WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Aug 20, 2023 – 02:09 AM EDT

PDB ID	:	2HJR
Title	:	Crystal Structure of Cryptosporidium parvum malate dehydrogenase
Authors	:	Wernimont, A.K.; Dong, A.; Lew, J.; Hassani, A.; Ren, H.; Qiu, W.; Kozier-adzki, I.; Weigelt, J.; Sundstrom, M.; Edwards, A.M.; Arrowsmith, C.H.; Bochkarev, A.; Hui, R.; Amani, M.; Structural Genomics Consortium (SGC)
Deposited on	:	2006-06-30
Resolution	:	2.20 Å(reported)

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

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

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

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

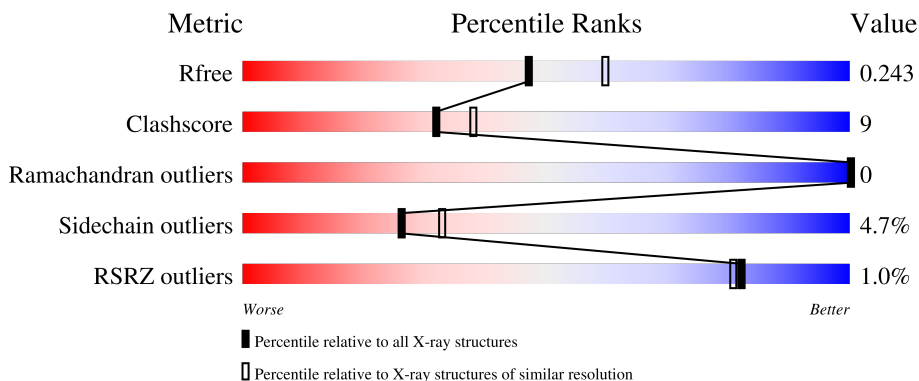|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.243
Clashscore		9
Ramachandran outliers		0
Sidechain outliers		4.7%
RSRZ outliers		1.0%

Worse ————— *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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

Mol	Chain	Length	Quality of chain
1	A	328	78% · 15% · 5%
1	B	328	80% · 14% · · ·
1	C	328	77% · 16% · ·
1	D	328	79% · 16% · ·

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Mol	Chain	Length	Quality of chain
1	E	328	79% 15% • 5%
1	F	328	83% 11% • •
1	G	328	80% 13% • 5%
1	H	328	78% 15% • •
1	I	328	79% 14% • 5%
1	J	328	77% 18% • •
1	K	328	78% 16% • 5%
1	L	328	80% 14% • •

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:

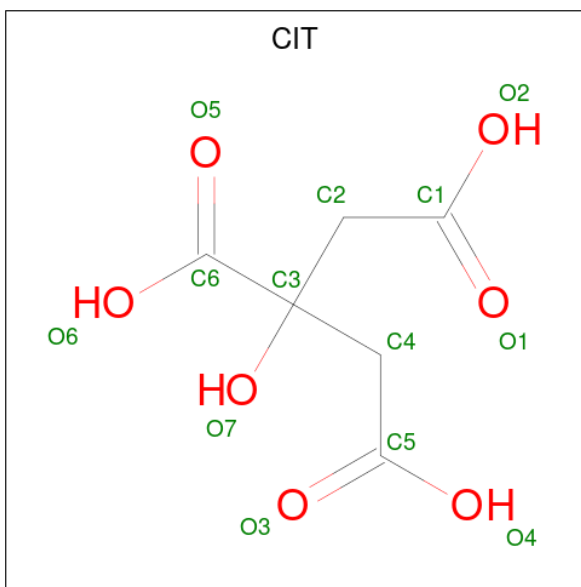| Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	CIT	A	2001	-	X	X	-
2	CIT	C	2003	-	X	X	-
2	CIT	E	2008	-	-	X	-
2	CIT	F	2007	-	X	-	-
2	CIT	J	2012	-	-	X	-
2	CIT	L	2010	-	X	X	-

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 29965 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 Malate dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	313	Total 2332	C 1483	N 387	O 448	S 14	0	0	0
1	B	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0
1	C	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0
1	D	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0
1	E	313	Total 2332	C 1483	N 387	O 448	S 14	0	0	0
1	F	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0
1	G	313	Total 2332	C 1483	N 387	O 448	S 14	0	0	0
1	H	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0
1	I	313	Total 2332	C 1483	N 387	O 448	S 14	0	0	0
1	J	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0
1	K	313	Total 2332	C 1483	N 387	O 448	S 14	0	0	0
1	L	314	Total 2340	C 1489	N 388	O 449	S 14	0	0	0

- Molecule 2 is CITRIC ACID (three-letter code: CIT) (formula: $C_6H_8O_7$).

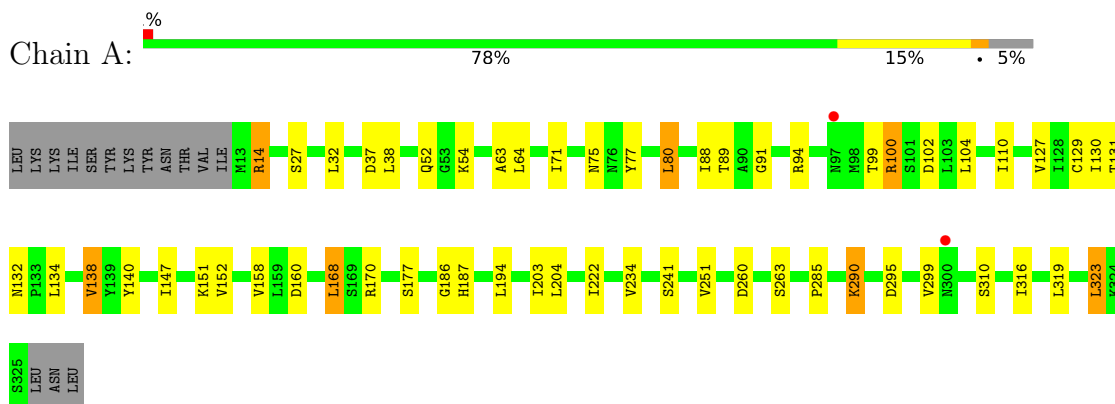| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 13	C 6	O 7	0	0
2	B	1	Total 13	C 6	O 7	0	0
2	C	1	Total 13	C 6	O 7	0	0
2	D	1	Total 13	C 6	O 7	0	0
2	E	1	Total 13	C 6	O 7	0	0
2	F	1	Total 13	C 6	O 7	0	0
2	G	1	Total 13	C 6	O 7	0	0
2	H	1	Total 13	C 6	O 7	0	0
2	I	1	Total 13	C 6	O 7	0	0
2	J	1	Total 13	C 6	O 7	0	0
2	K	1	Total 13	C 6	O 7	0	0
2	L	1	Total 13	C 6	O 7	0	0

- Molecule 3 is ADENOSINE-5-DIPHOSPHORIBOSE (three-letter code: APR) (formula: $C_{15}H_{23}N_5O_{14}P_2$).

APR

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	B	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	C	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	D	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	E	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	F	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	G	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	H	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	I	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	J	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	K	1	Total	C	N	O	P	0	0
			36	15	5	14	2		
3	L	1	Total	C	N	O	P	0	0
			36	15	5	14	2		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	114	Total 114	O 114	0	0
4	B	135	Total 135	O 135	0	0
4	C	118	Total 118	O 118	0	0
4	D	103	Total 103	O 103	0	0
4	E	101	Total 101	O 101	0	0
4	F	131	Total 131	O 131	0	0
4	G	121	Total 121	O 121	0	0
4	H	114	Total 114	O 114	0	0
4	I	105	Total 105	O 105	0	0
4	J	84	Total 84	O 84	0	0
4	K	110	Total 110	O 110	0	0
4	L	101	Total 101	O 101	0	0

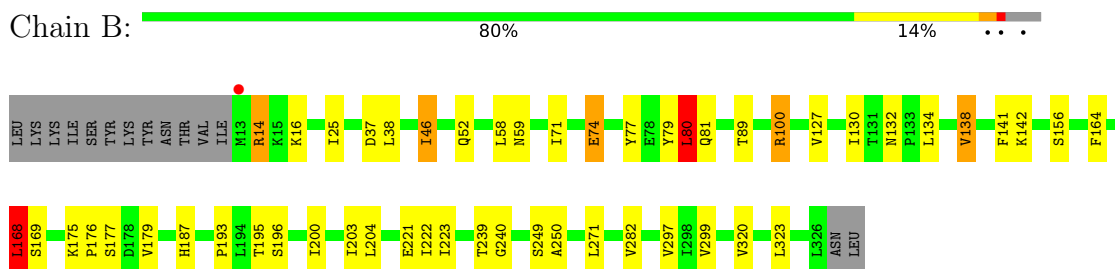# 3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
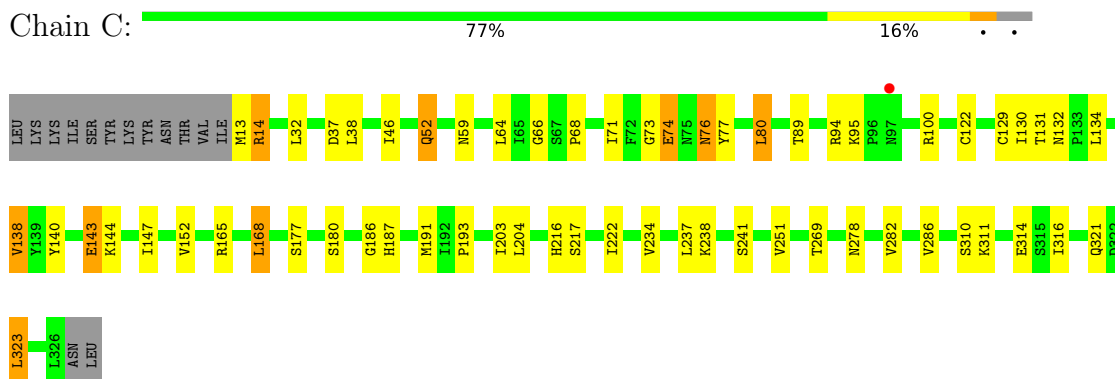
• Molecule 1: Malate dehydrogenase

Chain A:

• Molecule 1: Malate dehydrogenase

Chain B:

• Molecule 1: Malate dehydrogenase

Chain C:

• Molecule 1: Malate dehydrogenase

Chain D:

79%   16%

• Molecule 1: Malate dehydrogenase

Chain E:

79%   15%   5%

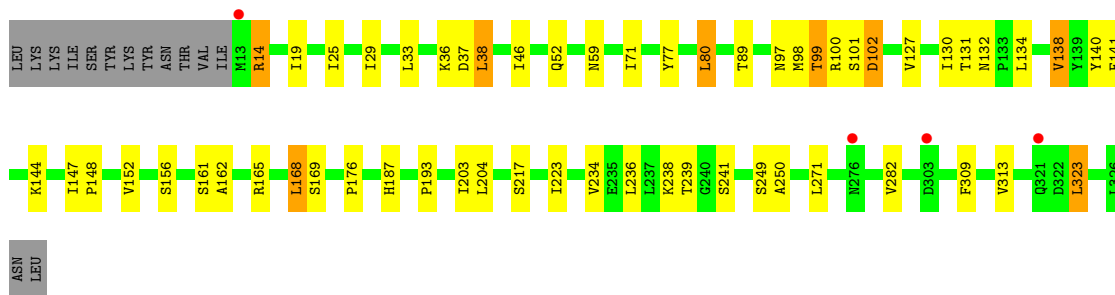• Molecule 1: Malate dehydrogenase

Chain F:

83%   11%

• Molecule 1: Malate dehydrogenase

Chain G:

80%   13%   5%

• Molecule 1: Malate dehydrogenase

Chain H:

78%   15%

LEU LYS LYS ILE SER TYR LYS TYR ASN THR VAL ILE M13 R14 I19 I25 I29 L33 K36 D37 L38 I46 Q52 N59 I71 Y77 L80 T89 N97 M98 T99 R100 S101 D102 V127 I130 T131 N132 P133 L134 V138 Y139 Y140 F141

K144 I147 P148 V152 S156 S161 A162 R165 L168 S169 P176 H187 P193 I203 L204 S217 I223 V234 E235 L236 L237 K238 T239 G240 S241 S249 A250 L271 N276 V282 D303 F309 V313 Q321 D322 L323 L326

ASN LEU

• Molecule 1: Malate dehydrogenase

Chain I:

79%   14%   • 5%

LEU LYS LYS ILE SER TYR LYS TYR ASN THR VAL ILE M13 R14 I25 D37 L38 I46 Q52 N59 P68 A69 K70 I71 E74 Y77 L80 V86 I87 I88 R94 K95 P96 N97 M98 T99 R100 S101 D102 V118 V127 I130 T131 N132 P133 L134

Y140 I147 F164 R165 L168 K175 P176 S177 A181 S196 I203 L204 E210 S217 E221 K238 A250 Q255 L271 N276 V277 N278 V282 P285 I288 V297 D303 Q317 N318 L319 L323 K324 S325 LEU ASN LEU

• Molecule 1: Malate dehydrogenase

Chain J:

2%   77%   18%   • •

LEU LYS LYS ILE SER TYR LYS TYR ASN THR VAL ILE M13 R14 A22 I25 K36 D37 L38 E48 Q52 G53 K54 N59 I71 E74 N75 N76 Y77 E78 Y79 L80 I88 T89 P93 R94 K95 T99 R100 S101 D102 N124 V127 I128 C129 I130 T131

N132 P133 L134 V138 K151 S161 L168 S169 K175 P176 S177 M191 I192 P193 T199 L204 I222 F228 V234 T239 G240 S241 M253 A254 Q255 C267 S268 T269 Q274 Y275 N276 V286 I293 V297 V298 V299 N300 D303 S310
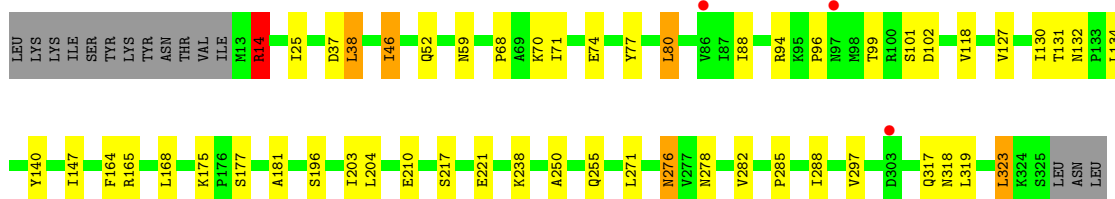
E314 V320 Q321 D322 L323 K324 S325 L326 ASN LEU

• Molecule 1: Malate dehydrogenase

Chain K:

%   78%   16%   • 5%

LEU LYS LYS ILE SER TYR LYS TYR ASN THR VAL ILE M13 R14 L32 D37 L38 I46 I47 E48 Q52 N59 K70 I71 E74 N75 N76 Y77 E78 Y79 L80 I88 T89 R94 T99 R100 S101 D102 V106 N107 A108 K109 V118 C129 I130 T131 N132

P133 L134 V138 Y139 Y140 E143 K144 S145 G146 I147 K151 V152 S161 F164 L168 S177 P193 I200 I203 L204 F208 K238 A245 P246 V251 T269 Y270 L271 Q274 Y275 N276 F281 D295 V299 D303 L323 K324 S325 LEU
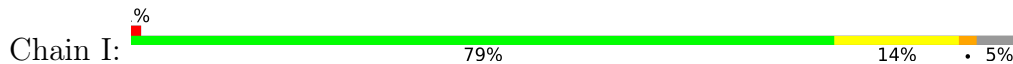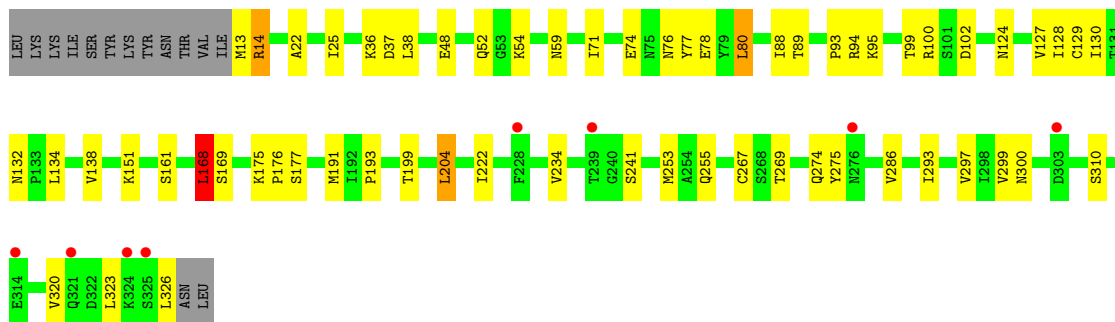
ASN LEU

• Molecule 1: Malate dehydrogenase

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 32	Depositor
Cell constants a, b, c, α, β, γ	171.89Å 171.89Å 135.61Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.83 – 2.20 19.82 – 2.20	Depositor EDS
% Data completeness (in resolution range)	100.0 (19.83-2.20) 100.0 (19.82-2.20)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	2.02 (at 2.21Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.198 , 0.247 0.195 , 0.243	Depositor DCC
R_{free} test set	11391 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	34.1	Xtriage
Anisotropy	0.023	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 41.6	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.008 for -h,-k,l 0.017 for h,-h-k,-l 0.054 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	29965	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.91% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: CIT, APR

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	0.57	0/2365	0.69	3/3200 (0.1%)
1	B	0.57	0/2373	0.69	5/3211 (0.2%)
1	C	0.55	0/2373	0.67	2/3211 (0.1%)
1	D	0.55	0/2373	0.68	2/3211 (0.1%)
1	E	0.57	0/2365	0.73	4/3200 (0.1%)
1	F	0.55	0/2373	0.68	4/3211 (0.1%)
1	G	0.56	0/2365	0.69	3/3200 (0.1%)
1	H	0.56	0/2373	0.69	3/3211 (0.1%)
1	I	0.54	0/2365	0.68	1/3200 (0.0%)
1	J	0.56	0/2373	0.65	3/3211 (0.1%)
1	K	0.57	0/2365	0.68	3/3200 (0.1%)
1	L	0.56	0/2373	0.67	2/3211 (0.1%)
All	All	0.56	0/28436	0.68	35/38477 (0.1%)

There are no bond length outliers.

