Full wwPDB X-ray Structure Validation Report ⓘ

Feb 10, 2024 – 11:27 PM EST

PDB ID	:	2P9U
Title	:	Crystal structure of bovine Arp2/3 complex co-crystallized with AMP-PNP and calcium
Authors	:	Nolen, B.J.; Pollard, T.D.
Deposited on	:	2007-03-26
Resolution	:	2.75 Å(reported)

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

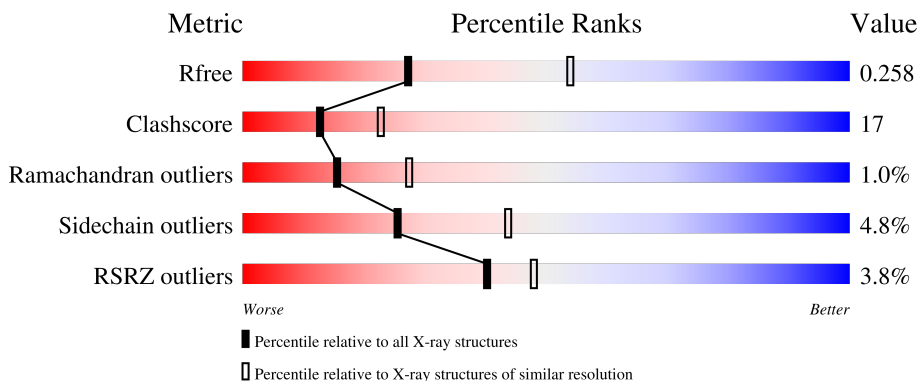|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & 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 2.75 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.
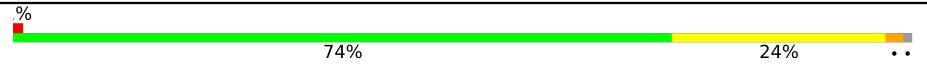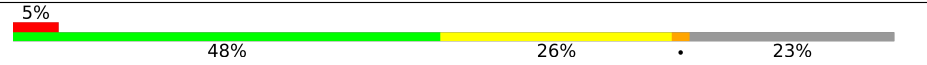
Metric	Percentile Ranks	Value
Rfree		0.258
Clashscore		17
Ramachandran outliers		1.0%
Sidechain outliers		4.8%
RSRZ outliers		3.8%

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	1235 (2.78-2.74)
Clashscore	141614	1277 (2.78-2.74)
Ramachandran outliers	138981	1257 (2.78-2.74)
Sidechain outliers	138945	1257 (2.78-2.74)
RSRZ outliers	127900	1207 (2.78-2.74)

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	418	5% / 64% 28% · 5%
2	B	394	3% / 31% 22% · 44%
3	C	372	2% / 64% 25% · 8%
4	D	300	.% / 70% 23% · 7%
5	E	178	8% / 60% 34% · · ·

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Mol	Chain	Length	Quality of chain
6	F	168	74% 24%
7	G	151	48% 26% 23%

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 13719 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-like protein 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	398	Total	C	N	O	S	0	0	0
			3176	2040	527	594	15			

- Molecule 2 is a protein called Actin-like protein 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	222	Total	C	N	O	S	0	0	0
			1679	1075	286	313	5			

- Molecule 3 is a protein called Actin-related protein 2/3 complex subunit 1B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	341	Total	C	N	O	S	0	0	0
			2638	1674	460	485	19			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	58	VAL	ILE	conflict	UNP Q58CQ2

- Molecule 4 is a protein called Actin-related protein 2/3 complex subunit 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	280	Total	C	N	O	S	0	0	0
			2256	1436	389	423	8			

- Molecule 5 is a protein called Actin-related protein 2/3 complex subunit 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	174	Total	C	N	O	S	0	0	0
			1415	908	236	262	9			

- Molecule 6 is a protein called Actin-related protein 2/3 complex subunit 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	167	Total 1371	C 875	N 239	O 248	S 9	0	0	0

- Molecule 7 is a protein called Actin-related protein 2/3 complex subunit 5.

