Full wwPDB X-ray Structure Validation Report (i)

Feb 19, 2024 – 02:34 AM EST

PDB ID	:	4JHD
Title	:	Crystal Structure of an Actin Dimer in Complex with the Actin Nucleator Cordon-Bleu
Authors	:	Chen, X.; Ni, F.; Wang, Q.
Deposited on	:	2013-03-04
Resolution	:	2.91 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:

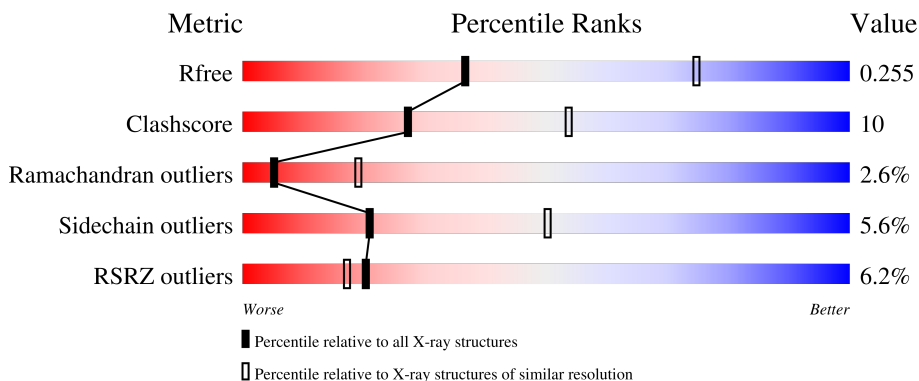|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.91 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		0.255
Clashscore		10
Ramachandran outliers		2.6%
Sidechain outliers		5.6%
RSRZ outliers		6.2%

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	2307 (2.94-2.90)
Clashscore	141614	2531 (2.94-2.90)
Ramachandran outliers	138981	2462 (2.94-2.90)
Sidechain outliers	138945	2464 (2.94-2.90)
RSRZ outliers	127900	2248 (2.94-2.90)

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	384	2% 74% 21% • •
1	D	384	7% 73% 22% • •
2	B	384	% 82% 14% • •
2	E	384	4% 77% 17% • •
3	C	171	14% 21% 19% 6% • 53%

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Mol	Chain	Length	Quality of chain
3	F	171	12% ▬▬▬ 22% 16% · · 56%

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
5	MG	E	402	-	-	-	X

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 13002 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 Actin-5C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	371	Total 2890	C 1829	N 488	O 552	S 21	0	0	0
1	D	371	Total 2880	C 1821	N 488	O 552	S 19	0	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-8	MET	-	expression tag	UNP P10987
A	-7	ALA	-	expression tag	UNP P10987
A	-6	HIS	-	expression tag	UNP P10987
A	-5	HIS	-	expression tag	UNP P10987
A	-4	HIS	-	expression tag	UNP P10987
A	-3	HIS	-	expression tag	UNP P10987
A	-2	HIS	-	expression tag	UNP P10987
A	-1	HIS	-	expression tag	UNP P10987
A	204	GLU	ALA	engineered mutation	UNP P10987
A	243	LYS	PRO	engineered mutation	UNP P10987
D	-8	MET	-	expression tag	UNP P10987
D	-7	ALA	-	expression tag	UNP P10987
D	-6	HIS	-	expression tag	UNP P10987
D	-5	HIS	-	expression tag	UNP P10987
D	-4	HIS	-	expression tag	UNP P10987
D	-3	HIS	-	expression tag	UNP P10987
D	-2	HIS	-	expression tag	UNP P10987
D	-1	HIS	-	expression tag	UNP P10987
D	204	GLU	ALA	engineered mutation	UNP P10987
D	243	LYS	PRO	engineered mutation	UNP P10987

- Molecule 2 is a protein called Actin-5C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	371	Total 2886	C 1826	N 487	O 552	S 21	0	0	0
2	E	371	Total 2886	C 1826	N 487	O 552	S 21	0	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-8	MET	-	expression tag	UNP P10987
B	-7	ALA	-	expression tag	UNP P10987
B	-6	HIS	-	expression tag	UNP P10987
B	-5	HIS	-	expression tag	UNP P10987
B	-4	HIS	-	expression tag	UNP P10987
B	-3	HIS	-	expression tag	UNP P10987
B	-2	HIS	-	expression tag	UNP P10987
B	-1	HIS	-	expression tag	UNP P10987
B	291	GLU	LYS	engineered mutation	UNP P10987
B	322	LYS	PRO	engineered mutation	UNP P10987
E	-8	MET	-	expression tag	UNP P10987
E	-7	ALA	-	expression tag	UNP P10987
E	-6	HIS	-	expression tag	UNP P10987
E	-5	HIS	-	expression tag	UNP P10987
E	-4	HIS	-	expression tag	UNP P10987
E	-3	HIS	-	expression tag	UNP P10987
E	-2	HIS	-	expression tag	UNP P10987
E	-1	HIS	-	expression tag	UNP P10987
E	291	GLU	LYS	engineered mutation	UNP P10987
E	322	LYS	PRO	engineered mutation	UNP P10987

- Molecule 3 is a protein called Protein cordon-bleu.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	81	Total 603	C 368	N 116	O 118	S 1	0	0	0
3	F	75	Total 571	C 347	N 110	O 113	S 1	0	0	0

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	49	MET	-	expression tag	UNP Q5NBX1
C	50	ALA	-	expression tag	UNP Q5NBX1
C	51	HIS	-	expression tag	UNP Q5NBX1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	52	HIS	-	expression tag	UNP Q5NBX1
C	53	HIS	-	expression tag	UNP Q5NBX1
C	54	HIS	-	expression tag	UNP Q5NBX1
C	55	HIS	-	expression tag	UNP Q5NBX1
C	56	HIS	-	expression tag	UNP Q5NBX1
C	57	VAL	-	expression tag	UNP Q5NBX1
C	87	VAL	THR	SEE REMARK 999	UNP Q5NBX1
C	167	THR	PRO	SEE REMARK 999	UNP Q5NBX1
F	49	MET	-	expression tag	UNP Q5NBX1
F	50	ALA	-	expression tag	UNP Q5NBX1
F	51	HIS	-	expression tag	UNP Q5NBX1
F	52	HIS	-	expression tag	UNP Q5NBX1
F	53	HIS	-	expression tag	UNP Q5NBX1
F	54	HIS	-	expression tag	UNP Q5NBX1
F	55	HIS	-	expression tag	UNP Q5NBX1
F	56	HIS	-	expression tag	UNP Q5NBX1
F	57	VAL	-	expression tag	UNP Q5NBX1
F	87	VAL	THR	SEE REMARK 999	UNP Q5NBX1
F	167	THR	PRO	SEE REMARK 999	UNP Q5NBX1

- Molecule 4 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$).
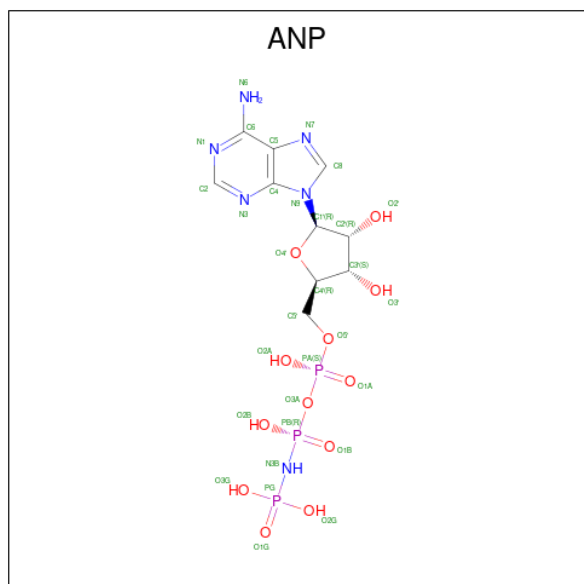
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
4	A	1	31	10	6	12	3	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	B	1	Total	C	N	O	P	0	0
			31	10	6	12	3		
4	D	1	Total	C	N	O	P	0	0
			31	10	6	12	3		
4	E	1	Total	C	N	O	P	0	0
			31	10	6	12	3		

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Mg	0	0
			1	1		
5	B	1	Total	Mg	0	0
			1	1		
5	D	1	Total	Mg	0	0
			1	1		
5	E	1	Total	Mg	0	0
			1	1		

- Molecule 6 is water.

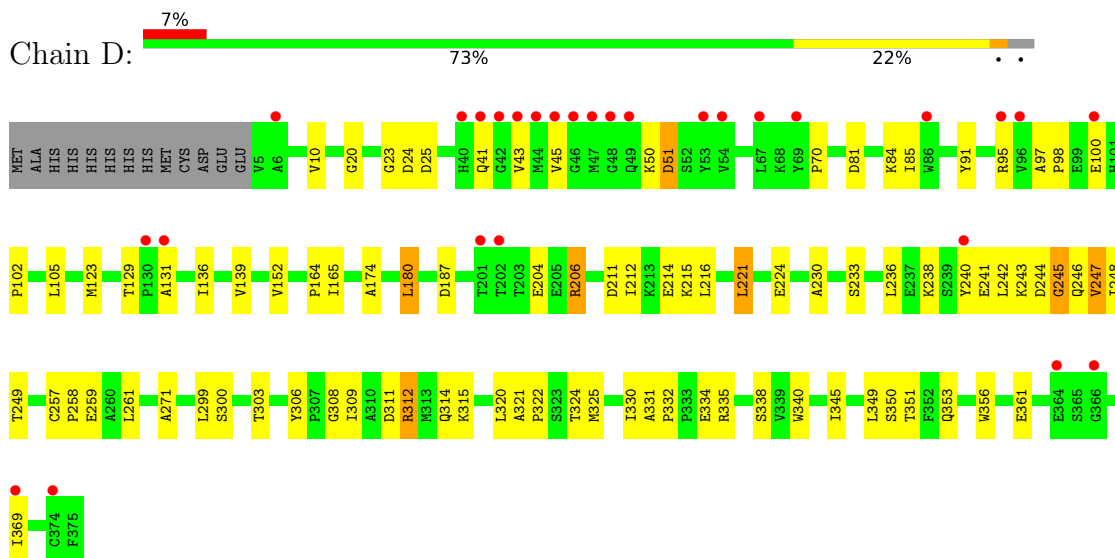| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	46	Total	O	0	0
			46	46		
6	B	43	Total	O	0	0
			43	43		
6	C	10	Total	O	0	0
			10	10		
6	D	31	Total	O	0	0
			31	31		
6	E	22	Total	O	0	0
			22	22		
6	F	6	Total	O	0	0
			6	6		

