3:G:C8	2.27	0.67
4:D:550:LEU:HD11	4:D:695:ALA:HB2	1.76	0.67
4:D:13:ASP:HB3	4:D:16:LEU:HD13	1.76	0.67
4:D:13:ASP:HB3	4:D:16:LEU:HD22	1.74	0.67
4:D:816:THR:HG22	4:D:817:ILE:H	1.59	0.67
4:D:421:ASP:OD1	4:D:423:ARG:NH1	2.28	0.67
4:D:589:GLY:O	4:D:613:THR:HB	1.94	0.67
4:D:244:ILE:HD12	4:D:244:ILE:O	1.95	0.67
4:D:35:GLU:HG2	4:D:272:VAL:HG21	1.77	0.66
4:D:433:ASN:ND2	4:D:435:GLN:H	1.86	0.66
4:D:104:GLN:NE2	4:D:104:GLN:H	1.92	0.66
4:D:806:SER:O	4:D:816:THR:HG23	1.96	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:586:ALA:O	4:D:614:LYS:HG3	1.95	0.66
2:N:25:DC:H1'	2:N:26:DA:H5"	1.77	0.66
4:D:551:ARG:HE	4:D:872:LEU:HD11	1.59	0.66
4:D:249:GLU:CD	4:D:249:GLU:H	1.99	0.66
4:D:146:GLU:O	4:D:148:GLU:N	2.29	0.66
4:D:148:GLU:O	4:D:152:GLY:HA3	1.96	0.66
4:D:378:LYS:O	4:D:382:ALA:CB	2.43	0.65
3:R:3:G:H2'	3:R:2:A:O4'	1.95	0.65
4:D:647:ARG:HH21	4:D:671:ASN:ND2	1.95	0.65
4:D:746:ARG:HD2	4:D:754:GLN:CD	2.17	0.65
4:D:409:ALA:O	4:D:410:ASN:HB2	1.97	0.65
4:D:378:LYS:O	4:D:382:ALA:HB2	1.97	0.64
3:R:9:C:H2'	3:R:8:A:C5'	2.26	0.64
4:D:59:LEU:HB3	4:D:64:VAL:HG22	1.79	0.64
4:D:766:ASP:O	4:D:767:SER:HB2	1.96	0.64
4:D:833:VAL:HG21	4:D:876:LEU:HD13	1.77	0.64
4:D:329:LYS:HG2	4:D:447:ALA:HA	1.80	0.64
4:D:690:VAL:HG23	4:D:691:ALA:N	2.12	0.64
4:D:383:ALA:O	4:D:386:ARG:HB3	1.97	0.64
4:D:767:SER:O	4:D:768:GLU:HB3	1.97	0.64
1:T:120:DT:H2"	1:T:119:DT:OP2	1.98	0.64
4:D:228:SER:C	4:D:229:LEU:HD22	2.18	0.64
1:T:118:DC:H2"	1:T:117:DG:OP2	1.96	0.63
4:D:181:ALA:O	4:D:184:GLN:HG2	1.98	0.63
4:D:378:LYS:O	4:D:379:ARG:C	2.32	0.63
4:D:723:CYS:HB3	4:D:853:LEU:HD13	1.80	0.63
4:D:68:ALA:HB3	4:D:261:LEU:HD21	1.80	0.63
4:D:613:THR:HG22	4:D:614:LYS:N	2.08	0.63
2:N:17:DA:P	4:D:378:LYS:HE3	2.37	0.63
4:D:117:ILE:HG23	4:D:752:LEU:HD21	1.80	0.63
4:D:707:ALA:O	4:D:722:ARG:HG2	1.99	0.63
4:D:278:TRP:N	4:D:321:ASN:HD21	1.81	0.63
4:D:339:ASN:HD21	4:D:406:ASN:HD21	1.46	0.63
4:D:148:GLU:OE1	4:D:749:LEU:HB3	1.98	0.63
4:D:257:ARG:O	4:D:261:LEU:HB2	1.99	0.63
4:D:302:LYS:NZ	4:D:302:LYS:HB3	2.14	0.63
4:D:69:ALA:HA	4:D:257:ARG:CG	2.28	0.62
4:D:133:THR:HB	4:D:242:GLU:O	1.99	0.62
1:T:130:DG:HO5'	1:T:130:DG:H8	1.47	0.62
4:D:551:ARG:HE	4:D:872:LEU:CD1	2.13	0.62
4:D:472:LYS:C	4:D:567:VAL:HG11	2.19	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:299:THR:HB	4:D:304:ALA:HB3	1.82	0.61
4:D:377:TRP:O	4:D:379:ARG:HB3	2.00	0.61
4:D:82:ILE:C	4:D:84:ARG:H	2.03	0.61
4:D:84:ARG:HA	4:D:84:ARG:NE	2.16	0.61
4:D:611:LEU:HD13	4:D:619:GLN:HE22	1.64	0.61
3:R:9:C:C3'	3:R:8:A:H5"	2.29	0.61
4:D:750:MET:O	4:D:751:PHE:HB2	2.01	0.61
4:D:154:ILE:HD11	4:D:158:GLU:HG2	1.82	0.61
4:D:81:MET:HG3	4:D:115:ALA:HB1	1.81	0.61
4:D:84:ARG:HD3	4:D:222:GLU:HG2	1.83	0.61
4:D:702:ALA:HA	4:D:861:MET:CE	2.31	0.61
3:R:9:C:H5'	4:D:746:ARG:HH21	1.64	0.61
4:D:345:LYS:HD2	4:D:346:HIS:CE1	2.35	0.60
4:D:141:ILE:O	4:D:145:ILE:HG12	2.01	0.60
4:D:624:GLY:O	4:D:626:THR:HG23	2.01	0.60
4:D:82:ILE:HB	4:D:112:GLU:CD	2.22	0.60
4:D:784:HIS:HA	4:D:787:ASP:OD2	2.01	0.60
4:D:433:ASN:HD22	4:D:435:GLN:N	1.89	0.60
4:D:828:VAL:HG21	4:D:883:ALA:HA	1.84	0.60
4:D:713:LYS:HD2	4:D:713:LYS:N	2.16	0.60
4:D:845:PHE:O	4:D:848:GLN:HB2	2.01	0.60
4:D:480:LYS:HE2	4:D:480:LYS:HA	1.84	0.60
4:D:720:ARG:HH12	4:D:858:LEU:CD1	2.15	0.60
4:D:89:PHE:C	4:D:91:GLU:H	2.06	0.60
4:D:123:LEU:C	4:D:125:CYS:H	2.05	0.60
4:D:723:CYS:SG	4:D:853:LEU:HB3	2.41	0.60
4:D:275:PRO:CB	4:D:324:GLN:HG3	2.32	0.59
4:D:164:LYS:HB3	4:D:166:VAL:CG2	2.25	0.59
4:D:852:GLN:HG2	4:D:853:LEU:HG	1.82	0.59
4:D:747:LEU:HD23	4:D:747:LEU:N	2.17	0.59
4:D:137:VAL:CG2	4:D:244:ILE:HG12	2.33	0.59
4:D:160:LYS:HB2	4:D:160:LYS:NZ	2.17	0.59
4:D:206:LYS:HE3	4:D:206:LYS:N	2.17	0.59
4:D:846:TYR:HA	4:D:849:PHE:CE1	2.38	0.59
4:D:101:THR:HA	4:D:104:GLN:OE1	2.02	0.59
4:D:204:TRP:CZ3	4:D:212:VAL:HG21	2.36	0.59
4:D:120:LYS:O	4:D:120:LYS:HD3	2.03	0.59
4:D:182:PHE:O	4:D:183:MET:HG2	2.03	0.59
4:D:21:PHE:HZ	4:D:30:GLU:HG3	1.68	0.59
4:D:126:LEU:HD13	4:D:246:LEU:HB2	1.85	0.59
4:D:204:TRP:HZ3	4:D:212:VAL:HG21	1.67	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:488:ASN:HB3	4:D:501:TRP:CE3	2.38	0.58
4:D:651:LEU:CD1	4:D:670:PRO:HB2	2.33	0.58
4:D:723:CYS:SG	4:D:853:LEU:HD22	2.43	0.58
4:D:57:ARG:HD3	4:D:57:ARG:C	2.24	0.58
4:D:133:THR:CG2	4:D:243:THR:HG22	2.29	0.58
4:D:711:LYS:HA	4:D:717:GLU:O	2.02	0.58
4:D:77:LEU:HD13	4:D:224:THR:HB	1.85	0.58
4:D:752:LEU:H	4:D:752:LEU:HD12	1.68	0.58
4:D:159:ALA:C	4:D:161:HIS:H	2.07	0.58