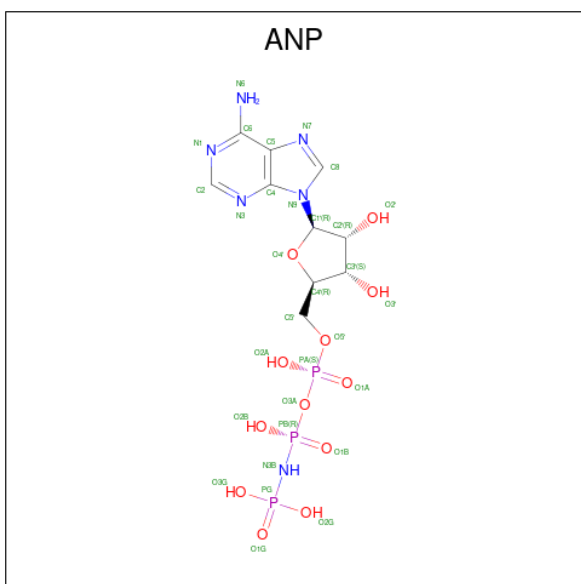| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	116	Total 868	C 552	N 146	O 168	S 2	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	17	ASP	GLY	conflict	UNP Q3SYX9
G	28	ASP	GLU	conflict	UNP Q3SYX9

- Molecule 8 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	1	Total 1	Ca 1	0	0
8	B	1	Total 1	Ca 1	0	0

- Molecule 9 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$).

ANP

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	A	1	Total 31	C 10	N 6	O 12	P 3	0	0
9	B	1	Total 31	C 10	N 6	O 12	P 3	0	0

• Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	42	Total 42	O 42	0	0
10	B	24	Total 24	O 24	0	0
10	C	73	Total 73	O 73	0	0
10	D	58	Total 58	O 58	0	0
10	E	4	Total 4	O 4	0	0
10	F	45	Total 45	O 45	0	0
10	G	6	Total 6	O 6	0	0

3 Residue-property plots ⓘ

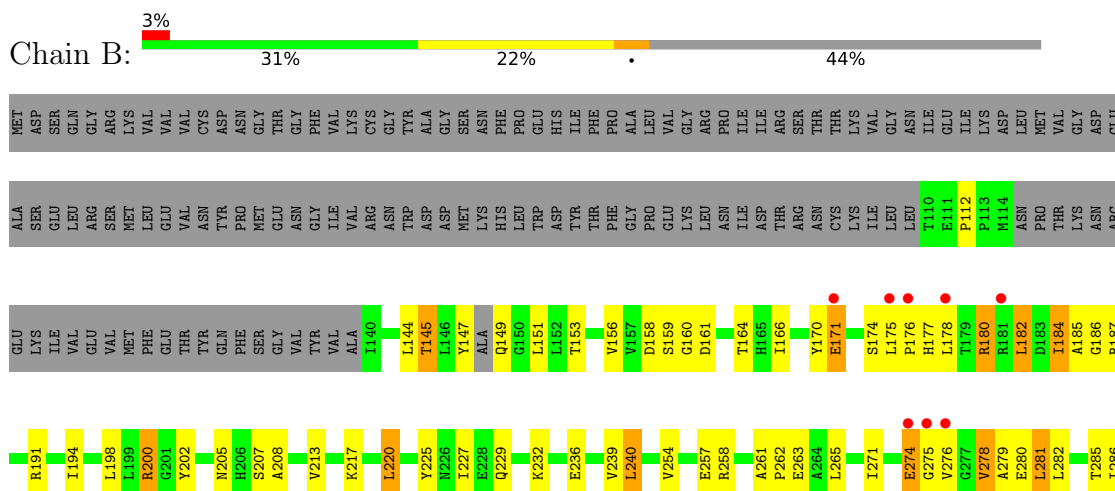These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Actin-like protein 3

Chain A:

• Molecule 2: Actin-like protein 2

Chain B:

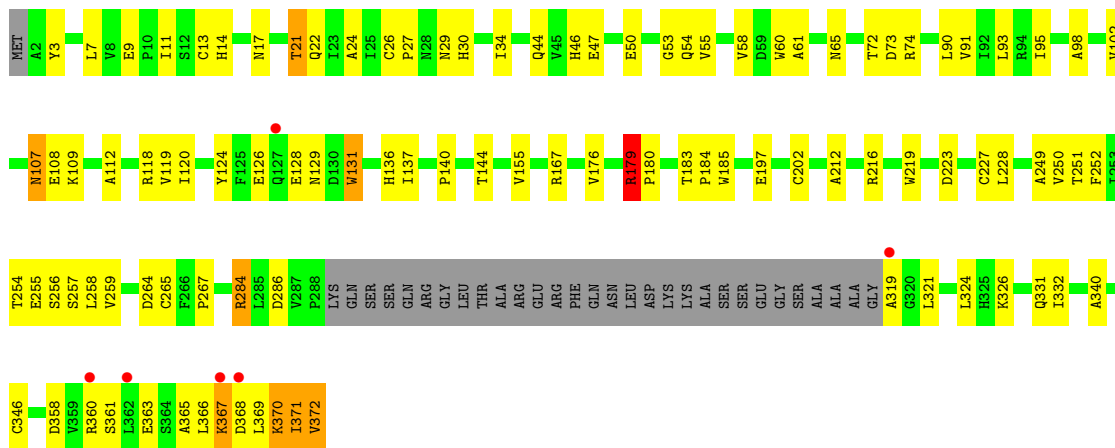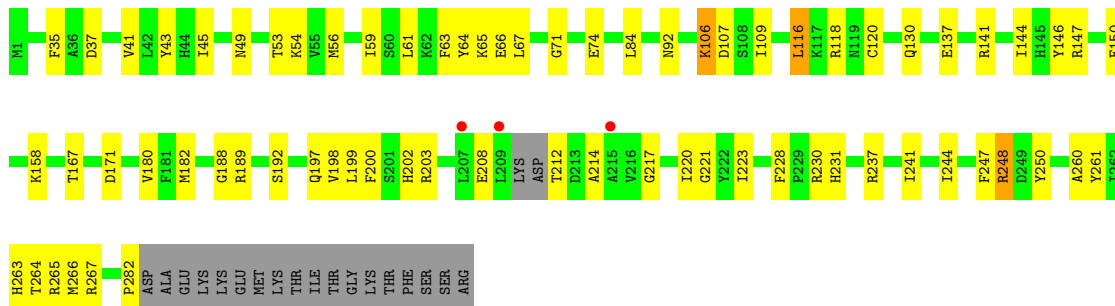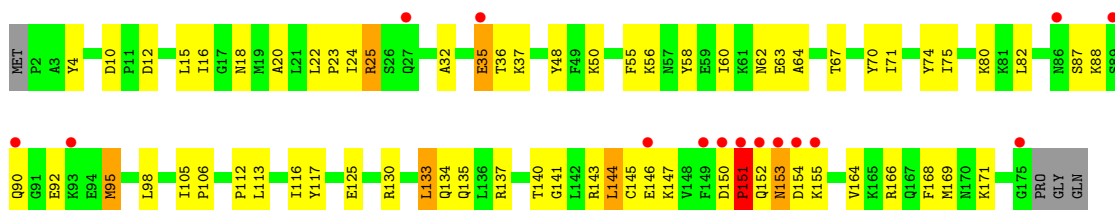Q287 A288 A289 D290 R294 Y298 K299 H300 I301 V302 L303 S304 T308 M309 Y310 L313 P314 L317 E318 R319 E320 L321 K322 Q323 L326 L330 K331 G332 D333 V334 E335 K336 L337 F340 K341 I342 R343 I344 D346 P347 P348 R349 R350 M353 V354 F355 L356 G357 GLY ALA

VAL LEU ALA ASP ILE MET LYS ASP LYS ASP ASN PHE TRP MET THR ARG GLN GLU TYR GLN GLU LYS GLY VAL ARG VAL LEU GLU LYS LEU GLY VAL THR VAL ARG

• Molecule 3: Actin-related protein 2/3 complex subunit 1B

Chain C:

MET A2 Y3 L7 V8 E9 P10 I11 S12 C13 H14 N17 T21 Q22 I23 A24 I25 C26 P27 N28 N29 H30 I34 Q44 V45 H46 E47 E50 G53 Q54 V55 V58 D59 W60 A61 N65 T72 D73 R74 L90 V91 I92 L93 R94 I95 A98 V102

N107 E108 K109 A112 R118 V119 I120 Y124 F125 E126 Q127 E128 N129 D130 W131 H136 I137 P140 T144 V155 R167 V176 R179 P180 T183 P184 W185 E197 C202 A212 R216 W219 D223 C227 L228 A249 V250 T251 F252 I253

T254 E255 S256 S257 L258 V259 D264 C265 F266 P267 R284 L285 D286 V287 P288 LYS GLN SER SER GLN ARG GLY LEU THR ALA ARG GLU ARG GLN ASN ASN LEU ASP LYS LYS ALA SER SER GLU GLY SER ALA ALA GLY A319 G320 L321 L324 H325 K326 Q331 I332 A340

C346 D358 V359 R360 S361 L362 E363 S364 A365 L366 K367 D368 L369 K370 I371 V372

• Molecule 4: Actin-related protein 2/3 complex subunit 2

Chain D:

M1 F35 A36 D37 V41 L42 Y43 H44 I45 N49 T53 K54 V55 M56 I59 S60 L61 K62 F63 Y64 K65 E66 L67 G71 E74 L84 N92 K106 D107 S108 I109 L116 K117 R118 N119 C120 Q130 E137 R141 I144 H145 Y146 R147 E150

