Full wwPDB X-ray Structure Validation Report (i)

Jun 13, 2024 – 11:57 AM EDT

PDB ID	:	1LTK
Title	:	CRYSTAL STRUCTURE OF PHOSPHOGLYCERATE KINASE FROM PLASMODIUM FALCIPARUM, IN THE OPEN CONFORMATION
Authors	:	Chattopadhyay, D.; Pal, B.; Smith, C.D.
Deposited on	:	2002-05-20
Resolution	:	3.00 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 (i) 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 (i)) were used in the production of this report:

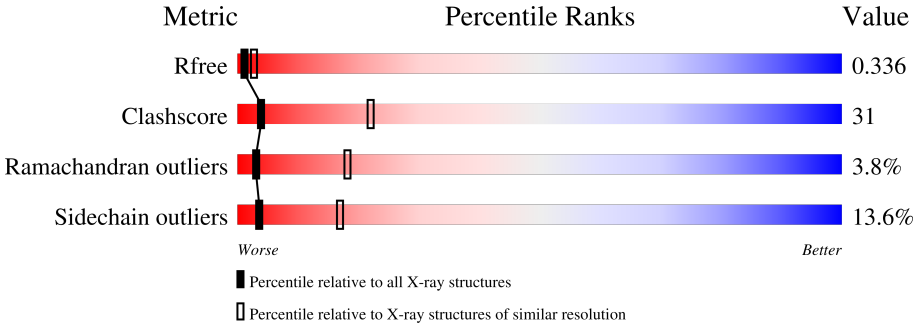
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 3.00 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)

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%

Mol	Chain	Length	Quality of chain
1	A	425	49% 41% 7% •
1	B	425	40% 46% 11% • •
1	C	425	47% 43% 9% •

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	GOL	A	614	-	X	-	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 9805 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called PHOSPHOGLYCERATE KINASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	417	3193	2024	546	612	3	8	0	0	0
1	B	415	3183	2018	544	610	3	8	0	0	0
1	C	424	3267	2068	566	621	3	9	0	0	0

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-8	GLY	-	EXPRESSION TAG	UNP P27362
A	-7	HIS	-	EXPRESSION TAG	UNP P27362
A	-6	SER	-	EXPRESSION TAG	UNP P27362
A	-5	MSE	-	EXPRESSION TAG	UNP P27362
A	-4	HIS	-	EXPRESSION TAG	UNP P27362
A	-3	HIS	-	EXPRESSION TAG	UNP P27362
A	-2	HIS	-	EXPRESSION TAG	UNP P27362
A	-1	HIS	-	EXPRESSION TAG	UNP P27362
A	0	HIS	-	EXPRESSION TAG	UNP P27362
A	1	HIS	-	EXPRESSION TAG	UNP P27362
B	-8	GLY	-	EXPRESSION TAG	UNP P27362
B	-7	HIS	-	EXPRESSION TAG	UNP P27362
B	-6	SER	-	EXPRESSION TAG	UNP P27362
B	-5	MSE	-	EXPRESSION TAG	UNP P27362
B	-4	HIS	-	EXPRESSION TAG	UNP P27362
B	-3	HIS	-	EXPRESSION TAG	UNP P27362
B	-2	HIS	-	EXPRESSION TAG	UNP P27362
B	-1	HIS	-	EXPRESSION TAG	UNP P27362
B	0	HIS	-	EXPRESSION TAG	UNP P27362
B	1	HIS	-	EXPRESSION TAG	UNP P27362
C	-8	GLY	-	EXPRESSION TAG	UNP P27362
C	-7	HIS	-	EXPRESSION TAG	UNP P27362
C	-6	SER	-	EXPRESSION TAG	UNP P27362

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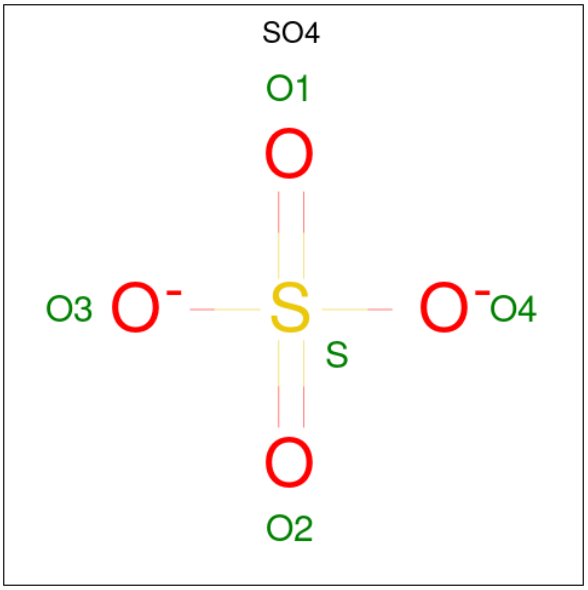
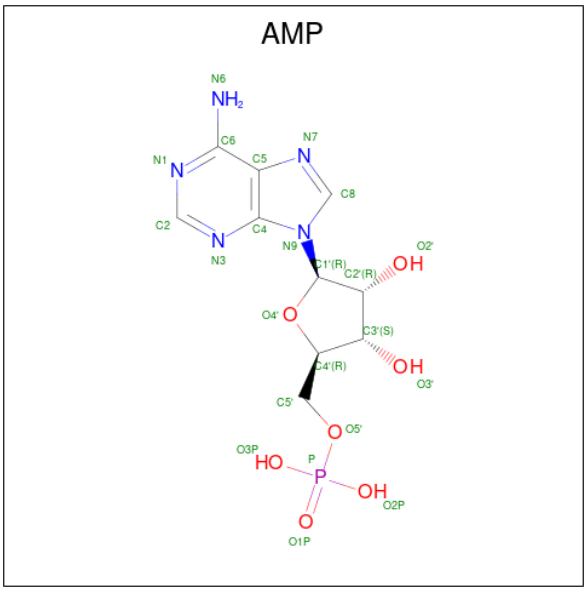
Chain	Residue	Modelled	Actual	Comment	Reference
C	-5	MSE	-	EXPRESSION TAG	UNP P27362
C	-4	HIS	-	EXPRESSION TAG	UNP P27362
C	-3	HIS	-	EXPRESSION TAG	UNP P27362
C	-2	HIS	-	EXPRESSION TAG	UNP P27362
C	-1	HIS	-	EXPRESSION TAG	UNP P27362
C	0	HIS	-	EXPRESSION TAG	UNP P27362
C	1	HIS	-	EXPRESSION TAG	UNP P27362

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



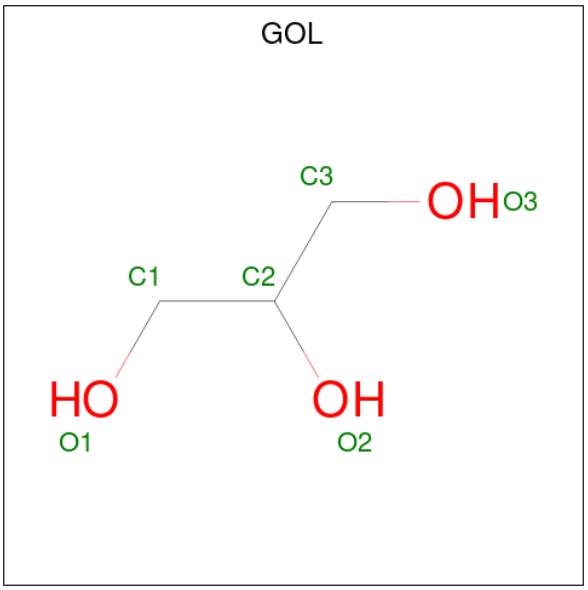
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
2	A	1	5	4	1	0	0
2	B	1	5	4	1	0	0
2	C	1	5	4	1	0	0

- Molecule 3 is ADENOSINE MONOPHOSPHATE (three-letter code: AMP) (formula: $C_{10}H_{14}N_5O_7P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
3	A	1	23	10	5	7	1	0	0
			Total	C	N	O	P		
3	B	1	23	10	5	7	1	0	0
			Total	C	N	O	P		
3	C	1	23	10	5	7	1	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
4	A	1	6	3	3	0	0

- Molecule 5 is water.

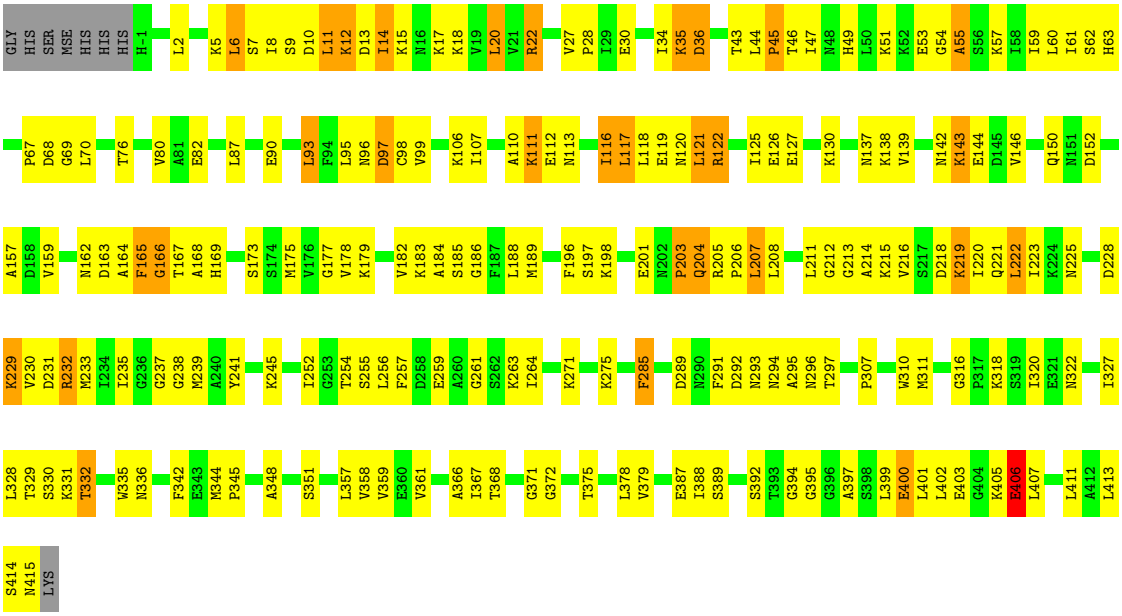
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	29	29	29	0	0
			Total	O		
5	B	21	21	21	0	0
			Total	O		
5	C	22	22	22	0	0

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. 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. 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.