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.
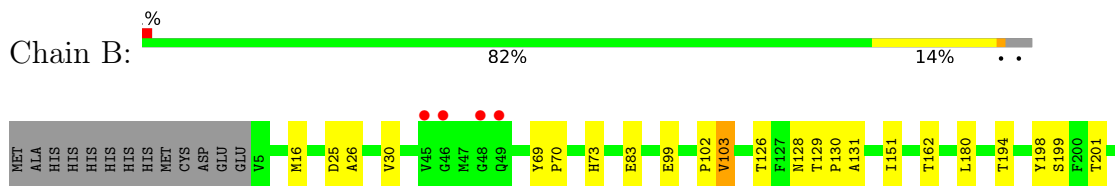
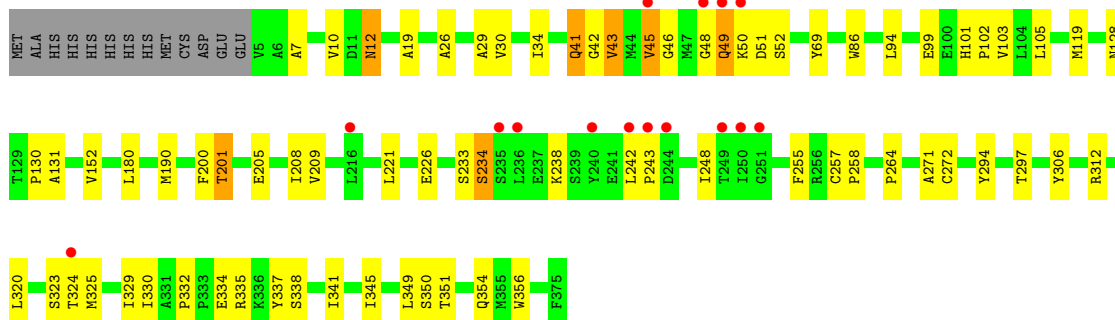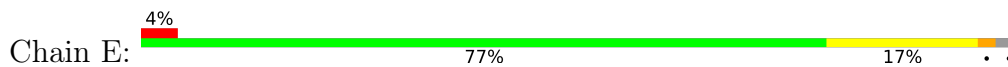• Molecule 1: Actin-5C
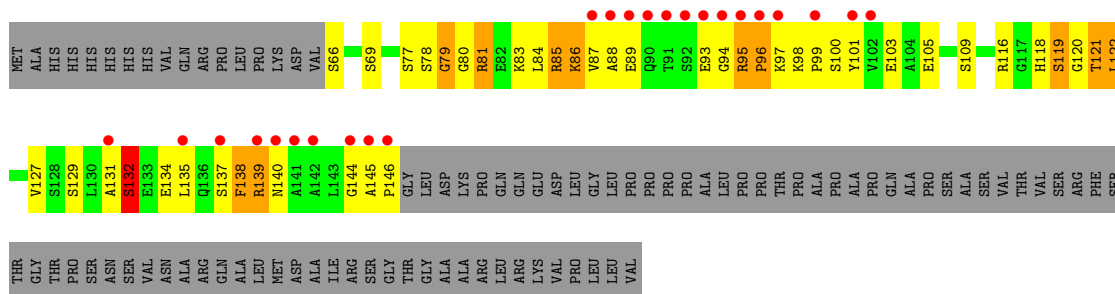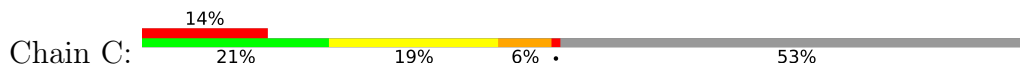

• Molecule 1: Actin-5C

• Molecule 2: Actin-5C

R210 Y218 L221 L242 P243 V247 I248 C257 P258 A271 T278 T297 V298 L299 R312 L320 A321 K322 S323 T324 M325 I330 A331 P332 R335 K336 Y337 S338 I341 S350 T351 F352 Q353 Q354 M355 W356 E361 I369 F375

• Molecule 2: Actin-5C

Chain E:

MET ALA HIS HIS HIS HIS HIS MET CYS ASP GLU GLU V5 A6 A7 V10 D11 M12 A19 A26 A29 V30 I34 Q41 G42 V43 M44 V45 G46 N47 G48 Q49 K50 D51 S52 Y69 W86 L94 E99 E100 H101 P102 V103 L104 L105 M119 N128

T129 P130 A131 V152 L180 M190 F200 T201 E205 I208 V209 L216 L221 E226 S233 S234 S235 L236 E237 K238 S239 Y240 E241 L242 P243 D244 I248 T249 I250 G251 F255 R256 C257 P258 P264 A271 C272 Y294 T297 Y306 R312

L320 S323 T324 M325 I329 I330 A331 P332 P333 E334 R335 K336 Y337 S338 I341 I345 L349 S350 T351 Q354 M355 W356 F375

• Molecule 3: Protein cordon-bleu

Chain C:

MET ALA HIS HIS HIS HIS HIS VAL GLN ARG PRO LEU PRO LYS ASP VAL S66 S69 S77 S78 G79 G80 R81 E82 K83 L84 R85 K86 V87 A88 E89 Q90 T91 S92 E93 G94 R95 P96 K97 K98 P99 S100 Y101 V102 E103 A104 E105 S109 R116 G117 H118 S119 G120 T121 L122

V127 S128 S129 L130 A131 S132 E133 E134 L135 Q136 S137 F138 R139 N140 A141 A142 L143 G144 A145 P146 GLY LEU ASP LYS PRO GLN GLU ASP LEU GLY LEU PRO PRO PRO ALA LEU PRO PRO THR PRO ALA PRO ALA PRO GLN ALA PRO SER ALA SER VAL THR VAL SER ARG PHE SER

THR GLY THR PRO SER ASN SER VAL ASN ALA ARG GLN ALA LEU MET ASP ALA ILE ARG SER GLY THR GLY ALA ALA ARG LEU ARG LYS VAL PRO LEU LEU VAL

• Molecule 3: Protein cordon-bleu

Chain F:

MET ALA HIS HIS HIS HIS HIS VAL GLN ARG PRO LEU PRO LYS ASP VAL S66 M72 H76 S77 S78 G79 G80 R81 E82 K83 L84 R85 K86 V87 A88 E89 Q90 T91 S92 E93 G94 R95 P96 K97 K98 P99 S100 Y101 V102 E103 A104 E105 L111 I115 G120 T121 L122 S123

L124 S128 A131 S132 E133 E134 L135 F138 R139 N140 ALA ALA LEU GLY ALA PRO GLY LEU ASP LYS PRO GLN GLU GLN ASP LEU GLY LEU PRO PRO PRO ALA LEU PRO PRO THR PRO ALA PRO ALA PRO GLN ALA PRO SER ALA SER VAL THR VAL SER ARG PHE SER THR GLY

THR PRO SER ASN SER VAL ASN ALA ARG GLN ALA LEU MET ASP ALA ILE ARG SER GLY THR GLY ALA ALA ARG LEU ARG LYS VAL PRO LEU LEU VAL

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	53.45Å 99.80Å 118.27Å 65.41° 90.03° 77.77°	Depositor
Resolution (Å)	45.02 – 2.91 45.02 – 2.91	Depositor EDS
% Data completeness (in resolution range)	97.7 (45.02-2.91) 97.7 (45.02-2.91)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.30 (at 2.91Å)	Xtriage
Refinement program	REFMAC 5.2.0019, PHENIX	Depositor
R, R_{free}	0.200 , 0.255 0.200 , 0.255	Depositor DCC
R_{free} test set	2341 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	61.0	Xtriage
Anisotropy	0.527	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 44.3	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	13002	wwPDB-VP
Average B, all atoms (Å^2)	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.51% 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: MG, ANP

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	0.42	0/2951	0.55	0/3996
1	D	0.45	1/2941 (0.0%)	0.53	0/3984
2	B	0.38	0/2947	0.52	0/3992
2	E	0.38	0/2947	0.53	0/3992
3	C	0.60	1/610 (0.2%)	0.64	0/816
3	F	0.83	4/577 (0.7%)	0.68	0/770
All	All	0.44	6/12973 (0.0%)	0.55	0/17550

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
3	F	0	1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	140	ASN	C-O	8.89	1.40	1.23
3	C	89	GLU	CD-OE1	7.83	1.34	1.25
3	F	86	LYS	CD-CE	7.72	1.70	1.51
3	F	128	SER	CB-OG	5.94	1.50	1.42
3	F	89	GLU	CD-OE2	5.71	1.31	1.25
1	D	51	ASP	CG-OD1	5.13	1.37	1.25

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	F	95	ARG	Peptide

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	2890	0	2865	52	0
1	D	2880	0	2837	71	0
2	B	2886	0	2857	37	0
2	E	2886	0	2857	52	0
3	C	603	0	611	55	0
3	F	571	0	580	43	0
4	A	31	0	13	4	0
4	B	31	0	13	2	0
4	D	31	0	13	5	0
4	E	31	0	13	1	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	D	1	0	0	0	0
5	E	1	0	0	0	0
6	A	46	0	0	1	0
6	B	43	0	0	0	0
6	C	10	0	0	0	0
6	D	31	0	0	0	0
6	E	22	0	0	0	0
6	F	6	0	0	0	0
All	All	13002	0	12659	257	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 10.