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	100	ARG	NE-CZ-NH2	-8.74	115.93	120.30
1	D	14	ARG	NE-CZ-NH2	-8.55	116.02	120.30
1	B	14	ARG	NE-CZ-NH2	-8.49	116.06	120.30
1	G	14	ARG	NE-CZ-NH2	-8.41	116.10	120.30
1	C	14	ARG	NE-CZ-NH2	-8.38	116.11	120.30
1	K	14	ARG	NE-CZ-NH2	-8.29	116.16	120.30
1	F	14	ARG	NE-CZ-NH2	-8.18	116.21	120.30
1	E	14	ARG	NE-CZ-NH2	-8.08	116.26	120.30
1	A	14	ARG	NE-CZ-NH2	-7.95	116.32	120.30
1	E	100	ARG	NE-CZ-NH1	7.73	124.17	120.30
1	H	14	ARG	NE-CZ-NH2	-7.40	116.60	120.30
1	I	14	ARG	NE-CZ-NH2	-7.38	116.61	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	14	ARG	NE-CZ-NH1	6.63	123.61	120.30
1	L	168	LEU	CA-CB-CG	6.62	130.52	115.30
1	L	14	ARG	NE-CZ-NH2	-6.59	117.00	120.30
1	J	14	ARG	NE-CZ-NH2	-6.35	117.12	120.30
1	F	14	ARG	NE-CZ-NH1	6.26	123.43	120.30
1	C	14	ARG	NE-CZ-NH1	6.14	123.37	120.30
1	A	100	ARG	NE-CZ-NH1	6.11	123.36	120.30
1	J	14	ARG	NE-CZ-NH1	5.70	123.15	120.30
1	F	323	LEU	CA-CB-CG	5.65	128.30	115.30
1	H	14	ARG	NE-CZ-NH1	5.63	123.12	120.30
1	K	14	ARG	NE-CZ-NH1	5.62	123.11	120.30
1	B	168	LEU	CA-CB-CG	5.61	128.21	115.30
1	G	14	ARG	NE-CZ-NH1	5.60	123.10	120.30
1	H	168	LEU	CA-CB-CG	5.57	128.11	115.30
1	B	100	ARG	NE-CZ-NH2	-5.48	117.56	120.30
1	J	168	LEU	CA-CB-CG	5.47	127.89	115.30
1	B	14	ARG	NE-CZ-NH1	5.42	123.01	120.30
1	A	100	ARG	NE-CZ-NH2	-5.37	117.61	120.30
1	F	64	LEU	CB-CG-CD2	-5.34	101.92	111.00
1	G	152	VAL	CB-CA-C	-5.22	101.48	111.40
1	E	14	ARG	NE-CZ-NH1	5.09	122.85	120.30
1	K	38	LEU	CA-CB-CG	5.09	127.01	115.30
1	B	80	LEU	CA-CB-CG	5.08	126.97	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2332	0	2399	52	0
1	B	2340	0	2410	45	0
1	C	2340	0	2410	58	0
1	D	2340	0	2410	39	0
1	E	2332	0	2399	44	0
1	F	2340	0	2410	33	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	G	2332	0	2399	44	0
1	H	2340	0	2410	52	0
1	I	2332	0	2399	36	0
1	J	2340	0	2410	46	0
1	K	2332	0	2399	39	0
1	L	2340	0	2410	36	0
2	A	13	0	5	11	0
2	B	13	0	5	4	0
2	C	13	0	5	12	0
2	D	13	0	5	2	0
2	E	13	0	5	7	0
2	F	13	0	5	5	0
2	G	13	0	5	0	0
2	H	13	0	5	3	0
2	I	13	0	5	1	0
2	J	13	0	5	6	0
2	K	13	0	5	1	0
2	L	13	0	5	7	0
3	A	36	0	21	3	0
3	B	36	0	21	5	0
3	C	36	0	21	4	0
3	D	36	0	21	5	0
3	E	36	0	21	4	0
3	F	36	0	21	3	0
3	G	36	0	21	7	0
3	H	36	0	21	6	0
3	I	36	0	21	4	0
3	J	36	0	21	5	0
3	K	36	0	21	3	0
3	L	36	0	21	3	0
4	A	114	0	0	6	0
4	B	135	0	0	11	0
4	C	118	0	0	12	0
4	D	103	0	0	7	0
4	E	101	0	0	5	0
4	F	131	0	0	4	0
4	G	121	0	0	5	0
4	H	114	0	0	11	0
4	I	105	0	0	4	0
4	J	84	0	0	5	0
4	K	110	0	0	9	0
4	L	101	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	29965	0	29177	517	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 9.