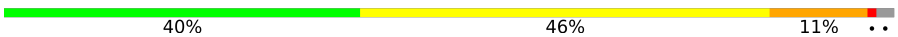
- Molecule 1: PHOSPHOGLYCERATE KINASE

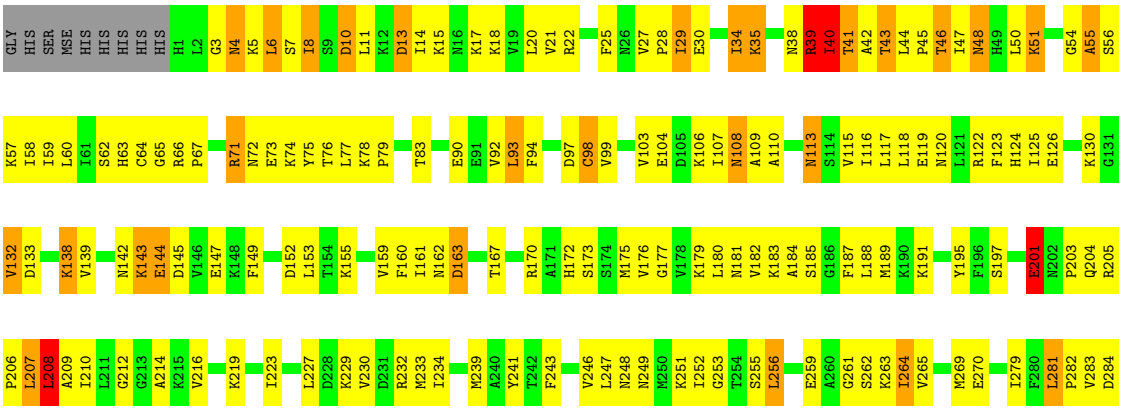
Chain A:



- Molecule 1: PHOSPHOGLYCERATE KINASE

Chain B:





F285 K286 I287 A288 D289 N290 F291 D292 N293 N294 T297 K298 T301 D302 E303 I306 P307 W310 M311 G312 L313 G316 P317 K318 S319 I320 Y323 K324 D325 V326 I327 L328 T329 S330 K331 T332 V333 I334 W335 N336 G340 V341 F342 E343 M344 P345 N346 F347 G350 S351 C354

L357 V358 V359 T362 K363 T368 I369 V370 G371 G372 G373 D374 T375 A376 S377 L378 V379 N383 K384 K385 N386 E387 I388 S389 H390 V391 G394 G395 G396 A397 S398 L399 E400 L401 K405 E406 L407 V410 L413 S414 N415 LYS

- Molecule 1: PHOSPHOGLYCERATE KINASE

Chain C: 47% 43% 9%

GLY H-7 S-6 M-5 H0 H1 N4 K5 L6 D10 L11 K12 D13 I14 K17 K18 V19 L20 V21 R22 I29 E30 N31 G32 D36 T37 N38 R39 A42 P45 L50 G54 A55 S56 K57 I58 I59 L60 I61 S62 H63 R66 P67 D68 N72 E73 K74

K78 P79 V80 A81 E82 T83 L84 K85 G86 L87 L88 G89 E90 E91 V92 L93 D97 C98 V99 G100 K101 E102 V103 E104 D105 K106 I107 N108 K111 E112 N113 S114 L117 L118 L121 R122 F123 H124 I125 E126 E127 E128 V132 N142 K143 E144 D145 F149 Q150 N151 D152 L153 T154

K155 L156 A157 D158 V159 F160 I161 N162 D163 G166 T167 M175 V176 G177 V178 K179 L180 N181 V182 K183 A184 S185 G186 F187 L188 M189 K190 K191 E192 F196 L200 E201 N202 P203 Q204 R205 P206 L207 L208 L211 G212 G213 A214 K215 V216 S217 D218 K219 I220 Q221 L222 I223 L226 L227

D228 K229 V230 D231 R232 M233 I234 I235 G236 M239 T242 F243 K244 K245 V246 L247 N248 N249 M250 K251 I252 G253 T254 F257 D258 E259 S262 K263 I264 V265 M269 E270 K271 K275 N276 V277 F280 D284 F285 K286 I287 A288 D289 N290 F291 D292 N293 N294 A295 N296 T297 K298

F299 V300 T301 D302 E303 E304 G305 D308 N309 W310 M311 D314 A315 G316 P317 K318 S319 I320 D325 L328 T329 S330 K331 T332 V341 F342 E343 M344 F347 A348 K349 G350 S351 I352 L355 N356 L357 V358 V359 E360 V361 T362 K363 T368 D374 T375 L378 K385 N386

E387 I388 S389 H390 V391 S392 T393 G394 G395 K405 L413 S414 N415 K416

4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	119.03Å 147.61Å 206.49Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.93 – 3.00 19.93 – 3.00	Depositor EDS
% Data completeness (in resolution range)	94.8 (19.93-3.00) 94.8 (19.93-3.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$< I/\sigma(I) >$ [1]	5.54 (at 2.98Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.208 , 0.258 0.306 , 0.336	Depositor DCC
R_{free} test set	3455 reflections (9.95%)	wwPDB-VP
Wilson B-factor (Å^2)	58.7	Xtriage
Anisotropy	0.145	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 55.3	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	0.82	EDS
Total number of atoms	9805	wwPDB-VP
Average B, all atoms (Å^2)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.45% 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: AMP, SO4, GOL

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
1	A	0.80	0/3227	0.87	4/4329 (0.1%)
1	B	0.76	0/3217	0.87	3/4315 (0.1%)
1	C	0.78	0/3306	0.86	1/4431 (0.0%)
All	All	0.78	0/9750	0.86	8/13075 (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	B	0	1

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	208	LEU	CA-CB-CG	6.33	129.86	115.30
1	B	40	ILE	CG1-CB-CG2	-5.66	98.96	111.40
1	A	237	GLY	N-CA-C	5.60	127.09	113.10
1	C	87	LEU	CA-CB-CG	5.42	127.77	115.30
1	A	318	LYS	CD-CE-NZ	5.40	124.13	111.70
1	B	39	ARG	N-CA-C	-5.26	96.79	111.00
1	A	406	GLU	N-CA-C	5.07	124.68	111.00
1	A	275	LYS	CD-CE-NZ	5.04	123.30	111.70

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	195	TYR	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	A	3193	0	3296	193	0
1	B	3183	0	3292	222	2
1	C	3267	0	3361	196	2
2	A	5	0	0	0	0
2	B	5	0	0	0	0
2	C	5	0	0	0	0
3	A	23	0	12	1	0
3	B	23	0	12	2	0
3	C	23	0	12	3	0
4	A	6	0	4	0	0
5	A	29	0	0	0	0
5	B	21	0	0	2	0
5	C	22	0	0	2	0
All	All	9805	0	9989	603	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 31.

All (603) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:250:MSE:HE2	1:C:252:ILE:HG22	1.41	1.02
1:B:42:ALA:HB1	1:B:188:LEU:HD21	1.40	1.02
1:A:93:LEU:HB3	1:A:116:ILE:HG23	1.43	0.98
1:B:264:ILE:HD13	1:B:264:ILE:H	1.28	0.96
1:A:331:LYS:HA	1:A:331:LYS:HE2	1.49	0.93
1:A:12:LYS:HD3	1:A:12:LYS:H	1.34	0.92
1:B:56:SER:O	1:B:57:LYS:HD2	1.68	0.92
1:A:14:ILE:HD12	1:A:14:ILE:H	1.33	0.92
1:B:46:THR:HG21	1:B:163:ASP:OD2	1.70	0.92
1:B:316:GLY:O	1:B:320:ILE:HG12	1.70	0.91