K158 T167 D171 V180 F181 M182 G188 R189 S192 Q197 V198 L199 F200 S201 H202 R203 L207 E208 L209 LYS ASP T212 D213 A214 A215 V216 G217 I220 G221 Y222 I223 F228 P229 R230 H231 R237 I241 I244 F247 R248 D249 Y250 A260 Y261 I262

H263 T264 R265 M266 R267 P282 ASP ALA GLU LYS LYS GLU MET LYS ILE THR GLY LYS THR PHE SER SER ARG

• Molecule 5: Actin-related protein 2/3 complex subunit 3

Chain E:

MET P2 A3 Y4 D10 P11 D12 L15 I16 G17 N18 M19 A20 L21 L22 P23 I24 R25 S26 Q27 A32 E35 T36 K37 Y48 F49 K50 F55 K56 N57 Y58 E59 I60 K61 N62 E63 A64 T67 Y70 I71 Y74 I75 K80 K81 L82 N86 S87 K88 S89

Q90 G91 E92 K93 E94 M95 L98 I105 P106 P112 L113 I116 Y117 E125 R130 L133 Q134 Q135 L136 R137 T140 G141 L142 L144 C145 E146 K147 V148 F149 D150 P151 Q152 N153 D154 K155 V164 K165 R166 Q167 F168 M169 N170 K171 G175 PRO GLY GLN

• Molecule 6: Actin-related protein 2/3 complex subunit 4

Chain F:

%

74% 24%

MET T2 A3 T4 P7 V12 R13 A14 Q17 L20 F25 Q28 V29 V30 E31 R32 H33 N34 K35 P36 E39 V40 E45 R55 K60 I67 R71 I74 A75 V76 F101 F102 I103 L104 Y112 D113 F116 F121 Q125 M126 Y127 K128

H129 K130 L131 V132 I136 H137 F138 M139 E140 E141 E145 E148 M149 V153 L165 F168

• Molecule 7: Actin-related protein 2/3 complex subunit 5

Chain G:

5%

48% 26% 23%

MET SER LYS ASN THR VAL SER SER A9 R10 F11 R12 K13 V14 D15 V16 D17 E18 Y19 D20 E21 N22 K23 F24 E27 ASP ASP GLY GLY ASP GLY GLN ALA GLY PRO ASP GLU GLY GLU VAL ASP SER CYS LEU ARG GLN GLY ASN M51 T52 A53 A54 L55 Q56 A57 A58 N61 P62

P63 ILE ASN THR LYS S68 Q69 A70 V71 R74 I78 V79 L80 K81 V82 L83 I84 K87 A88 N89 D90 V95 K112 G113 P117 S118 D119 N120 S121 S122 A123 V124 L125 K131 S140 V144 L145 T146 V151

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	111.12Å 129.35Å 203.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.75 47.41 – 2.75	Depositor EDS
% Data completeness (in resolution range)	94.5 (30.00-2.75) 94.5 (47.41-2.75)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.55 (at 2.77Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.219 , 0.265 0.212 , 0.258	Depositor DCC
R_{free} test set	3866 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	43.5	Xtriage
Anisotropy	0.404	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 45.4	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	0.92	EDS
Total number of atoms	13719	wwPDB-VP
Average B, all atoms (Å^2)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.70% 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: ANP, CA

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	0.38	0/3256	0.61	1/4418 (0.0%)
2	B	0.39	0/1708	0.65	1/2318 (0.0%)
3	C	0.40	0/2707	0.69	1/3677 (0.0%)
4	D	0.38	0/2304	0.61	0/3111
5	E	0.34	0/1449	0.58	0/1954
6	F	0.41	0/1393	0.62	0/1868
7	G	0.34	0/878	0.55	0/1184
All	All	0.38	0/13695	0.62	3/18530 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
4	D	0	1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	11	ILE	N-CA-C	-6.13	94.44	111.00
2	B	112	PRO	N-CA-CB	5.79	110.25	103.30
1	A	118	ASN	N-CA-C	-5.49	96.17	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

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Mol	Chain	Res	Type	Group
4	D	261	TYR	Sidechain

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	3176	0	3106	103	0
2	B	1679	0	1624	93	0
3	C	2638	0	2580	87	0
4	D	2256	0	2219	47	0
5	E	1415	0	1416	70	0
6	F	1371	0	1410	36	0
7	G	868	0	866	37	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
9	A	31	0	13	3	0
9	B	31	0	13	6	0
10	A	42	0	0	1	0
10	B	24	0	0	4	0
10	C	73	0	0	0	0
10	D	58	0	0	1	0
10	E	4	0	0	0	0
10	F	45	0	0	1	0
10	G	6	0	0	0	0
All	All	13719	0	13247	444	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 17.