All (257) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:401:ANP:N6	3:F:101:TYR:CD1	2.13	1.17
1:D:70:PRO:HG2	1:D:85:ILE:HD11	1.52	0.91
3:C:122:LEU:HB3	1:D:41:GLN:HB3	1.50	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:26:ALA:CB	3:C:132:SER:HB2	2.03	0.88
2:B:210:ARG:HH12	3:C:144:GLY:H	1.23	0.86
1:D:240:TYR:O	1:D:247:VAL:HA	1.75	0.86
1:A:321:ALA:HB1	1:A:322:PRO:HD2	1.57	0.86
1:A:306:TYR:CZ	4:A:401:ANP:H2	2.10	0.85
3:C:95:ARG:HB3	3:C:96:PRO:HD3	1.59	0.84
2:B:242:LEU:HB3	2:B:243:PRO:HD2	1.60	0.83
3:C:134:GLU:HA	3:C:140:ASN:HD22	1.45	0.80
4:B:401:ANP:H3'	3:C:145:ALA:HB3	1.65	0.79
3:C:137:SER:HB3	3:C:140:ASN:HD21	1.47	0.78
1:D:240:TYR:CE1	1:D:242:LEU:HG	2.19	0.78
3:C:78:SER:O	3:C:80:GLY:N	2.19	0.76
1:A:25:ASP:OD2	3:C:88:ALA:HB2	1.85	0.76
4:D:401:ANP:N6	3:F:101:TYR:HD1	1.79	0.76
1:A:306:TYR:CE1	4:A:401:ANP:H2	2.22	0.75
1:A:257:CYS:HB3	1:A:258:PRO:HD3	1.69	0.74
3:F:95:ARG:HB3	3:F:96:PRO:HD3	1.69	0.73
1:D:238:LYS:HE2	3:F:105:GLU:CG	2.18	0.73
3:F:78:SER:O	3:F:80:GLY:N	2.21	0.72
3:C:79:GLY:HA2	3:C:81:ARG:HD2	1.69	0.72
1:D:240:TYR:HE1	1:D:242:LEU:CD1	2.04	0.71
2:E:42:GLY:CA	2:E:43:VAL:HB	2.21	0.70
3:C:122:LEU:HD12	1:D:41:GLN:HG2	1.74	0.70
1:D:187:ASP:OD1	1:D:206:ARG:NH2	2.25	0.69
2:B:26:ALA:HB1	3:C:132:SER:HB2	1.72	0.69
2:E:242:LEU:HB3	2:E:243:PRO:HD2	1.74	0.69
1:A:190:MET:HG3	1:A:209:VAL:HG21	1.74	0.69
2:E:43:VAL:HG13	2:E:43:VAL:O	1.92	0.68
2:E:48:GLY:O	2:E:49:GLN:HB2	1.93	0.67
1:D:306:TYR:CZ	4:D:401:ANP:H2	2.28	0.67
3:C:122:LEU:HB3	1:D:41:GLN:CB	2.22	0.67
2:E:337:TYR:HD2	3:F:135:LEU:HD13	1.60	0.66
3:F:121:THR:HA	3:F:124:LEU:HD12	1.78	0.65
2:E:242:LEU:HB3	2:E:243:PRO:CD	2.26	0.65
3:C:81:ARG:HG2	3:C:83:LYS:HG2	1.78	0.65
1:D:238:LYS:HE2	3:F:105:GLU:HG2	1.77	0.64
1:D:330:ILE:HA	3:F:97:LYS:HG3	1.79	0.64
1:A:335:ARG:HH22	3:C:100:SER:H	1.46	0.63
2:B:210:ARG:HH12	3:C:144:GLY:N	1.95	0.63
3:C:97:LYS:HD3	3:C:98:LYS:HD2	1.81	0.63
3:F:122:LEU:HD22	3:F:122:LEU:H	1.63	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:86:LYS:O	3:C:86:LYS:HG3	1.99	0.63
2:B:25:ASP:HB2	3:C:121:THR:HG22	1.81	0.62
2:E:42:GLY:HA2	2:E:43:VAL:HB	1.81	0.62
1:D:215:LYS:HD2	1:D:242:LEU:CD1	2.29	0.62
1:A:109:PRO:HB3	1:A:175:ILE:HD13	1.81	0.62
1:D:257:CYS:HB3	1:D:258:PRO:HD3	1.82	0.61
2:E:131:ALA:HB1	2:E:356:TRP:HB3	1.83	0.61
1:D:23:GLY:O	3:F:84:LEU:HB3	2.01	0.60
3:C:134:GLU:HB2	3:C:140:ASN:HB2	1.83	0.60
1:D:306:TYR:CE1	4:D:401:ANP:H2	2.37	0.60
1:A:44:MET:HB2	1:A:46:GLY:H	1.67	0.60
2:E:10:VAL:HB	2:E:105:LEU:HD23	1.83	0.60
3:C:137:SER:HB3	3:C:140:ASN:ND2	2.14	0.60
3:F:84:LEU:O	3:F:85:ARG:HB3	2.02	0.60
2:B:242:LEU:HB3	2:B:243:PRO:CD	2.31	0.60
3:F:81:ARG:H	3:F:81:ARG:HD2	1.67	0.60
1:A:321:ALA:HB1	1:A:322:PRO:CD	2.31	0.59
1:A:322:PRO:HG2	1:A:325:MET:HB2	1.85	0.59
3:F:97:LYS:HD3	3:F:98:LYS:HD2	1.83	0.59
2:E:257:CYS:HB3	2:E:258:PRO:HD3	1.85	0.59
2:E:330:ILE:HG22	2:E:332:PRO:HD3	1.84	0.59
1:D:238:LYS:HE2	3:F:105:GLU:HG3	1.84	0.58
1:A:97:ALA:HB1	1:A:99:GLU:OE2	2.03	0.58
1:A:323:SER:O	1:A:325:MET:N	2.32	0.58
1:D:244:ASP:O	1:D:246:GLN:N	2.36	0.57
4:D:401:ANP:N6	3:F:101:TYR:CE1	2.71	0.57
2:E:26:ALA:HB3	3:F:132:SER:HB2	1.86	0.57
2:E:205:GLU:HA	2:E:208:ILE:HD12	1.86	0.57
2:B:16:MET:CE	2:B:30:VAL:HG12	2.34	0.56
1:A:212:ILE:HG23	1:A:216:LEU:HD12	1.88	0.56
2:B:341:ILE:HD11	3:C:135:LEU:HD21	1.87	0.56
1:D:322:PRO:HG2	1:D:325:MET:HB2	1.88	0.55
2:E:233:SER:O	2:E:234:SER:CB	2.55	0.55
1:A:102:PRO:HB3	1:A:131:ALA:HB3	1.88	0.55
2:E:42:GLY:N	2:E:43:VAL:HB	2.22	0.55
3:F:95:ARG:HB3	3:F:96:PRO:CD	2.35	0.55
2:B:330:ILE:HG22	2:B:332:PRO:HD3	1.89	0.55
1:A:116:ARG:NH2	1:A:374:CYS:SG	2.80	0.54
2:B:257:CYS:HB3	2:B:258:PRO:HD3	1.89	0.54
1:D:230:ALA:HB2	1:D:236:LEU:HD12	1.88	0.54
1:D:321:ALA:HB1	1:D:322:PRO:HD2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:79:GLY:HA3	3:F:83:LYS:HE2	1.89	0.54
1:D:240:TYR:CE1	1:D:242:LEU:CG	2.89	0.54
1:D:240:TYR:HE1	1:D:242:LEU:HD12	1.71	0.54
1:D:240:TYR:CE1	1:D:242:LEU:CD1	2.90	0.54
2:E:30:VAL:HG21	3:F:131:ALA:HB2	1.89	0.54
1:D:221:LEU:HD22	1:D:315:LYS:HD3	1.89	0.54
1:A:99:GLU:HA	1:A:128:ASN:O	2.08	0.53
3:F:86:LYS:HZ3	3:F:88:ALA:HB2	1.72	0.53
1:A:10:VAL:HB	1:A:105:LEU:HD23	1.91	0.53
3:C:118:HIS:ND1	3:C:119:SER:O	2.32	0.53
2:E:335:ARG:HA	2:E:338:SER:OG	2.09	0.53
1:A:15:GLY:H	4:A:401:ANP:HNB1	1.56	0.53
3:C:79:GLY:CA	3:C:81:ARG:HD2	2.37	0.53
3:C:122:LEU:H	3:C:122:LEU:HD22	1.74	0.53
1:A:23:GLY:O	3:C:85:ARG:HG2	2.08	0.53
1:D:334:GLU:HB2	3:F:89:GLU:OE2	2.09	0.53
2:E:50:LYS:O	2:E:52:SER:N	2.42	0.53
1:D:240:TYR:CE1	1:D:242:LEU:HD12	2.44	0.52
1:D:131:ALA:HB1	1:D:356:TRP:HB3	1.92	0.52
1:A:205:GLU:HA	1:A:208:ILE:HD12	1.92	0.52
2:B:131:ALA:HB1	2:B:356:TRP:HB3	1.90	0.52
3:F:91:THR:HG22	3:F:92:SER:H	1.75	0.52
1:D:211:ASP:OD2	1:D:242:LEU:HD13	2.10	0.51
2:B:350:SER:HA	3:C:96:PRO:HG2	1.91	0.51
1:D:215:LYS:HD2	1:D:242:LEU:HD11	1.91	0.51
2:B:337:TYR:HD2	3:C:135:LEU:HD13	1.76	0.51
1:D:334:GLU:CB	3:F:89:GLU:OE2	2.59	0.51
2:E:12:ASN:H	2:E:12:ASN:ND2	2.09	0.51
1:D:139:VAL:HA	1:D:165:ILE:HD13	1.93	0.51
2:E:42:GLY:HA2	2:E:43:VAL:CB	2.41	0.50
2:B:26:ALA:HB3	3:C:132:SER:HB2	1.91	0.50
1:D:215:LYS:HD2	1:D:242:LEU:HD13	1.93	0.50
2:E:43:VAL:O	2:E:43:VAL:CG1	2.60	0.50
1:D:350:SER:HA	1:D:353:GLN:HG2	1.94	0.50
1:A:330:ILE:HG22	1:A:332:PRO:HD3	1.94	0.50
1:D:211:ASP:OD2	1:D:242:LEU:CD1	2.60	0.49
1:D:335:ARG:HH22	3:F:99:PRO:HA	1.78	0.49
2:E:48:GLY:O	2:E:49:GLN:CB	2.60	0.49
2:E:30:VAL:CG2	3:F:131:ALA:HB2	2.42	0.49
3:C:129:SER:HB2	3:C:132:SER:HB3	1.93	0.49
1:A:70:PRO:HG3	1:A:81:ASP:HB3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:308:GLY:N	3:F:99:PRO:HB2	2.28	0.49
3:C:79:GLY:C	3:C:81:ARG:H	2.16	0.48
1:A:225:GLN:HE22	3:C:116:ARG:HB3	1.78	0.48
2:E:200:PHE:O	2:E:201:THR:HG23	2.13	0.48
1:A:194:THR:HA	1:A:198:TYR:O	2.13	0.48
3:F:86:LYS:HZ3	3:F:88:ALA:CB	2.27	0.48