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:233:MSE:HE3	1:A:235:ILE:HD11	1.52	0.90
1:A:204:GLN:HE21	1:A:204:GLN:H	1.16	0.90
1:B:76:THR:HG23	1:B:119:GLU:OE1	1.73	0.87
1:B:336:ASN:HB2	1:B:371:GLY:HA3	1.57	0.86
1:A:2:LEU:HD21	1:A:401:LEU:HD21	1.60	0.84
1:C:342:PHE:HA	1:C:348:ALA:HB2	1.63	0.81
1:A:328:LEU:HD23	1:A:361:VAL:HG22	1.63	0.81
1:B:206:PRO:HG2	1:B:330:SER:HA	1.59	0.81
1:C:163:ASP:OD1	1:C:188:LEU:HB2	1.82	0.80
1:A:204:GLN:H	1:A:204:GLN:NE2	1.79	0.79
1:C:244:LYS:HE2	1:C:248:ASN:OD1	1.82	0.79
1:A:185:SER:HB2	1:A:189:MSE:HG2	1.64	0.79
1:B:359:VAL:HG13	1:B:387:GLU:HB3	1.62	0.79
1:C:21:VAL:HG12	1:C:161:ILE:HB	1.64	0.79
1:A:61:ILE:HB	1:A:121:LEU:HD11	1.64	0.79
1:A:327:ILE:HG22	1:A:361:VAL:HG21	1.64	0.79
1:A:204:GLN:O	1:A:332:THR:HG22	1.82	0.78
1:A:130:LYS:HB2	1:A:138:LYS:HE2	1.65	0.78
1:A:197:SER:HB2	1:A:201:GLU:OE1	1.84	0.78
1:B:256:LEU:H	1:B:256:LEU:HD23	1.48	0.78
1:B:333:VAL:HB	1:B:368:THR:HG22	1.66	0.77
1:B:373:GLY:O	1:B:375:THR:N	2.18	0.77
1:A:252:ILE:HG12	1:A:255:SER:HB2	1.66	0.76
1:B:39:ARG:O	1:B:40:ILE:HG12	1.85	0.76
1:C:207:LEU:CD2	1:C:230:VAL:HA	2.16	0.75
1:B:252:ILE:HG23	1:B:255:SER:HB2	1.69	0.75
1:B:264:ILE:HD13	1:B:264:ILE:N	2.01	0.75
1:B:6:LEU:HD23	1:B:7:SER:H	1.51	0.75
1:B:107:ILE:HG13	1:B:108:ASN:N	2.02	0.75
1:B:8:ILE:HA	1:B:11:LEU:HD13	1.68	0.74
1:A:203:PRO:HB2	1:A:332:THR:HG21	1.69	0.74
1:A:6:LEU:HD13	1:A:184:ALA:HB2	1.70	0.74
1:A:220:ILE:HG23	1:A:264:ILE:HG21	1.69	0.74
1:B:344:MSE:HE3	1:B:347:PHE:CE1	2.22	0.74
1:C:142:ASN:HB2	1:C:145:ASP:OD2	1.89	0.73
1:C:59:ILE:HD11	1:C:118:LEU:HD11	1.69	0.73
1:A:254:THR:HG21	1:A:311:MSE:HE2	1.69	0.73
1:C:348:ALA:O	1:C:352:ILE:HG13	1.88	0.73
1:A:60:LEU:HB2	1:A:117:LEU:HD23	1.70	0.73
1:A:99:VAL:HB	1:A:152:ASP:HB3	1.70	0.72
1:A:214:ALA:H	3:A:501:AMP:H5'1	1.52	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:72:ASN:N	1:C:72:ASN:HD22	1.86	0.72
1:B:313:LEU:HD13	1:B:344:MSE:CE	2.19	0.72
1:C:243:PHE:HE1	1:C:269:MSE:HE3	1.54	0.72
1:C:162:ASN:ND2	1:C:175:MSE:HE2	2.04	0.72
1:C:204:GLN:O	1:C:332:THR:HG22	1.91	0.71
1:B:232:ARG:HH12	1:B:329:THR:HB	1.54	0.71
1:A:18:LYS:O	1:A:157:ALA:HB1	1.90	0.71
1:A:230:VAL:HG12	1:A:231:ASP:N	2.06	0.71
1:B:204:GLN:HB2	1:B:331:LYS:HE3	1.73	0.70
1:C:142:ASN:HB3	1:C:144:GLU:OE2	1.91	0.70
1:A:221:GLN:HG3	1:A:403:GLU:HG2	1.74	0.70
1:C:300:VAL:HG13	1:C:304:GLU:HB2	1.73	0.70
1:B:92:VAL:HG22	1:B:115:VAL:CG2	2.21	0.69
1:B:30:GLU:OE1	1:B:35:LYS:HD2	1.92	0.69
1:C:215:LYS:HG3	1:C:218:ASP:OD1	1.91	0.69
1:C:223:ILE:HD11	1:C:239:MSE:HE1	1.74	0.69
1:C:228:ASP:HB3	1:C:275:LYS:HE3	1.72	0.69
1:C:163:ASP:OD2	1:C:186:GLY:HA3	1.93	0.69
1:C:121:LEU:HB3	1:C:127:GLU:HG3	1.75	0.69
1:A:328:LEU:HD23	1:A:361:VAL:CG2	2.23	0.68
1:C:368:THR:O	1:C:389:SER:HB2	1.93	0.68
1:C:329:THR:O	1:C:329:THR:HG22	1.92	0.68
1:B:197:SER:O	1:B:201:GLU:HB2	1.94	0.68
1:B:130:LYS:HD2	1:B:138:LYS:HE3	1.74	0.68
1:A:8:ILE:O	1:A:11:LEU:HB2	1.94	0.68
1:B:185:SER:HB2	1:B:189:MSE:HG2	1.76	0.68
1:A:6:LEU:HD22	1:A:7:SER:N	2.09	0.67
1:A:328:LEU:HA	1:A:361:VAL:HG22	1.76	0.67
1:C:242:THR:HG21	1:C:258:ASP:H	1.58	0.67
1:A:27:VAL:HG23	1:A:28:PRO:HD2	1.75	0.67
1:B:160:PHE:HB2	1:B:180:LEU:HD12	1.75	0.67
1:C:245:LYS:O	1:C:249:ASN:HA	1.95	0.66
1:C:207:LEU:HD23	1:C:230:VAL:HA	1.78	0.66
1:C:235:ILE:HG23	1:C:239:MSE:HE2	1.78	0.66
1:C:72:ASN:HD22	1:C:72:ASN:H	1.42	0.65
1:B:375:THR:O	1:B:379:VAL:HG23	1.96	0.65
1:C:214:ALA:H	3:C:503:AMP:C5'	2.09	0.65
1:C:251:LYS:NZ	1:C:252:ILE:H	1.94	0.65
1:C:73:GLU:CD	1:C:73:GLU:H	1.99	0.65
1:A:189:MSE:HE3	1:A:413:LEU:HD11	1.79	0.64
1:C:12:LYS:HE2	1:C:12:LYS:HA	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:57:LYS:HE2	1:A:110:ALA:O	1.97	0.64
1:A:95:LEU:HD22	1:A:106:LYS:HE2	1.78	0.64
1:C:328:LEU:HA	1:C:361:VAL:HG13	1.78	0.64
1:C:300:VAL:HG11	1:C:305:GLY:O	1.98	0.63
1:C:342:PHE:CD1	1:C:378:LEU:HD23	2.33	0.63
1:A:221:GLN:HE21	1:B:405:LYS:NZ	1.96	0.63
1:C:6:LEU:CD2	1:C:10:ASP:HB2	2.28	0.63
1:C:85:LYS:HE3	1:C:91:GLU:OE2	1.99	0.63
1:A:126:GLU:H	1:A:126:GLU:CD	2.00	0.63
1:C:90:GLU:O	1:C:91:GLU:HB3	1.99	0.62
1:C:29:ILE:HG13	1:C:30:GLU:N	2.14	0.62
1:A:218:ASP:O	1:A:219:LYS:HD3	2.00	0.62
1:C:82:GLU:O	1:C:85:LYS:HB2	2.00	0.62
1:C:18:LYS:O	1:C:157:ALA:HB1	1.99	0.62
1:A:143:LYS:CD	1:A:143:LYS:H	2.09	0.62
1:A:185:SER:HB2	1:A:189:MSE:CG	2.29	0.62
1:B:40:ILE:HD11	1:B:83:THR:HG21	1.82	0.61
1:A:207:LEU:HA	1:A:332:THR:HG23	1.81	0.61
1:A:264:ILE:HG22	1:A:264:ILE:O	1.99	0.61
1:A:256:LEU:HD21	1:B:147:GLU:OE1	2.01	0.61
1:A:142:ASN:HA	1:A:143:LYS:HE3	1.83	0.61
1:C:207:LEU:HD21	1:C:230:VAL:HG22	1.83	0.61
1:B:65:GLY:HA3	1:B:75:TYR:CD2	2.37	0.60
1:B:132:VAL:HG23	1:B:133:ASP:O	2.00	0.60
1:C:189:MSE:HE3	1:C:413:LEU:HD11	1.83	0.60
1:C:342:PHE:HA	1:C:348:ALA:CB	2.30	0.60
1:B:204:GLN:HG3	1:B:332:THR:HG22	1.81	0.60
1:A:97:ASP:O	1:A:118:LEU:HB3	2.02	0.60
1:B:44:LEU:N	1:B:45:PRO:HD2	2.15	0.60
1:C:162:ASN:CG	1:C:189:MSE:HE2	2.22	0.60
1:B:28:PRO:HB2	1:B:35:LYS:HB2	1.83	0.60
1:C:99:VAL:HG11	1:C:153:LEU:HD12	1.83	0.60
1:C:250:MSE:HG2	1:C:251:LYS:N	2.16	0.60
1:C:55:ALA:HB3	1:C:58:ILE:HD11	1.84	0.60
1:A:220:ILE:HD13	1:A:264:ILE:HG12	1.83	0.59
1:B:22:ARG:HH22	1:B:63:HIS:CD2	2.20	0.59
1:C:254:THR:HB	1:C:311:MSE:HB3	1.83	0.59
1:C:359:VAL:O	1:C:363:LYS:HD3	2.03	0.59
1:B:67:PRO:HG2	1:B:122:ARG:O	2.02	0.59
1:C:101:LYS:H	1:C:101:LYS:HD2	1.66	0.59
1:A:61:ILE:HG22	1:A:118:LEU:HD12	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:6:LEU:HD22	1:A:7:SER:H	1.67	0.58
1:A:214:ALA:HB1	1:A:256:LEU:HD13	1.86	0.58
1:C:214:ALA:H	3:C:503:AMP:H5'1	1.67	0.58
1:A:12:LYS:HD3	1:A:12:LYS:N	2.13	0.58
1:A:13:ASP:O	1:A:17:LYS:HD2	2.03	0.58
1:B:283:VAL:HG11	1:B:318:LYS:HG2	1.85	0.58
1:A:2:LEU:HD22	1:A:401:LEU:HD11	1.85	0.58
1:C:344:MSE:HE3	1:C:347:PHE:CD1	2.38	0.58
1:C:78:LYS:HB3	1:C:79:PRO:HD3	1.85	0.58
1:B:167:THR:HG22	1:B:167:THR:O	2.03	0.58
1:A:361:VAL:HG12	1:A:366:ALA:HB3	1.85	0.58
1:A:8:ILE:CD1	1:A:46:THR:HG23	2.34	0.58
1:A:62:SER:OG	1:A:63:HIS:N	2.34	0.58
1:C:301:THR:OG1	1:C:304:GLU:HG3	2.03	0.57
1:A:213:GLY:O	1:A:239:MSE:HG3	2.05	0.57
1:A:223:ILE:HG23	1:A:233:MSE:HE1	1.86	0.57
1:C:207:LEU:HA	1:C:332:THR:HG23	1.87	0.57
1:A:107:ILE:HG12	1:A:116:ILE:HD13	1.85	0.57
1:B:56:SER:O	1:B:57:LYS:CD	2.49	0.57
1:C:207:LEU:HD22	1:C:230:VAL:HA	1.84	0.57
1:A:119:GLU:HG3	1:A:120:ASN:N	2.19	0.57
1:C:242:THR:HG22	1:C:257:PHE:HA	1.86	0.57
1:C:259:GLU:O	1:C:262:SER:OG	2.21	0.57
1:B:210:ILE:HD11	1:B:327:ILE:HD11	1.87	0.57
1:C:11:LEU:HD21	1:C:184:ALA:HB2	1.86	0.57
1:C:232:ARG:HH22	1:C:329:THR:CG2	2.18	0.57
1:B:189:MSE:HE3	1:B:413:LEU:HD11	1.86	0.57
1:A:254:THR:HG22	1:A:254:THR:O	2.05	0.56
1:B:163:ASP:OD1	1:B:188:LEU:HB2	2.05	0.56
1:B:261:GLY:HA2	1:B:264:ILE:HD11	1.87	0.56
1:C:207:LEU:CD2	1:C:230:VAL:HG22	2.34	0.56
1:A:219:LYS:HZ1	1:A:239:MSE:HE2	1.69	0.56
1:A:44:LEU:HD11	1:A:87:LEU:HD13	1.87	0.56
1:A:219:LYS:NZ	1:A:239:MSE:HE2	2.19	0.56
1:A:254:THR:O	1:A:254:THR:CG2	2.53	0.56
1:A:295:ALA:O	1:A:297:THR:HG23	2.04	0.56
1:C:160:PHE:HB2	1:C:180:LEU:HD12	1.87	0.56
1:C:234:ILE:HG12	1:C:280:PHE:HB2	1.87	0.56
1:C:329:THR:O	1:C:329:THR:CG2	2.53	0.56
1:B:44:LEU:O	1:B:48:ASN:HB2	2.05	0.56
1:B:214:ALA:H	3:B:502:AMP:H5'1	1.70	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:256:LEU:HD23	1:B:256:LEU:N	2.19	0.56
1:C:63:HIS:CG	1:C:122:ARG:HD2	2.41	0.56
1:C:101:LYS:H	1:C:101:LYS:CD	2.18	0.56
1:A:13:ASP:HB3	1:A:17:LYS:NZ	2.21	0.56
1:A:59:ILE:HG12	1:A:107:ILE:HD13	1.87	0.56
1:A:2:LEU:HD21	1:A:401:LEU:CD2	2.34	0.56
1:A:165:PHE:O	1:A:167:THR:N	2.39	0.56
1:A:169:HIS:HA	1:A:407:LEU:HD23	1.88	0.56
1:A:406:GLU:CG	1:A:411:LEU:HD11	2.36	0.56
1:A:27:VAL:CG2	1:A:28:PRO:HD2	2.35	0.55
1:A:185:SER:CB	1:A:189:MSE:HG2	2.36	0.55
1:B:15:LYS:HA	1:B:54:GLY:HA3	1.88	0.55
1:B:329:THR:HG22	1:B:329:THR:O	2.06	0.55
1:A:230:VAL:HG12	1:A:231:ASP:H	1.71	0.55
1:C:143:LYS:CD	1:C:143:LYS:H	2.18	0.55
1:A:54:GLY:O	1:A:55:ALA:O	2.23	0.55
1:A:220:ILE:CG2	1:A:264:ILE:HG21	2.36	0.55
1:C:359:VAL:HG13	1:C:387:GLU:HB3	1.88	0.55
1:A:336:ASN:OD1	1:A:372:GLY:HA2	2.07	0.55
1:C:220:ILE:HD13	1:C:264:ILE:HG13	1.89	0.55
1:A:359:VAL:HG13	1:A:387:GLU:HB3	1.89	0.55
1:C:299:PHE:CD2	1:C:317:PRO:HD3	2.42	0.55
1:B:107:ILE:HG13	1:B:108:ASN:H	1.72	0.54
1:C:300:VAL:CG1	1:C:304:GLU:HB2	2.37	0.54
1:A:406:GLU:HG3	1:A:411:LEU:HD11	1.89	0.54
1:C:192:GLU:OE2	1:C:393:THR:HG22	2.07	0.54
1:C:219:LYS:O	1:C:223:ILE:HG13	2.07	0.54
1:B:328:LEU:HD21	1:B:357:LEU:HD23	1.89	0.54
1:B:152:ASP:O	1:B:153:LEU:C	2.45	0.54
1:B:265:VAL:O	1:B:269:MSE:HG2	2.08	0.54
1:C:215:LYS:O	1:C:219:LYS:NZ	2.40	0.54