All (517) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:3004:APR:HR'1	4:E:3072:HOH:O	1.24	1.29
1:G:52:GLN:HG2	4:G:3100:HOH:O	1.25	1.28
3:A:3001:APR:HR'1	4:A:3078:HOH:O	1.34	1.25
3:D:3003:APR:HR'1	4:D:3081:HOH:O	1.36	1.24
1:A:187:HIS:HE1	2:A:2001:CIT:C4	1.49	1.23
1:A:187:HIS:CE1	2:A:2001:CIT:H42	1.73	1.22
1:L:263:SER:HB2	4:L:3084:HOH:O	1.08	1.22
1:I:282:VAL:HB	4:I:3096:HOH:O	1.41	1.20
1:J:269:THR:HB	4:J:3081:HOH:O	1.43	1.16
1:A:263:SER:HB2	4:A:3085:HOH:O	1.02	1.14
1:B:25:ILE:HD12	3:B:3012:APR:H5R1	1.15	1.13
1:A:187:HIS:HE1	2:A:2001:CIT:H42	0.97	1.13
3:K:3010:APR:HR'1	4:K:3102:HOH:O	1.47	1.11
1:D:152:VAL:HB	4:D:3091:HOH:O	1.53	1.09
1:L:241:SER:HB2	2:L:2010:CIT:H42	1.17	1.08
1:B:200:ILE:HG12	4:B:3115:HOH:O	1.50	1.07
1:C:187:HIS:NE2	2:C:2003:CIT:H42	1.72	1.02
2:B:2002:CIT:H41	4:B:3138:HOH:O	1.59	1.01
1:G:131:THR:HA	3:G:3006:APR:HR'2	1.39	1.00
1:C:13:MET:N	4:C:3090:HOH:O	1.94	0.99
1:E:100:ARG:HH11	2:E:2008:CIT:H41	1.22	0.99
1:J:25:ILE:HD12	3:J:3009:APR:H5R1	1.45	0.98
1:I:288:ILE:HG23	4:I:3090:HOH:O	1.64	0.98
1:C:52:GLN:HG2	4:C:3081:HOH:O	1.64	0.97
1:G:52:GLN:CG	4:G:3100:HOH:O	1.90	0.97
1:H:161:SER:OG	4:H:3093:HOH:O	1.81	0.96
1:K:161:SER:OG	4:K:3104:HOH:O	1.77	0.96
1:C:122:CYS:HB2	4:C:3064:HOH:O	1.63	0.96
2:L:2010:CIT:H22	2:L:2010:CIT:O3	1.67	0.94
1:D:131:THR:HA	3:D:3003:APR:O3D	1.67	0.93
1:A:187:HIS:CE1	2:A:2001:CIT:C4	2.42	0.91
1:L:241:SER:CB	2:L:2010:CIT:H42	2.03	0.89
2:B:2002:CIT:O3	4:B:3138:HOH:O	1.92	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:161:SER:OG	4:J:3076:HOH:O	1.92	0.87
1:H:97:ASN:HA	4:H:3085:HOH:O	1.73	0.87
1:H:147:ILE:HB	4:H:3107:HOH:O	1.74	0.87
1:L:241:SER:HB2	2:L:2010:CIT:C4	2.05	0.86
1:F:161:SER:OG	4:F:3065:HOH:O	1.93	0.85
1:H:59:ASN:HD21	1:H:71:ILE:H	1.23	0.85
1:J:100:ARG:NH1	2:J:2012:CIT:H42	1.93	0.84
1:C:100:ARG:HH11	2:C:2003:CIT:H22	1.43	0.84
1:B:59:ASN:HD21	1:B:71:ILE:H	1.26	0.83
1:C:95:LYS:HB2	4:C:3084:HOH:O	1.77	0.83
1:C:59:ASN:HD21	1:C:71:ILE:H	1.26	0.83
1:B:25:ILE:HD12	3:B:3012:APR:C5D	2.05	0.82
1:A:187:HIS:HE1	2:A:2001:CIT:H41	1.43	0.82
1:H:165:ARG:CZ	4:H:3084:HOH:O	2.27	0.82
1:L:169:SER:OG	1:L:176:PRO:HA	1.78	0.82
1:K:203:ILE:HG12	1:K:208:PHE:CE1	2.15	0.81
1:A:147:ILE:HG22	1:A:152:VAL:HG23	1.61	0.81
1:G:131:THR:HA	3:G:3006:APR:C2D	2.10	0.81
2:B:2002:CIT:C4	4:B:3138:HOH:O	2.22	0.81
1:H:169:SER:OG	1:H:176:PRO:HA	1.80	0.81
1:D:59:ASN:HD21	1:D:71:ILE:H	1.26	0.81
1:G:52:GLN:OE1	4:G:3100:HOH:O	1.99	0.80
1:C:168:LEU:HD13	1:C:222:ILE:HG21	1.61	0.80
3:D:3003:APR:C1D	4:D:3081:HOH:O	2.07	0.80
1:F:13:MET:N	4:F:3103:HOH:O	2.14	0.80
1:K:59:ASN:HD21	1:K:71:ILE:H	1.31	0.79
1:G:300:ASN:HB3	4:G:3059:HOH:O	1.81	0.79
1:K:203:ILE:HG12	1:K:208:PHE:HE1	1.48	0.78
1:J:59:ASN:HD21	1:J:71:ILE:H	1.31	0.77
2:B:2002:CIT:C5	4:B:3138:HOH:O	2.32	0.77
1:D:227:ALA:HB1	4:D:3082:HOH:O	1.83	0.76
3:H:3007:APR:HR'3	4:H:3103:HOH:O	1.86	0.76
1:C:52:GLN:CG	4:C:3081:HOH:O	2.27	0.76
1:G:132:ASN:H	3:G:3006:APR:HR'2	1.48	0.76
2:L:2010:CIT:O3	2:L:2010:CIT:C2	2.33	0.76
2:C:2003:CIT:O5	2:C:2003:CIT:C5	2.34	0.76
1:E:100:ARG:HD3	2:E:2008:CIT:C4	2.16	0.76
1:J:100:ARG:NH1	2:J:2012:CIT:C4	2.49	0.76
1:E:100:ARG:NH1	2:E:2008:CIT:H41	2.00	0.75
3:K:3010:APR:C1D	4:K:3102:HOH:O	2.18	0.75
1:C:52:GLN:CD	4:C:3081:HOH:O	2.25	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:25:ILE:HD12	3:H:3007:APR:HR'4	1.67	0.74
1:I:210:GLU:OE2	1:J:300:ASN:ND2	2.20	0.74
1:D:189:ASP:O	4:D:3082:HOH:O	2.07	0.73
1:C:132:ASN:HD22	1:C:134:LEU:H	1.35	0.72
1:G:59:ASN:HD21	1:G:71:ILE:H	1.37	0.72
1:C:100:ARG:NH1	2:C:2003:CIT:H22	2.03	0.72
1:E:59:ASN:HD21	1:E:71:ILE:H	1.36	0.72
1:C:129:CYS:HB3	1:C:138:VAL:HG13	1.70	0.72
1:B:74:GLU:HG3	4:B:3056:HOH:O	1.89	0.72
1:H:141:PHE:HE1	4:H:3107:HOH:O	1.74	0.70
1:K:140:TYR:HB2	1:K:323:LEU:HD11	1.71	0.70
1:K:106:VAL:C	4:K:3095:HOH:O	2.30	0.70
1:J:25:ILE:CD1	3:J:3009:APR:H5R1	2.20	0.70
1:J:76:ASN:OD1	1:J:78:GLU:HG3	1.92	0.70
1:C:52:GLN:OE1	4:C:3081:HOH:O	2.08	0.69
1:E:100:ARG:HD3	2:E:2008:CIT:H42	1.72	0.69
1:J:134:LEU:O	1:J:138:VAL:HG23	1.93	0.69
1:E:165:ARG:NH2	4:E:3076:HOH:O	2.26	0.69
1:E:89:THR:HG22	1:E:130:ILE:HD12	1.75	0.69
1:I:25:ILE:HD12	3:I:3008:APR:HR'4	1.75	0.69
1:K:129:CYS:HB3	1:K:138:VAL:HG13	1.75	0.69
1:F:132:ASN:OD1	2:F:2007:CIT:H22	1.93	0.68
1:L:88:ILE:HD11	1:L:127:VAL:HG13	1.74	0.68
1:H:99:THR:HG22	1:H:102:ASP:H	1.57	0.68
1:B:25:ILE:CD1	3:B:3012:APR:H5R1	2.08	0.68
1:L:131:THR:HA	3:L:3011:APR:HR'3	1.75	0.68
1:J:132:ASN:OD1	2:J:2012:CIT:H22	1.94	0.67
1:G:25:ILE:HD12	3:G:3006:APR:HR'4	1.74	0.67
1:K:106:VAL:O	4:K:3095:HOH:O	2.12	0.67
1:L:25:ILE:HD12	3:L:3011:APR:HR'4	1.75	0.67
1:A:234:VAL:HG22	1:A:241:SER:HB3	1.75	0.67
1:C:100:ARG:HH11	2:C:2003:CIT:C2	2.08	0.67
1:C:311:LYS:HG3	4:C:3086:HOH:O	1.94	0.67
1:K:109:LYS:N	4:K:3095:HOH:O	2.28	0.67
1:C:77:TYR:O	1:C:80:LEU:HB2	1.95	0.67
1:C:89:THR:HG22	1:C:130:ILE:HD12	1.76	0.67
1:C:14:ARG:HH22	1:C:37:ASP:CG	1.98	0.66
1:G:52:GLN:CD	4:G:3100:HOH:O	2.18	0.66
1:J:94:ARG:NH2	1:J:100:ARG:NH1	2.44	0.66
3:F:3005:APR:O1D	4:F:3033:HOH:O	2.14	0.66
3:E:3004:APR:C1D	4:E:3072:HOH:O	2.01	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:234:VAL:HG22	1:C:241:SER:HB3	1.78	0.65
1:L:104:LEU:HD13	1:L:319:LEU:HD22	1.78	0.65
1:A:129:CYS:HB3	1:A:138:VAL:HG13	1.78	0.65
1:G:132:ASN:N	3:G:3006:APR:HR'2	2.11	0.65
1:H:19:ILE:HG23	4:H:3106:HOH:O	1.96	0.65
1:H:89:THR:HG23	4:H:3106:HOH:O	1.98	0.64
1:A:100:ARG:NH2	4:A:3110:HOH:O	2.29	0.64
1:B:169:SER:OG	1:B:176:PRO:HA	1.96	0.64
1:E:14:ARG:HH22	1:E:37:ASP:CG	2.00	0.64
1:J:175:LYS:HD2	1:J:177:SER:OG	1.96	0.64
1:J:234:VAL:HG22	1:J:241:SER:HB3	1.79	0.64
1:L:131:THR:HA	3:L:3011:APR:C3D	2.28	0.63
1:E:147:ILE:HG22	1:E:152:VAL:HG22	1.80	0.63
1:H:14:ARG:HH22	1:H:37:ASP:CG	2.02	0.63
1:H:134:LEU:O	1:H:138:VAL:HG23	1.98	0.63
1:A:14:ARG:HH22	1:A:37:ASP:CG	2.02	0.63
1:H:100:ARG:NH1	2:H:2005:CIT:O7	2.32	0.63
1:C:187:HIS:NE2	2:C:2003:CIT:C4	2.56	0.63
1:L:59:ASN:HD21	1:L:71:ILE:H	1.45	0.62
1:G:131:THR:CA	3:G:3006:APR:HR'2	2.22	0.62
1:K:147:ILE:HG22	1:K:152:VAL:HG22	1.81	0.62
1:G:147:ILE:CG2	1:G:152:VAL:HG22	2.30	0.62
1:E:100:ARG:HD3	2:E:2008:CIT:H41	1.82	0.62
1:B:179:VAL:HG22	1:B:200:ILE:HD12	1.82	0.62
1:F:59:ASN:HD21	1:F:71:ILE:H	1.48	0.62
1:G:168:LEU:HD13	1:G:222:ILE:HG21	1.81	0.61
1:C:14:ARG:NH2	1:C:37:ASP:OD2	2.32	0.61
1:I:165:ARG:HH21	1:I:177:SER:HA	1.64	0.61
1:C:203:ILE:HG12	1:D:299:VAL:HG22	1.82	0.61
1:E:88:ILE:HD11	1:E:127:VAL:HG13	1.81	0.61
1:L:77:TYR:O	1:L:80:LEU:HB2	2.00	0.61
1:G:140:TYR:HB2	1:G:323:LEU:HD11	1.81	0.61
1:C:100:ARG:NH1	2:C:2003:CIT:C2	2.63	0.60
1:C:147:ILE:HG22	1:C:152:VAL:CG2	2.31	0.60
1:C:216:HIS:CE1	4:C:3077:HOH:O	2.53	0.60
1:J:100:ARG:HH11	2:J:2012:CIT:H42	1.63	0.60
1:L:88:ILE:N	1:L:88:ILE:HD12	2.16	0.60
1:E:134:LEU:O	1:E:138:VAL:HG23	2.01	0.60
1:K:14:ARG:HH22	1:K:37:ASP:CG	2.04	0.60
1:E:14:ARG:NH2	1:E:37:ASP:OD2	2.35	0.60
1:F:134:LEU:O	1:F:138:VAL:HG23	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:100:ARG:NH2	4:E:3049:HOH:O	2.34	0.60
3:A:3001:APR:C1D	4:A:3078:HOH:O	2.13	0.60
2:A:2001:CIT:C5	2:A:2001:CIT:O6	2.49	0.59
1:H:33:LEU:HD23	1:H:38:LEU:HD23	1.83	0.59
1:G:147:ILE:HG22	1:G:152:VAL:HG22	1.84	0.59
1:E:234:VAL:HG22	1:E:241:SER:HB3	1.84	0.59
1:H:99:THR:O	1:H:102:ASP:HB2	2.02	0.59
1:J:25:ILE:HD12	3:J:3009:APR:C5D	2.24	0.59
1:K:118:VAL:HG12	1:K:147:ILE:HD11	1.83	0.59
1:B:239:THR:C	4:B:3137:HOH:O	2.41	0.59
1:A:187:HIS:CE1	2:A:2001:CIT:H41	2.28	0.59
1:H:131:THR:HA	3:H:3007:APR:C3D	2.32	0.59
1:G:77:TYR:O	1:G:80:LEU:HB2	2.03	0.59
1:J:13:MET:N	4:J:3042:HOH:O	2.36	0.59
1:B:132:ASN:HD22	1:B:134:LEU:H	1.49	0.59
1:D:14:ARG:HH22	1:D:37:ASP:CG	2.06	0.59
1:F:131:THR:HA	3:F:3005:APR:O3D	2.03	0.59
1:F:14:ARG:HH22	1:F:37:ASP:CG	2.05	0.58
1:F:132:ASN:HD22	1:F:134:LEU:H	1.48	0.58
1:K:131:THR:HA	3:K:3010:APR:O3D	2.03	0.58
1:A:131:THR:HA	3:A:3001:APR:O3D	2.03	0.58
1:F:130:ILE:HD11	1:F:250:ALA:HB2	1.84	0.57
1:I:14:ARG:HH22	1:I:37:ASP:CG	2.06	0.57
1:I:130:ILE:HD11	1:I:250:ALA:HB2	1.86	0.57
1:J:168:LEU:HD13	1:J:222:ILE:HG21	1.86	0.57
1:B:164:PHE:CE2	1:B:193:PRO:HB3	2.40	0.57
1:K:14:ARG:NH2	1:K:37:ASP:OD2	2.38	0.57
1:C:132:ASN:H	3:C:3002:APR:HR'2	1.68	0.57
1:I:318:ASN:ND2	4:I:3093:HOH:O	2.29	0.57
1:F:164:PHE:CD2	1:F:181:ALA:HB1	2.40	0.56
1:A:168:LEU:HD13	1:A:222:ILE:HG21	1.87	0.56
2:A:2001:CIT:O6	2:A:2001:CIT:O4	2.24	0.56
1:B:100:ARG:NH2	4:B:3026:HOH:O	2.39	0.56
1:E:259:LYS:HE3	4:E:3081:HOH:O	2.04	0.56
1:I:59:ASN:HD21	1:I:71:ILE:H	1.52	0.56
1:A:104:LEU:HD13	1:A:319:LEU:HD22	1.89	0.55
1:F:14:ARG:NH2	1:F:37:ASP:OD2	2.37	0.55
1:A:177:SER:HB3	1:D:66:GLY:HA2	1.89	0.55
1:D:134:LEU:O	1:D:138:VAL:HG23	2.06	0.55
1:A:263:SER:CB	4:A:3085:HOH:O	1.88	0.55
1:C:143:GLU:OE2	4:C:3120:HOH:O	2.18	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:160:ASP:OD2	1:A:187:HIS:HD2	1.89	0.55
1:F:71:ILE:N	1:F:71:ILE:HD12	2.20	0.55
1:G:89:THR:HG22	1:G:130:ILE:HD12	1.88	0.55
1:C:100:ARG:HH11	2:C:2003:CIT:C1	2.20	0.55
1:I:99:THR:HG23	1:I:102:ASP:H	1.72	0.55
1:H:132:ASN:HD22	1:H:134:LEU:H	1.55	0.55
1:A:100:ARG:HD3	2:A:2001:CIT:H22	1.89	0.55
1:L:88:ILE:HD11	1:L:127:VAL:CG1	2.37	0.55
1:E:25:ILE:HD12	3:E:3004:APR:H5R1	1.89	0.55
1:G:193:PRO:HG2	1:G:223:ILE:HG23	1.88	0.55
1:J:14:ARG:HH22	1:J:37:ASP:CG	2.10	0.55
1:A:14:ARG:NH2	1:A:37:ASP:OD2	2.40	0.54
1:E:132:ASN:OD1	2:E:2008:CIT:H22	2.07	0.54
1:I:131:THR:HA	3:I:3008:APR:HR'3	1.88	0.54
1:I:131:THR:HA	3:I:3008:APR:C3D	2.36	0.54
1:H:147:ILE:HG22	1:H:152:VAL:HG22	1.90	0.54
1:H:234:VAL:HG22	1:H:241:SER:HB3	1.89	0.54
1:I:14:ARG:NH2	1:I:37:ASP:OD2	2.40	0.54
1:I:77:TYR:O	1:I:80:LEU:HB2	2.08	0.54
1:A:147:ILE:HG22	1:A:152:VAL:CG2	2.34	0.54
1:E:88:ILE:CD1	1:E:127:VAL:HG13	2.37	0.54
1:I:271:LEU:CD1	1:I:282:VAL:CG1	2.86	0.54
2:F:2007:CIT:O2	2:F:2007:CIT:O7	2.06	0.54
1:E:147:ILE:HG22	1:E:152:VAL:CG2	2.38	0.54
1:F:131:THR:HA	3:F:3005:APR:C3D	2.38	0.54
1:L:127:VAL:HG11	1:L:141:PHE:CE1	2.42	0.54
1:H:131:THR:HA	3:H:3007:APR:HR'3	1.89	0.53
1:J:169:SER:OG	1:J:176:PRO:HA	2.07	0.53
1:L:132:ASN:HD22	1:L:134:LEU:H	1.56	0.53
1:H:130:ILE:HD11	1:H:250:ALA:HB2	1.89	0.53
1:J:129:CYS:HB3	1:J:138:VAL:HG22	1.91	0.53
1:K:100:ARG:NH1	2:K:2013:CIT:O7	2.41	0.53
1:A:77:TYR:O	1:A:80:LEU:HB2	2.08	0.53
1:J:100:ARG:NH1	2:J:2012:CIT:H41	2.23	0.53
1:G:14:ARG:HH22	1:G:37:ASP:CG	2.12	0.53
1:I:46:ILE:HG12	3:I:3008:APR:C5	2.38	0.53
1:I:271:LEU:HD12	1:I:282:VAL:CG1	2.38	0.53
1:K:59:ASN:ND2	1:K:71:ILE:H	2.05	0.53
1:A:194:LEU:HD13	1:A:299:VAL:HG11	1.90	0.52
1:H:147:ILE:HG23	1:H:148:PRO:HD2	1.90	0.52
1:B:271:LEU:HD12	1:B:282:VAL:CG1	2.39	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:25:ILE:HD12	3:D:3003:APR:H5R1	1.91	0.52
1:H:140:TYR:CZ	1:H:144:LYS:HD2	2.44	0.52
1:E:131:THR:HG23	3:E:3004:APR:O3D	2.10	0.52
1:E:168:LEU:HD13	1:E:222:ILE:HG21	1.91	0.52
1:G:164:PHE:CD2	1:G:181:ALA:HB1	2.44	0.52
1:H:156:SER:HB2	1:H:187:HIS:HB2	1.91	0.52
1:I:276:ASN:HD22	1:I:276:ASN:N	2.07	0.52
1:A:170:ARG:HH22	1:D:56:LEU:HD23	1.74	0.52
1:B:200:ILE:CG1	4:B:3115:HOH:O	2.29	0.52
1:D:130:ILE:HD11	1:D:250:ALA:HB2	1.91	0.52
1:H:140:TYR:HB2	1:H:323:LEU:HD11	1.91	0.52
1:B:77:TYR:O	1:B:80:LEU:HB2	2.10	0.52
2:C:2003:CIT:O5	2:C:2003:CIT:O4	2.28	0.52
1:D:77:TYR:HE2	4:D:3040:HOH:O	1.92	0.52
1:L:129:CYS:HB3	1:L:138:VAL:HG13	1.91	0.52
1:E:234:VAL:CG2	1:E:241:SER:HB3	2.39	0.51
1:C:147:ILE:HG22	1:C:152:VAL:HG23	1.91	0.51
1:C:74:GLU:HG3	4:C:3038:HOH:O	2.10	0.51
1:L:140:TYR:HB2	1:L:323:LEU:HD11	1.92	0.51
1:C:52:GLN:NE2	1:C:73:GLY:O	2.42	0.51
1:K:77:TYR:O	1:K:80:LEU:HB2	2.10	0.51
1:H:141:PHE:CE1	4:H:3107:HOH:O	2.55	0.51
1:L:14:ARG:HH22	1:L:37:ASP:CG	2.12	0.51
1:A:299:VAL:HG22	1:B:203:ILE:HG12	1.92	0.51
1:K:88:ILE:N	1:K:88:ILE:HD12	2.25	0.51
1:E:89:THR:CG2	1:E:130:ILE:HD12	2.40	0.51
1:E:147:ILE:CG2	1:E:152:VAL:HG22	2.40	0.51
1:I:68:PRO:HB3	1:L:175:LYS:HG3	1.92	0.51
1:A:147:ILE:CG2	1:A:152:VAL:HG23	2.38	0.51
1:H:236:LEU:O	1:H:238:LYS:HE2	2.10	0.51
1:D:20:ILE:HD11	1:D:80:LEU:HD11	1.94	0.50
1:J:267:CYS:HB2	4:J:3081:HOH:O	2.11	0.50
1:E:299:VAL:HG22	1:F:203:ILE:HG12	1.93	0.50
1:J:77:TYR:O	1:J:80:LEU:HB2	2.11	0.50
1:K:89:THR:HG22	1:K:130:ILE:HD12	1.93	0.50
1:E:203:ILE:HD12	1:F:299:VAL:HA	1.93	0.50
1:K:145:SER:HB2	1:K:147:ILE:HD12	1.94	0.50
1:L:279:ASN:CG	1:L:279:ASN:O	2.50	0.50
1:K:134:LEU:O	1:K:138:VAL:HG22	2.12	0.50
1:B:14:ARG:HH22	1:B:37:ASP:CG	2.15	0.50
1:L:130:ILE:HD11	1:L:250:ALA:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:132:ASN:HD22	1:I:134:LEU:H	1.59	0.50
1:A:99:THR:HG22	1:A:102:ASP:CG	2.32	0.50
1:A:158:VAL:HG12	1:D:64:LEU:HD11	1.94	0.50
1:I:285:PRO:HB2	1:I:297:VAL:HB	1.92	0.49
1:C:100:ARG:NH1	2:C:2003:CIT:C1	2.75	0.49
1:F:77:TYR:O	1:F:80:LEU:HB2	2.11	0.49
1:I:118:VAL:HG12	1:I:147:ILE:HD11	1.94	0.49
1:I:271:LEU:HD12	1:I:282:VAL:HG12	1.94	0.49
1:A:140:TYR:HB2	1:A:323:LEU:HD11	1.94	0.49
1:B:74:GLU:HG2	1:B:79:TYR:CD1	2.47	0.49
1:H:14:ARG:NH2	1:H:37:ASP:OD2	2.42	0.49
1:A:100:ARG:HH11	2:A:2001:CIT:H22	1.76	0.49
1:E:195:THR:HG21	1:E:223:ILE:HD11	1.95	0.49
1:F:46:ILE:HD12	1:F:47:ILE:HG13	1.95	0.49
1:A:52:GLN:HE22	1:A:75:ASN:ND2	2.11	0.49
1:A:132:ASN:HD22	1:A:134:LEU:H	1.61	0.49
1:D:195:THR:HG21	1:D:223:ILE:HD11	1.95	0.49
2:F:2007:CIT:C6	2:F:2007:CIT:O4	2.60	0.49
1:I:130:ILE:HD11	1:I:250:ALA:CB	2.43	0.49
1:A:158:VAL:CG1	1:D:64:LEU:HD11	2.43	0.49
1:B:156:SER:HB2	1:B:187:HIS:HB2	1.95	0.49
1:C:134:LEU:O	1:C:138:VAL:HG22	2.13	0.49
1:H:25:ILE:HD12	3:H:3007:APR:C4D	2.41	0.49
1:H:59:ASN:ND2	1:H:71:ILE:H	2.02	0.49
1:D:89:THR:HG22	1:D:130:ILE:HD12	1.93	0.49
1:F:132:ASN:HD22	1:F:134:LEU:N	2.11	0.49
1:G:132:ASN:HD22	1:G:134:LEU:H	1.60	0.49
1:J:48:GLU:O	1:K:238:LYS:NZ	2.46	0.49
1:B:240:GLY:N	4:B:3137:HOH:O	2.46	0.48
1:D:132:ASN:HD22	1:D:134:LEU:H	1.61	0.48
1:K:108:ALA:O	1:K:140:TYR:HE2	1.96	0.48
1:D:168:LEU:HD13	1:D:222:ILE:HG21	1.95	0.48
1:H:99:THR:HG23	1:H:101:SER:H	1.78	0.48
1:H:98:MET:HE3	1:H:102:ASP:HB3	1.94	0.48
1:K:109:LYS:HB3	4:K:3095:HOH:O	2.14	0.48
1:C:269:THR:HG21	1:C:286:VAL:CG1	2.44	0.48
1:I:271:LEU:CD1	1:I:282:VAL:HG12	2.44	0.48
1:D:187:HIS:HE2	2:D:2004:CIT:C6	2.25	0.48
1:G:59:ASN:ND2	1:G:71:ILE:H	2.09	0.48
1:I:70:LYS:HD2	4:I:3012:HOH:O	2.12	0.48
1:K:71:ILE:N	1:K:71:ILE:HD12	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:234:VAL:HG22	1:F:241:SER:HB3	1.96	0.48
1:C:132:ASN:HB2	3:C:3002:APR:HR'2	1.96	0.48
1:K:132:ASN:HD22	1:K:134:LEU:H	1.61	0.48
1:I:165:ARG:NH2	1:I:177:SER:HA	2.28	0.47
1:K:48:GLU:HA	1:K:75:ASN:HD21	1.79	0.47
1:E:177:SER:HB3	1:G:66:GLY:HA2	1.96	0.47
1:L:195:THR:HG21	1:L:223:ILE:HD11	1.97	0.47
1:E:132:ASN:HD22	1:E:134:LEU:H	1.61	0.47
1:I:101:SER:OG	1:I:319:LEU:HD21	2.14	0.47
1:I:140:TYR:HB2	1:I:323:LEU:HD11	1.95	0.47
1:B:271:LEU:CD1	1:B:282:VAL:CG1	2.92	0.47
1:C:180:SER:HB3	4:D:3060:HOH:O	2.13	0.47
1:G:25:ILE:O	1:G:29:ILE:HG13	2.13	0.47
1:K:147:ILE:CG2	1:K:152:VAL:HG22	2.45	0.47
1:C:140:TYR:HB2	1:C:323:LEU:HD11	1.96	0.47
1:J:94:ARG:NH2	1:J:100:ARG:HH12	2.11	0.47
1:C:89:THR:CG2	1:C:130:ILE:HD12	2.45	0.47
1:A:27:SER:HB3	1:A:54:LYS:HD3	1.96	0.47
1:H:36:LYS:HB2	1:H:38:LEU:HD22	1.95	0.47
1:H:98:MET:CE	1:H:102:ASP:HB3	2.45	0.47
1:G:148:PRO:O	1:G:152:VAL:HG23	2.14	0.47
2:H:2005:CIT:O1	2:H:2005:CIT:C6	2.63	0.47
1:L:100:ARG:NH2	4:L:3016:HOH:O	2.47	0.47
1:A:71:ILE:N	1:A:71:ILE:HD12	2.29	0.47
1:A:132:ASN:OD1	2:A:2001:CIT:H21	2.15	0.47
1:D:77:TYR:O	1:D:80:LEU:HB2	2.14	0.47
1:D:169:SER:OG	1:D:176:PRO:HA	2.15	0.47
1:J:100:ARG:HH11	2:J:2012:CIT:C4	2.24	0.47
1:K:147:ILE:HG22	1:K:152:VAL:CG2	2.43	0.47
1:D:14:ARG:NH2	1:D:37:ASP:OD2	2.47	0.46
1:J:77:TYR:OH	3:J:3009:APR:H2	2.14	0.46
1:L:271:LEU:HD12	1:L:282:VAL:CG1	2.44	0.46
1:G:137:MET:HA	1:G:137:MET:CE	2.45	0.46
1:A:89:THR:HG22	1:A:130:ILE:HD12	1.97	0.46
1:C:132:ASN:HD22	1:C:134:LEU:N	2.07	0.46
1:D:131:THR:CA	3:D:3003:APR:O3D	2.53	0.46
1:H:193:PRO:HG2	1:H:223:ILE:HG23	1.98	0.46
1:B:77:TYR:OH	3:B:3012:APR:H2	2.16	0.46
1:B:168:LEU:HD13	1:B:222:ILE:HG21	1.97	0.46
1:E:210:GLU:CG	1:F:300:ASN:HD21	2.29	0.46
1:B:134:LEU:O	1:B:138:VAL:HG23	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:175:LYS:HE3	1:I:177:SER:OG	2.16	0.46
2:I:2011:CIT:C6	2:I:2011:CIT:O1	2.64	0.46
1:J:128:ILE:HG23	1:J:253:MET:HE2	1.98	0.46
1:D:15:LYS:HA	1:D:15:LYS:HD3	1.77	0.45
1:C:32:LEU:HB2	1:C:251:VAL:HG21	1.98	0.45
1:A:147:ILE:CG2	1:A:152:VAL:CG2	2.95	0.45
1:A:203:ILE:HG12	1:B:299:VAL:HG22	1.97	0.45
1:F:89:THR:HG22	1:F:130:ILE:HD12	1.99	0.45
1:E:187:HIS:NE2	2:E:2008:CIT:H21	2.31	0.45
1:H:309:PHE:O	1:H:313:VAL:HG23	2.16	0.45
1:K:70:LYS:HD2	4:K:3024:HOH:O	2.16	0.45
1:A:134:LEU:C	1:A:134:LEU:HD13	2.37	0.45
1:B:177:SER:HB3	1:C:66:GLY:HA2	1.99	0.45
1:C:76:ASN:C	1:C:76:ASN:HD22	2.19	0.45
1:F:187:HIS:NE2	2:F:2007:CIT:H21	2.32	0.45
1:F:271:LEU:HD12	1:F:282:VAL:HG13	1.99	0.45
1:G:239:THR:O	1:G:239:THR:OG1	2.33	0.45
1:J:199:THR:HG22	1:J:204:LEU:HD12	1.99	0.45
1:K:164:PHE:CE2	1:K:193:PRO:HB3	2.51	0.45
1:A:132:ASN:HD22	1:A:134:LEU:N	2.15	0.45
1:B:14:ARG:HG3	4:B:3046:HOH:O	2.17	0.45
1:C:314:GLU:HA	1:C:314:GLU:OE2	2.17	0.45
1:H:19:ILE:HD11	1:H:29:ILE:HG22	1.99	0.45
1:E:64:LEU:HD21	1:G:249:SER:HA	1.98	0.45
1:H:127:VAL:HG11	1:H:141:PHE:CE1	2.52	0.45
1:F:271:LEU:HD12	1:F:282:VAL:CG1	2.47	0.44
1:G:14:ARG:NH2	1:G:37:ASP:OD2	2.44	0.44
1:B:175:LYS:HG3	1:C:68:PRO:HB3	1.99	0.44
1:F:164:PHE:HB2	1:F:226:THR:HG21	1.99	0.44
1:H:241:SER:HB2	4:H:3046:HOH:O	2.18	0.44
1:A:91:GLY:HA2	1:A:110:ILE:HD13	1.98	0.44
1:D:195:THR:CG2	1:D:223:ILE:HD11	2.48	0.44
1:D:199:THR:HG22	1:D:204:LEU:HD12	1.99	0.44
1:F:100:ARG:NH1	2:F:2007:CIT:O4	2.48	0.44
1:F:130:ILE:HD11	1:F:250:ALA:CB	2.48	0.44
1:K:271:LEU:HD22	1:K:274:GLN:HB2	1.98	0.44
1:B:89:THR:HG22	1:B:130:ILE:HD12	2.00	0.44
1:G:71:ILE:N	1:G:71:ILE:HD12	2.33	0.44
1:L:242:ALA:H	2:L:2010:CIT:C5	2.30	0.44
1:C:100:ARG:HD3	2:C:2003:CIT:H22	2.00	0.44
1:E:175:LYS:HE3	1:E:177:SER:OG	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:269:THR:O	1:K:281:PHE:HA	2.17	0.44
1:J:99:THR:HG22	1:J:102:ASP:CG	2.38	0.44
1:L:14:ARG:NH2	1:L:37:ASP:OD2	2.47	0.44
1:G:313:VAL:O	1:G:317:GLN:HG3	2.18	0.43
1:H:77:TYR:O	1:H:80:LEU:HB2	2.17	0.43
1:J:14:ARG:HG3	4:L:3040:HOH:O	2.18	0.43
1:J:36:LYS:HE3	1:J:255:GLN:OE1	2.17	0.43
1:J:191:MET:O	1:J:193:PRO:HD3	2.18	0.43
1:L:99:THR:O	1:L:102:ASP:HB2	2.17	0.43
1:A:32:LEU:HB2	1:A:251:VAL:HG21	2.01	0.43
1:B:249:SER:HA	1:C:64:LEU:HD21	1.99	0.43
1:A:64:LEU:HD21	1:D:249:SER:HA	2.00	0.43
1:A:186:GLY:CA	1:A:316:ILE:HD11	2.48	0.43
1:B:175:LYS:HD2	1:B:177:SER:OG	2.19	0.43
1:G:99:THR:HG22	1:G:102:ASP:CG	2.38	0.43
1:G:285:PRO:CB	1:H:203:ILE:HD11	2.48	0.43
1:H:236:LEU:O	1:H:238:LYS:CE	2.66	0.43
1:E:140:TYR:HB2	1:E:323:LEU:HD11	2.01	0.43
1:J:323:LEU:O	1:J:326:LEU:HG	2.19	0.43
1:A:151:LYS:HE3	4:A:3069:HOH:O	2.19	0.43
1:C:100:ARG:NH1	2:C:2003:CIT:O2	2.52	0.43
1:E:100:ARG:HH21	1:E:188:GLY:HA2	1.83	0.43
1:F:46:ILE:H	1:F:46:ILE:HG13	1.67	0.43
1:K:151:LYS:HE3	4:K:3103:HOH:O	2.18	0.43
1:B:59:ASN:ND2	1:B:71:ILE:H	2.06	0.43
1:C:131:THR:HA	3:C:3002:APR:O2D	2.18	0.43
1:D:27:SER:HB3	1:D:54:LYS:HD3	2.00	0.43
1:G:27:SER:HB3	1:G:54:LYS:HD3	2.00	0.43
1:H:271:LEU:HD12	1:H:282:VAL:CG1	2.49	0.43
1:L:169:SER:OG	1:L:176:PRO:CA	2.57	0.43
1:D:115:ALA:HA	1:D:141:PHE:CE2	2.54	0.43
1:E:77:TYR:O	1:E:80:LEU:HB2	2.19	0.43
1:G:165:ARG:HG3	1:G:181:ALA:HB3	2.00	0.43
1:I:88:ILE:HD13	1:I:127:VAL:CG1	2.49	0.43
1:I:203:ILE:HG23	1:J:299:VAL:HG13	2.01	0.43
1:K:299:VAL:HG22	1:L:203:ILE:HG12	2.00	0.43
1:C:186:GLY:CA	1:C:316:ILE:HD11	2.49	0.42
1:B:320:VAL:O	1:B:323:LEU:HB2	2.19	0.42
1:A:99:THR:HG23	1:A:102:ASP:H	1.85	0.42
1:I:164:PHE:CD2	1:I:181:ALA:HB1	2.54	0.42
1:D:269:THR:CG2	1:D:284:VAL:HG22	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:203:ILE:HD13	1:B:297:VAL:HG11	2.00	0.42
1:C:59:ASN:ND2	1:C:71:ILE:H	2.06	0.42
1:E:285:PRO:HB2	1:E:297:VAL:HB	2.01	0.42
1:B:46:ILE:HG23	3:B:3012:APR:C6	2.49	0.42
1:B:132:ASN:HD22	1:B:134:LEU:N	2.17	0.42
1:D:309:PHE:O	1:D:313:VAL:HG23	2.19	0.42
1:G:285:PRO:HB3	1:H:203:ILE:HD11	2.02	0.42
1:G:299:VAL:HG22	1:H:203:ILE:HG12	2.01	0.42
1:L:195:THR:HA	1:L:198:VAL:HG23	2.02	0.42
1:G:132:ASN:HD21	1:G:187:HIS:HD2	1.67	0.42
1:H:131:THR:HA	3:H:3007:APR:O3D	2.18	0.42
1:H:239:THR:HB	4:H:3098:HOH:O	2.19	0.42
1:I:96:PRO:HD3	1:I:238:LYS:O	2.20	0.42
1:A:88:ILE:CD1	1:A:127:VAL:CG1	2.97	0.42
1:E:32:LEU:HB2	1:E:251:VAL:HG21	2.01	0.42
1:E:115:ALA:HB1	1:E:145:SER:HB3	2.02	0.42
1:J:124:ASN:O	1:J:151:LYS:NZ	2.49	0.42
1:F:64:LEU:HD21	1:H:249:SER:OG	2.20	0.42
1:J:274:GLN:O	1:J:275:TYR:HB2	2.20	0.42
1:L:27:SER:CB	1:L:54:LYS:HD3	2.50	0.42
1:B:14:ARG:NH2	1:B:37:ASP:OD2	2.49	0.41
1:C:144:LYS:HE2	1:C:144:LYS:HA	2.02	0.41
1:F:64:LEU:HD22	1:H:162:ALA:HB2	2.02	0.41
1:A:285:PRO:CB	1:B:203:ILE:HD11	2.50	0.41
1:D:104:LEU:HD13	1:D:319:LEU:HD22	2.03	0.41
1:I:38:LEU:HD11	1:I:255:GLN:HG3	2.02	0.41
1:L:94:ARG:HH21	2:L:2010:CIT:HO7	1.67	0.41
1:B:130:ILE:HD11	1:B:250:ALA:HB2	2.02	0.41
1:F:27:SER:HB3	1:F:54:LYS:HD3	2.01	0.41
1:J:95:LYS:NZ	4:J:3067:HOH:O	2.54	0.41
1:K:76:ASN:ND2	1:K:78:GLU:H	2.18	0.41
1:D:140:TYR:HB2	1:D:323:LEU:HD11	2.02	0.41
1:D:127:VAL:HG11	1:D:141:PHE:CE1	2.56	0.41
1:I:203:ILE:HD13	1:J:297:VAL:CG1	2.50	0.41
1:C:310:SER:O	1:C:314:GLU:HG2	2.21	0.41
1:G:130:ILE:HD11	1:G:250:ALA:HB2	2.03	0.41
1:J:22:ALA:O	1:J:54:LYS:NZ	2.43	0.41
1:J:88:ILE:HD12	1:J:127:VAL:HG13	2.02	0.41
1:J:89:THR:HG22	1:J:130:ILE:HD12	2.02	0.41
1:J:93:PRO:HA	3:J:3009:APR:HR'2	2.01	0.41
1:B:134:LEU:O	1:B:138:VAL:CG2	2.69	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:203:ILE:HG12	1:E:208:PHE:CE1	2.56	0.41
4:F:3012:HOH:O	1:G:14:ARG:HG3	2.21	0.41
1:H:147:ILE:HA	1:H:148:PRO:HD3	1.91	0.41
1:B:179:VAL:HG22	1:B:200:ILE:CD1	2.51	0.41
1:C:74:GLU:CG	4:C:3038:HOH:O	2.67	0.41
1:C:191:MET:O	1:C:193:PRO:HD3	2.21	0.41
1:C:237:LEU:O	1:C:238:LYS:HB2	2.21	0.41
1:D:187:HIS:NE2	2:D:2004:CIT:O6	2.39	0.41
1:E:297:VAL:HG11	1:F:203:ILE:HD13	2.03	0.41
1:F:164:PHE:CE2	1:F:181:ALA:HB1	2.56	0.41
1:L:89:THR:HG22	1:L:130:ILE:HD12	2.02	0.41
1:C:132:ASN:H	3:C:3002:APR:C2D	2.33	0.41
1:D:191:MET:O	1:D:193:PRO:HD3	2.21	0.41
1:J:320:VAL:O	1:J:323:LEU:HB2	2.21	0.41
1:B:16:LYS:NZ	1:B:81:GLN:O	2.44	0.40
1:B:58:LEU:HB3	1:B:71:ILE:HD13	2.03	0.40
1:B:127:VAL:HG11	1:B:141:PHE:CZ	2.56	0.40
1:E:20:ILE:HD11	1:E:80:LEU:HD11	2.02	0.40
1:G:104:LEU:HD13	1:G:319:LEU:HD22	2.03	0.40
1:G:269:THR:O	1:G:281:PHE:HA	2.21	0.40
1:H:100:ARG:NH1	2:H:2005:CIT:O1	2.54	0.40
1:K:99:THR:HG23	1:K:102:ASP:H	1.85	0.40
1:C:165:ARG:HH21	1:C:177:SER:HA	1.86	0.40
1:A:260:ASP:OD1	1:A:290:LYS:HB2	2.21	0.40
1:G:131:THR:HA	3:G:3006:APR:C3D	2.52	0.40
1:K:245:ALA:N	1:K:246:PRO:CD	2.85	0.40
1:B:195:THR:HG21	1:B:223:ILE:HD11	2.04	0.40
1:J:286:VAL:HG21	1:J:293:ILE:HD12	2.02	0.40
1:K:32:LEU:HB2	1:K:251:VAL:HG21	2.03	0.40
1:L:168:LEU:HD13	1:L:222:ILE:HG21	2.03	0.40
1:L:320:VAL:O	1:L:323:LEU:HB2	2.22	0.40
1:A:63:ALA:O	1:D:165:ARG:NH2	2.55	0.40
1:E:155:MET:C	1:E:155:MET:SD	3.00	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	311/328 (95%)	301 (97%)	10 (3%)	0	100	100
1	B	312/328 (95%)	306 (98%)	6 (2%)	0	100	100
1	C	312/328 (95%)	306 (98%)	6 (2%)	0	100	100
1	D	312/328 (95%)	301 (96%)	11 (4%)	0	100	100
1	E	311/328 (95%)	304 (98%)	7 (2%)	0	100	100
1	F	312/328 (95%)	307 (98%)	5 (2%)	0	100	100
1	G	311/328 (95%)	301 (97%)	10 (3%)	0	100	100
1	H	312/328 (95%)	303 (97%)	9 (3%)	0	100	100
1	I	311/328 (95%)	308 (99%)	3 (1%)	0	100	100
1	J	312/328 (95%)	296 (95%)	16 (5%)	0	100	100
1	K	311/328 (95%)	300 (96%)	11 (4%)	0	100	100
1	L	312/328 (95%)	304 (97%)	8 (3%)	0	100	100
All	All	3739/3936 (95%)	3637 (97%)	102 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	260/275 (94%)	250 (96%)	10 (4%)	33	42
1	B	261/275 (95%)	250 (96%)	11 (4%)	30	38