2:B:322:LYS:H	2:B:322:LYS:HG2	1.28	0.48
2:E:233:SER:O	2:E:234:SER:HB3	2.14	0.48
2:B:16:MET:HE3	2:B:30:VAL:HG12	1.96	0.47
2:B:361:GLU:HB3	2:B:369:ILE:CD1	2.44	0.47
1:A:335:ARG:HH22	3:C:99:PRO:HA	1.78	0.47
2:E:45:VAL:HG23	2:E:46:GLY:H	1.80	0.47
1:D:136:ILE:HB	1:D:139:VAL:HG23	1.95	0.47
2:E:101:HIS:O	2:E:130:PRO:HD2	2.13	0.47
3:C:95:ARG:HB3	3:C:96:PRO:CD	2.39	0.47
3:F:85:ARG:O	3:F:86:LYS:HG3	2.15	0.47
1:D:25:ASP:HB3	3:F:84:LEU:HB2	1.97	0.47
1:D:311:ASP:OD2	2:E:350:SER:OG	2.28	0.47
2:E:12:ASN:H	2:E:12:ASN:HD22	1.63	0.47
1:A:333:PRO:HD3	3:C:98:LYS:HD3	1.97	0.46
2:B:102:PRO:HB3	2:B:131:ALA:HB3	1.96	0.46
2:E:86:TRP:HH2	2:E:119:MET:HG2	1.81	0.46
3:C:66:SER:HB3	3:C:69:SER:HB3	1.97	0.46
3:C:131:ALA:O	3:C:134:GLU:HG2	2.15	0.46
2:B:151:ILE:HG23	2:B:297:THR:HG23	1.98	0.46
1:D:24:ASP:HB2	1:D:340:TRP:HH2	1.81	0.46
1:A:72:GLU:OE2	1:A:72:GLU:HA	2.16	0.46
1:A:164:PRO:HG2	1:A:174:ALA:HB3	1.96	0.46
2:B:103:VAL:HG11	2:B:129:THR:HG21	1.97	0.46
2:B:242:LEU:CB	2:B:243:PRO:HD2	2.38	0.46
1:A:350:SER:HA	1:A:353:GLN:HG2	1.98	0.45
1:D:81:ASP:O	1:D:84:LYS:HB2	2.16	0.45
1:D:241:GLU:HA	1:D:245:GLY:O	2.15	0.45
1:A:164:PRO:HG2	1:A:174:ALA:CB	2.47	0.45
2:B:162:THR:HG21	2:B:278:THR:HA	1.98	0.45
3:C:85:ARG:O	3:C:86:LYS:HB3	2.17	0.45
1:D:123:MET:O	1:D:129:THR:HG23	2.15	0.45
1:D:334:GLU:HA	3:F:89:GLU:OE2	2.15	0.45
2:E:19:ALA:HB1	2:E:94:LEU:HD11	1.99	0.45
1:A:33:SER:HB3	6:A:504:HOH:O	2.16	0.45
1:D:345:ILE:O	1:D:349:LEU:HG	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:291:LYS:HB3	1:A:291:LYS:HE2	1.81	0.45
1:A:330:ILE:HA	3:C:97:LYS:HG3	1.98	0.45
1:D:102:PRO:HB3	1:D:131:ALA:HB3	1.99	0.45
3:F:90:GLN:NE2	3:F:90:GLN:HA	2.32	0.45
4:A:401:ANP:N6	3:C:101:TYR:CD1	2.82	0.45
2:E:297:THR:HB	2:E:329:ILE:HD13	1.99	0.45
1:A:275:HIS:CD2	1:A:316:GLU:HB3	2.52	0.45
1:A:46:GLY:C	1:A:47:MET:HG3	2.37	0.44
1:A:259:GLU:OE2	1:A:263:GLN:NE2	2.41	0.44
2:B:83:GLU:OE2	2:B:126:THR:HG21	2.17	0.44
1:D:97:ALA:O	1:D:100:GLU:HG2	2.17	0.44
1:D:335:ARG:HH22	3:F:100:SER:H	1.65	0.44
2:B:16:MET:HE2	2:B:30:VAL:HG12	1.98	0.44
1:D:303:THR:HG22	1:D:303:THR:O	2.16	0.44
1:A:209:VAL:HA	1:A:212:ILE:HD12	1.99	0.44
1:D:20:GLY:HA3	1:D:340:TRP:HZ2	1.82	0.44
1:D:332:PRO:HG2	1:D:335:ARG:HB3	1.98	0.44
2:B:335:ARG:HA	2:B:338:SER:OG	2.18	0.44
2:B:353:GLN:HB2	3:C:98:LYS:HG3	2.00	0.44
1:D:70:PRO:HG2	1:D:85:ILE:CD1	2.35	0.44
2:B:26:ALA:HB1	3:C:132:SER:CB	2.44	0.44
2:B:194:THR:HA	2:B:198:TYR:O	2.17	0.44
2:E:306:TYR:CE1	4:E:401:ANP:H2	2.53	0.44
1:A:259:GLU:OE1	1:A:312:ARG:NH2	2.51	0.43
3:C:137:SER:O	3:C:139:ARG:N	2.51	0.43
1:D:212:ILE:HG23	1:D:216:LEU:HD12	2.00	0.43
1:A:335:ARG:NH2	3:C:99:PRO:HA	2.34	0.43
1:D:221:LEU:CD2	1:D:315:LYS:HD3	2.48	0.43
1:A:250:ILE:HG13	1:A:253:GLU:HB2	2.00	0.43
1:D:361:GLU:HB3	1:D:369:ILE:HD13	2.00	0.43
2:B:99:GLU:HA	2:B:128:ASN:O	2.19	0.43
1:D:214:GLU:O	3:F:101:TYR:CD2	2.72	0.43
2:E:10:VAL:HB	2:E:105:LEU:CD2	2.48	0.43
1:A:308:GLY:H	3:C:99:PRO:HB2	1.83	0.43
2:E:341:ILE:HD11	3:F:135:LEU:HD21	2.00	0.43
1:A:323:SER:C	1:A:325:MET:H	2.20	0.43
4:B:401:ANP:H5'2	3:C:145:ALA:CB	2.49	0.43
3:C:137:SER:CB	3:C:140:ASN:HD21	2.26	0.43
2:E:190:MET:HG3	2:E:209:VAL:HG21	2.01	0.43
2:E:294:TYR:CD2	2:E:325:MET:HG2	2.54	0.43
3:F:89:GLU:HG3	3:F:90:GLN:H	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:354:GLN:OE1	3:F:92:SER:HB3	2.20	0.42
1:A:154:ASP:OD1	1:A:300:SER:OG	2.29	0.42
1:A:171:LEU:HA	1:A:172:PRO:HD2	1.88	0.42
1:D:259:GLU:OE1	1:D:312:ARG:NH2	2.52	0.42
1:A:352:PHE:O	1:A:355:MET:HB2	2.20	0.42
1:D:308:GLY:H	3:F:99:PRO:HB2	1.83	0.42
2:B:130:PRO:HB2	3:C:93:GLU:HG2	2.02	0.42
2:E:99:GLU:HA	2:E:128:ASN:O	2.20	0.42
1:D:164:PRO:HG2	1:D:174:ALA:CB	2.50	0.42
2:B:353:GLN:NE2	3:C:96:PRO:HD2	2.35	0.42
2:E:99:GLU:CD	2:E:99:GLU:H	2.23	0.42
2:E:264:PRO:CB	2:E:271:ALA:HB3	2.50	0.42
1:A:167:GLU:OE2	1:A:167:GLU:HA	2.20	0.41
2:E:34:ILE:HG12	2:E:69:TYR:CE1	2.55	0.41
1:A:47:MET:SD	1:A:61:LYS:NZ	2.85	0.41
1:D:97:ALA:HA	1:D:98:PRO:HD3	1.90	0.41
1:A:68:LYS:HD2	1:A:81:ASP:OD2	2.20	0.41
3:F:72:MET:O	3:F:76:HIS:CD2	2.73	0.41
2:B:353:GLN:OE1	3:C:94:GLY:HA2	2.20	0.41
1:D:25:ASP:OD1	3:F:86:LYS:NZ	2.51	0.41
2:E:19:ALA:HB3	2:E:29:ALA:HB3	2.03	0.41
3:F:111:LEU:O	3:F:115:ILE:HG13	2.21	0.41
1:A:221:LEU:HD22	1:A:315:LYS:HD3	2.02	0.41
2:B:218:TYR:O	2:B:258:PRO:HG2	2.20	0.41
2:E:7:ALA:HB2	2:E:102:PRO:HG2	2.02	0.41
2:E:233:SER:OG	2:E:234:SER:N	2.53	0.41
2:E:323:SER:OG	2:E:324:THR:N	2.53	0.41
2:B:323:SER:O	2:B:325:MET:N	2.54	0.41
2:B:350:SER:CA	3:C:96:PRO:HG2	2.51	0.41
1:D:240:TYR:HE1	1:D:242:LEU:HG	1.80	0.41
2:E:345:ILE:O	2:E:349:LEU:HG	2.21	0.41
1:D:335:ARG:HA	1:D:338:SER:OG	2.21	0.41
2:B:69:TYR:HA	2:B:70:PRO:HD3	1.91	0.40
1:D:180:LEU:HD11	1:D:261:LEU:HD23	2.04	0.40
1:D:243:LYS:C	1:D:245:GLY:H	2.25	0.40
2:E:41:GLN:C	2:E:43:VAL:HB	2.41	0.40
2:E:334:GLU:OE1	2:E:334:GLU:N	2.52	0.40
1:D:10:VAL:HB	1:D:105:LEU:HD23	2.02	0.40
2:E:226:GLU:HB3	2:E:255:PHE:CE1	2.57	0.40
3:C:96:PRO:HB2	3:C:97:LYS:H	1.78	0.40
1:D:309:ILE:HG22	3:F:99:PRO:HB3	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:337:TYR:CD2	3:F:135:LEU:HD13	2.47	0.40
1:A:23:GLY:O	3:C:84:LEU:HB3	2.20	0.40
1:A:254:ARG:NH2	3:C:109:SER:OG	2.50	0.40
1:D:91:TYR:O	1:D:95:ARG:HA	2.21	0.40
1:D:224:GLU:OE1	1:D:224:GLU:HA	2.20	0.40
3:C:145:ALA:HA	3:C:146:PRO:HD3	1.94	0.40
1:D:299:LEU:HD12	1:D:331:ALA:HB2	2.02	0.40
2:E:42:GLY:CA	2:E:43:VAL:CB	2.94	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	369/384 (96%)	338 (92%)	22 (6%)	9 (2%)	6	21
1	D	369/384 (96%)	339 (92%)	22 (6%)	8 (2%)	6	23
2	B	369/384 (96%)	338 (92%)	28 (8%)	3 (1%)	19	49
2	E	369/384 (96%)	342 (93%)	21 (6%)	6 (2%)	9	31
3	C	79/171 (46%)	52 (66%)	19 (24%)	8 (10%)	0	1
3	F	73/171 (43%)	52 (71%)	13 (18%)	8 (11%)	0	1
All	All	1628/1878 (87%)	1461 (90%)	125 (8%)	42 (3%)	5	19

