Full wwPDB X-ray Structure Validation Report ⓘ

May 22, 2020 – 06:50 pm BST

PDB ID	:	2CSX
Title	:	Crystal structure of Aquifex aeolicus methionyl-tRNA synthetase complexed with tRNA(Met)
Authors	:	Nakanishi, K.; Ogiso, Y.; Nakama, T.; Fukai, S.; Nureki, O.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)
Deposited on	:	2005-05-23
Resolution	:	2.70 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 following versions of software and data (see references ①) were used in the production of this report:

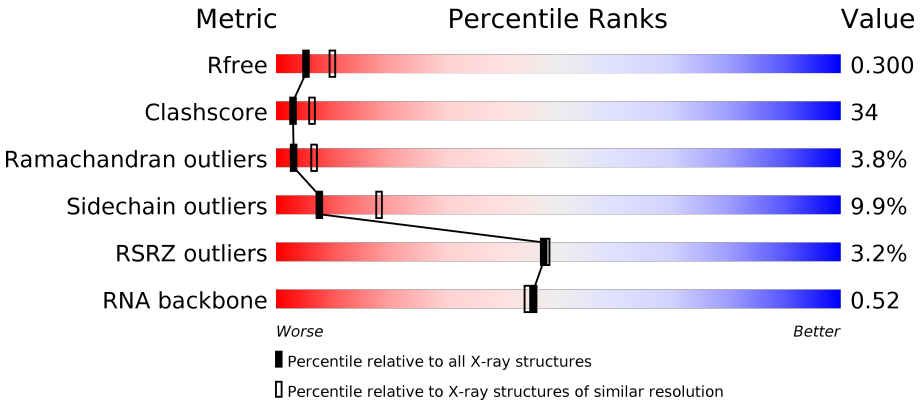
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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 2.70 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
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 on 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	C	75	3% 27% 43% 31%
1	D	75	13% 19% 51% 29%
2	A	497	2% 45% 41% 7% 7%
2	B	497	3% 41% 42% 9% 7%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11058 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 RNA chain called RNA (75-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	75	Total	C	N	O	P	0	0	0
			1603	713	288	527	75			
1	D	75	Total	C	N	O	P	0	0	0
			1603	713	288	527	75			

- Molecule 2 is a protein called Methionyl-tRNA synthetase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	464	Total	C	N	O	S	0	0	0
			3905	2561	637	698	9			
2	B	464	Total	C	N	O	S	0	0	0
			3905	2561	637	698	9			

- Molecule 3 is water.

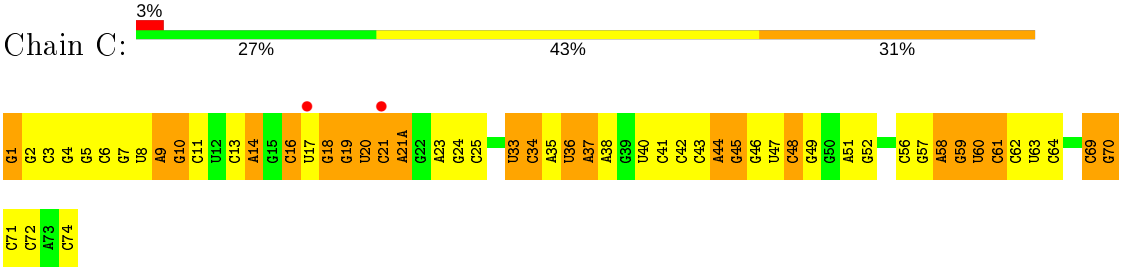
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	C	4	Total	O	0	0
			4	4		
3	D	2	Total	O	0	0
			2	2		
3	A	18	Total	O	0	0
			18	18		
3	B	18	Total	O	0	0
			18	18		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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.

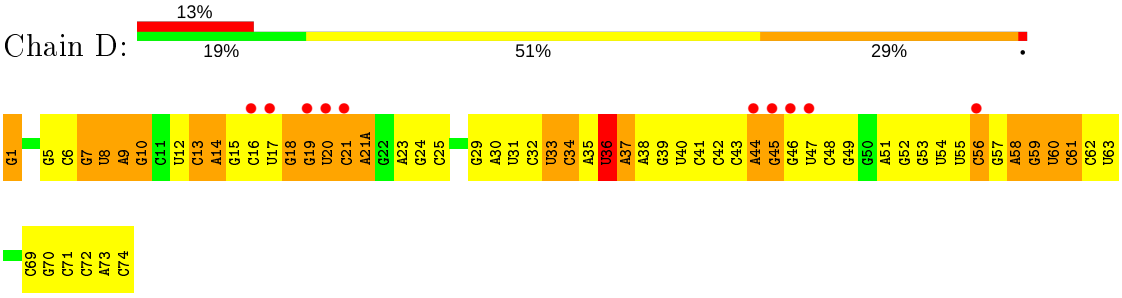
- Molecule 1: RNA (75-MER)

Chain C:



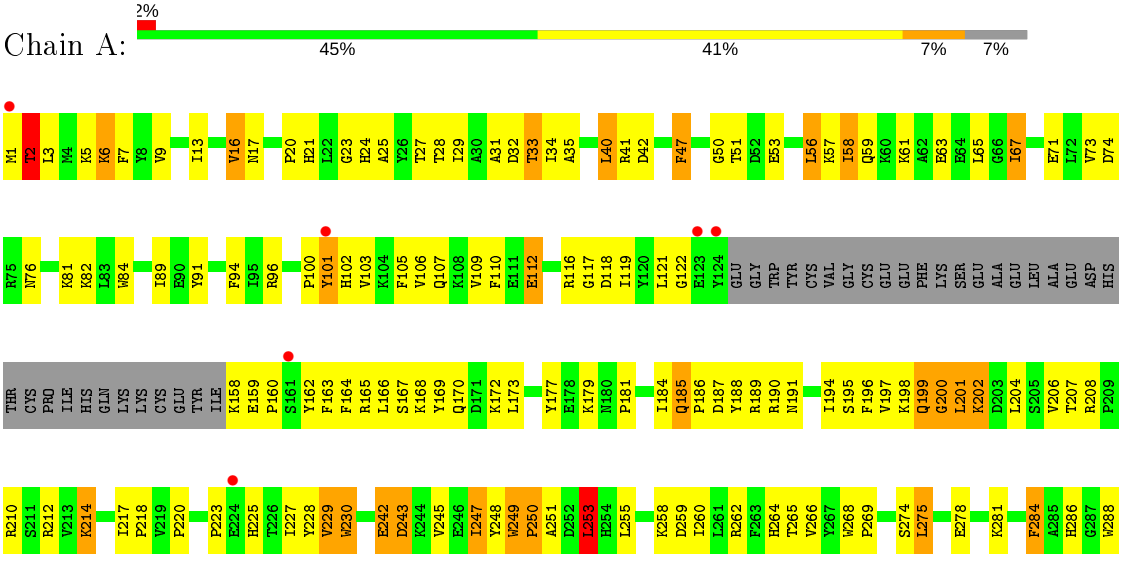
- Molecule 1: RNA (75-MER)

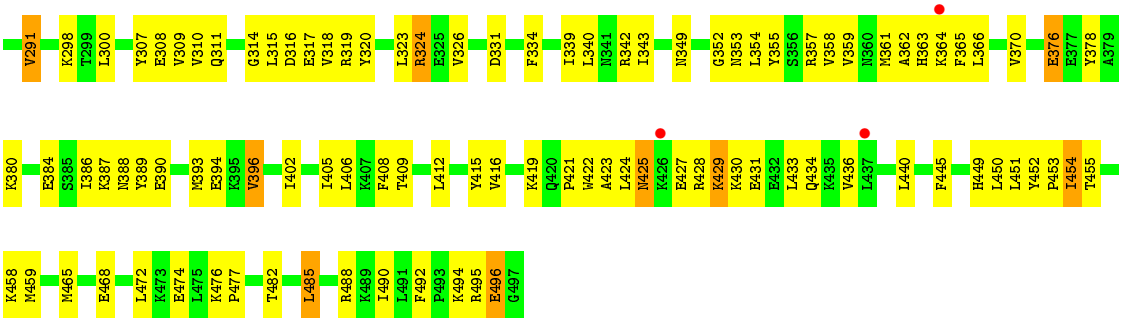
Chain D:



- Molecule 2: Methionyl-tRNA synthetase

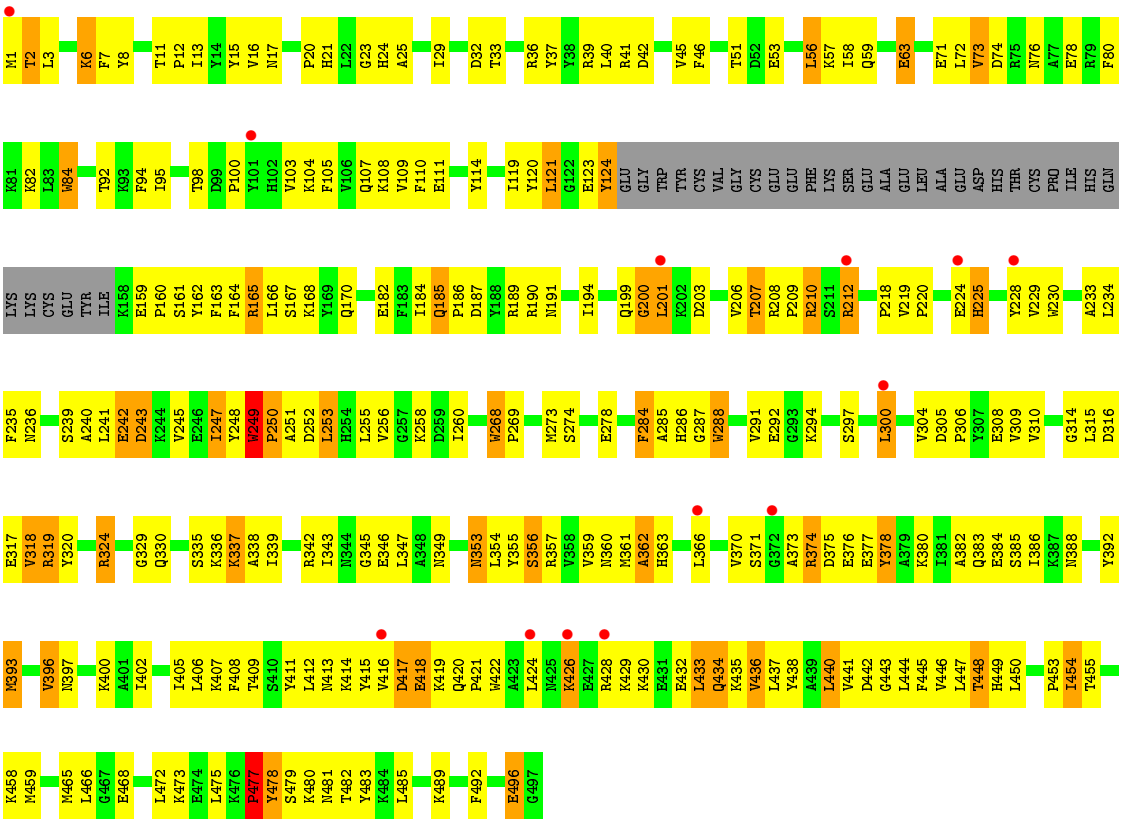
Chain A:





• Molecule 2: Methionyl-tRNA synthetase

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	94.10Å 108.12Å 162.07Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.08 – 2.70 48.33 – 2.60	Depositor EDS
% Data completeness (in resolution range)	97.8 (38.08-2.70) 95.2 (48.33-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.11 (at 2.61Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.239 , 0.302 0.239 , 0.300	Depositor DCC
R_{free} test set	3472 reflections (7.07%)	wwPDB-VP
Wilson B-factor (Å^2)	45.7	Xtriage
Anisotropy	0.538	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 55.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	11058	wwPDB-VP
Average B, all atoms (Å^2)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.13% 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

5.1 Standard geometry

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	C	0.46	1/1790 (0.1%)	0.78	1/2788 (0.0%)
1	D	0.40	1/1790 (0.1%)	0.72	0/2788
2	A	0.46	0/4012	0.70	0/5414
2	B	0.46	0/4012	0.68	2/5414 (0.0%)
All	All	0.45	2/11604 (0.0%)	0.71	3/16404 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1
1	D	0	1
All	All	0	2

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	1	G	OP3-P	-7.18	1.52	1.61
1	C	1	G	OP3-P	-7.17	1.52	1.61

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	11	THR	N-CA-C	-5.70	95.62	111.00
1	C	48	C	N1-C1'-C2'	5.49	121.13	114.00
2	B	249	TRP	N-CA-C	5.15	124.90	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	48	C	Sidechain
1	D	36	U	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	C	1603	0	813	59	0
1	D	1603	0	813	97	0
2	A	3905	0	3907	271	0
2	B	3905	0	3907	299	0
3	A	18	0	0	1	0
3	B	18	0	0	1	0
3	C	4	0	0	0	0
3	D	2	0	0	1	0
All	All	11058	0	9440	699	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 34.