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	261/275 (95%)	245 (94%)	16 (6%)	18	21
1	D	261/275 (95%)	252 (97%)	9 (3%)	37	47
1	E	260/275 (94%)	245 (94%)	15 (6%)	20	23
1	F	261/275 (95%)	247 (95%)	14 (5%)	22	26
1	G	260/275 (94%)	250 (96%)	10 (4%)	33	42
1	H	261/275 (95%)	250 (96%)	11 (4%)	30	38
1	I	260/275 (94%)	244 (94%)	16 (6%)	18	21
1	J	261/275 (95%)	254 (97%)	7 (3%)	44	57
1	K	260/275 (94%)	244 (94%)	16 (6%)	18	21
1	L	261/275 (95%)	250 (96%)	11 (4%)	30	38
All	All	3127/3300 (95%)	2981 (95%)	146 (5%)	26	33

All (146) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	38	LEU
1	A	80	LEU
1	A	94	ARG
1	A	138	VAL
1	A	168	LEU
1	A	204	LEU
1	A	290	LYS
1	A	295	ASP
1	A	310	SER
1	A	323	LEU
1	B	38	LEU
1	B	46	ILE
1	B	52	GLN
1	B	74	GLU
1	B	80	LEU
1	B	138	VAL
1	B	142	LYS
1	B	168	LEU
1	B	196	SER
1	B	204	LEU
1	B	221	GLU
1	C	38	LEU
1	C	46	ILE