4:D:229:LEU:HD12	4:D:242:GLU:OE1	2.02	0.58
4:D:585:ASP:HB3	4:D:613:THR:HG22	1.86	0.58
4:D:21:PHE:CZ	4:D:30:GLU:HG3	2.39	0.58
4:D:551:ARG:HG3	4:D:551:ARG:NH1	2.19	0.58
4:D:794:THR:HA	4:D:831:THR:HG21	1.85	0.57
4:D:358:GLU:N	4:D:358:GLU:CD	2.58	0.57
4:D:122:THR:HG22	4:D:141:ILE:HD11	1.86	0.57
4:D:205:HIS:C	4:D:206:LYS:HE3	2.24	0.57
4:D:214:VAL:HG12	4:D:218:GLU:OE1	2.05	0.57
4:D:417:PRO:HG2	4:D:429:VAL:HB	1.85	0.57
4:D:247:ALA:HB1	4:D:249:GLU:OE2	2.04	0.57
4:D:329:LYS:HG3	4:D:445:THR:HG23	1.86	0.57
4:D:104:GLN:H	4:D:104:GLN:HE21	1.50	0.57
4:D:541:SER:HA	4:D:544:GLN:HG3	1.86	0.57
4:D:757:LEU:HD23	4:D:758:GLN:N	2.20	0.57
4:D:720:ARG:HG3	4:D:720:ARG:HH11	1.68	0.57
1:T:122:DC:H2"	1:T:121:DA:OP2	2.04	0.56
2:N:27:DC:H2"	2:N:28:DG:H2'	1.86	0.56
4:D:36:GLN:NE2	4:D:272:VAL:H	2.03	0.56
4:D:217:ILE:O	4:D:221:ILE:HG13	2.05	0.56
4:D:855:GLU:CD	4:D:856:SER:N	2.58	0.56
4:D:705:LEU:HB3	4:D:858:LEU:HD22	1.86	0.56
4:D:62:GLY:O	4:D:63:GLU:HG3	2.05	0.56
1:T:119:DT:H5"	4:D:777:GLY:HA2	1.88	0.56
4:D:711:LYS:HG2	4:D:718:ILE:HD13	1.87	0.56
4:D:298:ARG:NE	4:D:419:ASN:HD21	2.03	0.56
4:D:161:HIS:O	4:D:164:LYS:HB2	2.06	0.56
3:R:3:G:H3'	3:R:2:A:H5"	1.88	0.56
4:D:71:LYS:N	4:D:72:PRO:HD2	2.21	0.56
4:D:50:ARG:HG3	4:D:51:PHE:N	2.21	0.56
4:D:69:ALA:HA	4:D:257:ARG:HG3	1.87	0.56
1:T:124:DC:H1'	1:T:123:DG:H5'	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:126:DT:H1'	1:T:125:DG:H5"	1.88	0.55
4:D:452:ILE:HG13	4:D:818:PRO:HB2	1.86	0.55
4:D:671:ASN:O	4:D:673:ALA:N	2.37	0.55
4:D:306:MET:O	4:D:309:GLU:HB3	2.06	0.55
4:D:215:ARG:HG3	4:D:219:MET:HE2	1.87	0.55
4:D:684:SER:O	4:D:687:VAL:HG22	2.07	0.55
4:D:48:GLU:HG3	4:D:262:ALA:HB1	1.89	0.55
4:D:137:VAL:HG21	4:D:244:ILE:HG12	1.89	0.55
1:T:112:DG:H2'	4:D:57:ARG:NH2	2.21	0.55
4:D:851:ASP:CG	4:D:852:GLN:H	2.09	0.55
1:T:115:DC:C2	3:R:5:G:N2	2.75	0.55
3:R:7:C:H5'	4:D:172:LYS:HE3	1.89	0.55
4:D:19:ILE:HD13	4:D:22:ASN:OD1	2.06	0.55
4:D:85:ILE:O	4:D:88:TRP:HB3	2.07	0.55
4:D:724:ALA:HB1	4:D:738:GLU:HB3	1.89	0.55
3:R:9:C:H1'	4:D:754:GLN:OE1	2.07	0.55
4:D:298:ARG:HE	4:D:419:ASN:ND2	2.05	0.55
4:D:302:LYS:HB3	4:D:302:LYS:HZ3	1.72	0.55
4:D:68:ALA:CB	4:D:261:LEU:HD21	2.37	0.54
4:D:738:GLU:HA	4:D:774:GLN:NE2	2.22	0.54
4:D:743:ILE:CD1	4:D:744:GLN:H	2.20	0.54
4:D:163:LYS:C	4:D:165:ASN:H	2.10	0.54
4:D:612:GLY:O	4:D:616:LEU:HB2	2.07	0.54
4:D:765:LYS:HG2	4:D:766:ASP:OD2	2.08	0.54
2:N:16:DT:H4'	4:D:378:LYS:CD	2.34	0.54
4:D:210:ILE:HG13	4:D:211:HIS:ND1	2.23	0.54
2:N:16:DT:H2"	2:N:17:DA:H5"	1.88	0.54
4:D:145:ILE:O	4:D:149:ALA:HB2	2.08	0.54
4:D:118:THR:HG21	4:D:220:LEU:HD13	1.88	0.54
4:D:326:THR:HG23	4:D:806:SER:HA	1.90	0.54
2:N:24:DG:H2"	2:N:25:DC:C6	2.43	0.54
4:D:170:LEU:N	4:D:170:LEU:HD22	2.23	0.54
4:D:266:PRO:HG2	4:D:268:PHE:CZ	2.43	0.54
4:D:552:ASP:OD2	4:D:552:ASP:C	2.46	0.54
4:D:713:LYS:H	4:D:713:LYS:CD	2.18	0.54
4:D:802:TYR:CE1	4:D:826:LYS:HD2	2.43	0.54
4:D:538:GLY:HA3	4:D:883:ALA:HB3	1.90	0.53
1:T:114:DG:H2"	1:T:113:DT:OP2	2.08	0.53
4:D:184:GLN:HG3	4:D:185:VAL:HG23	1.89	0.53
4:D:668:THR:O	4:D:669:GLN:HB3	2.08	0.53
4:D:162:PHE:C	4:D:164:LYS:H	2.12	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:750:MET:SD	4:D:750:MET:N	2.81	0.53
4:D:213:GLY:O	4:D:217:ILE:HG13	2.09	0.53
4:D:731:ASP:OD1	4:D:792:ARG:NE	2.42	0.53
1:T:120:DT:H71	4:D:632:ARG:NH2	2.23	0.53
4:D:59:LEU:C	4:D:61:ALA:H	2.10	0.53
4:D:184:GLN:HG3	4:D:185:VAL:N	2.24	0.53
4:D:690:VAL:CG2	4:D:691:ALA:N	2.71	0.53
4:D:378:LYS:HA	4:D:382:ALA:HB2	1.90	0.53
4:D:642:LYS:HA	4:D:682:TRP:HZ3	1.74	0.53
1:T:113:DT:H2"	1:T:112:DG:H5'	1.90	0.53
4:D:702:ALA:HA	4:D:861:MET:HE1	1.91	0.53
4:D:724:ALA:CB	4:D:738:GLU:HB3	2.39	0.53
2:N:17:DA:H2"	4:D:173:ARG:NH2	2.24	0.53
4:D:537:ASP:O	4:D:882:PHE:HD1	1.92	0.52
4:D:543:ILE:HB	4:D:559:VAL:HG11	1.89	0.52
4:D:105:PHE:O	4:D:106:LEU:HG	2.09	0.52
2:N:20:DT:N3	4:D:647:ARG:NH1	2.55	0.52
4:D:275:PRO:CG	4:D:324:GLN:HG3	2.38	0.52
4:D:634:VAL:HA	4:D:685:VAL:HG21	1.91	0.52
4:D:69:ALA:HA	4:D:257:ARG:HG2	1.91	0.52
2:N:27:DC:C2'	2:N:28:DG:O5'	2.58	0.52
4:D:106:LEU:HD23	4:D:145:ILE:HG21	1.92	0.52
4:D:439:MET:O	4:D:443:LEU:HD22	2.09	0.52
4:D:340:VAL:CG2	4:D:341:ILE:H	2.16	0.52
4:D:656:GLN:N	4:D:657:PRO:HD2	2.25	0.52
4:D:53:LYS:HD3	4:D:53:LYS:C	2.31	0.52
4:D:105:PHE:HB3	4:D:212:VAL:HG22	1.91	0.52
4:D:143:ARG:HG3	4:D:143:ARG:HH11	1.75	0.52
4:D:585:ASP:CG	4:D:613:THR:HG21	2.30	0.52
2:N:20:DT:H1'	2:N:21:DT:H5'	1.91	0.52