All (699) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:170:GLN:HB2	2:B:201:LEU:HD13	1.40	1.02
2:B:297:SER:HB3	2:B:300:LEU:HB2	1.41	1.00
2:B:346:GLU:OE1	2:B:406:LEU:HD21	1.64	0.97
2:A:361:MET:HE1	2:A:421:PRO:HG2	1.47	0.95
2:B:162:TYR:H	2:B:207:THR:HG22	1.32	0.95
2:A:21:HIS:H	2:A:24:HIS:HD2	1.05	0.92
2:A:33:THR:HG21	2:A:323:LEU:HD11	1.48	0.92
1:D:23:A:H2'	1:D:24:G:C8	2.06	0.90
2:B:366:LEU:HD12	2:B:370:VAL:HG22	1.53	0.90
1:C:69:C:H2'	1:C:70:G:H8	1.35	0.90
2:B:449:HIS:HE1	2:B:472:LEU:H	1.18	0.88
2:B:33:THR:HG22	2:B:453:PRO:O	1.75	0.87
2:A:21:HIS:H	2:A:24:HIS:CD2	1.92	0.87
2:A:40:LEU:O	2:A:40:LEU:HD12	1.75	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:305:ASP:HB3	2:B:308:GLU:HG2	1.59	0.84
2:A:118:ASP:HA	2:A:165:ARG:HG3	1.59	0.84
2:B:249:TRP:O	2:B:250:PRO:C	2.13	0.83
1:C:19:G:N2	1:C:56:C:N3	2.25	0.83
2:B:200:GLY:O	2:B:201:LEU:HB2	1.79	0.82
1:C:13:C:C2'	1:C:14:A:H5"	2.10	0.82
2:B:170:GLN:HB2	2:B:201:LEU:CD1	2.10	0.82
2:A:189:ARG:NH2	2:A:258:LYS:HE3	1.95	0.81
2:A:416:VAL:HG22	2:A:440:LEU:HD21	1.61	0.81
2:A:361:MET:CE	2:A:421:PRO:HG2	2.11	0.81
1:C:21:C:O3'	1:C:21(A):A:H4'	1.80	0.81
2:A:16:VAL:HG13	2:A:51:THR:HB	1.62	0.81
2:A:249:TRP:O	2:A:250:PRO:C	2.18	0.80
2:A:243:ASP:N	2:A:245:VAL:HG23	1.97	0.80
2:A:2:THR:CG2	2:A:247:ILE:HA	2.12	0.80
1:D:13:C:C2'	1:D:14:A:H5"	2.12	0.80
2:B:249:TRP:O	2:B:251:ALA:N	2.14	0.80
2:B:170:GLN:OE1	2:B:201:LEU:HD22	1.81	0.79
1:C:18:G:H2'	1:C:57:G:N2	1.97	0.79
2:A:189:ARG:HH22	2:A:258:LYS:HE3	1.45	0.79
2:B:366:LEU:HD21	2:B:433:LEU:HD13	1.65	0.79
1:D:31:U:H3'	3:D:75:HOH:O	1.81	0.79
2:B:162:TYR:HD2	2:B:207:THR:HG21	1.47	0.78
2:A:167:SER:O	2:A:201:LEU:HD11	1.84	0.78
2:A:320:TYR:HA	2:A:454:ILE:HD11	1.66	0.78
1:C:36:U:H4'	1:C:37:A:OP1	1.84	0.78
2:A:405:ILE:O	2:A:409:THR:HG23	1.82	0.78
2:A:311:GLN:NE2	2:B:458:LYS:HE2	1.99	0.78
2:B:210:ARG:HH12	2:B:218:PRO:HB3	1.47	0.78
2:B:424:LEU:HD21	2:B:432:GLU:HG2	1.65	0.77
2:B:374:ARG:HD2	2:B:374:ARG:H	1.50	0.77
1:D:13:C:H2'	1:D:14:A:H5"	1.68	0.76
2:A:16:VAL:HG21	2:A:53:GLU:HG2	1.67	0.76
2:A:29:ILE:O	2:A:33:THR:HG23	1.85	0.76
2:A:1:MET:O	2:A:2:THR:HG23	1.84	0.76
2:A:181:PRO:HB3	2:A:190:ARG:NH2	2.00	0.76
2:A:61:LYS:O	2:A:65:LEU:HG	1.84	0.76
1:D:19:G:H5"	1:D:21:C:N4	2.00	0.76
1:D:30:A:H2'	1:D:31:U:C6	2.21	0.76
2:B:455:THR:HG23	2:B:455:THR:O	1.86	0.76
2:B:162:TYR:H	2:B:207:THR:CG2	1.98	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:311:GLN:HE22	2:B:458:LYS:HE2	1.50	0.75
1:D:41:C:H2'	1:D:42:C:C6	2.21	0.75
2:A:181:PRO:HB3	2:A:190:ARG:HH22	1.52	0.75
2:A:162:TYR:H	2:A:207:THR:CG2	2.00	0.74
2:A:56:LEU:HA	2:A:59:GLN:HG2	1.68	0.74
2:A:82:LYS:HE3	2:B:496:GLU:HG3	1.68	0.74
2:B:412:LEU:O	2:B:416:VAL:HG23	1.87	0.74
2:A:109:VAL:HG13	2:A:275:LEU:HD21	1.69	0.74
2:A:249:TRP:O	2:A:251:ALA:N	2.21	0.74
2:A:107:GLN:HB3	2:A:220:PRO:HG3	1.70	0.74
1:C:42:C:H2'	1:C:43:C:H6	1.53	0.74
1:D:58:A:H4'	1:D:59:G:OP1	1.86	0.74
2:A:184:ILE:HG13	2:A:265:THR:HG21	1.68	0.73
2:B:335:SER:HB2	2:B:337:LYS:HE2	1.71	0.73
1:C:13:C:H2'	1:C:14:A:H5"	1.71	0.73
2:A:187:ASP:O	2:A:190:ARG:HG2	1.89	0.73
2:A:2:THR:HG21	2:A:247:ILE:HA	1.70	0.73
2:B:373:ALA:O	2:B:435:LYS:HG3	1.89	0.73
1:D:19:G:H5"	1:D:20:U:OP2	1.89	0.72
2:B:355:TYR:O	2:B:359:VAL:HG23	1.89	0.72
2:A:21:HIS:N	2:A:24:HIS:HD2	1.85	0.72
2:A:355:TYR:HB3	2:A:465:MET:CE	2.20	0.72
1:C:58:A:H4'	1:C:59:G:OP1	1.87	0.71
1:C:69:C:H2'	1:C:70:G:C8	2.23	0.71
2:B:268:TRP:HB3	2:B:269:PRO:HD3	1.71	0.71
2:A:200:GLY:O	2:A:201:LEU:HB2	1.88	0.71
2:A:56:LEU:H	2:A:56:LEU:CD1	2.04	0.71
2:B:167:SER:O	2:B:201:LEU:HD11	1.91	0.71
2:B:445:PHE:O	2:B:449:HIS:HD2	1.74	0.70
2:B:42:ASP:HB2	2:B:473:LYS:HG3	1.71	0.70
2:B:162:TYR:CD2	2:B:207:THR:HG21	2.25	0.70
2:B:386:ILE:HD13	2:B:475:LEU:HB3	1.73	0.70
2:A:278:GLU:HG3	3:A:502:HOH:O	1.91	0.70
2:A:298:LYS:NZ	2:A:298:LYS:HB3	2.07	0.70
2:B:58:ILE:CD1	2:B:73:VAL:HG23	2.22	0.70
1:C:69:C:O2'	1:C:70:G:H5'	1.92	0.70
1:C:44:A:H4'	1:C:45:G:OP1	1.90	0.70
2:A:184:ILE:HG21	2:A:190:ARG:HA	1.74	0.69
2:A:56:LEU:HD22	2:A:57:LYS:N	2.07	0.69
2:B:324:ARG:HG3	2:B:402:ILE:HG21	1.73	0.69
1:D:35:A:H5'	2:B:360:ASN:HD22	1.56	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:109:VAL:HG13	2:A:275:LEU:CD2	2.22	0.69
2:B:58:ILE:HD12	2:B:73:VAL:HG23	1.73	0.69
2:A:27:THR:OG1	2:A:286:HIS:HE1	1.76	0.69
2:B:21:HIS:HD2	2:B:23:GLY:H	1.41	0.69
1:C:19:G:H5"	1:C:20:U:OP2	1.93	0.68
2:B:337:LYS:CD	2:B:337:LYS:H	2.06	0.68
2:B:424:LEU:HD11	2:B:432:GLU:HG3	1.75	0.68
2:B:199:GLN:HG3	2:B:200:GLY:H	1.59	0.68
2:B:185:GLN:HA	2:B:185:GLN:OE1	1.93	0.67
1:D:41:C:H2'	1:D:42:C:H6	1.58	0.67
1:D:34:C:H1'	2:B:361:MET:CE	2.24	0.67
2:B:95:ILE:HD12	2:B:240:ALA:HB2	1.76	0.67
1:D:31:U:H2'	1:D:32:C:C6	2.28	0.67
1:D:34:C:H1'	2:B:361:MET:HE2	1.76	0.67
2:B:21:HIS:H	2:B:24:HIS:HD2	1.43	0.67
2:B:436:VAL:O	2:B:440:LEU:HD23	1.95	0.67
2:A:185:GLN:O	2:A:186:PRO:C	2.32	0.67
2:A:436:VAL:O	2:A:440:LEU:HB2	1.95	0.66
2:B:189:ARG:NH2	2:B:258:LYS:HE2	2.08	0.66
1:D:48:C:H5"	1:D:49:G:H5"	1.77	0.66
2:A:31:ALA:O	2:A:34:ILE:HG22	1.95	0.66
2:B:449:HIS:CE1	2:B:472:LEU:H	2.09	0.66
2:A:117:GLY:O	2:A:165:ARG:HD2	1.96	0.66
2:B:100:PRO:O	2:B:103:VAL:HG22	1.95	0.66
2:A:162:TYR:N	2:A:207:THR:HG22	2.11	0.66
1:C:13:C:O2'	1:C:14:A:H5"	1.95	0.66
2:A:386:ILE:HG13	2:A:387:LYS:N	2.11	0.65
2:A:56:LEU:HD13	2:A:56:LEU:H	1.61	0.65
2:B:269:PRO:O	2:B:273:MET:HG3	1.97	0.65
2:A:316:ASP:HB3	2:A:455:THR:OG1	1.96	0.65
2:A:452:TYR:HB3	2:A:453:PRO:HD3	1.79	0.65
2:B:316:ASP:HB3	2:B:455:THR:OG1	1.96	0.65
2:B:164:PHE:HB2	2:B:206:VAL:HG21	1.78	0.65
2:B:16:VAL:HG13	2:B:51:THR:HB	1.78	0.65
2:A:2:THR:HG21	2:A:247:ILE:CA	2.27	0.65
1:D:12:U:H2'	1:D:13:C:O4'	1.97	0.65
1:D:13:C:H2'	1:D:14:A:C5'	2.27	0.65
1:D:40:U:H2'	1:D:41:C:C6	2.31	0.65
2:A:187:ASP:HA	2:A:190:ARG:HD3	1.78	0.65
2:A:349:ASN:O	2:A:353:ASN:HB3	1.97	0.65
2:A:7:PHE:CE2	2:A:9:VAL:HB	2.31	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:212:ARG:HG2	2:B:212:ARG:HH11	1.62	0.65
2:B:21:HIS:HD2	2:B:23:GLY:N	1.94	0.65
2:B:2:THR:HG21	2:B:247:ILE:CD1	2.27	0.64
1:D:19:G:C5'	1:D:57:G:H21	2.11	0.64
2:A:101:TYR:H	2:A:101:TYR:HD1	1.42	0.64
2:A:9:VAL:HG21	2:A:34:ILE:HG21	1.80	0.64
2:B:416:VAL:HG22	2:B:440:LEU:HD11	1.80	0.64
1:D:60:U:H5"	1:D:61:C:OP2	1.98	0.64
2:A:185:GLN:O	2:A:187:ASP:N	2.31	0.64
2:B:162:TYR:N	2:B:207:THR:HG22	2.09	0.64
2:B:229:VAL:HG23	2:B:230:TRP:H	1.61	0.64
2:B:53:GLU:HB3	2:B:73:VAL:HG21	1.80	0.64
1:D:29:G:O2'	1:D:30:A:H5'	1.98	0.64
2:B:448:THR:HA	2:B:459:MET:SD	2.38	0.63
2:B:320:TYR:CE2	2:B:324:ARG:HD2	2.34	0.63
2:B:56:LEU:HA	2:B:59:GLN:HG2	1.80	0.63
1:D:19:G:N2	1:D:56:C:H42	1.96	0.63
2:A:249:TRP:HB3	2:A:250:PRO:HD3	1.78	0.63
1:D:38:A:H4'	2:B:349:ASN:OD1	1.99	0.63
1:D:29:G:H2'	1:D:30:A:C8	2.33	0.63
2:A:229:VAL:HG12	2:A:230:TRP:N	2.14	0.63
2:B:405:ILE:CD1	2:B:450:LEU:HB3	2.29	0.63
2:B:359:VAL:HG21	2:B:465:MET:SD	2.38	0.63
2:A:455:THR:HG23	2:A:459:MET:HG2	1.80	0.62
1:D:71:C:H2'	1:D:72:C:C6	2.34	0.62
2:B:56:LEU:H	2:B:56:LEU:CD2	2.12	0.62
1:D:30:A:H2	1:D:40:U:H3	1.46	0.62
2:B:337:LYS:H	2:B:337:LYS:HD3	1.62	0.62
2:B:382:ALA:HB3	2:B:477:PRO:HG3	1.82	0.62
2:A:210:ARG:NE	2:A:214:LYS:HZ2	1.97	0.62
2:B:15:TYR:CE2	2:B:17:ASN:HB3	2.35	0.62
1:D:59:G:H3'	1:D:60:U:H6	1.64	0.62
1:D:71:C:H2'	1:D:72:C:H6	1.65	0.62
2:A:355:TYR:HB3	2:A:465:MET:HE1	1.80	0.62
2:B:105:PHE:CE2	2:B:109:VAL:HG21	2.34	0.62
1:C:24:G:H2'	1:C:25:C:C6	2.35	0.62
1:C:60:U:H5"	1:C:61:C:OP2	2.00	0.62
1:D:29:G:H2'	1:D:30:A:H8	1.65	0.62
2:A:100:PRO:O	2:A:103:VAL:HG22	1.99	0.62
2:A:162:TYR:H	2:A:207:THR:HG22	1.63	0.62
2:B:437:LEU:O	2:B:441:VAL:HG12	1.99	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:35:A:H5'	2:B:360:ASN:ND2	2.14	0.62
2:A:33:THR:HG21	2:A:323:LEU:CD1	2.28	0.62
2:B:382:ALA:CB	2:B:477:PRO:HG3	2.30	0.62
2:A:185:GLN:HA	2:A:185:GLN:OE1	1.99	0.61
2:A:243:ASP:H	2:A:245:VAL:HG23	1.62	0.61
2:B:33:THR:CG2	2:B:319:ARG:HH12	2.13	0.61
2:A:1:MET:CE	2:A:281:LYS:HE3	2.29	0.61
2:B:184:ILE:HB	2:B:190:ARG:HB3	1.82	0.61
2:B:16:VAL:HG11	2:B:53:GLU:HG2	1.82	0.61
2:A:170:GLN:OE1	2:A:201:LEU:HD13	2.00	0.61
2:A:354:LEU:O	2:A:357:ARG:HG2	2.01	0.61
2:B:56:LEU:H	2:B:56:LEU:HD23	1.64	0.61
1:D:43:C:H2'	1:D:44:A:H5'	1.82	0.61
2:B:412:LEU:HD11	2:B:443:GLY:HA3	1.82	0.61
2:B:433:LEU:O	2:B:435:LYS:N	2.34	0.60
2:A:58:ILE:CD1	2:A:73:VAL:HG23	2.31	0.60
2:B:458:LYS:HG3	2:B:492:PHE:CE2	2.36	0.60
2:A:118:ASP:CA	2:A:165:ARG:HG3	2.30	0.60
2:A:21:HIS:HD2	2:A:23:GLY:H	1.50	0.60
2:A:170:GLN:OE1	2:A:201:LEU:HD22	2.01	0.60
2:B:16:VAL:CG1	2:B:51:THR:HB	2.32	0.60
1:C:40:U:O2'	1:C:41:C:H5'	2.02	0.60
2:A:405:ILE:CD1	2:A:450:LEU:HB3	2.31	0.60
2:B:56:LEU:HD23	2:B:57:LYS:H	1.66	0.60
2:A:365:PHE:CE2	2:A:422:TRP:HA	2.36	0.60
1:C:5:G:O2'	1:C:6:C:H5'	2.01	0.60
2:A:56:LEU:HD13	2:A:57:LYS:H	1.67	0.59
2:A:16:VAL:O	2:A:76:ASN:HB3	2.02	0.59
2:A:58:ILE:HD12	2:A:73:VAL:HG23	1.84	0.59
2:B:419:LYS:HB3	2:B:436:VAL:HG11	1.83	0.59
2:B:105:PHE:O	2:B:109:VAL:HG23	2.02	0.59
2:B:186:PRO:HB2	2:B:189:ARG:CG	2.32	0.59
2:B:447:LEU:HA	2:B:450:LEU:HD12	1.84	0.59
2:A:13:ILE:O	2:A:13:ILE:HG13	2.01	0.59
2:A:314:GLY:O	2:A:318:VAL:HG13	2.02	0.59
2:B:371:SER:O	2:B:434:GLN:HB3	2.03	0.59
2:B:446:VAL:O	2:B:450:LEU:HG	2.03	0.59
2:A:361:MET:HE3	2:A:422:TRP:HE3	1.67	0.59
1:C:69:C:O2'	1:C:70:G:C5'	2.50	0.59
2:A:376:GLU:O	2:A:380:LYS:HG2	2.03	0.59
1:C:36:U:C4	2:A:490:ILE:HG23	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:444:LEU:O	2:B:448:THR:HG22	2.03	0.59
1:D:18:G:H2'	1:D:57:G:N2	2.17	0.59
1:D:21:C:O3'	1:D:21(A):A:H4'	2.03	0.59
1:D:18:G:N2	1:D:57:G:H2'	2.18	0.59
1:D:30:A:H2'	1:D:31:U:H6	1.66	0.59
2:B:229:VAL:HG23	2:B:230:TRP:N	2.17	0.58
2:B:297:SER:CB	2:B:300:LEU:HB2	2.26	0.58
2:B:345:GLY:O	2:B:349:ASN:HB2	2.03	0.58
2:B:433:LEU:C	2:B:435:LYS:H	2.06	0.58
2:B:320:TYR:CZ	2:B:324:ARG:HD2	2.39	0.58
1:C:63:U:H2'	1:C:64:C:C6	2.38	0.58
2:B:32:ASP:OD2	2:B:319:ARG:NH2	2.36	0.58
1:D:13:C:O2'	1:D:14:A:H5"	2.01	0.58
2:A:67:ILE:HD13	2:A:67:ILE:H	1.68	0.58