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Mol	Chain	Res	Type
1	C	52	GLN
1	C	74	GLU
1	C	76	ASN
1	C	80	LEU
1	C	94	ARG
1	C	138	VAL
1	C	143	GLU
1	C	168	LEU
1	C	204	LEU
1	C	217	SER
1	C	278	ASN
1	C	282	VAL
1	C	321	GLN
1	C	323	LEU
1	D	38	LEU
1	D	52	GLN
1	D	138	VAL
1	D	168	LEU
1	D	175	LYS
1	D	204	LEU
1	D	210	GLU
1	D	217	SER
1	D	304	ASP
1	E	38	LEU
1	E	52	GLN
1	E	70	LYS
1	E	94	ARG
1	E	99	THR
1	E	106	VAL
1	E	138	VAL
1	E	168	LEU
1	E	203	ILE
1	E	204	LEU
1	E	210	GLU
1	E	217	SER
1	E	308	LEU
1	E	321	GLN
1	E	323	LEU
1	F	38	LEU
1	F	52	GLN
1	F	80	LEU
1	F	81	GLN

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Mol	Chain	Res	Type
1	F	105	THR
1	F	138	VAL
1	F	144	LYS
1	F	204	LEU
1	F	210	GLU
1	F	211	GLN
1	F	221	GLU
1	F	280	LEU
1	F	282	VAL
1	F	323	LEU
1	G	38	LEU
1	G	52	GLN
1	G	74	GLU
1	G	94	ARG
1	G	152	VAL
1	G	164	PHE
1	G	168	LEU
1	G	204	LEU
1	G	303	ASP
1	G	323	LEU
1	H	38	LEU
1	H	46	ILE
1	H	52	GLN
1	H	80	LEU
1	H	99	THR
1	H	102	ASP
1	H	138	VAL
1	H	168	LEU
1	H	204	LEU
1	H	217	SER
1	H	323	LEU
1	I	14	ARG
1	I	38	LEU
1	I	46	ILE
1	I	52	GLN
1	I	74	GLU
1	I	80	LEU
1	I	94	ARG
1	I	168	LEU
1	I	196	SER
1	I	204	LEU
1	I	217	SER

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Mol	Chain	Res	Type
1	I	221	GLU
1	I	276	ASN
1	I	278	ASN
1	I	317	GLN
1	I	323	LEU
1	J	38	LEU
1	J	52	GLN
1	J	74	GLU
1	J	80	LEU
1	J	168	LEU
1	J	204	LEU
1	J	310	SER
1	K	38	LEU
1	K	46	ILE
1	K	52	GLN
1	K	70	LYS
1	K	74	GLU
1	K	76	ASN
1	K	94	ARG
1	K	138	VAL
1	K	143	GLU
1	K	168	LEU
1	K	177	SER
1	K	200	ILE
1	K	203	ILE
1	K	204	LEU
1	K	295	ASP
1	K	323	LEU
1	L	38	LEU
1	L	52	GLN
1	L	80	LEU
1	L	101	SER
1	L	138	VAL
1	L	168	LEU
1	L	169	SER
1	L	204	LEU
1	L	221	GLU
1	L	259	LYS
1	L	278	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (64) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	75	ASN
1	A	124	ASN
1	A	187	HIS
1	A	216	HIS
1	A	318	ASN
1	B	59	ASN
1	B	75	ASN
1	B	132	ASN
1	B	318	ASN
1	C	52	GLN
1	C	59	ASN
1	C	75	ASN
1	C	76	ASN
1	C	132	ASN
1	C	318	ASN
1	D	59	ASN
1	D	75	ASN
1	D	76	ASN
1	D	132	ASN
1	D	300	ASN
1	D	318	ASN
1	E	59	ASN
1	E	75	ASN
1	E	318	ASN
1	F	59	ASN
1	F	75	ASN
1	F	132	ASN
1	F	291	ASN
1	F	300	ASN
1	F	318	ASN
1	G	52	GLN
1	G	59	ASN
1	G	75	ASN
1	G	132	ASN
1	G	276	ASN
1	G	318	ASN
1	H	59	ASN
1	H	75	ASN
1	H	132	ASN
1	I	59	ASN
1	I	75	ASN
1	I	76	ASN
1	I	132	ASN

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Mol	Chain	Res	Type
1	I	276	ASN
1	I	291	ASN
1	I	317	GLN
1	I	318	ASN
1	J	59	ASN
1	J	300	ASN
1	J	318	ASN
1	K	59	ASN
1	K	75	ASN
1	K	76	ASN
1	K	81	GLN
1	K	124	ASN
1	K	132	ASN
1	K	276	ASN
1	K	318	ASN
1	L	59	ASN
1	L	75	ASN
1	L	76	ASN
1	L	132	ASN
1	L	291	ASN
1	L	318	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

24 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	$\#\|Z\| > 2$
3	APR	G	3006	-	34,39,39	0.79	0	40,60,60	1.63	6 (15%)
3	APR	I	3008	-	34,39,39	0.96	0	40,60,60	2.87	9 (22%)
2	CIT	F	2007	-	12,12,12	2.63	2 (16%)	17,17,17	3.04	9 (52%)
3	APR	F	3005	-	34,39,39	0.91	2 (5%)	40,60,60	2.48	9 (22%)
2	CIT	A	2001	-	12,12,12	1.20	1 (8%)	17,17,17	2.23	8 (47%)
3	APR	A	3001	-	34,39,39	0.75	0	40,60,60	1.71	8 (20%)
3	APR	J	3009	-	34,39,39	0.72	0	40,60,60	1.44	4 (10%)
2	CIT	B	2002	-	12,12,12	2.45	3 (25%)	17,17,17	3.16	10 (58%)
2	CIT	H	2005	-	12,12,12	1.78	2 (16%)	17,17,17	2.50	8 (47%)
2	CIT	D	2004	-	12,12,12	1.12	0	17,17,17	2.03	6 (35%)
3	APR	C	3002	-	34,39,39	1.19	1 (2%)	40,60,60	2.67	9 (22%)
2	CIT	C	2003	-	12,12,12	1.34	2 (16%)	17,17,17	2.59	8 (47%)
3	APR	K	3010	-	34,39,39	0.84	0	40,60,60	1.68	7 (17%)
3	APR	D	3003	-	34,39,39	0.76	0	40,60,60	1.66	8 (20%)
3	APR	L	3011	-	34,39,39	0.91	0	40,60,60	2.41	7 (17%)
2	CIT	J	2012	-	12,12,12	1.52	1 (8%)	17,17,17	1.84	6 (35%)
2	CIT	I	2011	-	12,12,12	2.25	2 (16%)	17,17,17	2.70	5 (29%)
2	CIT	E	2008	-	12,12,12	2.11	5 (41%)	17,17,17	2.86	6 (35%)
2	CIT	G	2006	-	12,12,12	2.45	2 (16%)	17,17,17	3.38	7 (41%)
2	CIT	L	2010	-	12,12,12	1.84	3 (25%)	17,17,17	2.29	9 (52%)
3	APR	H	3007	-	34,39,39	0.76	0	40,60,60	2.19	7 (17%)
3	APR	E	3004	-	34,39,39	0.82	0	40,60,60	1.76	6 (15%)
3	APR	B	3012	-	34,39,39	0.78	1 (2%)	40,60,60	1.79	7 (17%)
2	CIT	K	2013	-	12,12,12	2.07	2 (16%)	17,17,17	2.54	5 (29%)

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	APR	G	3006	-	-	1/18/54/54	0/4/4/4

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	APR	I	3008	-	-	8/18/54/54	0/4/4/4
2	CIT	F	2007	-	-	10/16/16/16	-
3	APR	F	3005	-	-	7/18/54/54	0/4/4/4
2	CIT	A	2001	-	-	11/16/16/16	-
3	APR	A	3001	-	-	5/18/54/54	0/4/4/4
3	APR	J	3009	-	-	5/18/54/54	0/4/4/4
2	CIT	B	2002	-	-	0/16/16/16	-
2	CIT	H	2005	-	-	3/16/16/16	-
2	CIT	D	2004	-	-	4/16/16/16	-
3	APR	C	3002	-	-	4/18/54/54	0/4/4/4
2	CIT	C	2003	-	-	10/16/16/16	-
3	APR	K	3010	-	-	6/18/54/54	0/4/4/4
3	APR	D	3003	-	-	5/18/54/54	0/4/4/4
3	APR	L	3011	-	-	6/18/54/54	0/4/4/4
2	CIT	J	2012	-	-	4/16/16/16	-
2	CIT	I	2011	-	-	3/16/16/16	-
2	CIT	E	2008	-	-	4/16/16/16	-
2	CIT	G	2006	-	-	3/16/16/16	-
2	CIT	L	2010	-	-	6/16/16/16	-
3	APR	H	3007	-	-	6/18/54/54	0/4/4/4
3	APR	E	3004	-	-	5/18/54/54	0/4/4/4
3	APR	B	3012	-	-	7/18/54/54	0/4/4/4
2	CIT	K	2013	-	-	3/16/16/16	-

All (29) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	2007	CIT	C3-C6	-7.88	1.45	1.53
2	G	2006	CIT	C3-C6	-7.55	1.45	1.53
2	B	2002	CIT	C3-C6	-6.90	1.46	1.53
2	I	2011	CIT	C3-C6	-6.22	1.46	1.53
2	K	2013	CIT	C3-C6	-5.78	1.47	1.53
3	C	3002	APR	C1D-C2D	-5.41	1.46	1.52
2	E	2008	CIT	C3-C6	-4.34	1.48	1.53
2	H	2005	CIT	C3-C6	-4.30	1.48	1.53
2	L	2010	CIT	C3-C6	-4.06	1.49	1.53
2	J	2012	CIT	C3-C6	-3.57	1.49	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2002	CIT	O7-C3	3.18	1.49	1.43
2	I	2011	CIT	O7-C3	2.99	1.49	1.43
2	E	2008	CIT	C4-C3	-2.91	1.50	1.53
2	L	2010	CIT	C2-C3	2.77	1.57	1.53
2	H	2005	CIT	O7-C3	2.65	1.48	1.43
2	F	2007	CIT	C2-C3	-2.56	1.50	1.53
2	E	2008	CIT	C2-C3	-2.53	1.50	1.53
2	E	2008	CIT	O7-C3	2.51	1.48	1.43
2	C	2003	CIT	C3-C6	-2.42	1.50	1.53
3	B	3012	APR	O4D-C1D	2.31	1.46	1.43
2	K	2013	CIT	O7-C3	2.21	1.47	1.43
2	B	2002	CIT	O4-C5	-2.14	1.23	1.30
2	E	2008	CIT	O5-C6	2.10	1.28	1.22
2	A	2001	CIT	C4-C3	-2.09	1.51	1.53
2	C	2003	CIT	O2-C1	-2.08	1.23	1.30
2	L	2010	CIT	C4-C3	-2.06	1.51	1.53
3	F	3005	APR	C3D-C4D	-2.03	1.47	1.53
2	G	2006	CIT	O7-C3	2.02	1.47	1.43
3	F	3005	APR	O4D-C1D	2.01	1.45	1.43

All (174) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	I	3008	APR	C1D-C2D-C3D	-12.48	86.68	102.30
3	F	3005	APR	C1D-C2D-C3D	-10.33	89.37	102.30
3	L	3011	APR	C1D-C2D-C3D	-10.00	89.78	102.30
2	F	2007	CIT	C3-C2-C1	-9.16	91.62	113.81
2	G	2006	CIT	O7-C3-C6	-9.06	96.14	108.86
3	H	3007	APR	C1D-C2D-C3D	-8.36	91.84	102.30
3	C	3002	APR	C1D-C2D-C3D	-7.28	93.18	102.30
2	B	2002	CIT	O5-C6-C3	-7.06	112.26	122.25
3	C	3002	APR	O1D-C1D-O4D	6.72	119.73	111.13
3	I	3008	APR	O1D-C1D-O4D	6.70	119.71	111.13
2	B	2002	CIT	O7-C3-C6	-6.69	99.47	108.86
3	C	3002	APR	O4D-C4D-C3D	-6.53	92.19	105.11
3	E	3004	APR	O1D-C1D-O4D	6.22	119.09	111.13
3	G	3006	APR	N3-C2-N1	-6.07	119.19	128.68
2	G	2006	CIT	O5-C6-C3	-6.05	113.69	122.25
2	E	2008	CIT	O5-C6-C3	-5.70	114.18	122.25
2	E	2008	CIT	C3-C2-C1	-5.65	100.14	113.81
2	H	2005	CIT	O7-C3-C6	-5.62	100.97	108.86
3	B	3012	APR	N3-C2-N1	-5.60	119.93	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	3005	APR	N3-C2-N1	-5.48	120.11	128.68
3	B	3012	APR	O1D-C1D-O4D	5.47	118.14	111.13
3	D	3003	APR	N3-C2-N1	-5.38	120.28	128.68
3	C	3002	APR	N3-C2-N1	-5.32	120.36	128.68
3	I	3008	APR	N3-C2-N1	-5.30	120.39	128.68
3	K	3010	APR	N3-C2-N1	-5.29	120.41	128.68
2	I	2011	CIT	C3-C4-C5	-5.23	101.16	113.81
3	H	3007	APR	N3-C2-N1	-5.20	120.55	128.68
2	K	2013	CIT	O5-C6-C3	-5.19	114.90	122.25
3	C	3002	APR	O4D-C1D-C2D	-5.17	98.11	104.46
3	L	3011	APR	N3-C2-N1	-5.08	120.74	128.68
3	A	3001	APR	N3-C2-N1	-5.06	120.77	128.68
2	D	2004	CIT	O6-C6-C3	5.06	121.83	113.05
2	I	2011	CIT	O5-C6-C3	-5.03	115.13	122.25
2	H	2005	CIT	O5-C6-C3	-4.94	115.26	122.25
2	E	2008	CIT	C3-C4-C5	-4.92	101.90	113.81
3	J	3009	APR	N3-C2-N1	-4.91	121.00	128.68
3	C	3002	APR	O2D-C2D-C1D	-4.79	98.59	111.82
2	C	2003	CIT	O7-C3-C2	4.79	120.62	109.40
2	C	2003	CIT	C4-C3-C2	-4.77	96.70	109.16
2	I	2011	CIT	C4-C3-C6	-4.73	99.93	110.11
3	A	3001	APR	O1D-C1D-O4D	4.64	117.07	111.13
3	E	3004	APR	N3-C2-N1	-4.63	121.45	128.68
3	I	3008	APR	O4D-C4D-C3D	-4.62	95.96	105.11
2	K	2013	CIT	O7-C3-C6	-4.49	102.56	108.86
3	L	3011	APR	O4D-C1D-C2D	-4.49	98.94	104.46
3	H	3007	APR	O4D-C1D-C2D	-4.46	98.97	104.46
2	K	2013	CIT	C4-C3-C6	-4.40	100.66	110.11
3	I	3008	APR	O4D-C1D-C2D	-4.32	99.14	104.46
3	F	3005	APR	O4D-C1D-C2D	-4.31	99.16	104.46
3	I	3008	APR	O3D-C3D-C4D	-4.31	98.59	111.05
2	I	2011	CIT	O7-C3-C6	-4.29	102.84	108.86
2	L	2010	CIT	O7-C3-C6	-4.24	102.91	108.86
3	F	3005	APR	O3D-C3D-C4D	-4.08	99.26	111.05
2	G	2006	CIT	C4-C3-C6	-4.06	101.39	110.11
2	C	2003	CIT	O6-C6-C3	4.05	120.09	113.05
2	L	2010	CIT	O6-C6-C3	3.98	119.97	113.05
3	J	3009	APR	O4D-C1D-C2D	3.88	109.24	104.46
2	A	2001	CIT	O6-C6-C3	3.88	119.78	113.05
3	K	3010	APR	O1D-C1D-O4D	3.86	116.07	111.13
2	K	2013	CIT	C3-C4-C5	-3.85	104.49	113.81
2	G	2006	CIT	O7-C3-C4	3.82	118.34	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	3005	APR	O1D-C1D-O4D	3.82	116.02	111.13
2	F	2007	CIT	O5-C6-C3	-3.81	116.86	122.25
2	D	2004	CIT	O5-C6-C3	-3.80	116.87	122.25
3	H	3007	APR	O3D-C3D-C4D	-3.79	100.08	111.05
3	D	3003	APR	O3D-C3D-C4D	-3.76	100.17	111.05
3	F	3005	APR	O4D-C4D-C3D	-3.76	97.67	105.11
2	L	2010	CIT	O7-C3-C2	3.72	118.11	109.40
3	L	3011	APR	O4D-C4D-C3D	-3.72	97.75	105.11
3	L	3011	APR	O1D-C1D-O4D	3.71	115.88	111.13
3	K	3010	APR	C5D-C4D-C3D	-3.66	101.48	115.18
2	F	2007	CIT	C4-C3-C2	3.61	118.57	109.16
3	C	3002	APR	O3D-C3D-C4D	3.59	121.43	111.05
2	B	2002	CIT	O4-C5-O3	-3.55	114.46	123.30
3	L	3011	APR	O3D-C3D-C4D	-3.54	100.81	111.05
3	G	3006	APR	O5D-C5D-C4D	-3.53	96.85	108.99
3	E	3004	APR	C5D-C4D-C3D	-3.51	102.01	115.18
2	H	2005	CIT	O6-C6-C3	3.46	119.06	113.05
2	I	2011	CIT	O7-C3-C4	3.45	117.48	109.40
2	B	2002	CIT	O7-C3-C2	3.45	117.48	109.40
2	G	2006	CIT	C3-C4-C5	-3.43	105.51	113.81
2	E	2008	CIT	O7-C3-C6	-3.41	104.08	108.86
2	K	2013	CIT	O7-C3-C4	3.36	117.26	109.40
2	B	2002	CIT	O4-C5-C4	3.29	124.91	114.35
2	A	2001	CIT	C4-C3-C2	-3.27	100.62	109.16
3	H	3007	APR	O1D-C1D-O4D	3.22	115.26	111.13
2	J	2012	CIT	O5-C6-C3	-3.20	117.72	122.25
2	A	2001	CIT	O4-C5-C4	3.19	124.59	114.35
2	H	2005	CIT	C3-C4-C5	-3.16	106.17	113.81
3	C	3002	APR	O1D-C1D-C2D	-3.13	95.46	110.39
2	C	2003	CIT	O4-C5-C4	3.11	124.35	114.35
3	A	3001	APR	C5D-C4D-C3D	-3.10	103.58	115.18
2	C	2003	CIT	O7-C3-C6	-3.08	104.53	108.86
3	B	3012	APR	C1D-C2D-C3D	3.07	106.14	102.30
2	F	2007	CIT	O7-C3-C6	-3.05	104.58	108.86
2	F	2007	CIT	O7-C3-C2	-3.03	102.32	109.40
3	D	3003	APR	C5D-C4D-C3D	-2.99	103.98	115.18
3	L	3011	APR	C2D-C3D-C4D	-2.98	96.86	102.64
3	D	3003	APR	C4-C5-N7	-2.93	106.34	109.40
3	G	3006	APR	O4D-C1D-C2D	-2.90	100.90	104.46
2	B	2002	CIT	C3-C4-C5	-2.89	106.81	113.81
3	B	3012	APR	O4D-C1D-C2D	2.89	108.02	104.46
2	J	2012	CIT	C3-C2-C1	-2.89	106.82	113.81