4:D:275:PRO:HG2	4:D:324:GLN:HG3	1.92	0.52
4:D:744:GLN:HB2	4:D:756:ARG:HB3	1.92	0.52
4:D:146:GLU:HA	4:D:149:ALA:HB3	1.92	0.51
1:T:114:DG:H1'	1:T:113:DT:H5'	1.91	0.51
2:N:17:DA:H2"	4:D:173:ARG:CZ	2.40	0.51
4:D:208:ASP:O	4:D:212:VAL:HG23	2.10	0.51
4:D:650:VAL:HG13	4:D:651:LEU:N	2.25	0.51
4:D:203:SER:C	4:D:205:HIS:H	2.14	0.51
4:D:150:ARG:HG2	4:D:201:TRP:CE2	2.46	0.51
4:D:828:VAL:CG1	4:D:882:PHE:O	2.59	0.51
4:D:150:ARG:HG2	4:D:201:TRP:CZ2	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:R:4:C:H2'	3:R:3:G:H8	1.70	0.51
4:D:84:ARG:O	4:D:88:TRP:HB2	2.10	0.51
2:N:28:DG:H1'	2:N:29:DG:N7	2.25	0.51
4:D:59:LEU:HD12	4:D:60:LYS:N	2.26	0.51
4:D:146:GLU:OE1	4:D:204:TRP:HB2	2.09	0.51
4:D:585:ASP:O	4:D:614:LYS:HA	2.11	0.51
4:D:873:ARG:HH11	4:D:873:ARG:CB	2.14	0.51
4:D:386:ARG:HH11	4:D:386:ARG:HG2	1.75	0.51
4:D:120:LYS:NZ	4:D:752:LEU:O	2.44	0.50
4:D:450:LYS:HG3	4:D:817:ILE:HD11	1.94	0.50
4:D:473:VAL:HG21	4:D:477:GLU:CD	2.32	0.50
4:D:109:ILE:HD11	4:D:145:ILE:HG23	1.92	0.50
4:D:110:LYS:HB2	4:D:113:ALA:CB	2.41	0.50
4:D:201:TRP:HZ2	4:D:204:TRP:NE1	2.08	0.50
4:D:210:ILE:HG13	4:D:211:HIS:H	1.77	0.50
4:D:648:GLN:HE22	4:D:652:GLU:HB2	1.77	0.50
4:D:613:THR:O	4:D:615:ALA:N	2.45	0.50
4:D:450:LYS:HG3	4:D:817:ILE:HD12	1.92	0.50
4:D:744:GLN:HB3	4:D:757:LEU:H	1.77	0.50
4:D:140:ALA:O	4:D:144:ALA:N	2.42	0.49
4:D:190:MET:HG3	4:D:191:LEU:N	2.27	0.49
4:D:246:LEU:HG	4:D:251:ALA:HB2	1.94	0.49
4:D:620:TRP:CZ2	4:D:655:ILE:HD11	2.47	0.49
4:D:693:VAL:HG13	4:D:696:MET:CE	2.42	0.49
2:N:19:DG:H1'	2:N:20:DT:H71	1.93	0.49
4:D:629:VAL:HA	4:D:654:THR:HG21	1.94	0.49
4:D:378:LYS:O	4:D:382:ALA:HB3	2.12	0.49
4:D:489:ILE:HG23	4:D:515:CYS:SG	2.53	0.49
4:D:743:ILE:HD12	4:D:744:GLN:H	1.78	0.49
4:D:71:LYS:HD2	4:D:71:LYS:O	2.13	0.49
4:D:669:GLN:NE2	4:D:672:GLN:HE21	2.10	0.49
4:D:337:VAL:HG21	4:D:512:LEU:CD2	2.43	0.49
4:D:552:ASP:OD2	4:D:554:VAL:N	2.46	0.49
4:D:175:GLY:HA3	4:D:178:TYR:CB	2.35	0.49
4:D:332:LYS:HE3	4:D:410:ASN:H	1.77	0.48
4:D:855:GLU:CD	4:D:857:GLN:H	2.16	0.48
4:D:210:ILE:HG13	4:D:211:HIS:N	2.28	0.48
4:D:318:LYS:O	4:D:322:ILE:HG13	2.13	0.48
4:D:353:PRO:HG2	4:D:398:LEU:HD13	1.95	0.48
4:D:705:LEU:HD22	4:D:858:LEU:HD22	1.95	0.48
4:D:702:ALA:HA	4:D:861:MET:HE3	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:112:DG:C2'	4:D:57:ARG:HH22	2.24	0.48
4:D:378:LYS:O	4:D:378:LYS:HD2	2.13	0.48
4:D:846:TYR:CE1	4:D:850:ALA:HB2	2.48	0.48
4:D:167:GLU:CB	4:D:170:LEU:HA	2.37	0.48
4:D:54:MET:O	4:D:58:GLN:HG2	2.13	0.48
4:D:98:LYS:HD2	4:D:99:ARG:H	1.79	0.48
4:D:214:VAL:O	4:D:218:GLU:HG3	2.14	0.48
4:D:248:PRO:O	4:D:252:GLU:HG3	2.14	0.48
4:D:647:ARG:NH2	4:D:671:ASN:ND2	2.62	0.48
4:D:154:ILE:O	4:D:158:GLU:HB3	2.13	0.48
4:D:706:LEU:HD11	4:D:849:PHE:CB	2.43	0.48
4:D:308:TYR:CE2	4:D:734:PRO:HG2	2.49	0.48
4:D:652:GLU:O	4:D:657:PRO:HD3	2.14	0.48
1:T:130:DG:H2"	1:T:129:DC:H6	1.78	0.48
4:D:307:ARG:HG2	4:D:736:TRP:CH2	2.48	0.48
1:T:112:DG:H2'	4:D:57:ARG:HH12	1.77	0.47
4:D:585:ASP:OD1	4:D:613:THR:HG21	2.14	0.47
1:T:130:DG:H2"	1:T:129:DC:C6	2.49	0.47
4:D:274:PRO:HB3	4:D:325:ASN:HD22	1.78	0.47
4:D:720:ARG:NH1	4:D:854:HIS:HA	2.29	0.47
4:D:783:VAL:O	4:D:786:GLN:HB2	2.14	0.47
4:D:111:PRO:O	4:D:114:VAL:HB	2.14	0.47
4:D:611:LEU:CD1	4:D:619:GLN:HE22	2.25	0.47
4:D:623:TYR:CA	4:D:666:MET:HE1	2.44	0.47
4:D:36:GLN:HE22	4:D:271:CYS:HA	1.78	0.47
4:D:52:ARG:O	4:D:53:LYS:C	2.53	0.47
4:D:181:ALA:C	4:D:183:MET:H	2.17	0.47
1:T:119:DT:C2'	1:T:118:DC:OP2	2.57	0.47
4:D:13:ASP:CB	4:D:16:LEU:HD13	2.42	0.47
4:D:15:GLU:HA	4:D:15:GLU:OE1	2.14	0.47
4:D:51:PHE:CD2	4:D:262:ALA:HB2	2.49	0.47
4:D:163:LYS:O	4:D:165:ASN:N	2.48	0.47
4:D:551:ARG:HB2	4:D:868:GLY:H	1.78	0.47
4:D:711:LYS:HE2	4:D:716:GLY:O	2.14	0.47
4:D:738:GLU:O	4:D:738:GLU:HG3	2.14	0.47
4:D:822:ALA:O	4:D:825:PHE:HB3	2.14	0.47
4:D:100:PRO:O	4:D:102:ALA:N	2.43	0.47
4:D:409:ALA:O	4:D:410:ASN:CB	2.63	0.47
4:D:767:SER:O	4:D:768:GLU:CB	2.61	0.47
4:D:828:VAL:CG2	4:D:883:ALA:HA	2.43	0.47
4:D:632:ARG:HH11	4:D:632:ARG:HG3	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:219:MET:HA	4:D:222:GLU:HB3	1.97	0.47
4:D:298:ARG:HG3	4:D:420:MET:O	2.15	0.46
4:D:473:VAL:CG1	4:D:477:GLU:HB3	2.44	0.46
4:D:720:ARG:HG3	4:D:720:ARG:NH1	2.30	0.46
4:D:828:VAL:HG11	4:D:882:PHE:O	2.16	0.46
4:D:120:LYS:HD2	4:D:752:LEU:HD23	1.97	0.46
4:D:99:ARG:O	4:D:101:THR:N	2.41	0.46
4:D:107:GLN:HA	4:D:107:GLN:OE1	2.16	0.46
4:D:13:ASP:CB	4:D:16:LEU:HD22	2.43	0.46
4:D:642:LYS:HA	4:D:682:TRP:CZ3	2.50	0.46