All (42) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	48	GLY
1	A	324	THR
3	C	77	SER
3	C	79	GLY

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Mol	Chain	Res	Type
3	C	138	PHE
1	D	50	LYS
1	D	245	GLY
1	D	247	VAL
2	E	43	VAL
2	E	49	GLN
2	E	51	ASP
2	E	234	SER
3	F	79	GLY
1	A	41	GLN
1	A	46	GLY
1	A	50	LYS
2	B	271	ALA
3	C	120	GLY
1	D	45	VAL
1	D	271	ALA
1	D	324	THR
2	E	45	VAL
3	F	120	GLY
1	A	271	ALA
3	C	86	LYS
3	C	96	PRO
3	C	132	SER
1	D	51	ASP
3	C	87	VAL
3	F	85	ARG
3	F	96	PRO
1	A	44	MET
2	E	201	THR
3	F	86	LYS
3	F	87	VAL
1	A	40	HIS
2	B	247	VAL
2	B	324	THR
3	F	102	VAL
1	A	321	ALA
1	D	43	VAL
3	F	95	ARG

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	313/326 (96%)	293 (94%)	20 (6%)	17	44
1	D	309/326 (95%)	296 (96%)	13 (4%)	30	62
2	B	312/325 (96%)	298 (96%)	14 (4%)	27	59
2	E	312/325 (96%)	300 (96%)	12 (4%)	33	65
3	C	63/138 (46%)	51 (81%)	12 (19%)	1	4
3	F	62/138 (45%)	56 (90%)	6 (10%)	8	24
All	All	1371/1578 (87%)	1294 (94%)	77 (6%)	21	50

All (77) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	VAL
1	A	33	SER
1	A	39	ARG
1	A	41	GLN
1	A	66	THR
1	A	103	VAL
1	A	118	LYS
1	A	152	VAL
1	A	180	LEU
1	A	201	THR
1	A	204	GLU
1	A	221	LEU
1	A	242	LEU
1	A	248	ILE
1	A	272	CYS
1	A	299	LEU
1	A	312	ARG
1	A	320	LEU
1	A	351	THR
1	A	355	MET
2	B	73	HIS
2	B	103	VAL

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Mol	Chain	Res	Type
2	B	180	LEU
2	B	199	SER
2	B	201	THR
2	B	221	LEU
2	B	242	LEU
2	B	248	ILE
2	B	299	LEU
2	B	312	ARG
2	B	320	LEU
2	B	322	LYS
2	B	351	THR
2	B	355	MET
3	C	81	ARG
3	C	85	ARG
3	C	95	ARG
3	C	103	GLU
3	C	105	GLU
3	C	119	SER
3	C	121	THR
3	C	122	LEU
3	C	127	VAL
3	C	132	SER
3	C	138	PHE
3	C	139	ARG
1	D	152	VAL
1	D	180	LEU
1	D	204	GLU
1	D	206	ARG
1	D	221	LEU
1	D	233	SER
1	D	248	ILE
1	D	249	THR
1	D	300	SER
1	D	312	ARG
1	D	314	GLN
1	D	320	LEU
1	D	351	THR
2	E	12	ASN
2	E	41	GLN
2	E	103	VAL
2	E	152	VAL
2	E	180	LEU

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Mol	Chain	Res	Type
2	E	221	LEU
2	E	238	LYS
2	E	248	ILE
2	E	272	CYS
2	E	312	ARG
2	E	320	LEU
2	E	351	THR
3	F	81	ARG
3	F	86	LYS
3	F	90	GLN
3	F	95	ARG
3	F	103	GLU
3	F	121	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	140	ASN
3	F	90	GLN

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 ⓘ

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The

Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
4	ANP	D	401	5	29,33,33	1.94	7 (24%)	31,52,52	1.75	4 (12%)
4	ANP	A	401	5	29,33,33	1.93	8 (27%)	31,52,52	1.66	6 (19%)
4	ANP	E	401	5	29,33,33	1.83	5 (17%)	31,52,52	1.83	7 (22%)
4	ANP	B	401	5	29,33,33	1.83	7 (24%)	31,52,52	1.90	7 (22%)

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
4	ANP	D	401	5	-	1/14/38/38	0/3/3/3
4	ANP	A	401	5	-	6/14/38/38	0/3/3/3
4	ANP	E	401	5	-	4/14/38/38	0/3/3/3
4	ANP	B	401	5	-	7/14/38/38	0/3/3/3

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	401	ANP	PG-N3B	4.65	1.75	1.63
4	A	401	ANP	PG-N3B	4.52	1.75	1.63
4	A	401	ANP	PB-N3B	4.47	1.75	1.63
4	D	401	ANP	PB-N3B	4.44	1.75	1.63
4	E	401	ANP	PG-N3B	4.36	1.74	1.63
4	B	401	ANP	PG-N3B	4.32	1.74	1.63
4	E	401	ANP	PB-N3B	4.30	1.74	1.63
4	B	401	ANP	PB-N3B	4.21	1.74	1.63
4	E	401	ANP	PG-O1G	4.03	1.52	1.46
4	D	401	ANP	PG-O1G	3.89	1.52	1.46
4	D	401	ANP	PB-O1B	3.58	1.51	1.46
4	E	401	ANP	PB-O1B	3.56	1.51	1.46
4	A	401	ANP	PB-O1B	3.49	1.51	1.46
4	B	401	ANP	PB-O1B	3.40	1.51	1.46
4	A	401	ANP	PG-O1G	3.32	1.51	1.46
4	B	401	ANP	PG-O1G	3.20	1.51	1.46
4	A	401	ANP	PB-O3A	2.89	1.62	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	401	ANP	C5-C4	2.59	1.47	1.40
4	D	401	ANP	C5-C4	2.51	1.47	1.40
4	B	401	ANP	C5-C4	2.49	1.47	1.40
4	E	401	ANP	C5-C4	2.35	1.47	1.40
4	D	401	ANP	C2-N3	2.31	1.35	1.32
4	B	401	ANP	PB-O3A	2.24	1.61	1.59
4	D	401	ANP	PB-O3A	2.22	1.61	1.59
4	A	401	ANP	PB-O2B	-2.03	1.51	1.56
4	B	401	ANP	C2-N3	2.01	1.35	1.32
4	A	401	ANP	O4'-C1'	2.00	1.43	1.41

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	401	ANP	O1G-PG-N3B	-6.09	102.81	111.77
4	D	401	ANP	O1G-PG-N3B	-5.88	103.11	111.77
4	A	401	ANP	O1G-PG-N3B	-5.65	103.44	111.77
4	E	401	ANP	O1G-PG-N3B	-5.50	103.68	111.77
4	B	401	ANP	O2B-PB-O1B	4.51	119.38	109.92
4	D	401	ANP	O2B-PB-O1B	3.99	118.29	109.92
4	E	401	ANP	O2B-PB-O1B	3.82	117.92	109.92
4	E	401	ANP	PB-O3A-PA	-3.75	119.41	132.62
4	E	401	ANP	N3-C2-N1	-3.38	123.39	128.68
4	B	401	ANP	N3-C2-N1	-3.33	123.48	128.68
4	D	401	ANP	N3-C2-N1	-3.21	123.66	128.68
4	A	401	ANP	O2B-PB-O1B	3.20	116.63	109.92
4	A	401	ANP	C4-C5-N7	-3.12	106.15	109.40
4	B	401	ANP	PB-O3A-PA	-2.97	122.17	132.62
4	A	401	ANP	N3-C2-N1	-2.88	124.18	128.68
4	B	401	ANP	C4-C5-N7	-2.60	106.69	109.40
4	A	401	ANP	C1'-N9-C4	-2.56	122.15	126.64
4	D	401	ANP	PB-O3A-PA	-2.52	123.74	132.62
4	E	401	ANP	O2G-PG-O3G	2.26	113.67	107.64
4	E	401	ANP	C4-C5-N7	-2.22	107.08	109.40
4	B	401	ANP	O1B-PB-N3B	-2.20	108.53	111.77
4	A	401	ANP	O2G-PG-O3G	2.12	113.29	107.64
4	E	401	ANP	C3'-C2'-C1'	2.11	104.16	100.98
4	B	401	ANP	C1'-N9-C4	-2.02	123.09	126.64