All (444) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:151:LEU:HD13	2:B:300:HIS:HD2	1.26	1.01
3:C:223:ASP:HB3	7:G:146:THR:HG21	1.42	1.01
2:B:205:ASN:HD22	2:B:208:ALA:H	1.06	1.00
3:C:183:THR:HG22	3:C:185:TRP:H	1.24	0.99
3:C:256:SER:HB2	3:C:372:VAL:HG12	1.48	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:309:ILE:HA	1:A:312:ARG:HE	1.30	0.95
2:B:337:LEU:HD21	7:G:16:VAL:HG13	1.47	0.95
1:A:363:ILE:HD13	1:A:363:ILE:H	1.31	0.94
3:C:14:HIS:H	3:C:331:GLN:HE22	1.16	0.93
1:A:191:LYS:HE2	1:A:303:VAL:HG22	1.48	0.92
6:F:4:THR:HG23	6:F:55:ARG:HE	1.30	0.92
5:E:75:ILE:HG23	5:E:144:LEU:HD11	1.52	0.90
2:B:205:ASN:ND2	2:B:208:ALA:H	1.72	0.87
2:B:279:ALA:HB1	2:B:320:GLU:HG2	1.57	0.85
6:F:130:LYS:HA	6:F:130:LYS:HE2	1.58	0.85
5:E:15:LEU:HD22	5:E:63:GLU:HG3	1.60	0.84
3:C:167:ARG:HG2	3:C:197:GLU:HG3	1.60	0.83
3:C:367:LYS:HD2	3:C:368:ASP:N	1.96	0.80
5:E:88:LYS:H	5:E:153:ASN:ND2	1.80	0.80
2:B:175:LEU:HD12	2:B:175:LEU:H	1.45	0.80
5:E:152:GLN:HB2	5:E:155:LYS:HD2	1.63	0.79
4:D:65:LYS:HA	4:D:65:LYS:HE2	1.64	0.79
5:E:36:THR:HG23	5:E:37:LYS:HD3	1.65	0.78
2:B:205:ASN:HD22	2:B:208:ALA:N	1.82	0.78
1:A:343:VAL:HG23	1:A:346:ARG:HH21	1.48	0.77
2:B:151:LEU:CD1	2:B:300:HIS:HD2	1.98	0.77
4:D:228:PHE:H	4:D:231:HIS:HD2	1.33	0.77
1:A:343:VAL:HG21	1:A:363:ILE:HG13	1.65	0.76
2:B:279:ALA:CB	2:B:320:GLU:HG2	2.16	0.76
3:C:126:GLU:HB2	3:C:131:TRP:HZ3	1.51	0.75
3:C:179:ARG:HG3	3:C:179:ARG:HH11	1.50	0.75
3:C:202:CYS:HB2	7:G:146:THR:HG22	1.69	0.74
1:A:363:ILE:H	1:A:363:ILE:CD1	2.01	0.73
5:E:15:LEU:CD2	5:E:63:GLU:HG3	2.17	0.73
1:A:309:ILE:HA	1:A:312:ARG:NE	2.02	0.73
1:A:343:VAL:HG23	1:A:346:ARG:NH2	2.04	0.72
2:B:151:LEU:HD13	2:B:300:HIS:CD2	2.18	0.72
7:G:112:LYS:HE2	7:G:151:VAL:O	1.90	0.71
6:F:101:PHE:HB3	6:F:104:LEU:HB2	1.70	0.71
5:E:95:MET:HG2	5:E:141:GLY:O	1.91	0.70
2:B:282:LEU:HD21	2:B:301:ILE:HD13	1.74	0.70
1:A:155:SER:O	1:A:158:VAL:HG22	1.92	0.69
4:D:228:PHE:H	4:D:231:HIS:CD2	2.09	0.69
3:C:370:LYS:O	3:C:370:LYS:HG2	1.92	0.69
5:E:143:ARG:O	5:E:146:GLU:HG2	1.92	0.68
1:A:55:VAL:HG22	1:A:58:LEU:HD12	1.76	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:170:TYR:HB2	2:B:175:LEU:HD11	1.75	0.68
4:D:188:GLY:HA3	6:F:165:LEU:HD23	1.76	0.68
3:C:14:HIS:N	3:C:331:GLN:HE22	1.92	0.67
3:C:34:ILE:HB	3:C:46:HIS:HB2	1.77	0.67