4:D:720:ARG:HH12	4:D:858:LEU:HD12	1.81	0.46
4:D:113:ALA:O	4:D:117:ILE:HG13	2.15	0.46
4:D:278:TRP:CD2	4:D:284:GLY:HA3	2.50	0.46
4:D:571:TYR:CE2	4:D:631:LYS:NZ	2.82	0.46
1:T:119:DT:H2'	1:T:119:DT:O5'	2.16	0.46
4:D:224:THR:OG1	4:D:225:GLY:N	2.49	0.46
4:D:99:ARG:HD3	4:D:103:PHE:CD2	2.51	0.46
4:D:491:ALA:HB1	4:D:499:ASN:OD1	2.15	0.46
4:D:36:GLN:CG	4:D:273:VAL:HG22	2.46	0.46
4:D:123:LEU:C	4:D:125:CYS:N	2.70	0.46
4:D:416:PHE:CE1	4:D:433:ASN:HA	2.51	0.46
4:D:534:LEU:HD12	4:D:818:PRO:HA	1.98	0.46
1:T:120:DT:C2'	1:T:119:DT:OP2	2.64	0.46
4:D:35:GLU:O	4:D:39:LEU:HB2	2.15	0.46
4:D:117:ILE:HA	4:D:752:LEU:CD2	2.45	0.46
4:D:802:TYR:OH	4:D:826:LYS:HD3	2.16	0.45
4:D:551:ARG:O	4:D:870:LEU:HB3	2.16	0.45
4:D:154:ILE:O	4:D:154:ILE:HG12	2.16	0.45
4:D:729:THR:OG1	4:D:733:PHE:HB3	2.16	0.45
4:D:40:GLU:CD	4:D:286:TYR:HB3	2.36	0.45
4:D:562:LEU:HD21	4:D:870:LEU:HD12	1.99	0.45
4:D:689:VAL:HG12	4:D:692:ALA:HB3	1.97	0.45
4:D:151:PHE:CD1	4:D:151:PHE:N	2.83	0.45
4:D:180:LYS:O	4:D:180:LYS:CG	2.61	0.45
4:D:361:PRO:HG2	4:D:385:TYR:HE1	1.80	0.45
4:D:377:TRP:C	4:D:379:ARG:CB	2.83	0.45
3:R:4:C:H3'	3:R:4:C:H6	1.82	0.45
4:D:154:ILE:CD1	4:D:158:GLU:HG2	2.45	0.45
4:D:566:THR:CG2	4:D:568:GLN:OE1	2.64	0.45
4:D:664:GLY:O	4:D:666:MET:N	2.41	0.45
1:T:117:DG:H5'	1:T:117:DG:H8	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:274:PRO:HA	4:D:275:PRO:HD3	1.90	0.45
4:D:452:ILE:HG23	4:D:453:GLY:N	2.32	0.45
4:D:757:LEU:HD23	4:D:758:GLN:H	1.81	0.45
4:D:159:ALA:C	4:D:161:HIS:N	2.70	0.45
4:D:337:VAL:CG2	4:D:338:ALA:N	2.79	0.45
4:D:13:ASP:OD1	4:D:16:LEU:HD13	2.17	0.45
4:D:133:THR:HG22	4:D:243:THR:CG2	2.34	0.45
4:D:473:VAL:HG13	4:D:477:GLU:HB3	1.98	0.45
4:D:473:VAL:N	4:D:567:VAL:HG11	2.32	0.45
2:N:16:DT:C3'	4:D:378:LYS:HD3	2.46	0.45
4:D:134:VAL:HG23	4:D:135:GLN:N	2.32	0.45
4:D:184:GLN:HG3	4:D:185:VAL:H	1.80	0.45
4:D:24:LEU:HD21	4:D:287:TRP:CD2	2.52	0.44
4:D:119:ILE:HG23	4:D:226:MET:CE	2.46	0.44
4:D:155:ARG:HD3	4:D:155:ARG:C	2.37	0.44
4:D:311:VAL:HG11	4:D:734:PRO:HG3	1.98	0.44
4:D:339:ASN:ND2	4:D:406:ASN:HD21	2.14	0.44
4:D:30:GLU:CD	4:D:34:ARG:HH21	2.20	0.44
4:D:152:GLY:HA2	4:D:750:MET:SD	2.57	0.44
2:N:20:DT:C2	4:D:647:ARG:NH1	2.86	0.44
4:D:110:LYS:HE3	4:D:113:ALA:HB2	2.00	0.44
4:D:463:HIS:CB	4:D:534:LEU:HD22	2.46	0.44
4:D:637:LEU:CD2	4:D:689:VAL:HB	2.48	0.44
4:D:53:LYS:NZ	4:D:57:ARG:HG2	2.32	0.44
4:D:82:ILE:HG13	4:D:86:ASN:OD1	2.17	0.44
4:D:298:ARG:HE	4:D:419:ASN:CG	2.21	0.44
4:D:592:ASN:ND2	4:D:592:ASN:H	2.14	0.44
4:D:705:LEU:HD22	4:D:858:LEU:CD2	2.48	0.44
4:D:706:LEU:HD11	4:D:849:PHE:HB2	2.00	0.44
3:R:1:3DA:H5'1	7:D:904:HOH:O	2.18	0.44
4:D:82:ILE:HG13	4:D:86:ASN:CG	2.38	0.44
4:D:723:CYS:SG	4:D:853:LEU:HD13	2.58	0.44
2:N:26:DA:H2"	2:N:27:DC:O5'	2.18	0.44
4:D:110:LYS:HB2	4:D:113:ALA:HB2	1.99	0.44
4:D:465:ALA:CB	4:D:478:ARG:HB3	2.48	0.44
4:D:473:VAL:CG2	4:D:474:PRO:HD2	2.41	0.44
4:D:807:PHE:HB3	4:D:809:LEU:HD21	2.00	0.44
4:D:71:LYS:HD2	4:D:75:THR:HG23	1.99	0.43
4:D:163:LYS:C	4:D:165:ASN:N	2.72	0.43
1:T:120:DT:H71	4:D:632:ARG:HH21	1.82	0.43
2:N:28:DG:H1'	2:N:29:DG:C5	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:361:PRO:HG3	4:D:384:VAL:HB	1.98	0.43
4:D:402:LEU:HD13	4:D:439:MET:HE3	2.00	0.43
4:D:826:LYS:NZ	4:D:826:LYS:HB3	2.32	0.43
4:D:77:LEU:O	4:D:78:LEU:C	2.55	0.43
4:D:739:TYR:N	4:D:774:GLN:NE2	2.52	0.43
4:D:752:LEU:HD12	4:D:752:LEU:N	2.33	0.43
4:D:855:GLU:OE1	4:D:856:SER:N	2.52	0.43
4:D:149:ALA:O	4:D:153:ARG:HB2	2.19	0.43
4:D:623:TYR:CD2	4:D:624:GLY:N	2.86	0.43
4:D:721:LYS:O	4:D:722:ARG:C	2.56	0.43
4:D:779:ALA:HB3	4:D:780:PRO:CD	2.48	0.43
4:D:32:LEU:O	4:D:33:ALA:C	2.57	0.43
4:D:69:ALA:O	4:D:257:ARG:HG2	2.17	0.43
4:D:118:THR:O	4:D:122:THR:HG23	2.18	0.43
4:D:647:ARG:HH21	4:D:671:ASN:HD21	1.65	0.43
4:D:245:GLU:O	4:D:245:GLU:HG3	2.18	0.43
4:D:275:PRO:HB2	4:D:324:GLN:CG	2.44	0.43
4:D:358:GLU:CD	4:D:358:GLU:H	2.22	0.43
4:D:125:CYS:HA	4:D:128:SER:HB3	2.00	0.43
4:D:623:TYR:HA	4:D:666:MET:CE	2.49	0.43
4:D:723:CYS:CB	4:D:853:LEU:HD13	2.48	0.43
1:T:119:DT:C2'	1:T:119:DT:O5'	2.66	0.43
4:D:13:ASP:HB3	4:D:16:LEU:CD1	2.48	0.43
4:D:36:GLN:HG3	4:D:273:VAL:HG22	2.01	0.43
4:D:150:ARG:C	4:D:152:GLY:H	2.23	0.43
4:D:433:ASN:HB2	4:D:434:PRO:CD	2.49	0.43
4:D:452:ILE:N	4:D:528:TYR:O	2.42	0.43
4:D:698:TRP:HZ3	4:D:845:PHE:HD2	1.67	0.43
2:N:19:DG:H2"	2:N:20:DT:C7	2.49	0.42
4:D:58:GLN:OE1	4:D:58:GLN:HA	2.19	0.42
4:D:349:VAL:HG13	4:D:508:PRO:HG3	2.01	0.42