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	401	ANP	PB-N3B-PG-O1G
4	A	401	ANP	PA-O3A-PB-O1B
4	A	401	ANP	PA-O3A-PB-O2B
4	A	401	ANP	C5'-O5'-PA-O3A
4	B	401	ANP	PB-N3B-PG-O1G
4	B	401	ANP	PG-N3B-PB-O3A
4	B	401	ANP	C5'-O5'-PA-O1A
4	B	401	ANP	C5'-O5'-PA-O2A
4	B	401	ANP	C5'-O5'-PA-O3A
4	B	401	ANP	O4'-C4'-C5'-O5'
4	B	401	ANP	C3'-C4'-C5'-O5'
4	D	401	ANP	PB-N3B-PG-O1G
4	E	401	ANP	PB-N3B-PG-O1G
4	E	401	ANP	PG-N3B-PB-O3A
4	E	401	ANP	C3'-C4'-C5'-O5'
4	E	401	ANP	O4'-C4'-C5'-O5'
4	A	401	ANP	C5'-O5'-PA-O1A
4	A	401	ANP	C5'-O5'-PA-O2A

There are no ring outliers.

4 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	401	ANP	5	0
4	A	401	ANP	4	0
4	E	401	ANP	1	0
4	B	401	ANP	2	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 ANP D 401