2:B:408:PHE:O	2:B:412:LEU:HD23	2.03	0.58
2:A:212:ARG:HG2	2:A:212:ARG:HH11	1.67	0.58
1:C:21:C:H2'	1:C:21:C:O2	2.02	0.58
2:B:362:ALA:HB3	2:B:485:LEU:HD12	1.85	0.58
2:A:210:ARG:HE	2:A:214:LYS:CD	2.17	0.58
2:A:41:ARG:HG3	2:A:41:ARG:HH11	1.68	0.58
2:B:415:TYR:O	2:B:419:LYS:HG2	2.03	0.58
2:A:119:ILE:HA	2:A:163:PHE:O	2.03	0.58
2:A:386:ILE:O	2:A:390:GLU:HG3	2.04	0.58
2:A:389:TYR:CE1	2:A:405:ILE:HD11	2.39	0.58
2:A:179:LYS:O	2:A:181:PRO:HD3	2.03	0.57
2:A:268:TRP:HB3	2:A:269:PRO:HD3	1.85	0.57
2:A:449:HIS:CE1	2:A:472:LEU:H	2.23	0.57
2:A:106:VAL:O	2:A:110:PHE:HB2	2.03	0.57
1:D:30:A:H2'	1:D:31:U:O4'	2.05	0.57
2:A:82:LYS:HG3	2:B:496:GLU:HB2	1.85	0.57
2:A:455:THR:HG23	2:A:455:THR:O	2.03	0.57
2:A:326:VAL:HG21	2:A:331:ASP:O	2.05	0.56
2:B:6:LYS:HE3	2:B:6:LYS:O	2.05	0.56
2:B:256:VAL:HB	2:B:260:ILE:HD11	1.86	0.56
1:C:46:G:H3'	1:C:47:U:H5'	1.87	0.56
2:B:199:GLN:HG3	2:B:200:GLY:N	2.20	0.56
1:C:18:G:H2'	1:C:57:G:H22	1.69	0.56
2:A:166:LEU:O	2:A:168:LYS:O	2.23	0.56
2:B:37:TYR:CD1	2:B:393:MET:HG2	2.40	0.56
2:A:194:ILE:HG13	2:A:195:SER:N	2.20	0.56
1:D:41:C:O5'	1:D:41:C:H6	1.89	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:169:TYR:O	2:A:173:LEU:HG	2.05	0.56
2:B:20:PRO:HA	2:B:24:HIS:CD2	2.41	0.56
1:D:19:G:N2	1:D:56:C:N4	2.53	0.56
1:D:14:A:H2'	1:D:15:G:O4'	2.06	0.56
2:A:162:TYR:H	2:A:207:THR:HG21	1.68	0.55
2:B:200:GLY:O	2:B:201:LEU:CB	2.52	0.55
1:D:33:U:O2'	1:D:34:C:P	2.64	0.55
2:A:359:VAL:CG1	2:A:488:ARG:HB3	2.37	0.55
1:D:74:C:O5'	1:D:74:C:H6	1.88	0.55
2:B:185:GLN:O	2:B:187:ASP:N	2.39	0.55
2:B:109:VAL:HG11	2:B:235:PHE:CE2	2.42	0.55
2:B:2:THR:OG1	2:B:3:LEU:N	2.35	0.55
2:A:177:TYR:HE1	2:A:197:VAL:HG21	1.71	0.55
2:B:37:TYR:CE1	2:B:41:ARG:NH2	2.74	0.55
2:A:334:PHE:CZ	2:A:339:ILE:HD11	2.41	0.55
2:B:103:VAL:HG23	2:B:104:LYS:N	2.22	0.55
2:B:185:GLN:O	2:B:186:PRO:C	2.43	0.55
2:A:56:LEU:HD22	2:A:56:LEU:C	2.27	0.55
2:A:423:ALA:O	2:A:427:GLU:HB2	2.07	0.54
2:B:107:GLN:HB3	2:B:220:PRO:HG3	1.89	0.54
2:A:53:GLU:OE2	2:A:96:ARG:NE	2.34	0.54
2:A:59:GLN:O	2:A:63:GLU:HB2	2.07	0.54
2:B:187:ASP:O	2:B:190:ARG:HG2	2.07	0.54
2:B:424:LEU:HD21	2:B:432:GLU:CG	2.34	0.54
2:A:71:GLU:HA	2:A:71:GLU:OE1	2.06	0.54
2:B:292:GLU:OE1	2:B:337:LYS:NZ	2.36	0.54
1:C:51:A:O2'	1:C:52:G:H5'	2.08	0.54
2:A:1:MET:HB2	2:A:6:LYS:HE3	1.88	0.54
2:B:119:ILE:HA	2:B:163:PHE:O	2.07	0.54
2:A:495:ARG:O	2:A:496:GLU:HG3	2.07	0.54
2:B:2:THR:HG21	2:B:247:ILE:HD12	1.89	0.54
2:B:335:SER:HB2	2:B:337:LYS:CE	2.35	0.54
2:B:2:THR:HG21	2:B:247:ILE:HD13	1.90	0.54
1:C:2:G:H2'	1:C:3:C:C6	2.43	0.54
2:A:186:PRO:HB2	2:A:189:ARG:CG	2.37	0.54
2:A:324:ARG:NH2	2:A:342:ARG:NH1	2.55	0.54
2:A:21:HIS:HD2	2:A:23:GLY:N	2.05	0.54
2:A:307:TYR:O	2:A:311:GLN:HG2	2.08	0.54
2:A:334:PHE:CE2	2:A:339:ILE:HD11	2.43	0.54
2:B:186:PRO:HG3	2:B:284:PHE:CE2	2.43	0.54
2:B:186:PRO:HB2	2:B:189:ARG:HG2	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:384:GLU:O	2:B:388:ASN:ND2	2.41	0.54
2:B:415:TYR:CD2	2:B:440:LEU:HD21	2.43	0.54
2:A:82:LYS:HE3	2:B:496:GLU:HB2	1.89	0.54
2:B:426:LYS:HA	2:B:426:LYS:HE2	1.90	0.54
1:D:36:U:H4'	1:D:37:A:OP1	2.08	0.54
2:B:392:TYR:HB3	2:B:397:ASN:HB3	1.89	0.53
1:D:21:C:H4'	1:D:21(A):A:H4'	1.88	0.53
2:A:415:TYR:CD2	2:A:440:LEU:HD13	2.44	0.53
2:A:184:ILE:HB	2:A:190:ARG:HB3	1.91	0.53
2:A:25:ALA:O	2:A:29:ILE:HG13	2.07	0.53
2:A:324:ARG:HB2	2:A:402:ILE:HD13	1.91	0.53
2:B:306:PRO:O	2:B:310:VAL:HG23	2.08	0.53
2:B:339:ILE:HG22	2:B:343:ILE:CD1	2.39	0.53
2:B:424:LEU:CD2	2:B:429:LYS:HB2	2.38	0.53
1:D:21:C:O2'	1:D:21(A):A:H5"	2.08	0.53
2:B:37:TYR:O	2:B:41:ARG:HG2	2.09	0.53
1:C:1:G:H2'	1:C:2:G:C8	2.44	0.53
1:C:47:U:H6	1:C:47:U:P	2.31	0.53
2:A:359:VAL:HG21	2:A:465:MET:CE	2.39	0.53
2:B:405:ILE:O	2:B:409:THR:HG23	2.09	0.53
2:B:424:LEU:HD22	2:B:429:LYS:HB2	1.91	0.53
2:A:366:LEU:HD12	2:A:370:VAL:HG12	1.90	0.53
1:C:38:A:H4'	2:A:349:ASN:OD1	2.09	0.53
1:D:24:G:O2'	1:D:25:C:H5'	2.09	0.53
2:B:185:GLN:HG3	2:B:284:PHE:CE1	2.44	0.52
2:A:16:VAL:HG13	2:A:51:THR:CB	2.36	0.52
2:B:39:ARG:NH1	2:B:45:VAL:HG11	2.24	0.52
2:A:210:ARG:NE	2:A:214:LYS:NZ	2.57	0.52
2:A:217:ILE:HG22	2:A:227:ILE:HD12	1.92	0.52
2:A:1:MET:HE3	2:A:281:LYS:HE3	1.91	0.52
2:B:314:GLY:O	2:B:318:VAL:HG13	2.10	0.52
2:B:59:GLN:O	2:B:63:GLU:HB2	2.09	0.52
2:A:101:TYR:N	2:A:101:TYR:CD1	2.71	0.52
2:A:56:LEU:HD13	2:A:56:LEU:N	2.24	0.52
2:A:17:ASN:HA	2:A:76:ASN:ND2	2.24	0.52
2:B:416:VAL:HG22	2:B:440:LEU:CD1	2.39	0.52
2:B:335:SER:CB	2:B:337:LYS:HE2	2.38	0.52
1:C:13:C:H2'	1:C:14:A:C5'	2.38	0.52
2:B:51:THR:HG23	2:B:94:PHE:CZ	2.44	0.52
2:A:259:ASP:OD1	2:A:288:TRP:HH2	1.92	0.52
2:A:366:LEU:CD1	2:A:370:VAL:HG12	2.39	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:42:C:H2'	1:C:43:C:C6	2.42	0.52
2:A:162:TYR:HD2	2:A:207:THR:HG21	1.75	0.52
2:B:288:TRP:HA	2:B:288:TRP:CE3	2.45	0.52
2:B:477:PRO:O	2:B:479:SER:N	2.36	0.52
1:C:58:A:O2'	1:C:59:G:O5'	2.18	0.52
2:A:168:LYS:O	2:A:169:TYR:HB2	2.10	0.52
2:B:445:PHE:CE1	2:B:468:GLU:HG3	2.45	0.52
2:A:384:GLU:O	2:A:388:ASN:ND2	2.43	0.51
2:A:298:LYS:HB3	2:A:298:LYS:HZ2	1.76	0.51
2:B:120:TYR:HB3	2:B:165:ARG:NH2	2.26	0.51
2:B:209:PRO:HA	2:B:225:HIS:HD2	1.76	0.51
1:D:31:U:H2'	1:D:32:C:C5	2.45	0.51
2:A:212:ARG:NH1	2:A:212:ARG:HG2	2.26	0.51
2:A:451:LEU:HB3	2:A:455:THR:CG2	2.41	0.51
2:B:337:LYS:HD3	2:B:337:LYS:N	2.24	0.51
2:B:421:PRO:O	2:B:424:LEU:HB2	2.10	0.51
1:D:19:G:H5'	1:D:57:G:H21	1.73	0.51
2:A:427:GLU:O	2:A:428:ARG:HB2	2.10	0.51
2:B:480:LYS:HB2	2:B:483:TYR:CE2	2.46	0.51
2:B:20:PRO:HG3	2:B:80:PHE:CE1	2.45	0.51
2:A:107:GLN:CB	2:A:220:PRO:HG3	2.37	0.51
2:B:110:PHE:CE2	2:B:219:VAL:HG13	2.46	0.51
2:B:20:PRO:HA	2:B:24:HIS:HD2	1.76	0.51
2:B:438:TYR:OH	2:B:481:ASN:HA	2.11	0.51
2:A:196:PHE:CE2	2:A:262:ARG:HD2	2.45	0.51
2:B:210:ARG:O	2:B:210:ARG:HG3	2.11	0.51
2:B:286:HIS:HD2	2:B:287:GLY:O	1.94	0.51
2:B:56:LEU:HD23	2:B:56:LEU:N	2.25	0.51
2:A:210:ARG:HE	2:A:214:LYS:HD3	1.76	0.51
2:A:320:TYR:HA	2:A:454:ILE:CD1	2.40	0.51
2:B:256:VAL:O	2:B:285:ALA:HA	2.11	0.51
1:D:58:A:O2'	1:D:59:G:O5'	2.26	0.51
2:A:199:GLN:O	2:A:200:GLY:O	2.29	0.50
2:A:170:GLN:HB2	2:A:201:LEU:CD1	2.41	0.50
2:A:451:LEU:HB3	2:A:455:THR:HG22	1.93	0.50
2:B:166:LEU:O	2:B:168:LYS:O	2.29	0.50
2:B:424:LEU:HD13	2:B:433:LEU:HA	1.93	0.50
2:A:1:MET:SD	2:A:250:PRO:HB2	2.50	0.50
2:A:16:VAL:CG2	2:A:53:GLU:HA	2.42	0.50
2:B:21:HIS:H	2:B:24:HIS:CD2	2.28	0.50
2:A:317:GLU:HG2	2:A:343:ILE:HD13	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:405:ILE:HG21	2:A:451:LEU:HD21	1.93	0.50
2:A:53:GLU:HB3	2:A:73:VAL:HG21	1.92	0.50
2:A:82:LYS:HE3	2:B:496:GLU:CG	2.37	0.50
2:B:249:TRP:C	2:B:249:TRP:CD2	2.85	0.50
1:C:51:A:C2'	1:C:52:G:H5'	2.41	0.50
2:A:53:GLU:HB3	2:A:73:VAL:CG2	2.42	0.50
2:A:445:PHE:CE1	2:A:468:GLU:HG3	2.45	0.50
2:A:194:ILE:O	2:A:198:LYS:HG3	2.12	0.49
2:B:256:VAL:HB	2:B:260:ILE:CD1	2.42	0.49
2:B:342:ARG:HD2	2:B:346:GLU:OE2	2.12	0.49
2:A:107:GLN:HB3	2:A:220:PRO:CG	2.40	0.49
2:A:359:VAL:HG11	2:A:488:ARG:HB3	1.94	0.49
2:B:324:ARG:HB2	2:B:402:ILE:HD13	1.94	0.49
2:A:361:MET:SD	2:A:421:PRO:HG2	2.52	0.49
2:A:217:ILE:CG2	2:A:227:ILE:HD12	2.43	0.49
2:B:111:GLU:O	2:B:114:TYR:HB3	2.11	0.49
1:D:52:G:N2	1:D:53:G:H1'	2.27	0.49
2:A:121:LEU:HD12	2:A:122:GLY:N	2.27	0.49
2:A:40:LEU:HD12	2:A:40:LEU:C	2.31	0.49
2:A:188:TYR:HA	2:A:191:ASN:ND2	2.28	0.49
2:B:242:GLU:O	2:B:243:ASP:OD2	2.30	0.49
2:B:455:THR:CG2	2:B:455:THR:O	2.57	0.49
1:D:62:C:H2'	1:D:63:U:H6	1.77	0.49
2:B:121:LEU:HG	2:B:162:TYR:CE1	2.48	0.49
2:B:324:ARG:HE	2:B:346:GLU:CD	2.16	0.49
2:A:102:HIS:O	2:A:106:VAL:HG23	2.13	0.48
1:D:33:U:C2'	1:D:34:C:OP2	2.60	0.48
1:D:51:A:O2'	1:D:52:G:H5'	2.13	0.48
2:B:286:HIS:HA	2:B:329:GLY:HA2	1.94	0.48
2:B:288:TRP:HA	2:B:288:TRP:HE3	1.76	0.48
2:B:320:TYR:HA	2:B:454:ILE:HD11	1.93	0.48
2:B:415:TYR:HE2	2:B:436:VAL:HG12	1.78	0.48
2:B:378:TYR:OH	2:B:442:ASP:OD1	2.28	0.48
2:A:169:TYR:OH	2:A:274:SER:HB3	2.13	0.48
1:C:9:A:H5"	1:C:10:G:OP2	2.13	0.48
2:B:380:LYS:O	2:B:384:GLU:HG3	2.13	0.48
1:D:33:U:O2'	1:D:34:C:OP2	2.31	0.48
2:A:249:TRP:CG	2:A:250:PRO:N	2.78	0.48
2:A:266:VAL:O	2:A:269:PRO:HD2	2.14	0.48
2:A:27:THR:OG1	2:A:286:HIS:CE1	2.63	0.48
2:B:409:THR:HG22	2:B:447:LEU:HD22	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:13:ILE:HA	2:A:50:GLY:O	2.13	0.48
2:B:184:ILE:HG21	2:B:190:ARG:HA	1.96	0.48
2:A:84:TRP:HA	2:A:89:ILE:HD12	1.96	0.48
2:B:58:ILE:HG13	2:B:72:LEU:HD23	1.94	0.48
1:D:5:G:O2'	1:D:6:C:H5'	2.14	0.48
2:B:375:ASP:O	2:B:377:GLU:N	2.47	0.48
2:A:47:PHE:CD2	2:A:91:TYR:HA	2.49	0.48
2:B:247:ILE:HG13	2:B:248:TYR:N	2.29	0.48
2:B:353:ASN:O	2:B:356:SER:HB3	2.14	0.48
2:B:433:LEU:C	2:B:435:LYS:N	2.66	0.48
2:B:39:ARG:NH1	2:B:45:VAL:CG1	2.77	0.48
1:D:7:G:H4'	1:D:8:U:OP2	2.13	0.48
1:D:31:U:H2'	1:D:32:C:H6	1.75	0.47
2:A:242:GLU:O	2:A:243:ASP:OD2	2.32	0.47
2:B:20:PRO:HG3	2:B:80:PHE:CD1	2.48	0.47
2:B:78:GLU:OE2	2:B:82:LYS:HE3	2.15	0.47
1:D:21:C:C2'	1:D:21(A):A:OP2	2.62	0.47
1:D:49:G:H8	1:D:49:G:OP2	1.96	0.47
2:A:2:THR:HG21	2:A:247:ILE:CB	2.44	0.47
2:B:17:ASN:HA	2:B:76:ASN:ND2	2.29	0.47
2:A:28:THR:CG2	2:A:89:ILE:HD13	2.44	0.47
2:B:13:ILE:HD11	2:B:233:ALA:HA	1.96	0.47
2:B:336:LYS:NZ	3:B:498:HOH:O	2.47	0.47
2:B:419:LYS:O	2:B:420:GLN:C	2.53	0.47
2:A:184:ILE:HG13	2:A:265:THR:CG2	2.40	0.47
2:A:9:VAL:HG23	2:A:253:LEU:HD13	1.97	0.47
2:A:2:THR:HB	2:A:3:LEU:H	1.61	0.47
2:A:424:LEU:HD22	2:A:429:LYS:HD2	1.96	0.47
2:B:418:GLU:O	2:B:419:LYS:HD3	2.15	0.47
1:D:35:A:C5	1:D:38:A:C6	3.03	0.47
2:A:33:THR:HG22	2:A:319:ARG:NH2	2.29	0.47
2:B:233:ALA:O	2:B:236:ASN:HB3	2.15	0.47
1:D:8:U:H1'	1:D:48:C:H1'	1.96	0.47
2:A:84:TRP:CE3	2:A:89:ILE:HD12	2.49	0.47
2:B:8:TYR:O	2:B:252:ASP:O	2.33	0.47
2:B:189:ARG:HH22	2:B:258:LYS:HE2	1.80	0.47
2:B:71:GLU:HA	2:B:71:GLU:OE1	2.15	0.47
2:A:177:TYR:CD1	2:A:194:ILE:HG22	2.51	0.46
2:A:214:LYS:O	2:A:214:LYS:HE3	2.14	0.46
2:B:243:ASP:C	2:B:243:ASP:OD2	2.53	0.46
2:A:259:ASP:OD1	2:A:288:TRP:CH2	2.67	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:339:ILE:O	2:A:343:ILE:HG13	2.15	0.46
2:A:396:VAL:O	2:A:396:VAL:HG12	2.16	0.46