4:D:357:ARG:HB3	4:D:358:GLU:OE2	2.19	0.42
4:D:402:LEU:HD12	4:D:402:LEU:HA	1.78	0.42
4:D:613:THR:O	4:D:614:LYS:HB3	2.18	0.42
4:D:667:PHE:O	4:D:668:THR:C	2.58	0.42
4:D:852:GLN:O	4:D:853:LEU:HB2	2.19	0.42
4:D:470:VAL:HG21	4:D:481:PHE:CG	2.53	0.42
4:D:670:PRO:O	4:D:673:ALA:HB3	2.19	0.42
4:D:854:HIS:HD2	4:D:858:LEU:HD13	1.84	0.42
4:D:34:ARG:HH11	4:D:34:ARG:HG2	1.83	0.42
4:D:13:ASP:OD2	4:D:14:ILE:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:689:VAL:CG1	4:D:692:ALA:HB3	2.50	0.42
4:D:744:GLN:CB	4:D:756:ARG:HB3	2.48	0.42
4:D:416:PHE:CE2	4:D:434:PRO:HD3	2.55	0.42
4:D:490:MET:SD	4:D:522:GLN:HG3	2.59	0.42
4:D:669:GLN:NE2	4:D:672:GLN:NE2	2.67	0.42
4:D:398:LEU:C	4:D:398:LEU:HD23	2.40	0.42
4:D:89:PHE:C	4:D:91:GLU:N	2.72	0.42
4:D:146:GLU:O	4:D:147:ASP:HB2	2.20	0.42
4:D:344:TRP:O	4:D:345:LYS:C	2.57	0.42
4:D:852:GLN:O	4:D:853:LEU:CB	2.67	0.42
4:D:78:LEU:HD21	4:D:755:PHE:CD2	2.55	0.42
4:D:449:GLY:O	4:D:450:LYS:HG2	2.20	0.42
4:D:705:LEU:O	4:D:720:ARG:NH2	2.48	0.42
4:D:828:VAL:HG13	4:D:882:PHE:O	2.19	0.42
4:D:82:ILE:C	4:D:84:ARG:N	2.70	0.42
4:D:169:GLN:O	4:D:170:LEU:C	2.57	0.42
4:D:298:ARG:N	4:D:420:MET:O	2.52	0.42
4:D:537:ASP:O	4:D:882:PHE:CD1	2.71	0.42
4:D:585:ASP:HB3	4:D:613:THR:CG2	2.49	0.42
4:D:613:THR:CG2	4:D:614:LYS:H	2.16	0.42
4:D:645:GLY:O	4:D:649:GLN:HG3	2.20	0.42
4:D:655:ILE:O	4:D:659:ILE:HG13	2.19	0.42
4:D:746:ARG:HB3	4:D:756:ARG:HG2	2.02	0.42
1:T:114:DG:O6	3:R:8:A:N6	2.53	0.42
4:D:115:ALA:O	4:D:119:ILE:HG13	2.20	0.42
4:D:122:THR:HG21	4:D:220:LEU:HD22	2.01	0.42
4:D:165:ASN:OD1	4:D:168:GLU:HA	2.20	0.42
4:D:178:TYR:C	4:D:180:LYS:N	2.73	0.42
4:D:328:TRP:CH2	4:D:434:PRO:HB3	2.55	0.42
4:D:385:TYR:HD1	4:D:385:TYR:H	1.67	0.42
4:D:517:GLU:HG3	4:D:532:LEU:HB2	2.01	0.42
2:N:29:DG:H2"	2:N:30:DC:OP2	2.20	0.41
4:D:52:ARG:HA	4:D:52:ARG:HD3	1.87	0.41
4:D:562:LEU:HD21	4:D:870:LEU:CD1	2.50	0.41
4:D:782:PHE:O	4:D:786:GLN:HG2	2.20	0.41
2:N:19:DG:N2	4:D:670:PRO:HD2	2.35	0.41
3:R:7:C:OP1	4:D:169:GLN:HG3	2.19	0.41
4:D:161:HIS:HA	4:D:164:LYS:HG2	2.02	0.41
4:D:551:ARG:C	4:D:870:LEU:HB3	2.40	0.41
4:D:355:ILE:HB	4:D:356:GLU:OE2	2.21	0.41
4:D:720:ARG:HH22	4:D:858:LEU:HD11	1.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:48:GLU:HG3	4:D:262:ALA:CB	2.49	0.41
4:D:298:ARG:NH2	4:D:419:ASN:ND2	2.35	0.41
4:D:324:GLN:CB	4:D:418:TYR:HD1	2.33	0.41
4:D:109:ILE:CG2	4:D:149:ALA:HA	2.50	0.41
4:D:215:ARG:HG3	4:D:219:MET:CE	2.50	0.41
4:D:488:ASN:HB3	4:D:501:TRP:CZ3	2.56	0.41
4:D:750:MET:O	4:D:751:PHE:CB	2.67	0.41
1:T:129:DC:H2"	1:T:128:DC:C5	2.56	0.41
1:T:120:DT:H5'	4:D:641:SER:HA	2.03	0.41
4:D:40:GLU:OE1	4:D:288:ALA:N	2.48	0.41
4:D:164:LYS:C	4:D:166:VAL:N	2.72	0.41
4:D:349:VAL:O	4:D:350:GLU:C	2.59	0.41
4:D:359:GLU:O	4:D:360:LEU:O	2.39	0.41
3:R:6:G:O2'	4:D:390:ALA:HA	2.21	0.41
4:D:547:SER:O	4:D:551:ARG:N	2.54	0.41
4:D:720:ARG:NH1	4:D:858:LEU:CD1	2.82	0.41
4:D:855:GLU:CD	4:D:856:SER:H	2.24	0.41
4:D:99:ARG:HA	4:D:100:PRO:HD3	1.84	0.41
4:D:159:ALA:O	4:D:160:LYS:HB2	2.21	0.41
4:D:622:ALA:O	4:D:623:TYR:O	2.38	0.41
4:D:646:PHE:N	4:D:646:PHE:CD2	2.88	0.41
4:D:663:LYS:HD2	4:D:663:LYS:N	2.35	0.41
3:R:6:G:O2'	3:R:5:G:H5'	2.20	0.41
4:D:18:ALA:O	4:D:20:PRO:HD3	2.20	0.41
4:D:109:ILE:HG21	4:D:149:ALA:HA	2.02	0.41
4:D:171:ASN:OD1	4:D:179:LYS:HB3	2.21	0.41
4:D:299:THR:OG1	4:D:305:LEU:HB2	2.20	0.41
4:D:854:HIS:CG	4:D:855:GLU:H	2.38	0.41
4:D:36:GLN:HE21	4:D:272:VAL:HG22	1.85	0.41
4:D:111:PRO:HG2	4:D:112:GLU:H	1.85	0.41
4:D:269:GLN:HB3	4:D:270:PRO:HD2	2.01	0.41
4:D:690:VAL:CG2	4:D:691:ALA:H	2.32	0.41
3:R:7:C:H5'	4:D:172:LYS:CE	2.52	0.40
4:D:118:THR:CG2	4:D:220:LEU:HD13	2.49	0.40
4:D:156:ASP:OD2	4:D:157:LEU:HD23	2.22	0.40
4:D:307:ARG:HG2	4:D:736:TRP:CZ3	2.55	0.40
4:D:668:THR:O	4:D:669:GLN:CB	2.69	0.40
4:D:725:VAL:HG11	4:D:778:ILE:HD13	2.03	0.40
4:D:737:GLN:HE22	4:D:778:ILE:N	2.19	0.40
4:D:860:LYS:HA	4:D:860:LYS:HD3	1.87	0.40
1:T:120:DT:OP2	4:D:641:SER:HA	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:671:ASN:O	4:D:672:GLN:HB2	2.21	0.40
4:D:683:GLU:O	4:D:687:VAL:HG13	2.21	0.40
2:N:22:DG:H2"	2:N:23:DC:C5	2.57	0.40
4:D:497:LEU:H	4:D:497:LEU:CD1	2.24	0.40
4:D:664:GLY:C	4:D:666:MET:H	2.21	0.40
4:D:360:LEU:HA	4:D:361:PRO:HD3	1.90	0.40
4:D:361:PRO:HB3	4:D:382:ALA:HA	2.03	0.40
4:D:433:ASN:ND2	4:D:435:GLN:HB2	2.37	0.40
4:D:881:ALA:O	4:D:882:PHE:HB2	2.20	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
4	D	822/883 (93%)	669 (81%)	109 (13%)	44 (5%)	2 3