1:B:395:GLY:HA2	1:B:398:SER:OG	2.08	0.54
1:A:14:ILE:HD12	1:A:14:ILE:N	2.13	0.54
1:A:137:ASN:O	1:A:139:VAL:HG23	2.08	0.54
1:A:400:GLU:HB3	1:A:405:LYS:HB2	1.88	0.54
1:B:204:GLN:H	1:B:332:THR:HG21	1.73	0.54
1:B:14:ILE:HD12	1:B:14:ILE:O	2.07	0.54
1:B:51:LYS:HD3	1:B:113:ASN:ND2	2.23	0.54
1:A:216:VAL:HG13	1:A:261:GLY:HA3	1.88	0.54
1:B:59:ILE:H	1:B:59:ILE:HD12	1.72	0.54
1:A:8:ILE:HD13	1:A:46:THR:HG23	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:238:GLY:HA2	1:A:241:TYR:HD2	1.73	0.53
1:C:357:LEU:O	1:C:361:VAL:HG22	2.09	0.53
1:A:166:GLY:HA2	1:A:397:ALA:HB3	1.90	0.53
1:B:46:THR:HG22	1:B:187:PHE:HB2	1.90	0.53
1:B:302:ASP:N	1:B:302:ASP:OD1	2.40	0.53
1:B:289:ASP:HB3	1:B:310:TRP:CZ2	2.43	0.53
1:C:177:GLY:O	1:C:179:LYS:HG2	2.08	0.53
1:A:163:ASP:CG	1:A:186:GLY:HA3	2.28	0.53
1:B:368:THR:O	1:B:389:SER:HB2	2.08	0.53
1:C:284:ASP:OD2	1:C:318:LYS:HB2	2.09	0.53
1:B:269:MSE:HE1	1:B:279:ILE:HG13	1.89	0.53
1:A:264:ILE:O	1:A:264:ILE:CG2	2.56	0.53
1:B:340:GLY:O	1:B:342:PHE:N	2.40	0.53
1:C:207:LEU:HD23	1:C:230:VAL:HG13	1.91	0.53
1:B:14:ILE:HA	1:B:17:LYS:HE2	1.91	0.53
1:A:22:ARG:NH2	1:A:63:HIS:ND1	2.51	0.53
1:B:29:ILE:HG13	1:B:30:GLU:N	2.24	0.53
1:B:6:LEU:CD2	1:B:7:SER:H	2.21	0.52
1:B:406:GLU:O	1:B:407:LEU:CB	2.56	0.52
1:C:211:LEU:HD13	1:C:223:ILE:HG12	1.89	0.52
1:A:205:ARG:HD2	1:A:231:ASP:OD2	2.10	0.52
1:B:107:ILE:CG1	1:B:108:ASN:N	2.71	0.52
1:A:344:MSE:CE	1:B:144:GLU:HG2	2.40	0.52
1:B:117:LEU:C	1:B:117:LEU:HD23	2.29	0.52
1:B:241:TYR:OH	1:B:312:GLY:HA3	2.09	0.52
1:C:82:GLU:HA	1:C:85:LYS:HD2	1.90	0.52
1:A:15:LYS:HA	1:A:54:GLY:HA3	1.91	0.52
1:A:254:THR:CG2	1:A:311:MSE:HE2	2.39	0.52
1:A:232:ARG:NH2	1:A:329:THR:HB	2.25	0.52
1:B:38:ASN:O	1:B:41:THR:HB	2.10	0.52
1:B:399:LEU:HD12	5:B:627:HOH:O	2.09	0.52
1:A:13:ASP:HB3	1:A:17:LYS:HZ1	1.74	0.52
1:B:359:VAL:CG1	1:B:387:GLU:HB3	2.36	0.52
1:A:204:GLN:HE21	1:A:204:GLN:N	1.96	0.52
1:B:216:VAL:HG13	1:B:261:GLY:HA3	1.92	0.52
1:A:14:ILE:N	1:A:14:ILE:CD1	2.72	0.52
1:A:289:ASP:HB3	1:A:310:TRP:CZ2	2.45	0.52
1:A:357:LEU:O	1:A:361:VAL:HG23	2.09	0.52
1:B:227:LEU:HG	1:B:233:MSE:HE1	1.92	0.52
1:C:6:LEU:HD21	1:C:10:ASP:HB2	1.92	0.52
1:C:189:MSE:O	1:C:190:LYS:C	2.49	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:8:ILE:HD11	1:A:186:GLY:HA2	1.92	0.52
1:C:97:ASP:OD1	1:C:97:ASP:N	2.43	0.52
1:B:320:ILE:HD12	1:B:350:GLY:HA2	1.91	0.51
1:B:204:GLN:O	1:B:332:THR:HG22	2.10	0.51
1:C:132:VAL:HG23	1:C:132:VAL:O	2.10	0.51
1:C:85:LYS:HG2	1:C:91:GLU:HA	1.92	0.51
1:C:259:GLU:OE1	1:C:259:GLU:HA	2.10	0.51
1:B:406:GLU:O	1:B:407:LEU:HB2	2.10	0.51
1:C:208:LEU:HD23	1:C:233:MSE:HA	1.93	0.51
1:B:126:GLU:HG3	1:B:149:PHE:HB2	1.92	0.51
1:C:243:PHE:CE1	1:C:269:MSE:HE3	2.40	0.51
1:C:314:ASP:OD2	1:C:350:GLY:HA3	2.11	0.51
1:B:206:PRO:HG3	1:B:232:ARG:NH2	2.26	0.51
1:C:72:ASN:O	1:C:74:LYS:N	2.44	0.51
1:C:99:VAL:CG1	1:C:153:LEU:HD12	2.41	0.51
1:C:242:THR:CG2	1:C:258:ASP:H	2.22	0.51
1:A:35:LYS:O	1:A:36:ASP:HB2	2.10	0.51
1:A:67:PRO:O	1:A:68:ASP:HB2	2.11	0.51
1:A:331:LYS:O	1:A:366:ALA:HB1	2.11	0.51
1:B:51:LYS:NZ	1:B:90:GLU:OE2	2.32	0.51
1:B:64:CYS:HB2	1:B:77:LEU:HD21	1.93	0.51
1:B:170:ARG:HB3	1:B:172:HIS:CD2	2.45	0.51
1:C:63:HIS:HB2	1:C:122:ARG:HD2	1.91	0.51
1:C:385:LYS:HE3	1:C:391:VAL:HB	1.93	0.51
1:B:117:LEU:HD23	1:B:118:LEU:N	2.26	0.51
1:B:6:LEU:HD23	1:B:7:SER:N	2.21	0.50
1:B:5:LYS:HE3	1:B:410:VAL:O	2.11	0.50
1:B:103:VAL:HG23	1:B:104:GLU:N	2.26	0.50
1:A:331:LYS:HA	1:A:331:LYS:CE	2.32	0.50
1:B:143:LYS:CD	1:B:143:LYS:H	2.24	0.50
1:B:143:LYS:CD	1:B:143:LYS:N	2.75	0.50
1:B:185:SER:HB2	1:B:189:MSE:CG	2.41	0.50
1:B:287:ILE:HD12	1:B:307:PRO:HD2	1.92	0.50
1:C:6:LEU:HD23	1:C:10:ASP:HB2	1.94	0.50
1:C:264:ILE:HG22	1:C:264:ILE:O	2.11	0.50
1:A:230:VAL:CG1	1:A:231:ASP:N	2.75	0.50
1:A:316:GLY:O	1:A:320:ILE:HG13	2.11	0.50
1:B:170:ARG:HB3	1:B:172:HIS:NE2	2.27	0.50
1:A:2:LEU:CD2	1:A:401:LEU:HD11	2.42	0.50
1:A:221:GLN:HE21	1:B:405:LYS:HZ3	1.58	0.50
1:C:185:SER:HB2	1:C:189:MSE:CB	2.42	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:121:LEU:HB3	1:C:127:GLU:CG	2.41	0.50
1:C:159:VAL:HG22	1:C:182:VAL:HB	1.94	0.50
1:C:285:PHE:CD1	1:C:285:PHE:N	2.80	0.50
1:B:126:GLU:CD	1:B:126:GLU:H	2.15	0.50
1:B:256:LEU:H	1:B:256:LEU:CD2	2.14	0.50
1:C:204:GLN:O	1:C:332:THR:CG2	2.58	0.50
1:C:247:LEU:HD11	1:C:265:VAL:HG12	1.93	0.50
1:A:164:ALA:O	1:A:175:MSE:HE1	2.12	0.49
1:B:313:LEU:HD12	1:B:347:PHE:CZ	2.47	0.49
1:C:202:ASN:CG	1:C:202:ASN:O	2.49	0.49
1:C:358:VAL:O	1:C:361:VAL:HG23	2.11	0.49
1:B:160:PHE:HB3	1:B:183:LYS:HG2	1.94	0.49
1:C:228:ASP:HB3	1:C:275:LYS:CE	2.39	0.49
1:C:230:VAL:HG12	1:C:232:ARG:H	1.76	0.49
1:A:34:ILE:HD11	1:A:80:VAL:HG22	1.95	0.49
1:A:125:ILE:HG13	1:A:130:LYS:O	2.12	0.49
1:B:354:CYS:O	1:B:358:VAL:HG23	2.12	0.49
1:A:44:LEU:HB2	1:A:45:PRO:HD3	1.94	0.49
1:A:327:ILE:HG22	1:A:361:VAL:CG2	2.39	0.49
1:B:223:ILE:HD11	1:B:239:MSE:HE1	1.93	0.49
1:B:388:ILE:HD12	1:B:388:ILE:H	1.77	0.49
1:A:368:THR:O	1:A:389:SER:HB2	2.13	0.49
1:B:99:VAL:HG12	1:B:153:LEU:HD23	1.94	0.49
1:C:316:GLY:O	1:C:320:ILE:HG13	2.13	0.49
1:B:388:ILE:HD12	1:B:388:ILE:N	2.28	0.49
1:B:22:ARG:NH1	1:B:62:SER:HA	2.28	0.48
1:B:251:LYS:HE3	1:B:253:GLY:H	1.77	0.48
1:B:335:TRP:CD1	1:B:335:TRP:C	2.86	0.48
1:C:212:GLY:HA2	1:C:236:GLY:O	2.13	0.48
1:B:378:LEU:O	1:B:378:LEU:HD22	2.13	0.48
1:C:251:LYS:HZ2	1:C:252:ILE:H	1.58	0.48
1:B:54:GLY:O	1:B:55:ALA:HB3	2.14	0.48
1:B:92:VAL:HG22	1:B:115:VAL:HG23	1.92	0.48
1:B:208:LEU:HD22	1:B:209:ALA:N	2.28	0.48
1:B:406:GLU:HA	1:B:406:GLU:OE1	2.13	0.48
1:C:11:LEU:HD22	1:C:182:VAL:HG11	1.95	0.48
1:B:297:THR:HA	1:B:310:TRP:HZ3	1.78	0.48
1:C:292:ASP:OD2	1:C:293:ASN:N	2.46	0.48
1:A:110:ALA:O	1:A:111:LYS:C	2.50	0.48
1:A:164:ALA:C	1:A:165:PHE:O	2.50	0.48
1:A:289:ASP:OD2	1:A:296:ASN:HB2	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:185:SER:HB2	1:C:189:MSE:HB2	1.95	0.48
1:A:143:LYS:H	1:A:143:LYS:HE3	1.78	0.48
1:B:51:LYS:HD3	1:B:113:ASN:HD21	1.79	0.48
1:B:104:GLU:O	1:B:108:ASN:HB2	2.13	0.48
1:B:11:LEU:HD12	1:B:11:LEU:N	2.28	0.48
1:B:14:ILE:HA	1:B:17:LYS:CE	2.43	0.48
1:B:307:PRO:HB2	1:B:310:TRP:HB2	1.96	0.48
1:C:162:ASN:O	1:C:189:MSE:HG3	2.14	0.48
1:A:119:GLU:CG	1:A:120:ASN:N	2.76	0.48
1:A:143:LYS:H	1:A:143:LYS:CE	2.27	0.47
1:B:324:LYS:O	1:B:328:LEU:HG	2.14	0.47
1:C:227:LEU:HB3	1:C:271:LYS:HD3	1.96	0.47
1:A:119:GLU:CG	1:A:120:ASN:H	2.26	0.47
1:C:230:VAL:HG12	1:C:232:ARG:N	2.30	0.47
1:A:5:LYS:HD2	1:A:414:SER:O	2.14	0.47
1:B:138:LYS:HD2	1:B:139:VAL:H	1.79	0.47
1:B:368:THR:OG1	1:B:388:ILE:HG23	2.14	0.47
1:A:285:PHE:N	1:A:285:PHE:CD1	2.82	0.47
1:B:106:LYS:O	1:B:110:ALA:HB2	2.15	0.47
1:C:102:GLU:O	1:C:105:ASP:HB2	2.13	0.47
1:B:108:ASN:O	1:B:109:ALA:HB3	2.13	0.47
1:C:144:GLU:CD	1:C:144:GLU:H	2.18	0.47
1:C:60:LEU:HD12	1:C:117:LEU:HD13	1.97	0.47
1:C:289:ASP:HB3	1:C:310:TRP:CE2	2.50	0.47
1:A:61:ILE:CG2	1:A:118:LEU:HD12	2.45	0.47
1:A:163:ASP:OD2	1:A:188:LEU:HB2	2.15	0.47
1:B:384:LYS:HD3	1:B:387:GLU:HG3	1.95	0.47
1:C:101:LYS:HD2	1:C:101:LYS:N	2.28	0.47
1:A:144:GLU:HG3	1:B:291:PHE:CE2	2.49	0.47
1:B:143:LYS:H	1:B:143:LYS:HE2	1.80	0.47
1:C:142:ASN:HA	1:C:143:LYS:HE3	1.97	0.47
1:A:137:ASN:OD1	1:B:28:PRO:HA	2.15	0.47
1:B:160:PHE:O	1:B:183:LYS:HA	2.15	0.47
1:C:251:LYS:HZ1	1:C:253:GLY:H	1.63	0.47
1:A:43:THR:O	1:A:47:ILE:HG13	2.15	0.46
1:B:11:LEU:HD11	1:B:184:ALA:CB	2.45	0.46
1:B:78:LYS:N	1:B:79:PRO:HD2	2.31	0.46
1:B:119:GLU:HG3	1:B:120:ASN:N	2.29	0.46
1:C:151:ASN:O	1:C:155:LYS:HG3	2.16	0.46
1:C:227:LEU:HD23	1:C:227:LEU:HA	1.72	0.46
1:C:301:THR:O	1:C:302:ASP:C	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:344:MSE:HE1	1:B:144:GLU:HG2	1.97	0.46
1:B:177:GLY:O	1:B:179:LYS:HG2	2.15	0.46
1:C:214:ALA:H	3:C:503:AMP:H5'2	1.78	0.46
1:B:78:LYS:HG3	1:B:94:PHE:CD2	2.51	0.46
1:B:205:ARG:HA	1:B:206:PRO:C	2.35	0.46
1:C:355:LEU:O	1:C:359:VAL:HG23	2.15	0.46
1:A:30:GLU:HB2	1:A:35:LYS:NZ	2.29	0.46
1:B:13:ASP:O	1:B:17:LYS:NZ	2.40	0.46
1:B:93:LEU:HB3	1:B:116:ILE:HG23	1.96	0.46
1:B:159:VAL:HG13	1:B:182:VAL:HB	1.97	0.46
1:B:14:ILE:HA	1:B:17:LYS:NZ	2.31	0.46
1:B:18:LYS:NZ	1:B:108:ASN:ND2	2.64	0.46
1:A:130:LYS:CB	1:A:138:LYS:HE2	2.42	0.46
1:A:183:LYS:HE3	1:B:259:GLU:OE1	2.16	0.46
1:C:163:ASP:CG	1:C:186:GLY:HA3	2.36	0.46
1:A:30:GLU:HB2	1:A:35:LYS:HZ2	1.81	0.46
1:A:62:SER:O	1:A:121:LEU:HD13	2.16	0.46
1:A:238:GLY:HA2	1:A:241:TYR:CD2	2.51	0.46
1:B:243:PHE:O	1:B:247:LEU:HB2	2.16	0.46
1:B:261:GLY:O	1:B:262:SER:C	2.53	0.46
1:C:108:ASN:HD22	1:C:108:ASN:HA	1.57	0.46
1:C:227:LEU:CD2	1:C:233:MSE:HE3	2.45	0.46
1:B:176:VAL:HG12	1:B:176:VAL:O	2.16	0.46
1:C:14:ILE:O	1:C:17:LYS:HG3	2.15	0.46
1:A:119:GLU:HG3	1:A:120:ASN:H	1.81	0.46