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP A 401

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP E 401

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP B 401

Bond lengths

Bond angles

Torsions

Rings
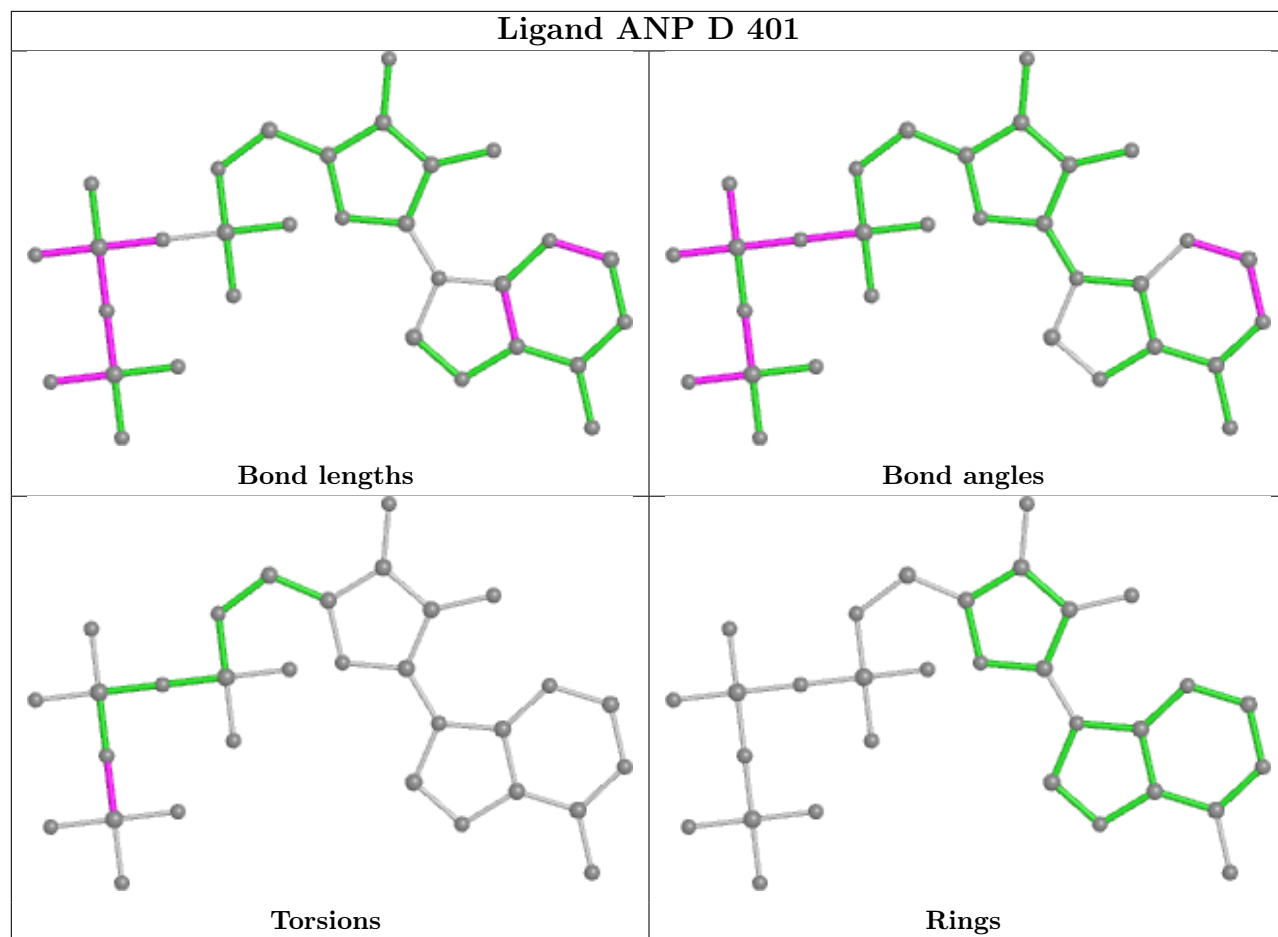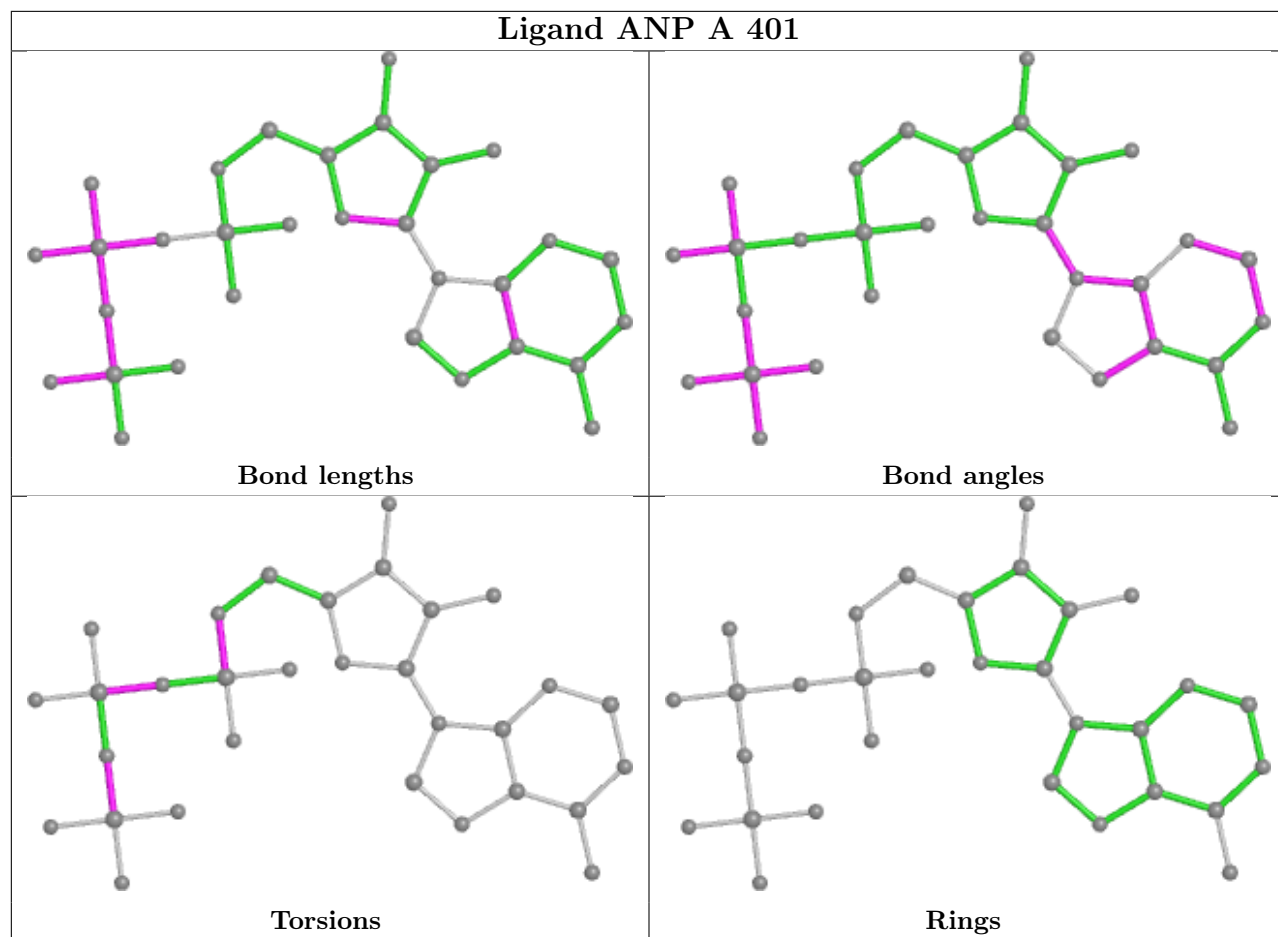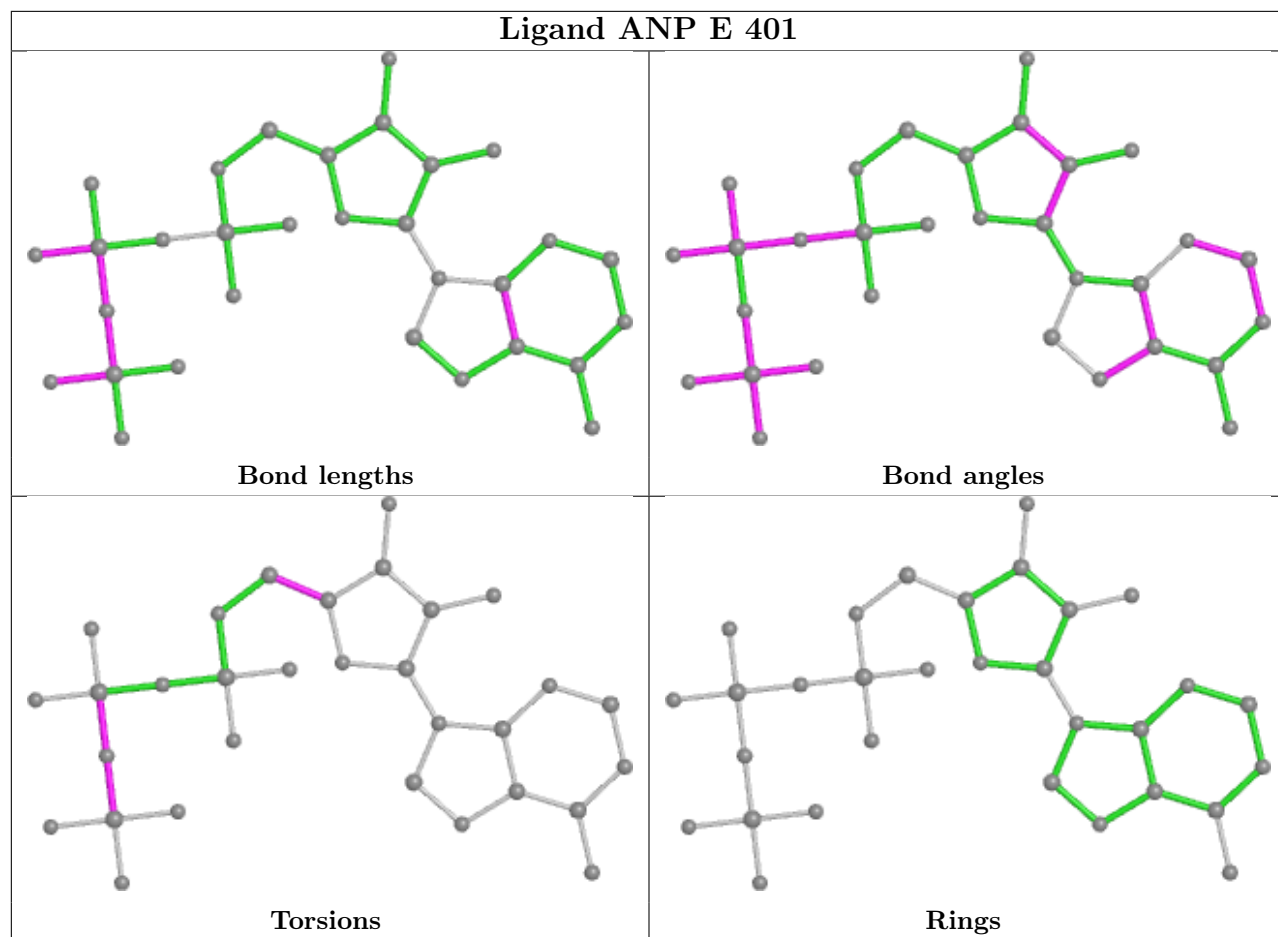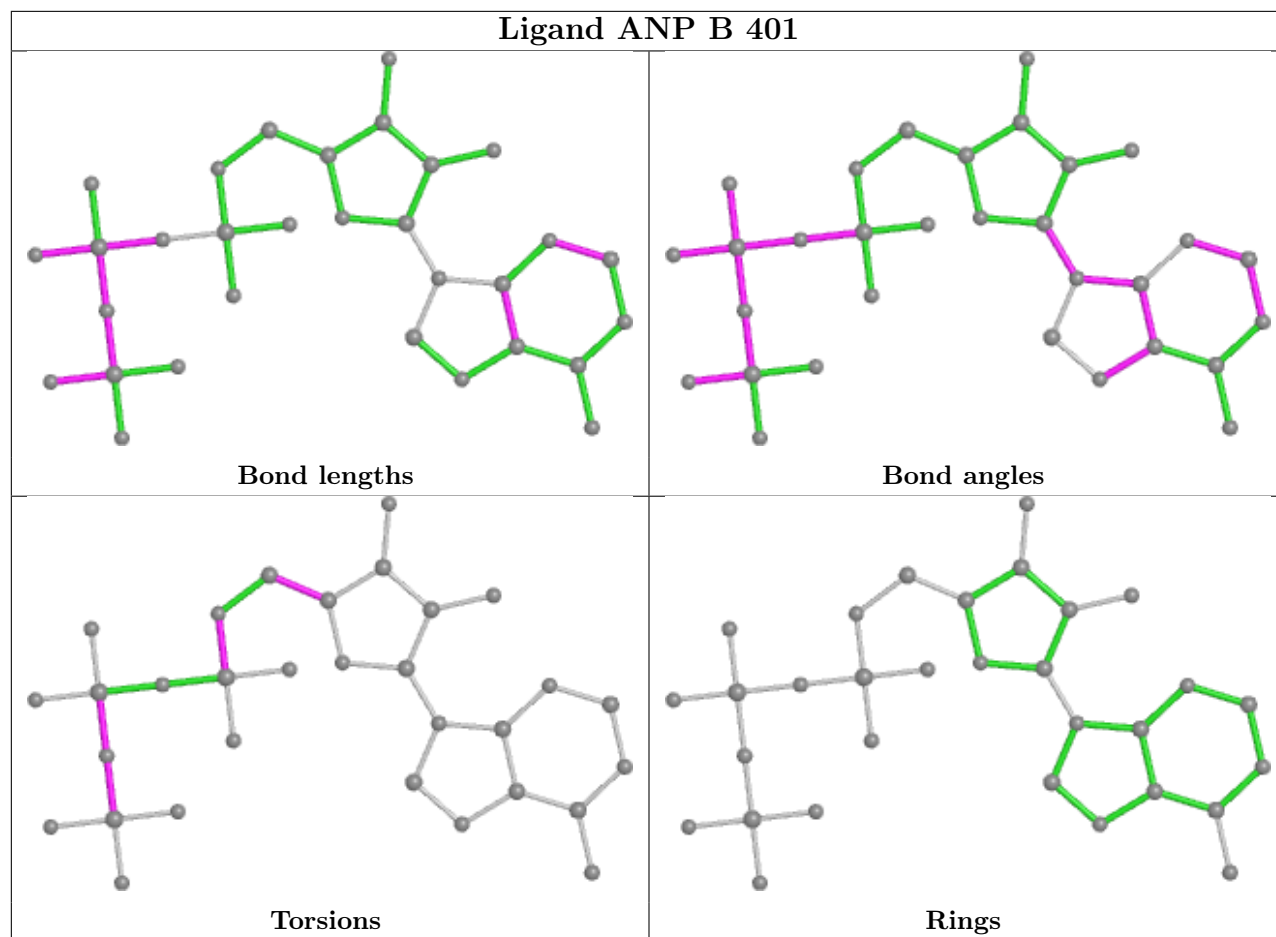
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	371/384 (96%)	-0.19	9 (2%)	59	57	34, 47, 85, 110	0
1	D	371/384 (96%)	0.22	28 (7%)	14	11	34, 62, 121, 130	0
2	B	371/384 (96%)	-0.14	4 (1%)	80	81	32, 55, 87, 119	0
2	E	371/384 (96%)	0.16	15 (4%)	38	35	40, 78, 118, 132	0
3	C	81/171 (47%)	1.40	24 (29%)	0	0	40, 76, 117, 142	0
3	F	75/171 (43%)	1.18	21 (28%)	0	0	41, 91, 124, 141	0
All	All	1640/1878 (87%)	0.13	101 (6%)	20	17	32, 61, 115, 142	0

All (101) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	92	SER	9.0
1	D	46	GLY	8.8
1	D	42	GLY	8.6
3	C	96	PRO	8.0
3	C	91	THR	7.8
3	F	89	GLU	7.3
3	C	88	ALA	7.0
3	F	91	THR	7.0
1	D	45	VAL	6.8
1	D	43	VAL	6.6
1	D	47	MET	6.6
3	C	89	GLU	6.5
3	C	87	VAL	6.0
1	A	45	VAL	6.0
3	F	88	ALA	5.8
3	F	101	TYR	5.7
3	C	140	ASN	5.6
3	C	146	PRO	5.6
2	E	251	GLY	5.4

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Mol	Chain	Res	Type	RSRZ
1	D	53	TYR	5.2
3	C	94	GLY	4.9
3	F	94	GLY	4.8
2	B	46	GLY	4.8
1	A	49	GLN	4.8
3	F	87	VAL	4.6
2	B	49	GLN	4.6
1	D	41	GLN	4.5
1	A	48	GLY	4.5
1	D	67	LEU	4.4
2	E	249	THR	4.4
3	F	102	VAL	4.4
3	F	96	PRO	4.4
2	E	48	GLY	4.2
1	A	44	MET	4.1
2	E	244	ASP	4.1
3	C	139	ARG	3.9
3	C	101	TYR	3.9
1	D	40	HIS	3.8
3	F	90	GLN	3.8
2	E	250	ILE	3.7
3	F	98	LYS	3.6
2	E	49	GLN	3.5
3	C	135	LEU	3.4
2	B	45	VAL	3.4
3	C	141	ALA	3.4
3	C	90	GLN	3.4
1	A	47	MET	3.3
1	D	44	MET	3.3
1	D	69	TYR	3.3
1	D	48	GLY	3.3
3	F	138	PHE	3.2
3	C	145	ALA	3.2
2	E	242	LEU	3.1
3	F	95	ARG	3.0
1	D	374	CYS	2.9
1	D	366	GLY	2.9
3	C	99	PRO	2.9
3	F	99	PRO	2.9
3	C	93	GLU	2.9
1	D	130	PRO	2.9
3	C	144	GLY	2.8