All (44) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	D	226	MET
4	D	350	GLU
4	D	360	LEU
4	D	378	LYS
4	D	379	ARG
4	D	590	THR
4	D	623	TYR
4	D	767	SER
4	D	854	HIS
4	D	62	GLY
4	D	100	PRO
4	D	158	GLU

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Mol	Chain	Res	Type
4	D	164	LYS
4	D	168	GLU
4	D	224	THR
4	D	359	GLU
4	D	625	VAL
4	D	631	LYS
4	D	751	PHE
4	D	857	GLN
4	D	83	ALA
4	D	90	GLU
4	D	106	LEU
4	D	150	ARG
4	D	204	TRP
4	D	225	GLY
4	D	309	GLU
4	D	668	THR
4	D	764	ASN
4	D	852	GLN
4	D	174	VAL
4	D	183	MET
4	D	200	ALA
4	D	357	ARG
4	D	665	LEU
4	D	669	GLN
4	D	768	GLU
4	D	63	GLU
4	D	859	ASP
4	D	882	PHE
4	D	111	PRO
4	D	594	VAL
4	D	20	PRO
4	D	624	GLY

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
4	D	683/729 (94%)	625 (92%)	58 (8%)	10 24

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	D	19	ILE
4	D	36	GLN
4	D	50	ARG
4	D	57	ARG
4	D	71	LYS
4	D	104	GLN
4	D	143	ARG
4	D	155	ARG
4	D	169	GLN
4	D	173	ARG
4	D	206	LYS
4	D	276	LYS
4	D	292	ARG
4	D	303	LYS
4	D	310	ASP
4	D	318	LYS
4	D	324	GLN
4	D	329	LYS
4	D	339	ASN
4	D	341	ILE
4	D	351	ASP
4	D	358	GLU
4	D	377	TRP
4	D	378	LYS
4	D	392	LYS
4	D	393	SER
4	D	403	GLU
4	D	419	ASN
4	D	423	ARG
4	D	433	ASN
4	D	443	LEU
4	D	473	VAL
4	D	480	LYS
4	D	488	ASN
4	D	497	LEU
4	D	506	ASP
4	D	514	PHE
4	D	527	SER