1:A:205:ARG:HB3	1:A:206:PRO:HA	1.98	0.46
1:B:142:ASN:HB2	1:B:145:ASP:OD2	2.15	0.46
1:B:313:LEU:HB2	1:B:347:PHE:CD2	2.51	0.46
1:B:342:PHE:CE1	1:B:378:LEU:HB2	2.51	0.46
1:B:6:LEU:CD2	1:B:7:SER:N	2.79	0.45
1:C:206:PRO:HG2	1:C:330:SER:HA	1.97	0.45
1:A:177:GLY:O	1:A:179:LYS:N	2.50	0.45
1:B:58:ILE:HB	1:B:115:VAL:HG12	1.97	0.45
1:B:298:LYS:HE2	1:B:310:TRP:CH2	2.51	0.45
1:B:344:MSE:HE3	1:B:347:PHE:CD1	2.51	0.45
1:A:168:ALA:HA	1:A:175:MSE:HE2	1.98	0.45
1:A:252:ILE:CG1	1:A:255:SER:HB2	2.40	0.45
1:A:328:LEU:HA	1:A:361:VAL:CG2	2.44	0.45
1:B:39:ARG:C	1:B:40:ILE:HG23	2.37	0.45
1:C:68:ASP:HB2	1:C:132:VAL:HG22	1.98	0.45
1:C:126:GLU:HG3	1:C:149:PHE:HB2	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:178:VAL:HG12	1:C:178:VAL:O	2.17	0.45
1:A:293:ASN:O	1:A:294:ASN:HB3	2.16	0.45
1:B:313:LEU:HD13	1:B:344:MSE:HE1	1.95	0.45
1:C:302:ASP:OD1	1:C:303:GLU:N	2.50	0.45
1:A:67:PRO:CG	1:A:122:ARG:HB3	2.46	0.45
1:A:159:VAL:HG13	1:A:182:VAL:HB	1.99	0.45
1:A:400:GLU:HA	1:A:403:GLU:HB2	1.98	0.45
1:A:212:GLY:CA	1:A:239:MSE:HE3	2.46	0.45
1:B:247:LEU:HD11	1:B:269:MSE:HG3	1.99	0.45
1:B:407:LEU:HD23	1:B:410:VAL:HG21	1.98	0.45
1:C:162:ASN:HD21	1:C:175:MSE:HE2	1.80	0.45
1:C:355:LEU:HD22	1:C:378:LEU:HD13	1.99	0.45
1:B:22:ARG:HH12	1:B:63:HIS:HD2	1.64	0.45
1:C:243:PHE:CD1	1:C:265:VAL:HG13	2.52	0.45
1:A:168:ALA:CA	1:A:175:MSE:HE2	2.46	0.44
1:A:212:GLY:C	1:A:239:MSE:HE3	2.38	0.44
1:B:47:ILE:HD11	1:B:60:LEU:HD11	1.99	0.44
1:B:72:ASN:O	1:B:74:LYS:N	2.50	0.44
1:C:42:ALA:O	1:C:45:PRO:HD2	2.15	0.44
1:C:57:LYS:NZ	1:C:107:ILE:O	2.44	0.44
1:C:61:ILE:HG22	1:C:118:LEU:HD12	1.99	0.44
1:C:162:ASN:OD1	1:C:189:MSE:HE2	2.18	0.44
1:C:287:ILE:HG13	1:C:310:TRP:HE3	1.83	0.44
1:B:261:GLY:O	1:B:264:ILE:HD13	2.18	0.44
1:B:285:PHE:CD1	1:B:285:PHE:N	2.85	0.44
1:B:344:MSE:CE	1:B:347:PHE:CD1	3.00	0.44
1:C:67:PRO:O	1:C:68:ASP:C	2.55	0.44
1:A:127:GLU:HA	1:A:173:SER:HB2	2.00	0.44
1:A:211:LEU:CD1	1:A:223:ILE:HG12	2.47	0.44
1:A:307:PRO:HG2	1:A:310:TRP:CG	2.52	0.44
1:B:11:LEU:N	1:B:11:LEU:CD1	2.79	0.44
1:B:125:ILE:HG23	1:B:126:GLU:N	2.32	0.44
1:C:90:GLU:O	1:C:91:GLU:CB	2.64	0.44
1:A:59:ILE:HG12	1:A:107:ILE:CD1	2.48	0.44
1:A:8:ILE:HG13	1:A:185:SER:O	2.17	0.44
1:B:21:VAL:HA	1:B:161:ILE:O	2.17	0.44
1:B:207:LEU:HD13	1:B:230:VAL:HA	1.99	0.44
1:A:20:LEU:HD23	1:A:59:ILE:O	2.17	0.44
1:B:107:ILE:CG1	1:B:108:ASN:H	2.30	0.44
1:C:54:GLY:O	1:C:55:ALA:C	2.56	0.44
1:C:150:GLN:O	1:C:154:THR:OG1	2.26	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:263:LYS:O	1:C:264:ILE:HD13	2.17	0.44
1:C:287:ILE:HG13	1:C:310:TRP:CE3	2.53	0.44
1:A:162:ASN:HD21	1:A:175:MSE:HE3	1.83	0.44
1:C:29:ILE:HD11	1:C:32:GLY:C	2.39	0.44
1:C:286:LYS:HE2	1:C:297:THR:HB	2.00	0.44
1:B:301:THR:C	1:B:303:GLU:N	2.71	0.44
1:C:251:LYS:HZ1	1:C:252:ILE:H	1.62	0.44
1:A:8:ILE:HD11	1:A:46:THR:HG23	2.00	0.43
1:B:359:VAL:O	1:B:362:THR:HB	2.18	0.43
1:B:248:ASN:O	1:B:249:ASN:HB3	2.16	0.43
1:B:284:ASP:HA	1:B:301:THR:HA	2.00	0.43
1:C:0:HIS:O	1:C:1:HIS:HB2	2.17	0.43
1:C:201:GLU:O	1:C:203:PRO:HD3	2.17	0.43
1:A:49:HIS:O	1:A:53:GLU:HG2	2.18	0.43
1:A:146:VAL:O	1:A:150:GLN:HG3	2.19	0.43
1:C:36:ASP:OD2	1:C:38:ASN:HB2	2.19	0.43
1:C:299:PHE:CE2	1:C:317:PRO:HD3	2.53	0.43
1:A:165:PHE:C	1:A:167:THR:H	2.22	0.43
1:B:370:VAL:HG21	1:B:379:VAL:HG21	2.00	0.43
1:A:165:PHE:CD2	1:A:166:GLY:N	2.83	0.43
1:B:98:CYS:SG	1:B:124:HIS:CE1	3.11	0.43
1:B:306:ILE:O	1:B:307:PRO:O	2.35	0.43
1:C:342:PHE:HD1	1:C:378:LEU:HD23	1.77	0.43
1:C:63:HIS:CB	1:C:122:ARG:HD2	2.49	0.43
1:C:66:ARG:O	1:C:68:ASP:N	2.50	0.43
1:C:300:VAL:HG12	1:C:301:THR:N	2.33	0.43
1:A:14:ILE:H	1:A:14:ILE:CD1	2.08	0.43
1:A:162:ASN:HB3	1:A:189:MSE:HE2	2.01	0.43
1:C:232:ARG:HH22	1:C:329:THR:HG22	1.84	0.43
1:A:51:LYS:HE2	1:A:90:GLU:OE1	2.18	0.43
1:A:99:VAL:CB	1:A:152:ASP:HB3	2.44	0.43
1:B:59:ILE:HD12	1:B:59:ILE:N	2.33	0.43
1:A:51:LYS:CE	1:A:90:GLU:OE1	2.67	0.43
1:A:169:HIS:CA	1:A:407:LEU:HD23	2.49	0.43
1:A:206:PRO:HG2	1:A:330:SER:HA	2.00	0.43
1:A:228:ASP:HB3	1:A:271:LYS:NZ	2.33	0.43
1:A:342:PHE:HA	1:A:348:ALA:HB2	2.01	0.43
1:B:71:ARG:HD2	1:B:123:PHE:CD2	2.54	0.43
1:B:108:ASN:HD22	1:B:108:ASN:HA	1.53	0.43
1:B:234:ILE:HD11	1:B:326:VAL:HG11	2.00	0.43
1:C:201:GLU:C	1:C:203:PRO:HD3	2.39	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:198:LYS:HD3	1:A:367:ILE:HD13	2.01	0.42
1:B:8:ILE:CA	1:B:11:LEU:HD13	2.44	0.42
1:B:116:ILE:HD12	1:B:116:ILE:N	2.34	0.42
1:A:169:HIS:HB3	1:A:407:LEU:CD2	2.48	0.42
1:A:222:LEU:HD23	1:A:402:LEU:O	2.19	0.42
1:A:379:VAL:HG11	1:A:388:ILE:HD12	2.00	0.42
1:A:11:LEU:HD23	1:A:11:LEU:HA	1.86	0.42
1:A:225:ASN:O	1:A:225:ASN:CG	2.58	0.42
1:C:166:GLY:HA2	1:C:394:GLY:HA2	2.01	0.42
1:B:264:ILE:N	1:B:264:ILE:CD1	2.73	0.42
1:C:132:VAL:O	1:C:132:VAL:CG2	2.66	0.42
1:C:294:ASN:O	1:C:295:ALA:C	2.58	0.42
1:C:56:SER:O	1:C:57:LYS:HG2	2.19	0.42
1:C:61:ILE:O	1:C:61:ILE:HG13	2.19	0.42
1:C:80:VAL:O	1:C:84:LEU:HG	2.20	0.42
1:C:328:LEU:HD21	1:C:357:LEU:HD23	2.00	0.42
1:B:98:CYS:SG	1:B:124:HIS:ND1	2.87	0.42
1:C:83:THR:O	1:C:87:LEU:HD22	2.20	0.42
1:C:221:GLN:OE1	1:C:405:LYS:HE2	2.18	0.42
1:A:69:GLY:O	1:A:70:LEU:HD23	2.19	0.42
1:B:167:THR:O	1:B:167:THR:CG2	2.68	0.42
1:C:56:SER:C	1:C:57:LYS:HG2	2.40	0.42
1:C:294:ASN:O	1:C:295:ALA:O	2.37	0.42
1:A:9:SER:O	1:A:10:ASP:HB2	2.19	0.42
1:A:169:HIS:HB3	1:A:407:LEU:HD23	2.02	0.42
1:A:406:GLU:HG2	1:A:411:LEU:HD11	2.00	0.42
1:B:170:ARG:HH21	1:B:170:ARG:HG3	1.84	0.42
1:C:98:CYS:SG	1:C:124:HIS:CD2	3.13	0.42
1:C:112:GLU:O	1:C:114:SER:N	2.53	0.42
1:C:374:ASP:HB2	5:C:626:HOH:O	2.19	0.42
1:A:392:SER:C	1:A:394:GLY:H	2.23	0.42
1:B:40:ILE:O	1:B:40:ILE:HG13	2.19	0.42
1:B:76:THR:HG22	1:B:78:LYS:H	1.84	0.42
1:B:98:CYS:HG	1:B:124:HIS:CE1	2.36	0.42
1:B:152:ASP:O	1:B:155:LYS:HG2	2.20	0.42
1:A:130:LYS:HD3	1:A:138:LYS:HE3	2.02	0.41
1:A:164:ALA:O	1:A:165:PHE:O	2.38	0.41
1:A:215:LYS:HB3	1:A:218:ASP:OD1	2.20	0.41
1:A:375:THR:O	1:A:378:LEU:HB3	2.20	0.41
1:B:25:PHE:CD2	1:B:40:ILE:HG22	2.54	0.41
1:B:167:THR:HB	1:B:175:MSE:HE3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:289:ASP:HB3	1:B:310:TRP:CE2	2.55	0.41
1:B:313:LEU:HD22	1:B:341:VAL:HG21	2.01	0.41
1:B:281:LEU:HD23	1:B:282:PRO:HD2	2.02	0.41
1:B:325:ASP:OD1	1:B:325:ASP:N	2.53	0.41
1:C:72:ASN:O	1:C:72:ASN:ND2	2.53	0.41
1:B:35:LYS:HE3	1:B:35:LYS:HA	2.03	0.41
1:B:298:LYS:HG2	1:B:310:TRP:CZ3	2.55	0.41
1:C:298:LYS:HB2	1:C:298:LYS:HE3	1.87	0.41
1:C:301:THR:O	1:C:304:GLU:N	2.53	0.41
1:A:197:SER:O	1:A:201:GLU:HB2	2.21	0.41
1:B:63:HIS:HB2	1:B:122:ARG:HD3	2.02	0.41
1:B:230:VAL:CG1	1:B:232:ARG:O	2.68	0.41
1:B:261:GLY:C	1:B:263:LYS:N	2.72	0.41
1:B:370:VAL:HB	1:B:391:VAL:HG22	2.02	0.41
1:C:19:VAL:HG21	1:C:50:LEU:CD2	2.51	0.41
1:C:128:GLU:HB2	5:C:618:HOH:O	2.20	0.41
1:B:162:ASN:O	1:B:189:MSE:HE2	2.20	0.41
1:A:44:LEU:N	1:A:45:PRO:CD	2.83	0.41
1:C:208:LEU:HD23	1:C:232:ARG:O	2.21	0.41
1:A:329:THR:HG22	1:A:329:THR:O	2.20	0.41
1:B:261:GLY:HA2	1:B:264:ILE:CD1	2.51	0.41
1:C:18:LYS:N	1:C:158:ASP:OD1	2.50	0.41
1:A:76:THR:HA	1:A:119:GLU:OE2	2.21	0.41
1:A:196:PHE:HB3	1:A:401:LEU:HD21	2.03	0.41
1:B:7:SER:O	1:B:10:ASP:HB3	2.20	0.41
1:B:65:GLY:HA3	1:B:75:TYR:CE2	2.56	0.41
1:B:363:LYS:NZ	1:B:363:LYS:HB3	2.35	0.41
1:B:395:GLY:O	1:B:396:GLY:C	2.59	0.41
1:C:20:LEU:HD12	1:C:59:ILE:O	2.20	0.41
1:C:103:VAL:C	1:C:105:ASP:N	2.74	0.41
1:B:204:GLN:O	1:B:331:LYS:HB2	2.21	0.41
1:C:121:LEU:CB	1:C:127:GLU:HG3	2.47	0.41
1:B:3:GLY:O	1:B:4:ASN:HB2	2.21	0.40
1:B:27:VAL:HA	1:B:28:PRO:HD3	1.87	0.40
1:B:43:THR:HG23	1:B:47:ILE:HD12	2.03	0.40
1:B:384:LYS:O	1:B:388:ILE:HD12	2.21	0.40
1:C:63:HIS:CE1	1:C:122:ARG:NH1	2.89	0.40
1:C:98:CYS:SG	1:C:124:HIS:HD2	2.44	0.40
1:C:196:PHE:O	1:C:200:LEU:HG	2.21	0.40
1:C:222:LEU:CD2	1:C:226:LEU:HD11	2.51	0.40
1:A:127:GLU:OE2	1:A:173:SER:HB2	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:143:LYS:H	1:C:143:LYS:HE3	1.85	0.40
1:A:112:GLU:OE2	1:A:112:GLU:HA	2.21	0.40
1:A:335:TRP:CE3	1:A:358:VAL:HG21	2.56	0.40
1:B:99:VAL:CG1	1:B:153:LEU:HD23	2.51	0.40
1:B:269:MSE:HE3	5:B:607:HOH:O	2.21	0.40
1:A:245:LYS:HD3	1:A:257:PHE:CE1	2.56	0.40
1:A:263:LYS:C	1:A:264:ILE:HD12	2.41	0.40
1:B:17:LYS:O	1:B:55:ALA:HA	2.21	0.40
1:B:143:LYS:N	1:B:143:LYS:HD3	2.37	0.40
1:C:62:SER:C	1:C:121:LEU:HD12	2.42	0.40
1:C:105:ASP:O	1:C:106:LYS:C	2.59	0.40
1:C:112:GLU:C	1:C:114:SER:H	2.25	0.40
1:B:212:GLY:O	1:B:219:LYS:HE2	2.22	0.40
1:B:214:ALA:HB3	3:B:502:AMP:H5'2	2.03	0.40
1:B:232:ARG:HH22	1:B:329:THR:CG2	2.34	0.40
1:B:246:VAL:HG11	1:B:265:VAL:CG2	2.51	0.40
1:B:362:THR:HG21	1:B:387:GLU:O	2.21	0.40
1:B:372:GLY:O	1:B:373:GLY:O	2.40	0.40
1:C:232:ARG:HA	1:C:277:VAL:HG13	2.03	0.40