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	3001	APR	C1'-N9-C4	-2.89	121.57	126.64
2	B	2002	CIT	C4-C3-C6	-2.84	103.99	110.11
2	A	2001	CIT	O3-C5-C4	-2.82	114.70	122.94
2	L	2010	CIT	C4-C3-C6	-2.80	104.08	110.11
2	E	2008	CIT	O6-C6-C3	2.77	117.86	113.05
3	B	3012	APR	O2D-C2D-C1D	-2.76	104.21	111.82
3	C	3002	APR	C1'-N9-C4	-2.75	121.81	126.64
2	B	2002	CIT	O7-C3-C4	2.73	115.79	109.40
2	A	2001	CIT	O7-C3-C6	-2.71	105.06	108.86
3	K	3010	APR	O3D-C3D-C4D	-2.66	103.36	111.05
3	H	3007	APR	O4D-C4D-C3D	-2.64	99.89	105.11
2	J	2012	CIT	C4-C3-C2	2.63	116.02	109.16
3	A	3001	APR	O3D-C3D-C4D	-2.63	103.46	111.05
3	B	3012	APR	C5D-C4D-C3D	-2.62	105.37	115.18
2	J	2012	CIT	O6-C6-C3	2.60	117.56	113.05
2	A	2001	CIT	C4-C3-C6	2.59	115.66	110.11
3	D	3003	APR	PB-O3A-PA	-2.58	123.99	132.83
2	H	2005	CIT	O7-C3-C2	2.56	115.39	109.40
2	C	2003	CIT	O3-C5-C4	-2.54	115.51	122.94
2	G	2006	CIT	O7-C3-C2	2.52	115.30	109.40
3	G	3006	APR	PB-O3A-PA	-2.51	124.21	132.83
2	C	2003	CIT	C4-C3-C6	2.51	115.49	110.11
2	D	2004	CIT	O4-C5-C4	2.50	122.39	114.35
2	D	2004	CIT	O2-C1-O1	-2.50	117.06	123.30
3	G	3006	APR	C1'-N9-C4	-2.50	122.25	126.64
2	L	2010	CIT	O1-C1-C2	-2.50	115.64	122.94
3	I	3008	APR	C1'-N9-C4	-2.49	122.27	126.64
2	B	2002	CIT	O6-C6-C3	2.49	117.37	113.05
3	A	3001	APR	PB-O3A-PA	-2.48	124.31	132.83
3	E	3004	APR	C4-C5-N7	-2.46	106.83	109.40
2	L	2010	CIT	O5-C6-C3	-2.46	118.77	122.25
2	D	2004	CIT	O4-C5-O3	-2.45	117.18	123.30
3	A	3001	APR	C2D-C3D-C4D	2.44	107.39	102.64
2	C	2003	CIT	C3-C2-C1	2.44	119.71	113.81
3	J	3009	APR	C5D-C4D-C3D	-2.43	106.08	115.18
2	F	2007	CIT	O4-C5-O3	-2.42	117.26	123.30
3	D	3003	APR	O1D-C1D-O4D	2.42	114.23	111.13
2	G	2006	CIT	O2-C1-O1	-2.42	117.28	123.30
3	K	3010	APR	C1'-N9-C4	-2.40	122.42	126.64
3	I	3008	APR	C4-C5-N7	-2.40	106.90	109.40
3	H	3007	APR	C4-C5-N7	-2.39	106.91	109.40
3	J	3009	APR	O4'-C1'-C2'	-2.35	103.49	106.93

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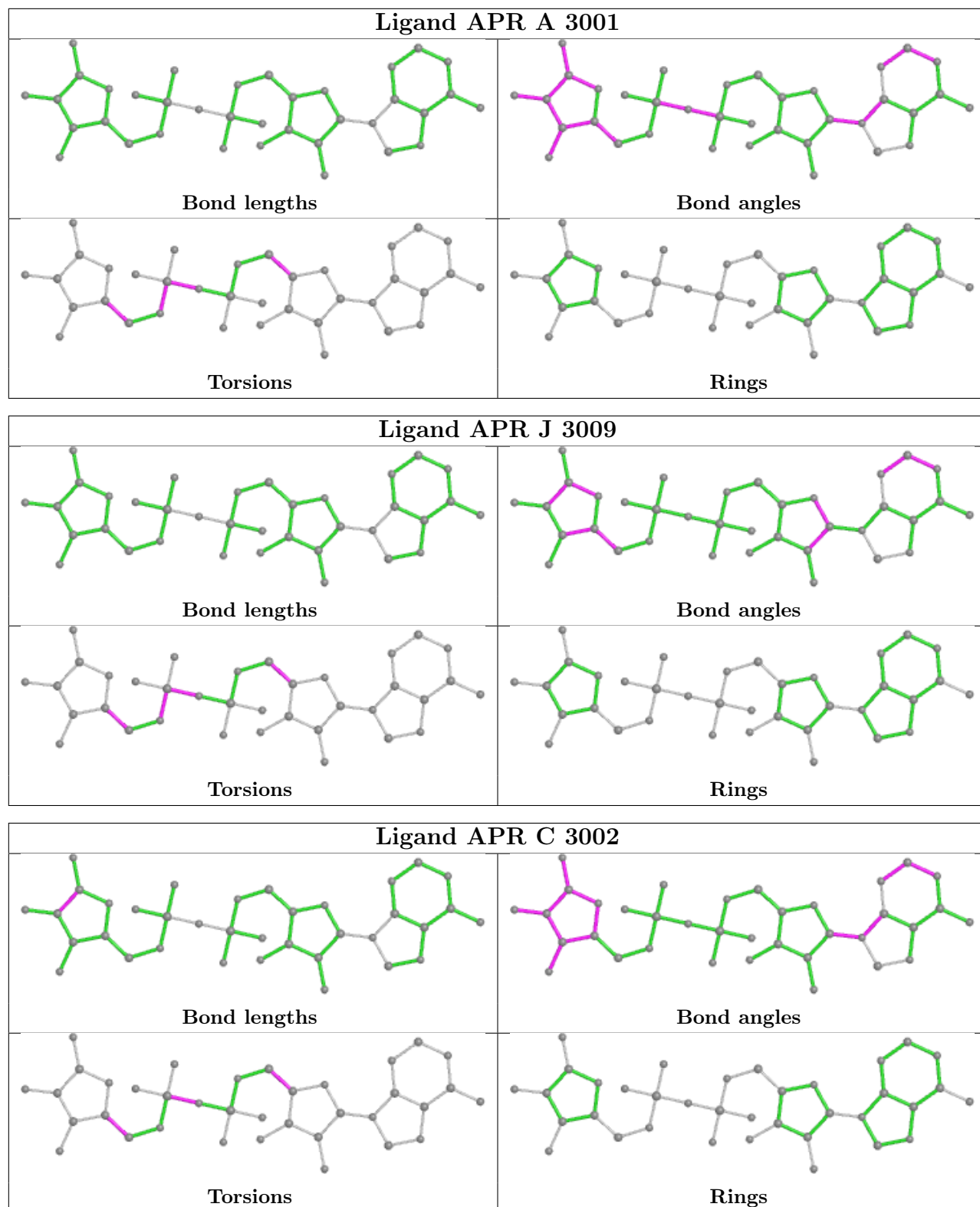| Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	3003	APR	O4D-C4D-C5D	2.35	117.11	109.37
3	D	3003	APR	O4'-C1'-C2'	-2.30	103.56	106.93
2	E	2008	CIT	O4-C5-C4	2.28	121.67	114.35
2	F	2007	CIT	O7-C3-C4	2.27	114.71	109.40
3	F	3005	APR	O2D-C2D-C1D	2.27	118.08	111.82
3	I	3008	APR	PB-O3A-PA	-2.26	125.06	132.83
2	F	2007	CIT	O6-C6-O5	2.24	130.93	123.82
2	H	2005	CIT	O7-C3-C4	2.23	114.62	109.40
3	B	3012	APR	C1'-N9-C4	-2.23	122.72	126.64
2	A	2001	CIT	O7-C3-C2	2.23	114.61	109.40
3	K	3010	APR	O2D-C2D-C3D	-2.21	104.67	111.82
3	F	3005	APR	O4'-C1'-C2'	-2.15	103.79	106.93
2	A	2001	CIT	C3-C4-C5	2.13	118.98	113.81
2	L	2010	CIT	C3-C4-C5	-2.12	108.67	113.81
2	D	2004	CIT	O7-C3-C6	-2.12	105.89	108.86
3	G	3006	APR	C2-N1-C6	2.11	122.37	118.75
3	E	3004	APR	C1D-C2D-C3D	2.11	104.94	102.30
3	E	3004	APR	O4D-C4D-C5D	2.10	116.28	109.37
3	A	3001	APR	O2D-C2D-C1D	-2.10	106.03	111.82
2	J	2012	CIT	C2-C3-C6	-2.09	105.61	110.11
2	L	2010	CIT	O2-C1-C2	2.09	121.05	114.35
2	F	2007	CIT	C2-C3-C6	-2.07	105.65	110.11
2	B	2002	CIT	O6-C6-O5	2.06	130.37	123.82
3	K	3010	APR	O4D-C4D-C5D	2.05	116.12	109.37
2	H	2005	CIT	O2-C1-O1	-2.04	118.20	123.30
2	J	2012	CIT	O4-C5-C4	2.03	120.88	114.35
2	L	2010	CIT	C2-C3-C6	2.03	114.47	110.11
2	H	2005	CIT	C4-C3-C6	-2.02	105.77	110.11
3	F	3005	APR	C1'-N9-C4	-2.00	123.12	126.64

There are no chirality outliers.

All (126) torsion outliers are listed below:

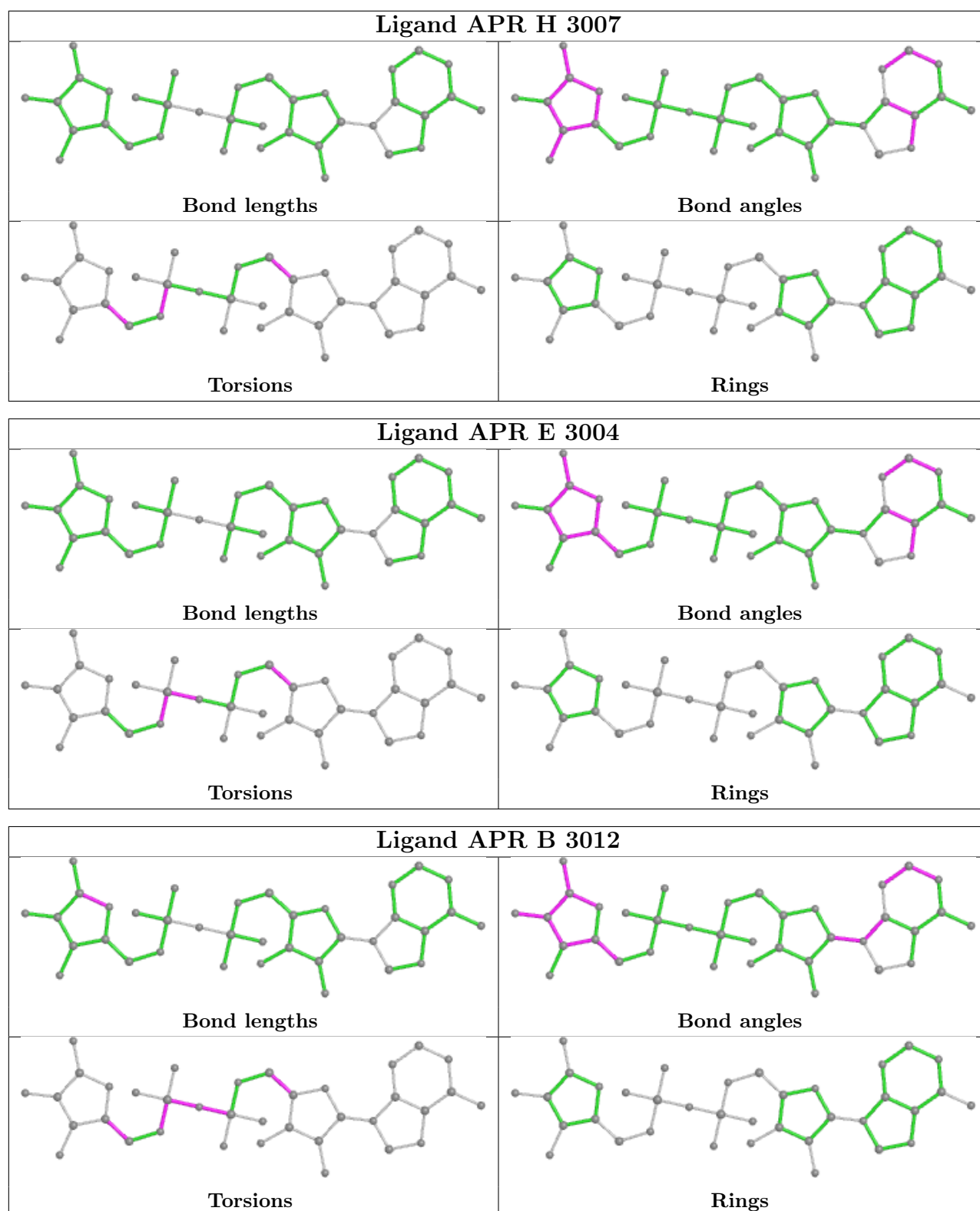| Mol	Chain	Res	Type	Atoms
2	A	2001	CIT	C2-C3-C4-C5
2	A	2001	CIT	O7-C3-C4-C5
2	A	2001	CIT	O7-C3-C6-O5
2	A	2001	CIT	O7-C3-C6-O6
2	A	2001	CIT	C4-C3-C6-O5
2	A	2001	CIT	C4-C3-C6-O6
2	C	2003	CIT	C2-C3-C4-C5
2	C	2003	CIT	O7-C3-C4-C5

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Mol	Chain	Res	Type	Atoms
2	C	2003	CIT	C6-C3-C4-C5
2	C	2003	CIT	O7-C3-C6-O5
2	C	2003	CIT	O7-C3-C6-O6
2	C	2003	CIT	C4-C3-C6-O5
2	C	2003	CIT	C4-C3-C6-O6
2	F	2007	CIT	C1-C2-C3-O7
2	F	2007	CIT	C1-C2-C3-C4
2	F	2007	CIT	C1-C2-C3-C6
2	F	2007	CIT	C2-C3-C6-O5
2	F	2007	CIT	C2-C3-C6-O6
2	F	2007	CIT	O7-C3-C6-O5
2	F	2007	CIT	O7-C3-C6-O6
2	G	2006	CIT	C2-C3-C4-C5
2	G	2006	CIT	C6-C3-C4-C5
2	H	2005	CIT	C2-C3-C4-C5
2	H	2005	CIT	C6-C3-C4-C5
2	I	2011	CIT	C2-C3-C4-C5
2	I	2011	CIT	C6-C3-C4-C5
2	J	2012	CIT	C2-C3-C4-C5
2	J	2012	CIT	C6-C3-C4-C5
2	K	2013	CIT	C2-C3-C4-C5
2	K	2013	CIT	C6-C3-C4-C5
2	L	2010	CIT	C2-C3-C6-O5
2	L	2010	CIT	C2-C3-C6-O6
2	L	2010	CIT	O7-C3-C6-O6
3	A	3001	APR	O4D-C4D-C5D-O5D
3	B	3012	APR	C5D-O5D-PB-O3A
3	C	3002	APR	O4D-C4D-C5D-O5D
3	D	3003	APR	C5D-O5D-PB-O1B
3	D	3003	APR	C5D-O5D-PB-O2B
3	E	3004	APR	C5D-O5D-PB-O1B
3	E	3004	APR	C5D-O5D-PB-O2B
3	F	3005	APR	C5D-O5D-PB-O2B
3	F	3005	APR	O4D-C4D-C5D-O5D
3	F	3005	APR	C3D-C4D-C5D-O5D
3	H	3007	APR	C5D-O5D-PB-O2B
3	H	3007	APR	O4D-C4D-C5D-O5D
3	H	3007	APR	C3D-C4D-C5D-O5D
3	I	3008	APR	C5D-O5D-PB-O1B
3	I	3008	APR	C5D-O5D-PB-O2B
3	I	3008	APR	O4D-C4D-C5D-O5D
3	I	3008	APR	C3D-C4D-C5D-O5D