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Mol	Chain	Res	Type
4	D	588	ASN
4	D	592	ASN
4	D	628	SER
4	D	648	GLN
4	D	653	ASP
4	D	666	MET
4	D	713	LYS
4	D	720	ARG
4	D	743	ILE
4	D	747	LEU
4	D	750	MET
4	D	773	LYS
4	D	816	THR
4	D	826	LYS
4	D	838	SER
4	D	855	GLU
4	D	857	GLN
4	D	859	ASP
4	D	874	ASP
4	D	876	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
4	D	36	GLN
4	D	104	GLN
4	D	165	ASN
4	D	321	ASN
4	D	325	ASN
4	D	346	HIS
4	D	406	ASN
4	D	419	ASN
4	D	433	ASN
4	D	463	HIS
4	D	488	ASN
4	D	544	GLN
4	D	579	ASN
4	D	588	ASN
4	D	592	ASN
4	D	619	GLN
4	D	648	GLN
4	D	649	GLN

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Mol	Chain	Res	Type
4	D	669	GLN
4	D	671	ASN
4	D	672	GLN
4	D	726	HIS
4	D	737	GLN
4	D	762	ASN
4	D	774	GLN
4	D	781	ASN
4	D	790	HIS
4	D	811	HIS
4	D	848	GLN
4	D	852	GLN
4	D	854	HIS
4	D	871	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	R	8/10 (80%)	2 (25%)	0

All (2) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	R	8	A
3	R	2	A

There are no RNA pucker outliers to report.