2:B:319:ARG:NH1	2:B:319:ARG:HG2	2.29	0.46
2:A:249:TRP:CD2	2:A:249:TRP:C	2.85	0.46
2:B:12:PRO:HD3	2:B:255:LEU:O	2.15	0.46
2:B:56:LEU:HD23	2:B:57:LYS:N	2.28	0.46
1:D:73:A:H2'	1:D:74:C:O4'	2.16	0.46
2:A:357:ARG:O	2:A:361:MET:HG3	2.16	0.46
1:C:60:U:C5'	1:C:61:C:OP2	2.64	0.46
1:C:20:U:H4'	1:C:20:U:OP1	2.15	0.46
2:A:81:LYS:HE3	2:A:94:PHE:CD2	2.51	0.46
2:B:212:ARG:HG2	2:B:212:ARG:NH1	2.30	0.46
1:D:69:C:H2'	1:D:70:G:C8	2.51	0.46
2:A:364:LYS:CE	2:A:365:PHE:HE1	2.29	0.46
2:A:431:GLU:CD	2:A:431:GLU:H	2.19	0.46
2:B:304:VAL:CG1	2:B:309:VAL:HG21	2.45	0.46
2:B:317:GLU:OE2	2:B:458:LYS:NZ	2.46	0.46
2:B:33:THR:HG22	2:B:319:ARG:HH12	1.79	0.46
1:D:35:A:C5'	2:B:360:ASN:ND2	2.79	0.46
2:B:438:TYR:CE2	2:B:478:TYR:CD2	3.04	0.46
1:C:16:C:O5'	1:C:16:C:H6	1.99	0.46
2:B:107:GLN:HG2	2:B:220:PRO:HG3	1.98	0.46
2:B:411:TYR:HD2	2:B:412:LEU:HD22	1.80	0.46
1:D:54:U:H2'	1:D:55:U:O4'	2.16	0.46
2:A:425:ASN:C	2:A:425:ASN:ND2	2.70	0.46
2:A:28:THR:HG22	2:A:89:ILE:HD13	1.97	0.46
2:B:209:PRO:HA	2:B:225:HIS:CD2	2.51	0.46
2:B:370:VAL:HG11	2:B:438:TYR:HA	1.98	0.46
1:D:59:G:H3'	1:D:60:U:C6	2.47	0.46
2:A:160:PRO:O	2:A:225:HIS:HE1	1.98	0.45
2:B:314:GLY:HA3	2:B:317:GLU:OE1	2.16	0.45
1:C:74:C:O5'	1:C:74:C:C6	2.69	0.45
1:D:69:C:H2'	1:D:70:G:H8	1.81	0.45
2:A:204:LEU:O	2:A:206:VAL:HG13	2.15	0.45
2:A:67:ILE:H	2:A:67:ILE:CD1	2.27	0.45
2:A:184:ILE:HD12	2:A:184:ILE:N	2.31	0.45
1:C:36:U:O4	2:A:352:GLY:HA3	2.17	0.45
2:A:386:ILE:CG1	2:A:387:LYS:N	2.78	0.45
2:A:430:LYS:HB3	2:A:434:GLN:HE21	1.81	0.45
2:B:40:LEU:HD23	2:B:40:LEU:O	2.17	0.45
2:B:428:ARG:HB3	2:B:430:LYS:HZ3	1.79	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:445:PHE:O	2:B:448:THR:HG23	2.16	0.45
1:C:62:C:H2'	1:C:63:U:C6	2.52	0.45
2:A:223:PRO:C	2:A:225:HIS:H	2.20	0.45
2:B:53:GLU:HB2	2:B:98:THR:HG23	1.99	0.45
2:A:184:ILE:HG21	2:A:190:ARG:CA	2.43	0.45
2:B:161:SER:HA	2:B:225:HIS:CE1	2.52	0.45
2:B:397:ASN:CG	2:B:400:LYS:HB2	2.37	0.45
2:B:414:LYS:O	2:B:414:LYS:HG2	2.16	0.45
2:A:243:ASP:H	2:A:245:VAL:CG2	2.28	0.45
2:A:2:THR:HG21	2:A:247:ILE:HB	1.97	0.45
2:A:20:PRO:HA	2:A:24:HIS:CD2	2.52	0.45
2:A:309:VAL:HG21	2:A:334:PHE:CZ	2.52	0.45
2:A:67:ILE:HD13	2:A:67:ILE:N	2.32	0.45
2:A:82:LYS:CE	2:B:496:GLU:HG3	2.41	0.45
2:A:309:VAL:CG1	2:A:310:VAL:N	2.80	0.45
2:B:104:LYS:HG2	2:B:108:LYS:HE3	1.97	0.45
2:B:219:VAL:HG23	2:B:225:HIS:O	2.16	0.45
2:B:310:VAL:HG13	2:B:315:LEU:HA	1.98	0.45
2:B:73:VAL:HG12	2:B:74:ASP:N	2.31	0.45
1:C:56:C:H6	1:C:56:C:O5'	1.99	0.45
2:B:46:PHE:CD1	2:B:92:THR:HG21	2.52	0.45
1:C:11:C:H42	1:C:24:G:H1	1.64	0.45
2:B:39:ARG:HH12	2:B:45:VAL:CG1	2.28	0.44
2:B:16:VAL:CG1	2:B:53:GLU:HG2	2.45	0.44
2:A:41:ARG:NH1	2:A:41:ARG:HG3	2.31	0.44
2:A:424:LEU:CD2	2:A:429:LYS:HD2	2.48	0.44
2:A:425:ASN:HA	2:A:433:LEU:HD22	1.98	0.44
2:A:458:LYS:HG3	2:A:492:PHE:CE2	2.52	0.44
2:A:6:LYS:C	2:A:6:LYS:HD2	2.37	0.44
2:B:8:TYR:CZ	2:B:241:LEU:HD21	2.52	0.44
1:D:43:C:H2'	1:D:44:A:C5'	2.47	0.44
1:D:59:G:H5'	1:D:60:U:H5	1.82	0.44
2:A:186:PRO:HB2	2:A:189:ARG:HG2	2.00	0.44
2:B:191:ASN:O	2:B:194:ILE:HG13	2.16	0.44
1:C:59:G:N3	1:C:59:G:O4'	2.50	0.44
2:B:7:PHE:CE1	2:B:252:ASP:HB2	2.52	0.44
2:B:53:GLU:OE1	2:B:98:THR:HG23	2.18	0.44
1:D:8:U:C2	1:D:15:G:O6	2.71	0.44
2:A:210:ARG:CZ	2:A:214:LYS:NZ	2.80	0.44
2:A:33:THR:HB	2:A:453:PRO:O	2.18	0.44
1:C:38:A:H4'	2:A:349:ASN:CG	2.38	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:114:TYR:HD1	2:B:119:ILE:O	2.01	0.44
2:B:339:ILE:HG22	2:B:343:ILE:HD11	1.99	0.44
1:D:34:C:C1'	2:B:361:MET:HE2	2.46	0.44
2:B:41:ARG:HH11	2:B:41:ARG:HG2	1.82	0.44
2:B:84:TRP:HA	2:B:84:TRP:HE3	1.83	0.44
2:A:186:PRO:HG3	2:A:284:PHE:CE2	2.53	0.44
2:B:406:LEU:O	2:B:407:LYS:C	2.56	0.44
2:B:420:GLN:HB3	2:B:422:TRP:CZ2	2.53	0.44
2:B:370:VAL:CG1	2:B:438:TYR:HA	2.47	0.44
1:C:23:A:H2'	1:C:24:G:O4'	2.17	0.44
1:D:21:C:O2'	1:D:21(A):A:C5'	2.65	0.44
2:A:260:ILE:HD12	2:A:264:HIS:CE1	2.53	0.44
1:D:18:G:HO2'	1:D:19:G:P	2.41	0.44
2:B:343:ILE:O	2:B:347:LEU:HB2	2.18	0.44
2:B:58:ILE:HD11	2:B:73:VAL:HG23	1.99	0.44
1:C:69:C:C2'	1:C:70:G:O5'	2.65	0.44
2:A:247:ILE:HD11	2:A:248:TYR:CZ	2.52	0.44
2:B:84:TRP:CE3	2:B:84:TRP:HA	2.53	0.44
1:D:1:G:N2	1:D:73:A:H1'	2.32	0.44
2:A:362:ALA:HB3	2:A:485:LEU:CD1	2.48	0.43
2:B:107:GLN:CG	2:B:220:PRO:HG3	2.48	0.43
2:B:374:ARG:N	2:B:374:ARG:HD2	2.26	0.43
2:B:7:PHE:O	2:B:45:VAL:HA	2.18	0.43
1:D:9:A:H5'	1:D:10:G:P	2.58	0.43
2:A:42:ASP:O	2:A:42:ASP:CG	2.57	0.43
1:D:39:G:H1'	2:B:357:ARG:NH2	2.33	0.43
2:B:396:VAL:HG12	2:B:396:VAL:O	2.18	0.43
2:B:53:GLU:OE1	2:B:98:THR:CG2	2.66	0.43
1:C:18:G:O2'	1:C:19:G:P	2.76	0.43
2:A:170:GLN:HB2	2:A:201:LEU:HD13	2.00	0.43
2:A:291:VAL:O	2:A:334:PHE:O	2.35	0.43
1:D:38:A:H1'	2:B:353:ASN:OD1	2.18	0.43
1:D:40:U:C4	1:D:41:C:N4	2.87	0.43
1:D:46:G:H3'	1:D:47:U:H5'	2.00	0.43
2:B:120:TYR:CD1	2:B:165:ARG:NH2	2.82	0.43
1:D:19:G:C5'	1:D:21:C:N4	2.76	0.43
2:A:201:LEU:O	2:A:202:LYS:C	2.56	0.43
2:A:340:LEU:HA	2:A:340:LEU:HD23	1.79	0.43
2:A:16:VAL:HG21	2:A:53:GLU:HA	2.00	0.43
2:B:252:ASP:O	2:B:253:LEU:CB	2.66	0.43
2:B:415:TYR:CE2	2:B:436:VAL:HG12	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:449:HIS:HE1	2:B:472:LEU:N	2.01	0.43
2:A:428:ARG:O	2:A:430:LYS:N	2.52	0.43
2:B:25:ALA:O	2:B:29:ILE:HG13	2.18	0.43
1:C:3:C:H2'	1:C:4:G:O5'	2.18	0.43
2:B:208:ARG:HD3	2:B:208:ARG:HA	1.86	0.43
2:B:186:PRO:HB2	2:B:189:ARG:HG3	2.01	0.43
2:B:438:TYR:CE2	2:B:478:TYR:HD2	2.36	0.43
2:B:320:TYR:CB	2:B:454:ILE:HD11	2.49	0.43
1:D:21:C:O2'	1:D:21(A):A:OP2	2.37	0.43
2:A:227:ILE:H	2:A:227:ILE:HG13	1.70	0.43
2:B:435:LYS:O	2:B:438:TYR:N	2.52	0.43
1:C:59:G:N3	1:C:59:G:H5'	2.33	0.43
1:D:18:G:H2'	1:D:19:G:O5'	2.18	0.43
1:D:40:U:O3'	2:B:414:LYS:NZ	2.37	0.43
2:B:119:ILE:HG22	2:B:119:ILE:O	2.18	0.42
2:A:177:TYR:CE1	2:A:197:VAL:HG21	2.53	0.42
2:A:105:PHE:CE2	2:A:109:VAL:HG21	2.55	0.42
1:C:38:A:OP1	2:A:494:LYS:NZ	2.52	0.42
2:B:324:ARG:NH2	2:B:342:ARG:NH1	2.67	0.42
2:A:112:GLU:O	2:A:116:ARG:HG3	2.19	0.42
2:A:118:ASP:C	2:A:165:ARG:HG3	2.39	0.42
2:A:214:LYS:HD2	2:A:214:LYS:HA	1.90	0.42
2:A:314:GLY:HA3	2:A:317:GLU:OE1	2.20	0.42
1:C:10:G:O6	1:C:44:A:H2	2.02	0.42
1:D:21:C:O2'	1:D:21(A):A:C4'	2.67	0.42
1:D:8:U:H4'	1:D:48:C:H4'	2.02	0.42
2:A:217:ILE:HA	2:A:218:PRO:HD3	1.77	0.42
2:A:266:VAL:C	2:A:269:PRO:HD2	2.39	0.42
2:B:103:VAL:HG23	2:B:104:LYS:H	1.84	0.42
2:B:354:LEU:HD13	2:B:413:ASN:OD1	2.19	0.42
2:B:51:THR:HG23	2:B:94:PHE:HZ	1.84	0.42
2:A:56:LEU:CA	2:A:59:GLN:HG2	2.44	0.42
2:B:105:PHE:CZ	2:B:109:VAL:HG21	2.54	0.42
2:B:53:GLU:HB3	2:B:73:VAL:CG2	2.48	0.42
2:A:164:PHE:C	2:A:166:LEU:H	2.23	0.42
1:D:21:C:C3'	1:D:21(A):A:H4'	2.50	0.42
1:D:34:C:H1'	2:B:361:MET:HE3	2.01	0.42
1:D:73:A:H2'	1:D:74:C:C6	2.55	0.42
2:B:224:GLU:HA	2:B:224:GLU:OE2	2.19	0.42
2:B:371:SER:O	2:B:434:GLN:O	2.37	0.42
2:A:185:GLN:HG3	2:A:284:PHE:CE1	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:32:ASP:OD2	2:A:319:ARG:NH1	2.50	0.42
2:B:167:SER:HA	2:B:201:LEU:HG	2.02	0.42
2:B:199:GLN:O	2:B:200:GLY:O	2.38	0.42
1:C:60:U:C4'	1:C:61:C:OP2	2.68	0.42
1:C:33:U:HO2'	1:C:34:C:P	2.43	0.41
2:A:103:VAL:HA	2:A:217:ILE:HD13	2.03	0.41
1:D:41:C:OP1	2:B:414:LYS:CE	2.68	0.41
2:A:495:ARG:HH22	2:B:489:LYS:NZ	2.19	0.41
2:A:47:PHE:C	2:A:47:PHE:CD1	2.92	0.41
2:A:53:GLU:OE1	2:A:73:VAL:HG13	2.20	0.41
2:B:445:PHE:O	2:B:449:HIS:CD2	2.64	0.41
2:B:33:THR:CG2	2:B:454:ILE:HA	2.49	0.41
1:D:18:G:C2'	1:D:19:G:O5'	2.68	0.41
2:A:425:ASN:C	2:A:425:ASN:HD22	2.23	0.41
2:B:249:TRP:HB3	2:B:250:PRO:HD3	2.03	0.41
1:C:71:C:H2'	1:C:72:C:O4'	2.20	0.41
2:A:317:GLU:CG	2:A:343:ILE:HD13	2.51	0.41
2:A:34:ILE:CG2	2:A:35:ALA:N	2.82	0.41
2:B:361:MET:O	2:B:363:HIS:N	2.54	0.41
2:B:424:LEU:HB3	2:B:433:LEU:HG	2.02	0.41
1:C:58:A:O2'	1:C:60:U:OP2	2.39	0.41
2:B:206:VAL:O	2:B:206:VAL:HG12	2.20	0.41
2:B:234:LEU:HD23	2:B:234:LEU:HA	1.81	0.41
2:B:444:LEU:HD13	2:B:466:LEU:HD21	2.02	0.41
1:C:24:G:H2'	1:C:25:C:H6	1.81	0.41
1:D:30:A:O5'	1:D:30:A:H8	2.04	0.41
2:A:169:TYR:OH	2:A:274:SER:CB	2.69	0.41
2:A:253:LEU:HD22	2:A:255:LEU:HG	2.03	0.41
2:A:309:VAL:HG13	2:A:310:VAL:N	2.34	0.41
2:A:316:ASP:CG	2:A:458:LYS:HG2	2.41	0.41
2:A:334:PHE:CZ	2:A:339:ILE:CD1	3.03	0.41
2:A:82:LYS:HE3	2:B:496:GLU:CB	2.50	0.41
2:B:383:GLN:O	2:B:384:GLU:C	2.59	0.41
1:D:34:C:O2	2:B:361:MET:HE3	2.21	0.41
2:A:199:GLN:HB3	2:A:199:GLN:HE21	1.56	0.41
2:B:32:ASP:OD2	2:B:36:ARG:NE	2.42	0.41
2:B:335:SER:O	2:B:338:ALA:HB3	2.20	0.41
2:B:388:ASN:O	2:B:392:TYR:CD2	2.74	0.41
1:C:10:G:H2'	1:C:11:C:C6	2.56	0.41
1:D:45:G:O4'	1:D:45:G:OP2	2.39	0.41
2:B:164:PHE:O	2:B:166:LEU:N	2.44	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:105:PHE:CD2	2:B:239:SER:HB3	2.56	0.41
1:C:35:A:C5	1:C:38:A:C6	3.09	0.41
2:B:252:ASP:O	2:B:253:LEU:HB2	2.21	0.41
2:B:319:ARG:HG2	2:B:319:ARG:HH11	1.86	0.41
2:B:402:ILE:O	2:B:405:ILE:N	2.54	0.41
1:D:59:G:H5'	1:D:60:U:C5	2.55	0.41
2:A:286:HIS:C	2:A:286:HIS:CD2	2.94	0.40
2:A:84:TRP:HE3	2:A:84:TRP:HA	1.86	0.40
2:B:123:GLU:HG2	2:B:124:TYR:N	2.36	0.40
2:B:408:PHE:CZ	2:B:412:LEU:HD21	2.56	0.40
2:A:474:GLU:OE2	2:A:476:LYS:HE3	2.21	0.40
2:A:359:VAL:HG12	2:A:488:ARG:HB3	2.04	0.40
2:B:124:TYR:N	2:B:159:GLU:O	2.47	0.40
2:B:268:TRP:HA	2:B:268:TRP:HE3	1.87	0.40
2:A:408:PHE:CE2	2:A:412:LEU:HD11	2.56	0.40
2:A:118:ASP:HA	2:A:165:ARG:CG	2.41	0.40
2:A:170:GLN:CG	2:A:201:LEU:HD13	2.51	0.40
2:A:316:ASP:OD2	2:A:458:LYS:HG2	2.21	0.40
2:B:159:GLU:HB2	2:B:160:PRO:HD2	2.03	0.40
1:C:69:C:O2'	1:C:70:G:O5'	2.40	0.40
1:D:23:A:H2'	1:D:24:G:H8	1.78	0.40
1:D:7:G:C4'	1:D:8:U:OP2	2.69	0.40
2:A:358:VAL:O	2:A:359:VAL:C	2.60	0.40
2:A:415:TYR:CE2	2:A:419:LYS:HG3	2.57	0.40
2:A:5:LYS:HE3	2:A:5:LYS:HB2	1.85	0.40
2:B:107:GLN:HG2	2:B:220:PRO:HD3	2.04	0.40
2:B:168:LYS:C	2:B:170:GLN:H	2.25	0.40
2:B:29:ILE:HD13	2:B:319:ARG:HG3	2.04	0.40
1:D:7:G:H5"	1:D:8:U:OP2	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
2	A	460/497 (93%)	404 (88%)	40 (9%)	16 (4%)	3 8
2	B	460/497 (93%)	396 (86%)	45 (10%)	19 (4%)	3 6
All	All	920/994 (93%)	800 (87%)	85 (9%)	35 (4%)	3 7