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Mol	Chain	Res	Type	RSRZ
1	D	100	GLU	2.8
1	D	364	GLU	2.8
3	F	97	LYS	2.8
1	D	95	ARG	2.7
2	E	216	LEU	2.7
1	D	240	TYR	2.7
2	E	45	VAL	2.7
1	D	86	TRP	2.6
3	C	131	ALA	2.6
2	E	235	SER	2.6
3	C	95	ARG	2.6
3	C	137	SER	2.5
3	F	80	GLY	2.5
2	E	324	THR	2.5
1	A	46	GLY	2.5
1	D	131	ALA	2.5
2	E	50	LYS	2.5
3	C	97	LYS	2.5
3	F	92	SER	2.4
1	D	202	THR	2.4
3	C	102	VAL	2.4
3	F	77	SER	2.3
1	D	49	GLN	2.3
1	D	54	VAL	2.3
2	E	240	TYR	2.3
3	C	142	ALA	2.3
2	E	236	LEU	2.3
3	F	133	GLU	2.3
3	F	139	ARG	2.3
1	A	375	PHE	2.2
1	D	369	ILE	2.2
3	F	100	SER	2.2
1	A	247	VAL	2.2
1	A	245	GLY	2.2
3	F	81	ARG	2.1
1	D	201	THR	2.1
1	D	6	ALA	2.1
2	B	48	GLY	2.1
2	E	243	PRO	2.0
1	D	96	VAL	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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
5	MG	E	402	1/1	0.74	0.47	67,67,67,67	0
5	MG	D	402	1/1	0.81	0.45	69,69,69,69	0
5	MG	A	402	1/1	0.83	0.36	56,56,56,56	0
4	ANP	A	401	31/31	0.94	0.16	56,65,76,77	0
5	MG	B	402	1/1	0.94	0.44	53,53,53,53	0
4	ANP	D	401	31/31	0.95	0.11	54,63,85,103	0
4	ANP	E	401	31/31	0.95	0.18	68,79,85,90	0
4	ANP	B	401	31/31	0.97	0.14	49,56,62,63	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 ANP A 401:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
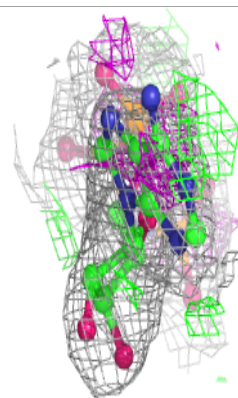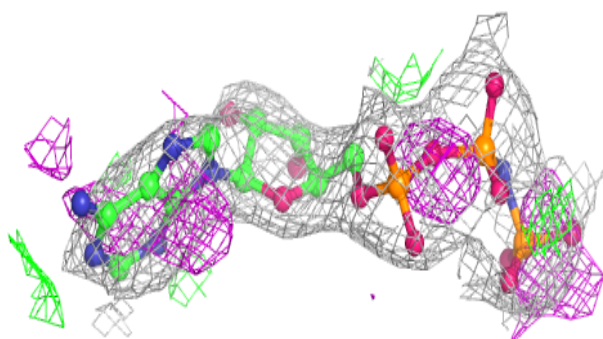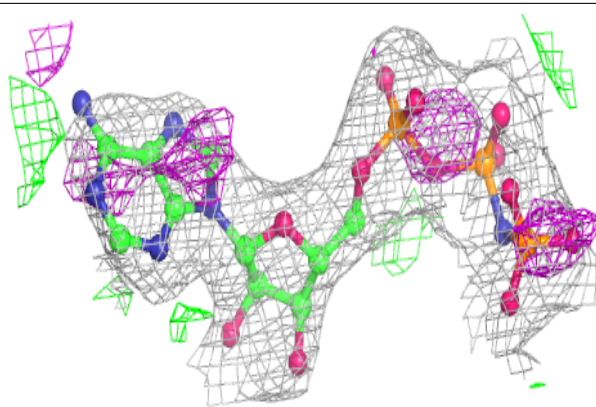
Electron density around ANP D 401:

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
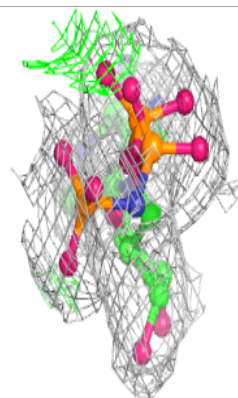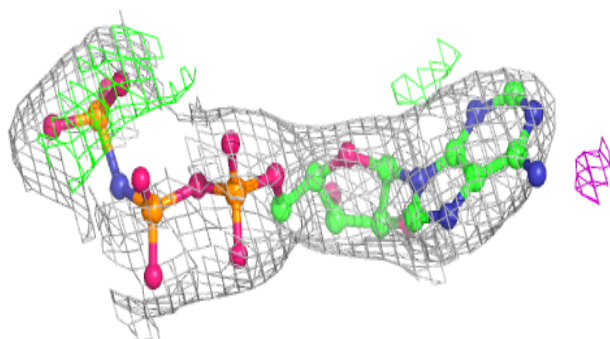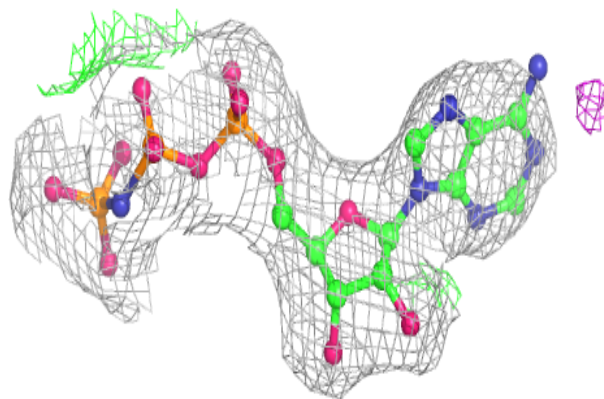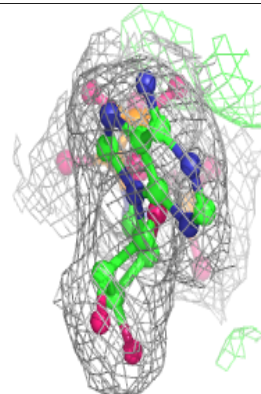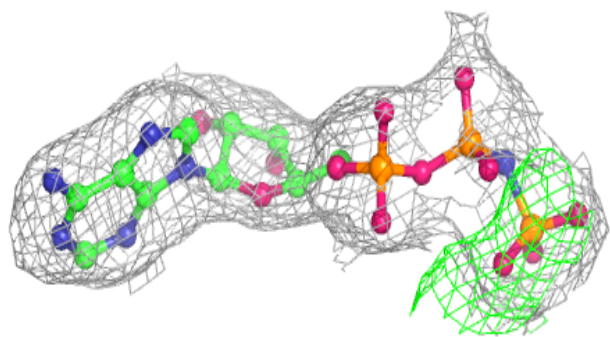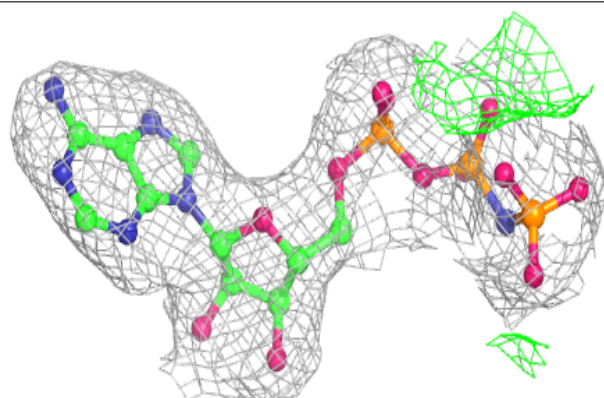and green (positive)
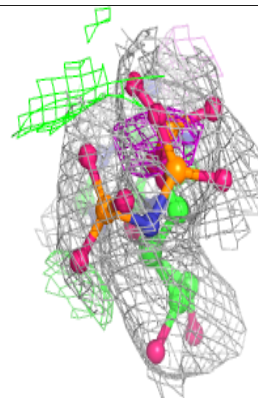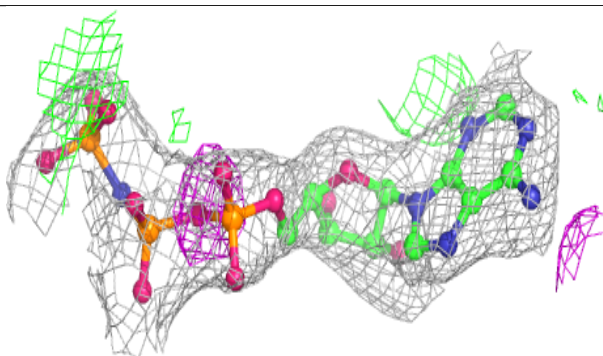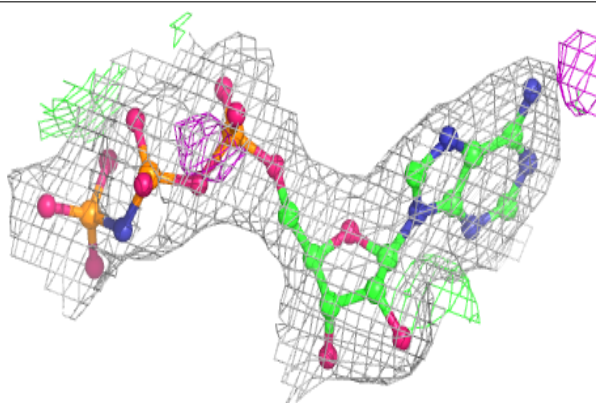
Electron density around ANP E 401:

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

Electron density around ANP B 401:

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

6.5 Other polymers (i)

There are no such residues in this entry.