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:386:ASN:ND2	1:C:386:ASN:ND2[7_545]	1.43	0.77
1:B:345:PRO:O	1:C:89:GLY:CA[7_545]	2.10	0.10

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	415/425 (98%)	373 (90%)	33 (8%)	9 (2%)	6 31

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	B	413/425 (97%)	342 (83%)	50 (12%)	21 (5%)	2 12
1	C	422/425 (99%)	357 (85%)	48 (11%)	17 (4%)	3 17
All	All	1250/1275 (98%)	1072 (86%)	131 (10%)	47 (4%)	3 18

All (47) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	36	ASP
1	A	55	ALA
1	B	4	ASN
1	B	307	PRO
1	B	374	ASP
1	C	68	ASP
1	C	111	LYS
1	C	112	GLU
1	C	295	ALA
1	C	308	ASP
1	A	111	LYS
1	A	165	PHE
1	A	166	GLY
1	A	229	LYS
1	B	34	ILE
1	B	341	VAL
1	B	371	GLY
1	B	414	SER
1	C	4	ASN
1	C	13	ASP
1	C	73	GLU
1	C	113	ASN
1	C	201	GLU
1	C	395	GLY
1	A	395	GLY
1	B	73	GLU
1	B	373	GLY
1	B	203	PRO
1	C	254	THR
1	A	178	VAL
1	B	10	ASP
1	B	40	ILE
1	B	201	GLU
1	B	336	ASN

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Mol	Chain	Res	Type
1	B	405	LYS
1	C	12	LYS
1	C	122	ARG
1	C	179	LYS
1	C	247	LEU
1	B	8	ILE
1	B	13	ASP
1	B	55	ALA
1	B	138	LYS
1	B	345	PRO
1	A	371	GLY
1	B	394	GLY
1	C	107	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	351/351 (100%)	312 (89%)	39 (11%)	6 25
1	B	351/351 (100%)	297 (85%)	54 (15%)	2 13
1	C	360/351 (103%)	309 (86%)	51 (14%)	3 16
All	All	1062/1053 (101%)	918 (86%)	144 (14%)	3 17