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

1 non-standard protein/DNA/RNA residue is 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	$\#\|Z\|>2$
3	3DA	R	1	3,1,5	17,23,24	0.69	0	15,33,36	0.87	1 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	3DA	R	1	3,1,5	-	1/3/21/22	0/3/3/3

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	R	1	3DA	C5-C6-N6	2.22	123.73	120.35

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	R	1	3DA	O4'-C4'-C5'-O5'

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	R	1	3DA	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 3 ligands modelled in this entry, 2 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	$\#\|Z\| > 2$
6	POP	D	901	-	6,8,8	1.11	0	13,13,13	0.79	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
6	POP	D	901	-	-	0/6/6/6	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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^{th} 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	T	21/21 (100%)	2.48	12 (57%)	0	0	43, 124, 149, 149	0
2	N	17/17 (100%)	2.58	11 (64%)	0	0	144, 148, 149, 150	0
3	R	9/10 (90%)	1.78	1 (11%)	5	4	76, 95, 128, 135	0
4	D	828/883 (93%)	0.80	102 (12%)	4	3	24, 61, 105, 127	0
All	All	875/931 (93%)	0.89	126 (14%)	2	1	24, 63, 110, 150	0

All (126) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	D	377	TRP	14.4
4	D	159	ALA	8.7
4	D	185	VAL	8.7
4	D	157	LEU	7.8
4	D	105	PHE	7.6
3	R	10	A	6.8
4	D	160	LYS	6.6
4	D	766	ASP	6.6
4	D	83	ALA	6.4
1	T	130	DG	6.4
4	D	190	MET	6.0
4	D	204	TRP	5.8
4	D	360	LEU	5.7
4	D	131	ASN	5.6
4	D	106	LEU	5.1
4	D	200	ALA	5.1
2	N	29	DG	5.1
4	D	188	ALA	5.0
1	T	126	DT	5.0
2	N	26	DA	4.9
4	D	361	PRO	4.9

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Mol	Chain	Res	Type	RSRZ
4	D	191	LEU	4.7
4	D	178	TYR	4.7
4	D	161	HIS	4.7
4	D	389	LYS	4.6
4	D	152	GLY	4.5
4	D	761	ILE	4.5
4	D	760	THR	4.3
4	D	244	ILE	4.3
4	D	194	GLY	4.3
4	D	192	SER	4.3
1	T	112	DG	4.2
1	T	114	DG	4.2
4	D	162	PHE	4.2
4	D	230	HIS	4.2
4	D	151	PHE	4.1
4	D	665	LEU	4.1
4	D	132	THR	4.0
1	T	125	DG	4.0
2	N	28	DG	4.0
1	T	129	DC	3.9
4	D	743	ILE	3.9
1	T	127	DG	3.9
4	D	755	PHE	3.8
1	T	113	DT	3.8
4	D	205	HIS	3.8
1	T	128	DC	3.8
4	D	217	ILE	3.8
4	D	201	TRP	3.8
4	D	130	ASP	3.7
4	D	176	HIS	3.7
4	D	587	ILE	3.7
4	D	209	SER	3.5
4	D	156	ASP	3.5
4	D	594	VAL	3.5
4	D	359	GLU	3.4
4	D	385	TYR	3.4
4	D	211	HIS	3.4
4	D	206	LYS	3.4
4	D	381	ALA	3.4
4	D	174	VAL	3.4
4	D	252	GLU	3.4
2	N	17	DA	3.4

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Mol	Chain	Res	Type	RSRZ
4	D	744	GLN	3.4
4	D	166	VAL	3.3
4	D	767	SER	3.3
2	N	30	DC	3.3
2	N	24	DG	3.2
4	D	291	ARG	3.2
1	T	111	DT	3.1
4	D	378	LYS	3.1
4	D	357	ARG	3.1
4	D	60	LYS	3.0
4	D	182	PHE	3.0
4	D	249	GLU	3.0
4	D	873	ARG	3.0
4	D	670	PRO	2.9
4	D	136	ALA	2.9
4	D	102	ALA	2.9
4	D	210	ILE	2.8
4	D	96	ARG	2.8
4	D	746	ARG	2.7
4	D	98	LYS	2.7
4	D	99	ARG	2.7
4	D	137	VAL	2.7
4	D	148	GLU	2.6
1	T	123	DG	2.6
4	D	193	LYS	2.6
4	D	164	LYS	2.6
2	N	18	DC	2.6
4	D	742	PRO	2.6
4	D	153	ARG	2.6
4	D	632	ARG	2.6
2	N	19	DG	2.6
2	N	15	DT	2.6
4	D	762	ASN	2.5
1	T	110	DT	2.5
4	D	593	GLU	2.5
4	D	380	ALA	2.5
4	D	565	GLU	2.5
4	D	84	ARG	2.5
4	D	177	VAL	2.4
4	D	90	GLU	2.4
4	D	853	LEU	2.4
4	D	763	THR	2.4

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Mol	Chain	Res	Type	RSRZ
4	D	129	ALA	2.3
4	D	245	GLU	2.3
2	N	21	DT	2.3
4	D	87	ASP	2.3
4	D	764	ASN	2.3
4	D	146	GLU	2.3
4	D	609	VAL	2.3
4	D	854	HIS	2.3
4	D	386	ARG	2.2
4	D	222	GLU	2.2
4	D	428	ALA	2.2
2	N	27	DC	2.2
4	D	172	LYS	2.2
4	D	97	GLY	2.2
4	D	877	GLU	2.1
4	D	116	TYR	2.1
4	D	756	ARG	2.1
4	D	646	PHE	2.1
4	D	754	GLN	2.1
4	D	175	GLY	2.1
4	D	631	LYS	2.0

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, 95^{th} 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
3	3DA	R	1	21/22	0.95	0.18	32,48,79,83	0

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^{th} 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
5	MG	D	903	1/1	0.73	0.10	61,61,61,61	0
6	POP	D	901	9/9	0.83	0.22	144,145,145,145	0
5	MG	R	902	1/1	0.98	0.11	39,39,39,39	0

6.5 Other polymers (i)

There are no such residues in this entry.