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Mol	Chain	Res	Type	Atoms
3	J	3009	APR	C5D-O5D-PB-O1B
3	J	3009	APR	O4D-C4D-C5D-O5D
3	K	3010	APR	C5D-O5D-PB-O2B
3	L	3011	APR	C5D-O5D-PB-O2B
3	L	3011	APR	O4D-C4D-C5D-O5D
3	L	3011	APR	C3D-C4D-C5D-O5D
3	A	3001	APR	C3D-C4D-C5D-O5D
3	J	3009	APR	C3D-C4D-C5D-O5D
3	K	3010	APR	O4D-C4D-C5D-O5D
3	K	3010	APR	C3D-C4D-C5D-O5D
2	A	2001	CIT	C6-C3-C4-C5
3	C	3002	APR	C3D-C4D-C5D-O5D
2	E	2008	CIT	C1-C2-C3-O7
2	I	2011	CIT	O7-C3-C4-C5
2	D	2004	CIT	C1-C2-C3-O7
2	E	2008	CIT	C1-C2-C3-C6
2	G	2006	CIT	O7-C3-C4-C5
2	J	2012	CIT	O7-C3-C4-C5
2	E	2008	CIT	C1-C2-C3-C4
2	H	2005	CIT	O7-C3-C4-C5
3	B	3012	APR	O4D-C4D-C5D-O5D
2	A	2001	CIT	C2-C3-C6-O5
2	A	2001	CIT	C2-C3-C6-O6
3	B	3012	APR	PB-O3A-PA-O5'
3	A	3001	APR	C5D-O5D-PB-O3A
3	F	3005	APR	C5D-O5D-PB-O3A
3	H	3007	APR	C5D-O5D-PB-O3A
3	I	3008	APR	C5D-O5D-PB-O3A
3	K	3010	APR	C5D-O5D-PB-O3A
3	L	3011	APR	C5D-O5D-PB-O3A
3	B	3012	APR	C5D-O5D-PB-O1B
3	F	3005	APR	C5D-O5D-PB-O1B
3	K	3010	APR	C5D-O5D-PB-O1B
3	B	3012	APR	C3D-C4D-C5D-O5D
2	L	2010	CIT	C4-C3-C6-O5
2	L	2010	CIT	C4-C3-C6-O6
2	F	2007	CIT	O7-C3-C4-C5
2	K	2013	CIT	O7-C3-C4-C5
3	D	3003	APR	O4'-C4'-C5'-O5'
2	L	2010	CIT	O7-C3-C6-O5
2	C	2003	CIT	C2-C3-C6-O6
2	D	2004	CIT	C3-C4-C5-O3

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Mol	Chain	Res	Type	Atoms
2	D	2004	CIT	C3-C4-C5-O4
3	D	3003	APR	O4D-C4D-C5D-O5D
2	E	2008	CIT	O7-C3-C4-C5
3	I	3008	APR	PB-O3A-PA-O5'
2	C	2003	CIT	O1-C1-C2-C3
2	D	2004	CIT	C1-C2-C3-C4
2	J	2012	CIT	C1-C2-C3-O7
3	D	3003	APR	C5D-O5D-PB-O3A
3	E	3004	APR	C5D-O5D-PB-O3A
2	F	2007	CIT	C3-C4-C5-O3
3	G	3006	APR	O4'-C4'-C5'-O5'
3	H	3007	APR	O4'-C4'-C5'-O5'
3	J	3009	APR	O4'-C4'-C5'-O5'
3	K	3010	APR	O4'-C4'-C5'-O5'
3	A	3001	APR	PA-O3A-PB-O1B
3	B	3012	APR	PA-O3A-PB-O2B
3	C	3002	APR	PA-O3A-PB-O1B
3	E	3004	APR	PA-O3A-PB-O1B
3	F	3005	APR	PA-O3A-PB-O1B
3	I	3008	APR	PA-O3A-PB-O1B
3	J	3009	APR	PA-O3A-PB-O2B
2	A	2001	CIT	C3-C4-C5-O3
2	F	2007	CIT	C3-C4-C5-O4
3	H	3007	APR	C5D-O5D-PB-O1B
3	L	3011	APR	C5D-O5D-PB-O1B
3	A	3001	APR	O4'-C4'-C5'-O5'
3	B	3012	APR	O4'-C4'-C5'-O5'
3	C	3002	APR	O4'-C4'-C5'-O5'
3	E	3004	APR	O4'-C4'-C5'-O5'
3	F	3005	APR	O4'-C4'-C5'-O5'
3	I	3008	APR	O4'-C4'-C5'-O5'
3	L	3011	APR	O4'-C4'-C5'-O5'
2	A	2001	CIT	C3-C4-C5-O4
2	C	2003	CIT	O2-C1-C2-C3

There are no ring outliers.

23 monomers are involved in 111 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	3006	APR	7	0
3	I	3008	APR	4	0
2	F	2007	CIT	5	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	3005	APR	3	0
2	A	2001	CIT	11	0
3	A	3001	APR	3	0
3	J	3009	APR	5	0
2	B	2002	CIT	4	0
2	H	2005	CIT	3	0
2	D	2004	CIT	2	0
3	C	3002	APR	4	0
2	C	2003	CIT	12	0
3	K	3010	APR	3	0
3	D	3003	APR	5	0
3	L	3011	APR	3	0
2	J	2012	CIT	6	0
2	I	2011	CIT	1	0
2	E	2008	CIT	7	0
2	L	2010	CIT	7	0
3	H	3007	APR	6	0
3	E	3004	APR	4	0
3	B	3012	APR	5	0
2	K	2013	CIT	1	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 APR G 3006

Bond lengths

Bond angles

Torsions

Rings

Ligand APR I 3008

Bond lengths

Bond angles

Torsions

Rings

Ligand APR F 3005

Bond lengths

Bond angles

Torsions

Rings

Ligand APR A 3001

Bond lengths

Bond angles

Torsions

Rings

Ligand APR J 3009

Bond lengths

Bond angles

Torsions

Rings

Ligand APR C 3002

Bond lengths

Bond angles

Torsions

Rings

Ligand APR K 3010

Bond lengths

Bond angles

Torsions

Rings

Ligand APR D 3003

Bond lengths

Bond angles

Torsions

Rings

Ligand APR L 3011

Bond lengths

Bond angles

Torsions

Rings

Ligand APR H 3007

Bond lengths

Bond angles

Torsions

Rings

Ligand APR E 3004

Bond lengths

Bond angles

Torsions

Rings

Ligand APR B 3012

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	\<RSRZ\>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	313/328 (95%)	-0.30	2 (0%)	89	88	22, 32, 46, 60	0
1	B	314/328 (95%)	-0.30	1 (0%)	94	93	20, 31, 46, 58	0
1	C	314/328 (95%)	-0.32	1 (0%)	94	93	21, 32, 46, 58	0
1	D	314/328 (95%)	-0.30	3 (0%)	82	81	22, 32, 47, 59	0
1	E	313/328 (95%)	-0.31	4 (1%)	77	75	23, 32, 46, 57	0
1	F	314/328 (95%)	-0.31	0	100	100	22, 32, 46, 60	0
1	G	313/328 (95%)	-0.37	3 (0%)	82	81	22, 32, 46, 58	0
1	H	314/328 (95%)	-0.30	4 (1%)	77	75	23, 33, 47, 57	0
1	I	313/328 (95%)	-0.29	3 (0%)	82	81	22, 33, 46, 57	0
1	J	314/328 (95%)	-0.25	8 (2%)	57	55	24, 33, 48, 63	0
1	K	313/328 (95%)	-0.28	4 (1%)	77	75	23, 33, 46, 60	0
1	L	314/328 (95%)	-0.31	3 (0%)	82	81	23, 33, 47, 60	0
All	All	3763/3936 (95%)	-0.30	36 (0%)	82	81	20, 32, 47, 63	0

All (36) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	J	321	GLN	3.3
1	K	13	MET	3.3
1	E	303	ASP	3.2
1	H	276	ASN	3.1
1	J	239	THR	3.1
1	L	276	ASN	3.0
1	L	325	SER	3.0
1	L	303	ASP	2.9
1	J	303	ASP	2.8
1	H	13	MET	2.8
1	J	325	SER	2.7

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Mol	Chain	Res	Type	RSRZ
1	E	239	THR	2.7
1	K	303	ASP	2.7
1	G	303	ASP	2.6
1	D	303	ASP	2.6
1	J	324	LYS	2.6
1	I	303	ASP	2.5
1	H	321	GLN	2.5
1	I	97	ASN	2.4
1	K	324	LYS	2.3
1	G	304	ASP	2.3
1	E	13	MET	2.3
1	H	303	ASP	2.3
1	E	324	LYS	2.2
1	D	321	GLN	2.2
1	J	228	PHE	2.1
1	J	276	ASN	2.1
1	A	300	ASN	2.1
1	B	13	MET	2.1
1	J	314	GLU	2.1
1	C	97	ASN	2.1
1	G	314	GLU	2.0
1	K	276	ASN	2.0
1	D	314	GLU	2.0
1	I	86	VAL	2.0
1	A	97	ASN	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($Å^2$)	Q<0.9
2	CIT	L	2010	13/13	0.76	0.27	34,41,48,49	0
2	CIT	J	2012	13/13	0.81	0.24	49,52,56,58	0
2	CIT	C	2003	13/13	0.89	0.15	26,31,34,34	0
2	CIT	F	2007	13/13	0.89	0.16	26,30,33,33	0
2	CIT	H	2005	13/13	0.89	0.13	30,33,36,38	0
2	CIT	A	2001	13/13	0.89	0.17	27,33,35,37	0
2	CIT	B	2002	13/13	0.89	0.15	23,27,31,32	0
3	APR	H	3007	36/36	0.89	0.17	42,47,50,51	0
2	CIT	E	2008	13/13	0.90	0.16	27,34,38,40	0
2	CIT	I	2011	13/13	0.91	0.13	27,29,32,33	0
3	APR	J	3009	36/36	0.91	0.17	42,46,51,55	0
2	CIT	K	2013	13/13	0.92	0.12	31,33,36,37	0
2	CIT	G	2006	13/13	0.92	0.12	25,29,34,34	0
3	APR	G	3006	36/36	0.93	0.12	34,36,47,53	0
3	APR	D	3003	36/36	0.93	0.15	36,42,46,49	0
3	APR	E	3004	36/36	0.93	0.15	36,41,43,48	0
3	APR	L	3011	36/36	0.93	0.13	32,40,45,48	0
3	APR	C	3002	36/36	0.94	0.11	28,32,39,40	0
3	APR	F	3005	36/36	0.94	0.11	30,35,44,46	0
3	APR	K	3010	36/36	0.94	0.12	35,40,46,52	0
3	APR	B	3012	36/36	0.94	0.13	30,40,44,46	0
3	APR	A	3001	36/36	0.95	0.11	33,36,45,51	0
2	CIT	D	2004	13/13	0.95	0.13	28,31,32,32	0
3	APR	I	3008	36/36	0.95	0.09	30,32,38,40	0