All (35) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	A	201	LEU
2	A	249	TRP
2	A	477	PRO
2	B	201	LEU
2	B	228	TYR
2	B	242	GLU
2	B	249	TRP
2	B	291	VAL
2	B	477	PRO
2	A	200	GLY
2	A	202	LYS
2	A	228	TYR
2	A	230	TRP
2	A	242	GLU
2	A	250	PRO
2	A	429	LYS
2	B	2	THR
2	B	165	ARG
2	B	200	GLY
2	B	376	GLU
2	B	418	GLU
2	B	434	GLN
2	B	478	TYR
2	A	2	THR
2	A	485	LEU
2	B	362	ALA
2	A	253	LEU
2	A	291	VAL
2	B	250	PRO
2	B	356	SER
2	B	203	ASP
2	B	417	ASP
2	A	396	VAL
2	B	396	VAL
2	A	229	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	A	418/447 (94%)	380 (91%)	38 (9%)	9 21
2	B	418/447 (94%)	373 (89%)	45 (11%)	6 15
All	All	836/894 (94%)	753 (90%)	83 (10%)	8 18

All (83) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	2	THR
2	A	6	LYS
2	A	16	VAL
2	A	33	THR
2	A	40	LEU
2	A	47	PHE
2	A	56	LEU
2	A	58	ILE
2	A	67	ILE
2	A	74	ASP
2	A	101	TYR
2	A	112	GLU
2	A	158	LYS
2	A	159	GLU
2	A	172	LYS
2	A	185	GLN
2	A	199	GLN
2	A	208	ARG
2	A	214	LYS
2	A	243	ASP
2	A	247	ILE
2	A	253	LEU
2	A	275	LEU
2	A	284	PHE
2	A	300	LEU
2	A	308	GLU
2	A	315	LEU