4:D:188:GLY:HA3	6:F:165:LEU:CD2	2.24	0.67
2:B:175:LEU:HD12	2:B:175:LEU:N	2.10	0.67
2:B:322:LYS:HB3	7:G:16:VAL:HG11	1.75	0.67
5:E:25:ARG:NH1	5:E:35:GLU:HB3	2.10	0.67
3:C:107:ASN:ND2	3:C:109:LYS:H	1.94	0.66
3:C:155:VAL:HG21	3:C:180:PRO:HG3	1.78	0.66
1:A:14:THR:CG2	1:A:79:ARG:HH21	2.09	0.66
1:A:183:GLY:HA3	1:A:413:VAL:HG21	1.76	0.66
3:C:119:VAL:HG22	3:C:120:ILE:N	2.10	0.66
3:C:126:GLU:HB2	3:C:131:TRP:CZ3	2.31	0.65
2:B:313:LEU:HB3	2:B:314:PRO:HD3	1.79	0.65
3:C:72:THR:HA	3:C:98:ALA:HB1	1.78	0.65
1:A:363:ILE:HD13	1:A:363:ILE:N	2.09	0.64
7:G:80:LEU:O	7:G:84:ILE:HD13	1.97	0.64
2:B:350:ARG:HA	2:B:353:MET:HG3	1.80	0.64
4:D:180:VAL:HG11	6:F:153:VAL:HG12	1.80	0.63
2:B:229:GLN:NE2	6:F:40:VAL:HB	2.12	0.63
2:B:346:ASP:OD1	2:B:350:ARG:NH1	2.31	0.63
2:B:194:ILE:HG12	2:B:213:VAL:HG21	1.80	0.63
1:A:204:ILE:HD12	1:A:228:LYS:HB2	1.80	0.62
2:B:180:ARG:HD2	2:B:285:THR:OG1	1.99	0.62
5:E:25:ARG:HD2	5:E:35:GLU:HG3	1.81	0.62
5:E:88:LYS:O	5:E:92:GLU:HG3	1.98	0.62
2:B:354:VAL:HA	10:B:903:HOH:O	2.00	0.62
5:E:23:PRO:O	5:E:24:ILE:HG23	1.99	0.62
1:A:409:ARG:HD3	2:B:200:ARG:O	1.99	0.61
2:B:261:ALA:HB3	2:B:262:PRO:HD3	1.82	0.61
2:B:147:TYR:O	2:B:149:GLN:N	2.34	0.61
1:A:116:PRO:O	1:A:117:LEU:HB2	2.01	0.60
4:D:150:GLU:HG2	4:D:167:THR:HA	1.84	0.60
1:A:79:ARG:HB2	1:A:84:GLU:HG3	1.82	0.60
3:C:257:SER:OG	3:C:371:ILE:O	2.16	0.60
3:C:183:THR:HG23	3:C:184:PRO:HD2	1.83	0.60
1:A:55:VAL:HG13	1:A:55:VAL:O	2.01	0.60
2:B:175:LEU:O	2:B:177:HIS:O	2.20	0.60
1:A:359:LYS:N	1:A:360:PRO:HD3	2.17	0.60
2:B:161:ASP:O	2:B:187:ARG:HG2	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:248:ARG:HD3	4:D:248:ARG:C	2.23	0.59
1:A:239:VAL:HG11	5:E:48:TYR:HD1	1.67	0.59
4:D:59:ILE:HB	4:D:116:LEU:HD13	1.84	0.59
5:E:95:MET:HE3	5:E:95:MET:HA	1.83	0.59
3:C:14:HIS:H	3:C:331:GLN:NE2	1.95	0.59
5:E:25:ARG:CD	5:E:35:GLU:HG3	2.33	0.59
3:C:107:ASN:HD22	3:C:108:GLU:N	2.00	0.59
6:F:25:PHE:CD1	6:F:67:ILE:HD13	2.38	0.59
2:B:174:SER:O	2:B:176:PRO:HD3	2.03	0.58
7:G:20:ASP:OD1	7:G:22:ASN:HB2	2.02	0.58
5:E:67:THR:O	5:E:71:ILE:HG13	2.03	0.58
3:C:252:PHE:HA	3:C:258:LEU:HD23	1.86	0.58
7:G:117:PRO:O	7:G:118:SER:HB3	2.02	0.58
5:E:18:ASN:O	5:E:63:GLU:HB3	2.04	0.57
4:D:203:ARG:HG3	4:D:217:GLY:O	2.04	0.57
2:B:232:LYS:HE3	2:B:236:GLU:OE2	2.04	0.57
3:C:3:TYR:HB2	3:C:324:LEU:HG	1.85	0.57