All (144) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	LEU
1	A	11	LEU
1	A	12	LYS
1	A	14	ILE
1	A	20	LEU
1	A	22	ARG
1	A	35	LYS
1	A	45	PRO
1	A	82	GLU

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Mol	Chain	Res	Type
1	A	93	LEU
1	A	96	ASN
1	A	97	ASP
1	A	98	CYS
1	A	113	ASN
1	A	116	ILE
1	A	117	LEU
1	A	121	LEU
1	A	122	ARG
1	A	143	LYS
1	A	203	PRO
1	A	204	GLN
1	A	207	LEU
1	A	208	LEU
1	A	219	LYS
1	A	222	LEU
1	A	229	LYS
1	A	232	ARG
1	A	259	GLU
1	A	285	PHE
1	A	291	PHE
1	A	292	ASP
1	A	322	ASN
1	A	332	THR
1	A	345	PRO
1	A	351	SER
1	A	399	LEU
1	A	400	GLU
1	A	406	GLU
1	A	415	ASN
1	B	6	LEU
1	B	20	LEU
1	B	29	ILE
1	B	34	ILE
1	B	35	LYS
1	B	39	ARG
1	B	40	ILE
1	B	41	THR
1	B	43	THR
1	B	46	THR
1	B	48	ASN
1	B	50	LEU

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Mol	Chain	Res	Type
1	B	51	LYS
1	B	66	ARG
1	B	71	ARG
1	B	93	LEU
1	B	97	ASP
1	B	98	CYS
1	B	108	ASN
1	B	113	ASN
1	B	132	VAL
1	B	143	LYS
1	B	144	GLU
1	B	163	ASP
1	B	173	SER
1	B	181	ASN
1	B	191	LYS
1	B	201	GLU
1	B	207	LEU
1	B	208	LEU
1	B	229	LYS
1	B	256	LEU
1	B	264	ILE
1	B	270	GLU
1	B	281	LEU
1	B	285	PHE
1	B	291	PHE
1	B	292	ASP
1	B	294	ASN
1	B	307	PRO
1	B	323	TYR
1	B	325	ASP
1	B	332	THR
1	B	344	MSE
1	B	351	SER
1	B	363	LYS
1	B	375	THR
1	B	377	SER
1	B	383	ASN
1	B	386	ASN
1	B	399	LEU
1	B	401	LEU
1	B	406	GLU
1	B	414	SER

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Mol	Chain	Res	Type
1	C	-5	MSE
1	C	6	LEU
1	C	10	ASP
1	C	13	ASP
1	C	22	ARG
1	C	38	ASN
1	C	39	ARG
1	C	59	ILE
1	C	60	LEU
1	C	72	ASN
1	C	73	GLU
1	C	87	LEU
1	C	93	LEU
1	C	97	ASP
1	C	99	VAL
1	C	101	LYS
1	C	104	GLU
1	C	113	ASN
1	C	114	SER
1	C	143	LYS
1	C	144	GLU
1	C	153	LEU
1	C	158	ASP
1	C	163	ASP
1	C	167	THR
1	C	175	MSE
1	C	189	MSE
1	C	201	GLU
1	C	205	ARG
1	C	207	LEU
1	C	208	LEU
1	C	216	VAL
1	C	221	GLN
1	C	222	LEU
1	C	242	THR
1	C	244	LYS
1	C	245	LYS
1	C	247	LEU
1	C	248	ASN
1	C	254	THR
1	C	285	PHE
1	C	291	PHE

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Mol	Chain	Res	Type
1	C	318	LYS
1	C	325	ASP
1	C	341	VAL
1	C	351	SER
1	C	361	VAL
1	C	374	ASP
1	C	375	THR
1	C	405	LYS
1	C	414	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	16	ASN
1	A	38	ASN
1	A	49	HIS
1	A	108	ASN
1	A	113	ASN
1	A	124	HIS
1	A	204	GLN
1	A	221	GLN
1	A	248	ASN
1	A	356	ASN
1	B	16	ASN
1	B	63	HIS
1	B	108	ASN
1	B	113	ASN
1	B	225	ASN
1	B	248	ASN
1	C	72	ASN
1	C	108	ASN
1	C	113	ASN
1	C	124	HIS
1	C	296	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

7 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	SO4	C	604	-	4,4,4	0.33	0	6,6,6	0.23	0
2	SO4	B	606	-	4,4,4	0.26	0	6,6,6	0.18	0
4	GOL	A	614	-	5,5,5	4.29	4 (80%)	5,5,5	5.72	3 (60%)
2	SO4	A	605	-	4,4,4	0.33	0	6,6,6	0.20	0
3	AMP	A	501	-	22,25,25	2.94	7 (31%)	25,38,38	1.66	5 (20%)
3	AMP	B	502	-	22,25,25	2.75	8 (36%)	25,38,38	1.64	7 (28%)
3	AMP	C	503	-	22,25,25	2.60	7 (31%)	25,38,38	1.68	7 (28%)

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	AMP	A	501	-	-	1/6/26/26	0/3/3/3
3	AMP	B	502	-	-	1/6/26/26	0/3/3/3
3	AMP	C	503	-	-	1/6/26/26	0/3/3/3
4	GOL	A	614	-	-	2/4/4/4	-

All (26) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	614	GOL	C3-C2	-7.30	1.21	1.51
3	A	501	AMP	C2'-C1'	7.12	1.64	1.53
3	A	501	AMP	C3'-C4'	6.90	1.70	1.53
3	C	503	AMP	C3'-C4'	6.65	1.70	1.53
3	B	502	AMP	C3'-C4'	6.50	1.69	1.53
3	B	502	AMP	C2'-C1'	5.60	1.62	1.53
3	C	503	AMP	C2'-C1'	5.39	1.61	1.53
3	B	502	AMP	O3'-C3'	4.95	1.54	1.43
3	A	501	AMP	O3'-C3'	4.81	1.54	1.43
3	C	503	AMP	O3'-C3'	4.59	1.53	1.43
3	C	503	AMP	C2'-C3'	4.40	1.65	1.53
3	B	502	AMP	O4'-C1'	4.19	1.46	1.41
4	A	614	GOL	O1-C1	4.16	1.60	1.42
3	A	501	AMP	O4'-C1'	3.99	1.46	1.41
3	B	502	AMP	C2'-C3'	3.90	1.64	1.53
3	A	501	AMP	C2'-C3'	3.89	1.64	1.53
4	A	614	GOL	O3-C3	3.53	1.57	1.42
3	A	501	AMP	C2-N3	3.10	1.37	1.32
3	B	502	AMP	C2-N3	3.08	1.37	1.32
4	A	614	GOL	O2-C2	-2.74	1.35	1.43
3	C	503	AMP	O4'-C1'	2.71	1.44	1.41
3	A	501	AMP	O4'-C4'	2.60	1.50	1.45
3	C	503	AMP	C2-N3	2.55	1.36	1.32
3	B	502	AMP	O4'-C4'	2.38	1.50	1.45
3	C	503	AMP	C5'-C4'	2.07	1.58	1.51
3	B	502	AMP	C5'-C4'	2.03	1.57	1.51

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	614	GOL	O3-C3-C2	10.22	159.19	110.20
4	A	614	GOL	O2-C2-C3	6.82	139.16	109.12
3	B	502	AMP	C4-C5-N7	4.12	113.69	109.40
3	C	503	AMP	C4-C5-N7	4.06	113.63	109.40
3	A	501	AMP	C4-C5-N7	4.05	113.62	109.40
4	A	614	GOL	O1-C1-C2	3.44	126.68	110.20
3	C	503	AMP	C3'-C2'-C1'	3.30	105.94	100.98
3	A	501	AMP	N6-C6-N1	3.29	125.40	118.57
3	C	503	AMP	N6-C6-N1	3.27	125.36	118.57
3	A	501	AMP	C3'-C2'-C1'	3.16	105.73	100.98
3	B	502	AMP	N6-C6-N1	3.12	125.06	118.57
3	B	502	AMP	C2-N1-C6	2.70	123.38	118.75
3	A	501	AMP	C2-N1-C6	2.67	123.33	118.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	503	AMP	C2-N1-C6	2.66	123.30	118.75
3	B	502	AMP	C3'-C2'-C1'	2.55	104.82	100.98
3	B	502	AMP	N3-C2-N1	-2.35	125.01	128.68
3	A	501	AMP	C5-C6-N1	-2.19	115.39	120.35
3	C	503	AMP	C5-C6-N1	-2.12	115.56	120.35
3	C	503	AMP	N3-C2-N1	-2.10	125.40	128.68
3	B	502	AMP	C5-C6-N1	-2.07	115.65	120.35
3	B	502	AMP	O3'-C3'-C4'	-2.06	105.09	111.05
3	C	503	AMP	O3'-C3'-C4'	-2.05	105.11	111.05

There are no chirality outliers.

All (5) torsion outliers are listed below:

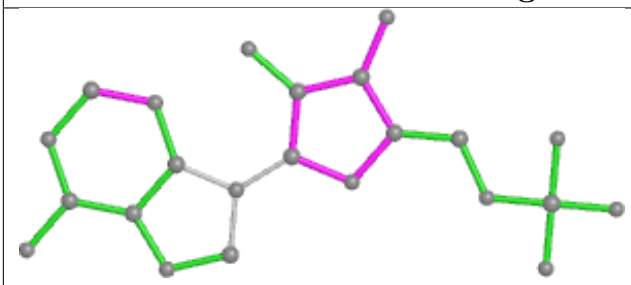
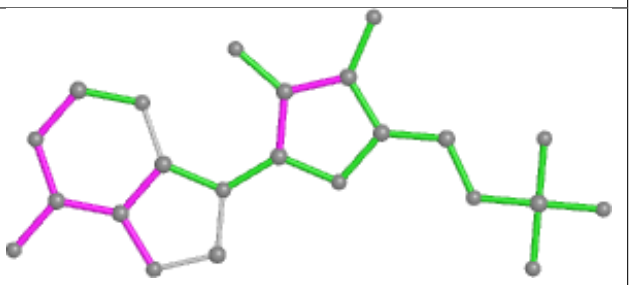
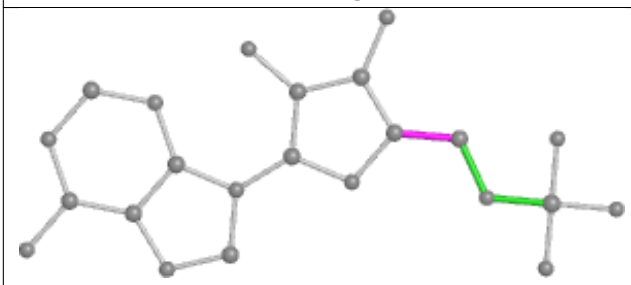
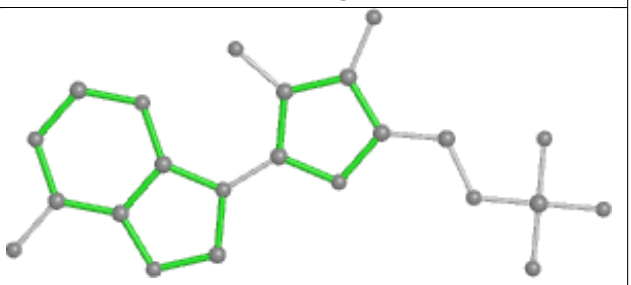
Mol	Chain	Res	Type	Atoms
4	A	614	GOL	C1-C2-C3-O3
4	A	614	GOL	O1-C1-C2-O2
3	A	501	AMP	O4'-C4'-C5'-O5'
3	B	502	AMP	O4'-C4'-C5'-O5'
3	C	503	AMP	O4'-C4'-C5'-O5'