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Mol	Chain	Res	Type
2	A	324	ARG
2	A	363	HIS
2	A	376	GLU
2	A	378	TYR
2	A	393	MET
2	A	394	GLU
2	A	406	LEU
2	A	425	ASN
2	A	454	ILE
2	A	482	THR
2	A	496	GLU
2	B	1	MET
2	B	6	LYS
2	B	56	LEU
2	B	63	GLU
2	B	73	VAL
2	B	84	TRP
2	B	121	LEU
2	B	124	TYR
2	B	182	GLU
2	B	185	GLN
2	B	207	THR
2	B	210	ARG
2	B	212	ARG
2	B	225	HIS
2	B	243	ASP
2	B	245	VAL
2	B	247	ILE
2	B	253	LEU
2	B	268	TRP
2	B	274	SER
2	B	278	GLU
2	B	284	PHE
2	B	288	TRP
2	B	294	LYS
2	B	300	LEU
2	B	318	VAL
2	B	319	ARG
2	B	324	ARG
2	B	330	GLN
2	B	337	LYS
2	B	353	ASN

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Mol	Chain	Res	Type
2	B	374	ARG
2	B	378	TYR
2	B	385	SER
2	B	393	MET
2	B	417	ASP
2	B	426	LYS
2	B	433	LEU
2	B	436	VAL
2	B	440	LEU
2	B	448	THR
2	B	454	ILE
2	B	477	PRO
2	B	482	THR
2	B	496	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	17	ASN
2	A	21	HIS
2	A	24	HIS
2	A	76	ASN
2	A	191	ASN
2	A	199	GLN
2	A	225	HIS
2	A	236	ASN
2	A	286	HIS
2	A	311	GLN
2	A	330	GLN
2	A	383	GLN
2	A	425	ASN
2	A	434	GLN
2	A	449	HIS
2	B	21	HIS
2	B	24	HIS
2	B	180	ASN
2	B	191	ASN
2	B	199	GLN
2	B	286	HIS
2	B	330	GLN
2	B	341	ASN
2	B	360	ASN