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

Electron density around APR H 3007:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
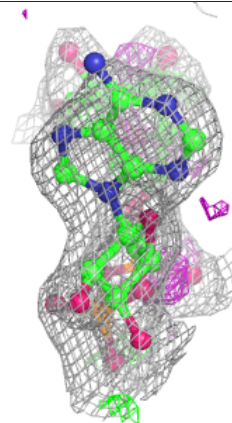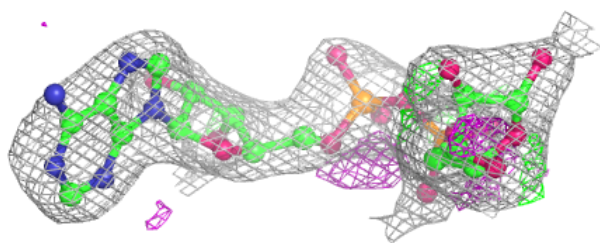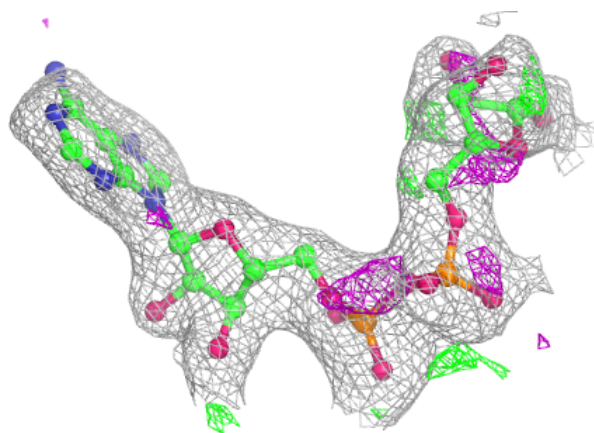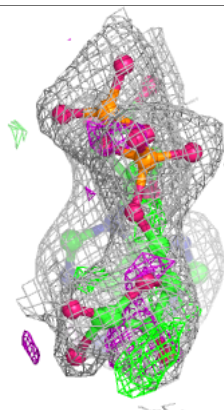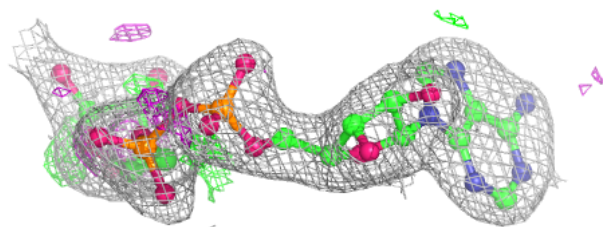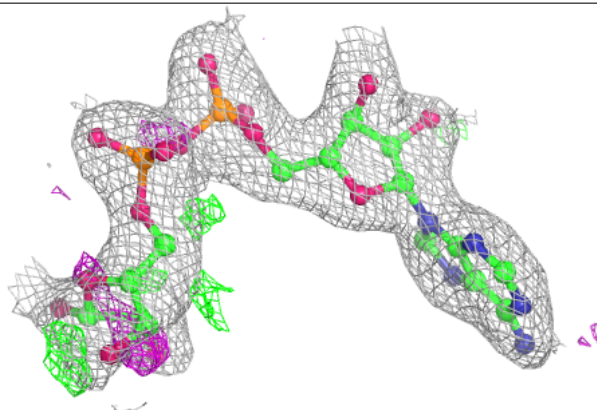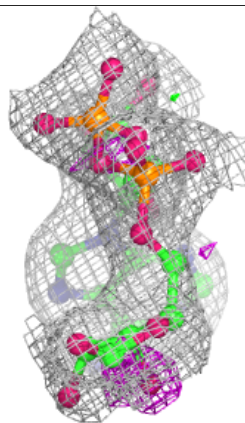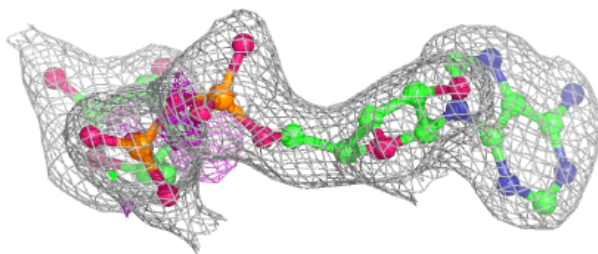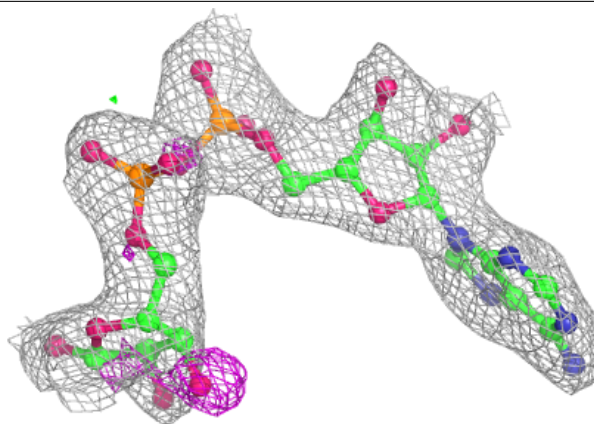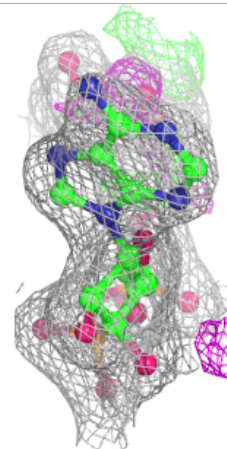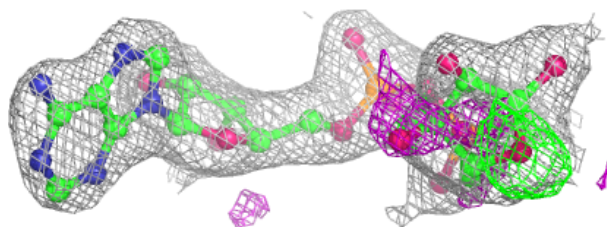
Electron density around APR J 3009:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
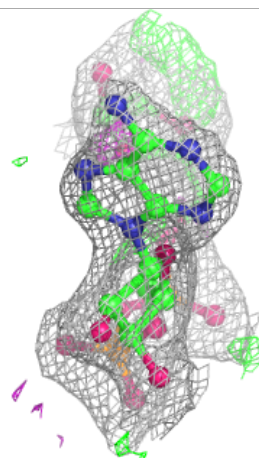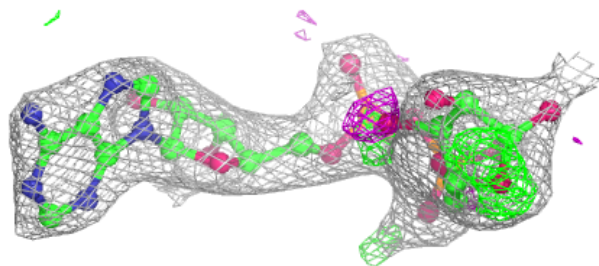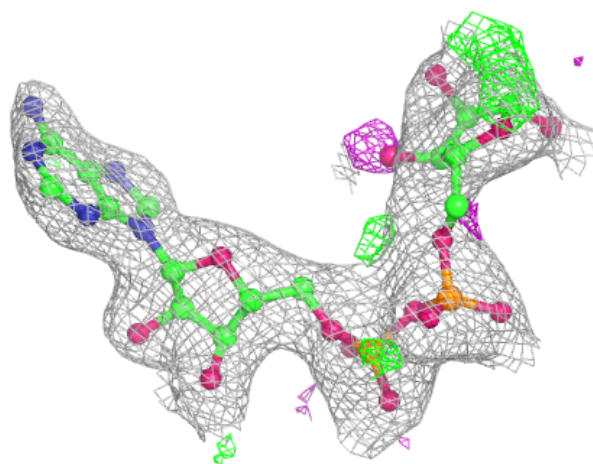
Electron density around APR G 3006:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
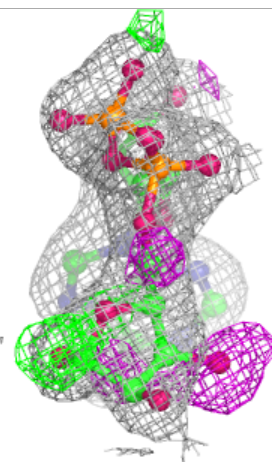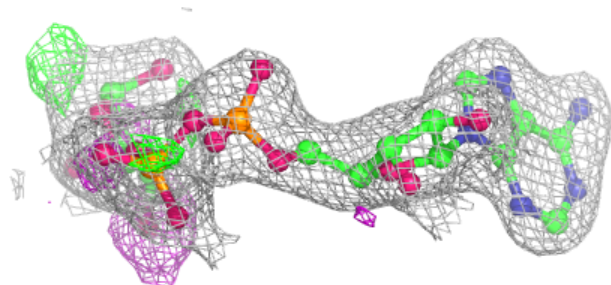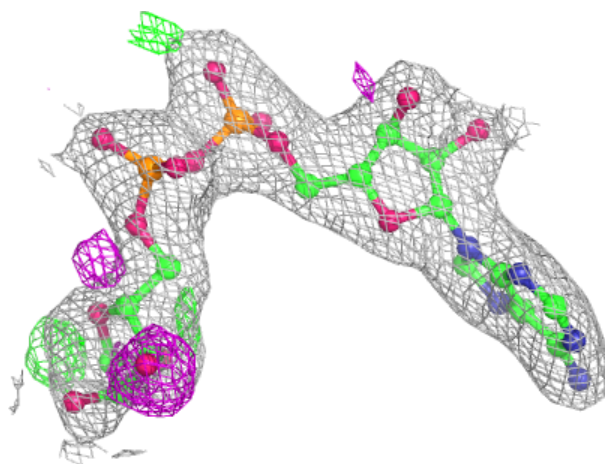
Electron density around APR D 3003:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
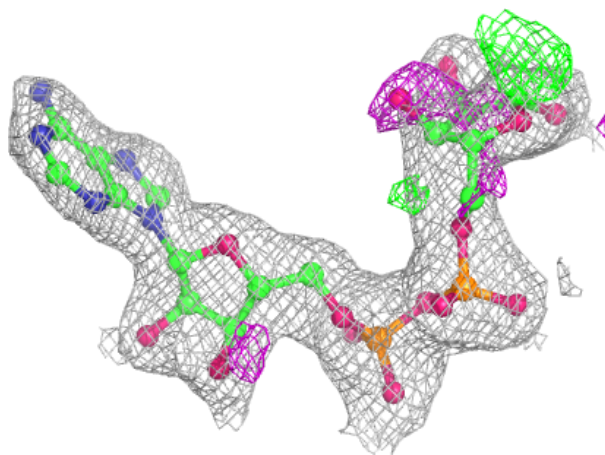mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
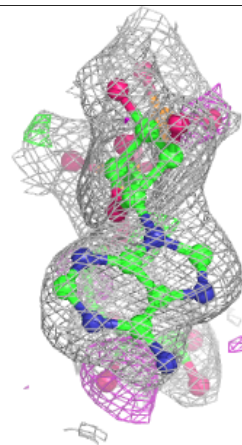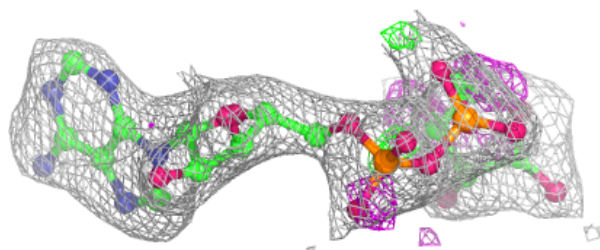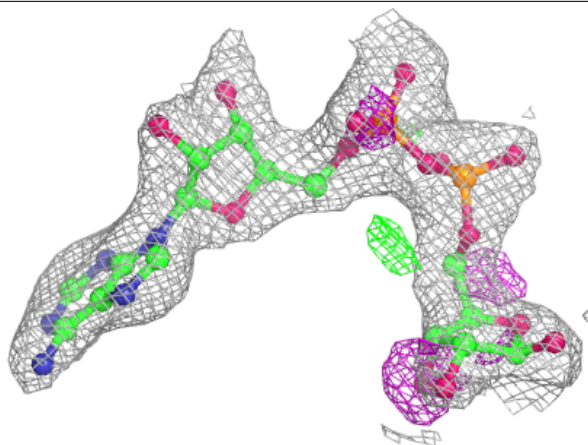
Electron density around APR E 3004:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
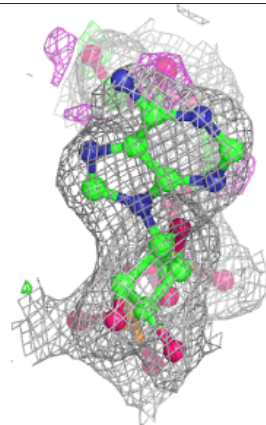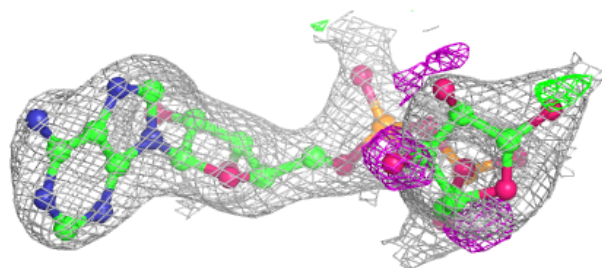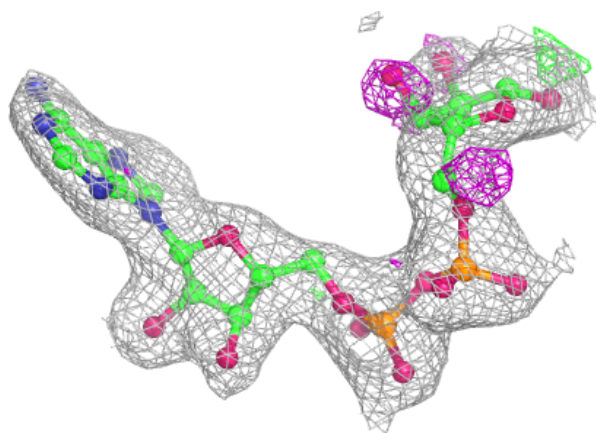
Electron density around APR L 3011:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
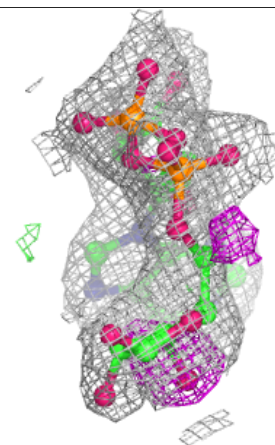$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
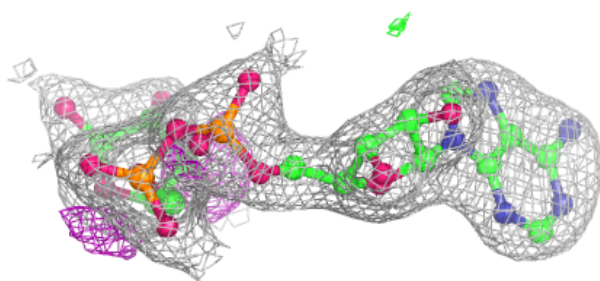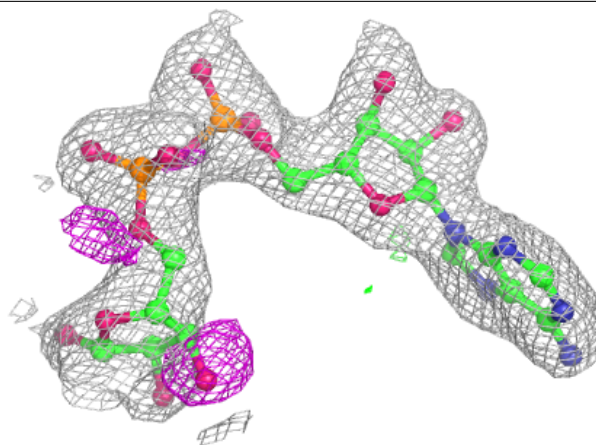and green (positive)
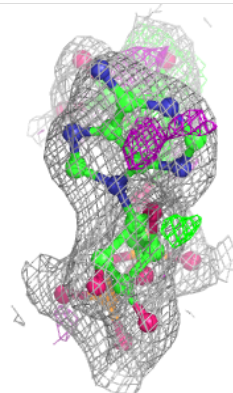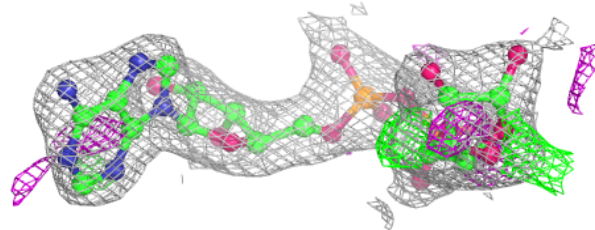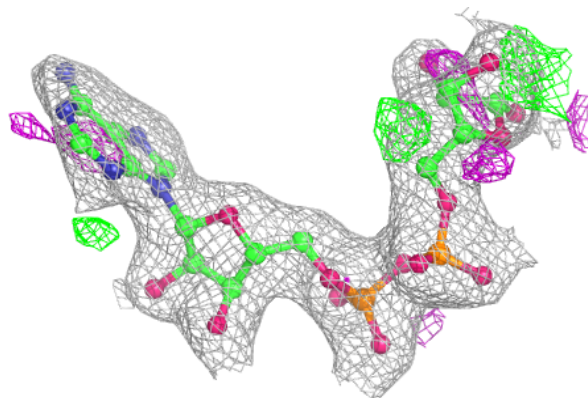
Electron density around APR C 3002:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
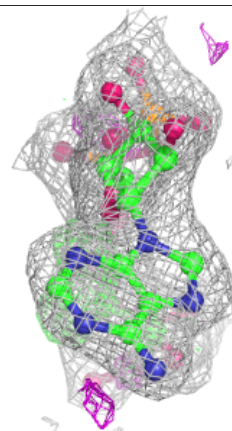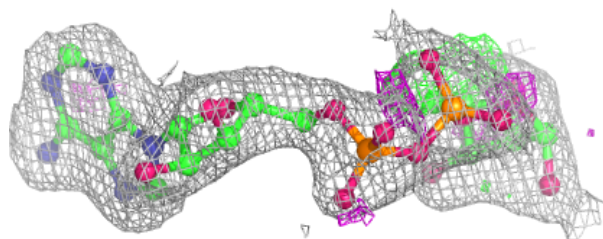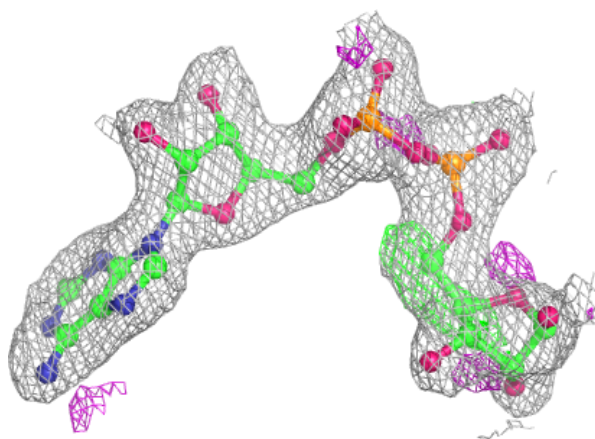
Electron density around APR F 3005:

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 APR K 3010:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
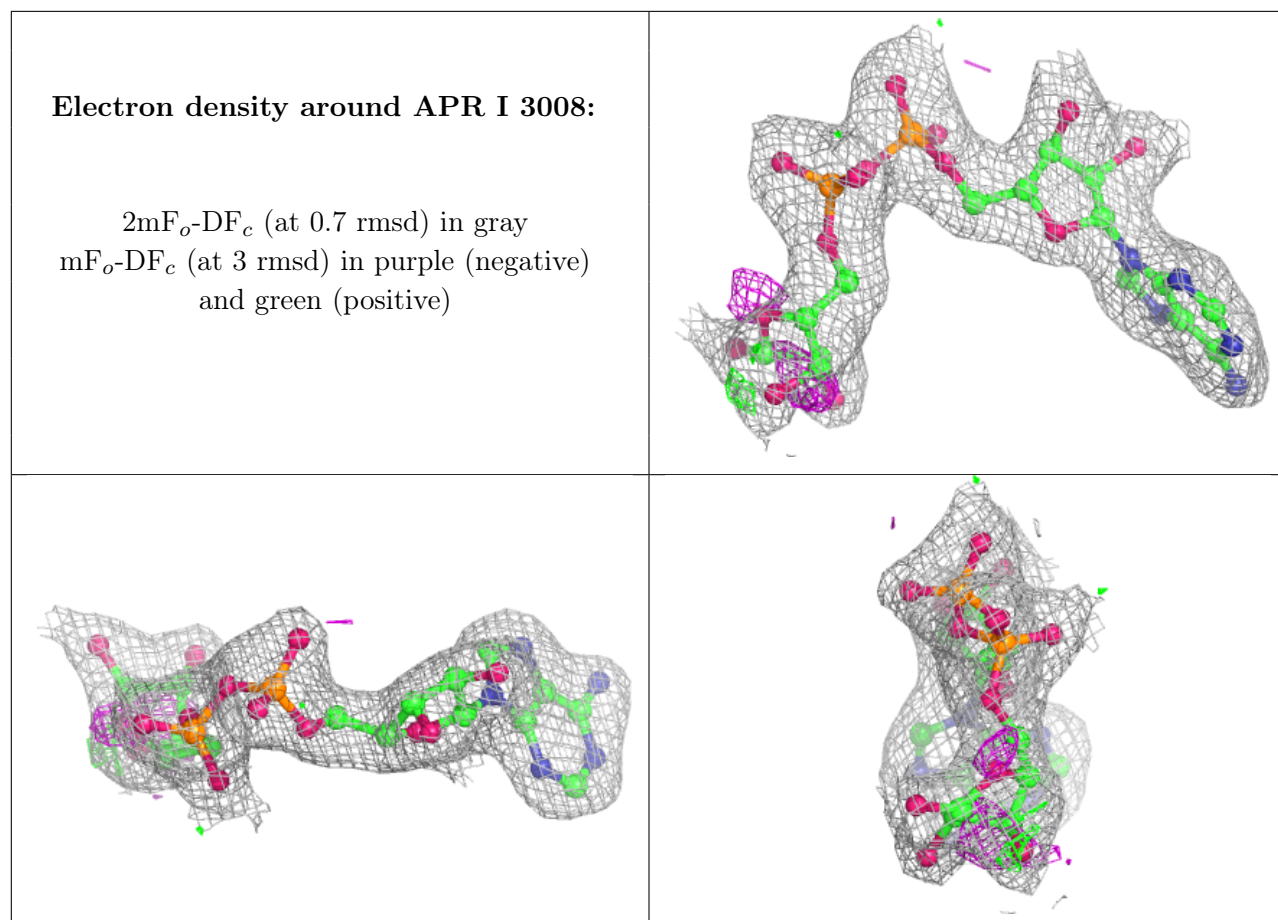
Electron density around APR B 3012:

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

Electron density around APR A 3001:

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

Electron density around APR I 3008:

$2mF_o$-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 ⓘ

There are no such residues in this entry.