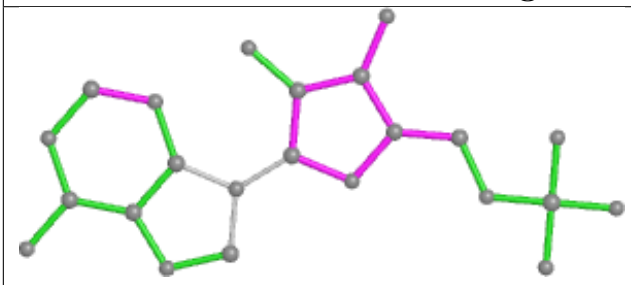
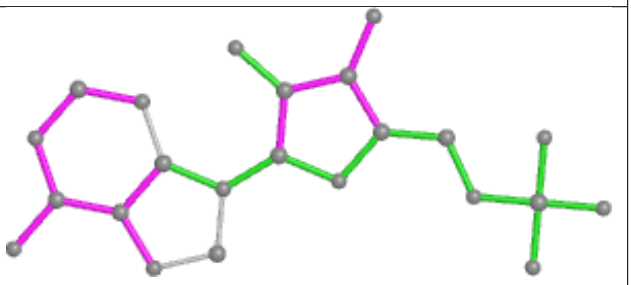
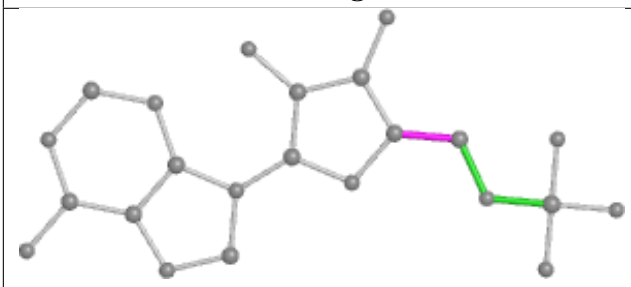
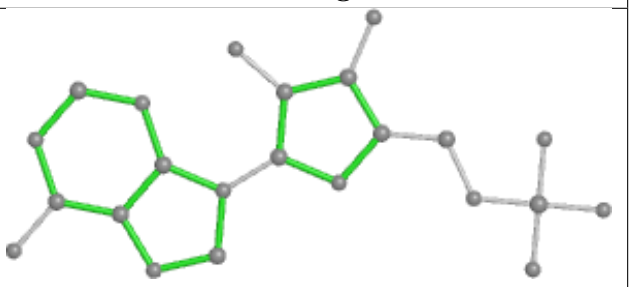
There are no ring outliers.

3 monomers are involved in 6 short contacts:

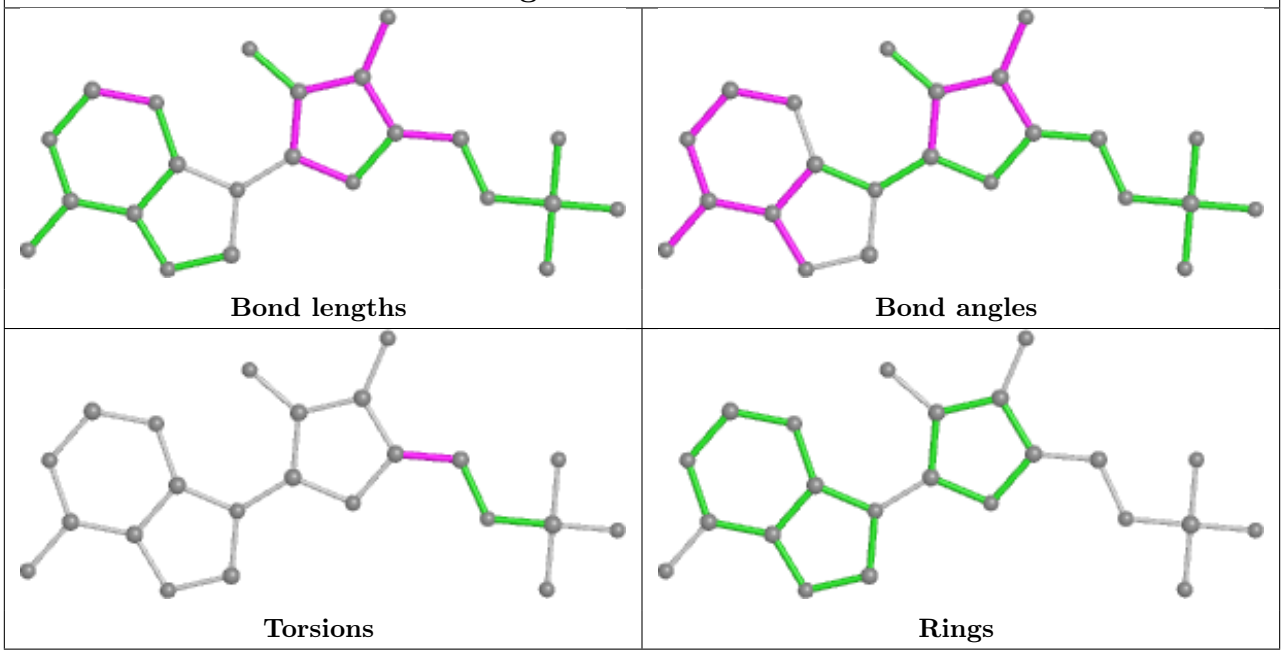
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	501	AMP	1	0
3	B	502	AMP	2	0
3	C	503	AMP	3	0

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

Ligand AMP A 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand AMP B 502	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand AMP C 503



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates (i)

Unable to reproduce the depositors R factor - this section is therefore empty.

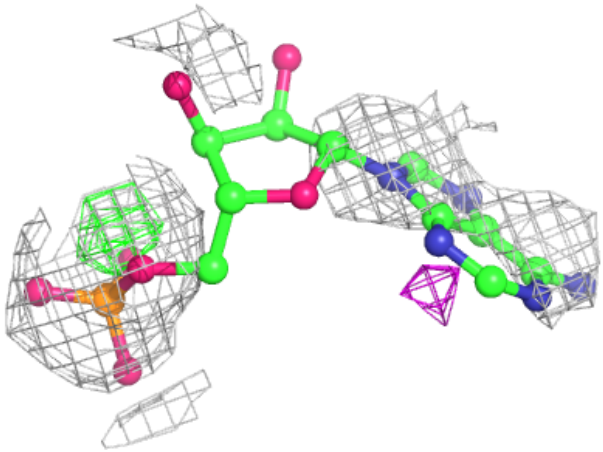
6.4 Ligands (i)

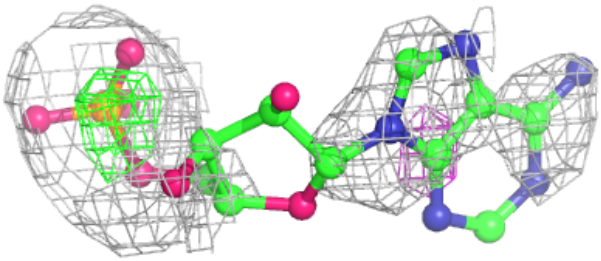
Unable to reproduce the depositors R factor - this section is therefore empty.

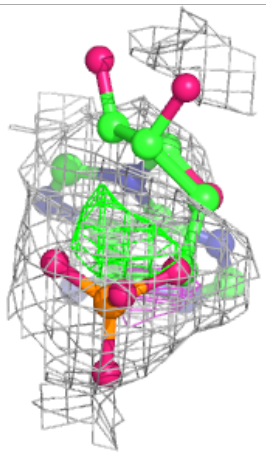
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around AMP A 501:

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

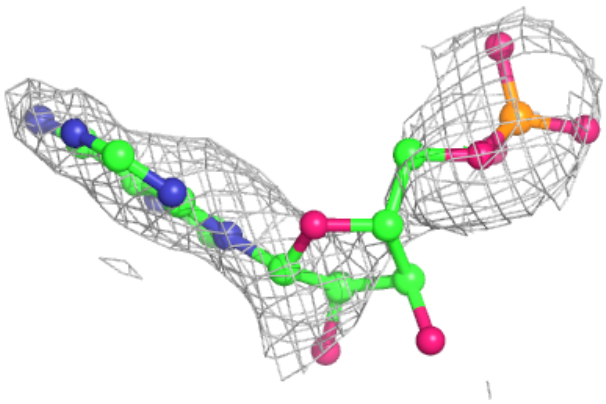


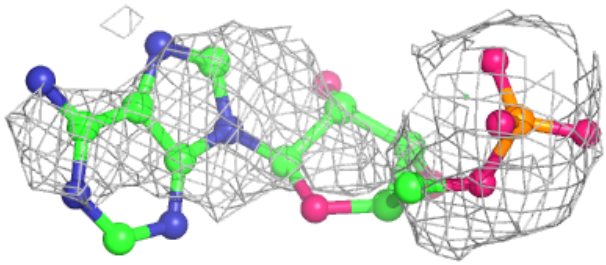


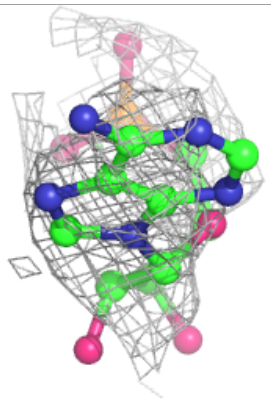


Electron density around AMP B 502:

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

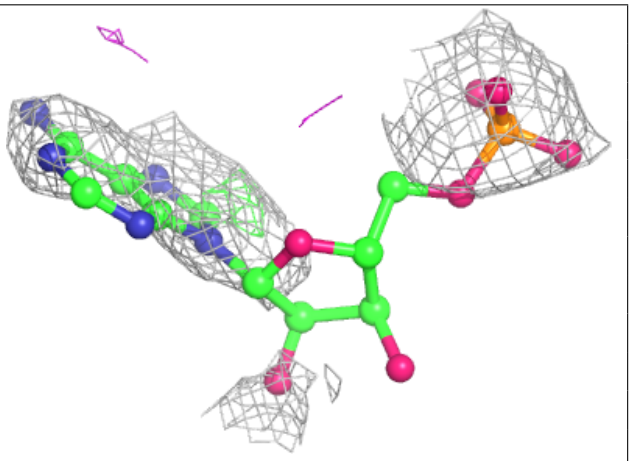


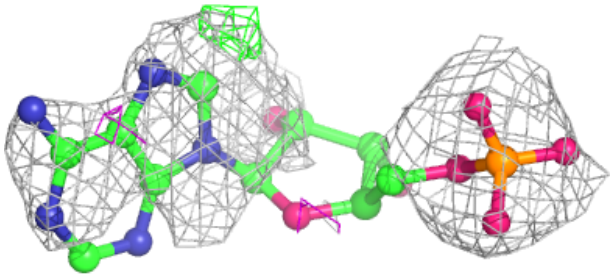


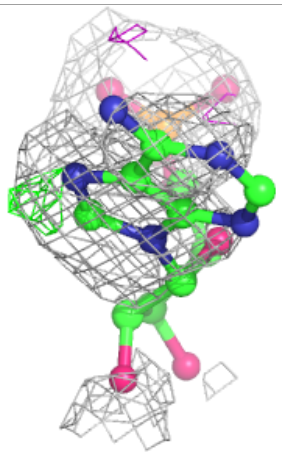


Electron density around AMP C 503:

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







6.5 Other polymers (i)

Unable to reproduce the depositors R factor - this section is therefore empty.