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Mol	Chain	Res	Type
2	B	449	HIS
2	B	464	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	C	74/75 (98%)	20 (27%)	9 (12%)
1	D	74/75 (98%)	20 (27%)	6 (8%)
All	All	148/150 (98%)	40 (27%)	15 (10%)

All (40) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	C	7	G
1	C	8	U
1	C	9	A
1	C	10	G
1	C	14	A
1	C	16	C
1	C	17	U
1	C	18	G
1	C	19	G
1	C	20	U
1	C	21	C
1	C	21(A)	A
1	C	34	C
1	C	37	A
1	C	45	G
1	C	49	G
1	C	59	G
1	C	60	U
1	C	61	C
1	C	70	G
1	D	8	U
1	D	9	A
1	D	10	G
1	D	13	C
1	D	14	A
1	D	16	C
1	D	17	U
1	D	18	G

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Mol	Chain	Res	Type
1	D	19	G
1	D	20	U
1	D	21	C
1	D	21(A)	A
1	D	34	C
1	D	37	A
1	D	44	A
1	D	45	G
1	D	56	C
1	D	59	G
1	D	60	U
1	D	61	C

All (15) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	C	7	G
1	C	9	A
1	C	18	G
1	C	33	U
1	C	36	U
1	C	44	A
1	C	58	A
1	C	60	U
1	C	69	C
1	D	7	G
1	D	18	G
1	D	21	C
1	D	33	U
1	D	36	U
1	D	58	A

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

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

5.5 Carbohydrates (i)

There are no carbohydrates in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	C	75/75 (100%)	0.00	2 (2%) 54 55	47, 69, 122, 135	0
1	D	75/75 (100%)	0.67	10 (13%) 3 2	63, 100, 143, 154	0
2	A	464/497 (93%)	0.02	9 (1%) 66 69	17, 43, 73, 94	0
2	B	464/497 (93%)	0.02	13 (2%) 53 54	17, 45, 84, 112	0
All	All	1078/1144 (94%)	0.06	34 (3%) 47 48	17, 48, 102, 154	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	45	G	7.6
1	D	47	U	6.7
2	A	1	MET	6.1
1	C	17	U	5.9
1	D	20	U	5.2
1	D	21	C	4.9
2	B	1	MET	4.0
2	B	428	ARG	4.0
1	D	19	G	3.7
2	A	426	LYS	3.6
1	D	17	U	3.4
1	D	56	C	3.4
2	A	224	GLU	3.3
1	C	21	C	3.2
1	D	44	A	3.2
2	B	424	LEU	3.0
2	B	228	TYR	3.0
1	D	46	G	2.8
2	B	224	GLU	2.7
2	A	123	GLU	2.7
2	B	416	VAL	2.7

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Mol	Chain	Res	Type	RSRZ
2	B	212	ARG	2.7
2	B	300	LEU	2.6
2	A	124	TYR	2.6
2	A	437	LEU	2.6
2	B	372	GLY	2.5
1	D	16	C	2.5
2	A	364	LYS	2.5
2	A	101	TYR	2.4
2	B	366	LEU	2.4
2	B	426	LYS	2.1
2	A	161	SER	2.1
2	B	101	TYR	2.1
2	B	201	LEU	2.1

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

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

6.3 Carbohydrates (i)

There are no carbohydrates in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.