5:E:88:LYS:H	5:E:153:ASN:HD21	1.52	0.57
2:B:323:GLN:HG3	7:G:16:VAL:CG2	2.34	0.57
5:E:80:LYS:HG3	5:E:164:VAL:HG23	1.87	0.57
7:G:87:LYS:HD3	7:G:87:LYS:N	2.19	0.57
4:D:53:THR:C	4:D:54:LYS:HD2	2.24	0.57
1:A:274:GLU:OE1	1:A:274:GLU:N	2.35	0.57
1:A:384:LEU:HB3	1:A:414:PHE:CZ	2.40	0.57
3:C:30:HIS:HA	3:C:53:GLY:O	2.04	0.57
5:E:62:ASN:OD1	5:E:64:ALA:HB3	2.05	0.57
2:B:175:LEU:H	2:B:175:LEU:CD1	2.14	0.56
1:A:194:PRO:O	1:A:195:ILE:HD12	2.04	0.56
5:E:87:SER:HA	5:E:153:ASN:OD1	2.06	0.56
2:B:239:VAL:HG23	2:B:240:LEU:HD13	1.88	0.56
3:C:107:ASN:HD22	3:C:107:ASN:C	2.07	0.56
1:A:343:VAL:CG2	1:A:363:ILE:HG13	2.33	0.56
2:B:323:GLN:HG3	7:G:16:VAL:HG21	1.88	0.56
5:E:24:ILE:HD11	5:E:135:GLN:HG2	1.88	0.56
1:A:85:ASP:OD2	1:A:88:LEU:HD22	2.05	0.56
1:A:4:ARG:HH11	1:A:4:ARG:HB2	1.70	0.55
5:E:36:THR:HG23	5:E:37:LYS:H	1.70	0.55
1:A:71:THR:O	1:A:71:THR:OG1	2.25	0.55
1:A:311:VAL:C	1:A:314:PRO:HD2	2.26	0.55
1:A:4:ARG:HD2	1:A:5:LEU:HG	1.88	0.55
7:G:74:ARG:O	7:G:78:ILE:HG13	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:239:VAL:HG11	5:E:48:TYR:CD1	2.42	0.55
1:A:309:ILE:HG23	1:A:310:ASP:N	2.21	0.55
2:B:254:VAL:HG13	2:B:257:GLU:HG2	1.88	0.55
1:A:308:PRO:O	1:A:311:VAL:HG12	2.07	0.54
4:D:220:ILE:HG22	4:D:221:GLY:N	2.20	0.54
1:A:55:VAL:CG2	1:A:58:LEU:HD12	2.37	0.54
5:E:150:ASP:O	5:E:152:GLN:N	2.40	0.54
5:E:58:TYR:CD1	5:E:168:PHE:HZ	2.24	0.54
3:C:216:ARG:NH1	3:C:255:GLU:O	2.40	0.54
7:G:9:ALA:HA	7:G:11:PHE:CE2	2.42	0.54
3:C:21:THR:HG22	3:C:22:GLN:HG3	1.90	0.54
7:G:11:PHE:O	7:G:14:VAL:HG12	2.08	0.54
1:A:239:VAL:HG13	5:E:4:TYR:CE2	2.44	0.53
1:A:328:PHE:CE1	9:A:901:ANP:H2	2.44	0.53
3:C:358:ASP:OD1	3:C:360:ARG:HG2	2.08	0.53
1:A:87:ASP:OD2	4:D:267:ARG:HD2	2.08	0.53
3:C:119:VAL:HG22	3:C:120:ILE:H	1.72	0.53
2:B:290:ASP:O	2:B:294:ARG:HG3	2.09	0.53
4:D:64:TYR:HB3	4:D:92:ASN:ND2	2.23	0.53
6:F:127:TYR:HB3	6:F:129:HIS:CE1	2.44	0.53
9:A:901:ANP:O1B	9:A:901:ANP:O2G	2.27	0.53
2:B:276:VAL:HB	2:B:280:GLU:HB3	1.89	0.53
7:G:78:ILE:O	7:G:82:VAL:HG23	2.09	0.53
5:E:36:THR:CG2	5:E:37:LYS:HD3	2.37	0.53
7:G:15:ASP:OD2	7:G:18:GLU:HG2	2.09	0.53
6:F:30:VAL:HG11	6:F:33:HIS:ND1	2.24	0.53
6:F:33:HIS:ND1	6:F:35:LYS:NZ	2.56	0.53
3:C:363:GLU:HG2	3:C:369:LEU:HD23	1.91	0.53
3:C:223:ASP:CB	7:G:146:THR:HG21	2.30	0.52
2:B:177:HIS:O	2:B:178:LEU:HB2	2.10	0.52
5:E:25:ARG:HH11	5:E:35:GLU:HB3	1.75	0.52
7:G:79:VAL:O	7:G:83:LEU:HG	2.09	0.52
2:B:177:HIS:CD2	2:B:177:HIS:H	2.26	0.52
4:D:130:GLN:OE1	4:D:130:GLN:HA	2.10	0.52
3:C:109:LYS:HD3	3:C:176:VAL:O	2.10	0.52
3:C:126:GLU:CB	3:C:131:TRP:HZ3	2.23	0.52
3:C:118:ARG:HH11	3:C:118:ARG:HG3	1.75	0.51
3:C:363:GLU:CD	3:C:371:ILE:HD12	2.30	0.51
6:F:74:ILE:HD13	6:F:139:MET:HG2	1.91	0.51
1:A:79:ARG:HB2	1:A:84:GLU:CG	2.40	0.51
4:D:65:LYS:HE2	4:D:65:LYS:CA	2.39	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:121:PHE:O	6:F:125:GLN:HG3	2.10	0.51
1:A:397:LYS:HG2	1:A:401:GLU:OE2	2.10	0.51
1:A:149:LEU:HD11	1:A:180:VAL:HB	1.92	0.51
2:B:326:LEU:HD23	7:G:14:VAL:HG11	1.93	0.51
3:C:61:ALA:HB1	3:C:108:GLU:OE1	2.11	0.51
2:B:333:ASP:C	2:B:335:GLU:H	2.15	0.51
3:C:367:LYS:HD2	3:C:367:LYS:C	2.32	0.51
5:E:36:THR:HG23	5:E:37:LYS:N	2.26	0.51
7:G:51:MET:O	7:G:54:ALA:HB3	2.10	0.51
7:G:58:ALA:HB1	7:G:79:VAL:HG22	1.92	0.51
1:A:129:ILE:O	1:A:133:SER:HB2	2.11	0.50
5:E:112:PRO:O	5:E:113:LEU:HB2	2.11	0.50
5:E:150:ASP:OD1	5:E:151:PRO:HD2	2.11	0.50
7:G:87:LYS:HE3	7:G:87:LYS:H	1.77	0.50
2:B:198:LEU:HA	2:B:202:TYR:O	2.11	0.50
4:D:45:ILE:HA	4:D:56:MET:O	2.11	0.50
7:G:124:VAL:HG13	7:G:125:LEU:N	2.26	0.50
1:A:398:LYS:HG3	1:A:402:GLU:OE2	2.12	0.50
7:G:95:VAL:HG21	7:G:131:LYS:HB3	1.93	0.50
4:D:202:HIS:O	4:D:220:ILE:O	2.30	0.50
6:F:30:VAL:HG11	6:F:33:HIS:CE1	2.46	0.50
9:B:902:ANP:O3G	9:B:902:ANP:O3A	2.30	0.50
1:A:289:ASN:HD22	1:A:290:PRO:CD	2.24	0.50
1:A:348:LYS:O	1:A:352:GLU:HG3	2.12	0.50
4:D:197:GLN:HG2	4:D:199:LEU:HD11	1.93	0.50
1:A:263:SER:C	1:A:265:LYS:H	2.15	0.50
2:B:182:LEU:HD13	2:B:184:ILE:HG23	1.93	0.50
6:F:36:PRO:HG2	6:F:39:GLU:HB2	1.93	0.50
2:B:166:ILE:HD13	2:B:282:LEU:HA	1.94	0.49
1:A:205:GLN:HE21	1:A:220:SER:CB	2.26	0.49
4:D:54:LYS:HD2	4:D:54:LYS:N	2.25	0.49
4:D:182:MET:HG3	4:D:200:PHE:CD1	2.47	0.49
4:D:189:ARG:HA	4:D:192:SER:O	2.12	0.49
3:C:370:LYS:O	3:C:370:LYS:CG	2.58	0.49
2:B:217:LYS:HD2	2:B:310:TYR:OH	2.13	0.49
5:E:16:ILE:HG23	5:E:16:ILE:O	2.12	0.49
5:E:168:PHE:CE2	5:E:169:MET:HE2	2.48	0.49
3:C:60:TRP:HE1	3:C:65:ASN:ND2	2.10	0.49
4:D:282:PRO:HG3	6:F:127:TYR:CZ	2.48	0.49
3:C:119:VAL:CG2	3:C:120:ILE:N	2.76	0.49
1:A:153:TRP:HA	1:A:158:VAL:HG21	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:289:ASN:HD22	1:A:290:PRO:N	2.11	0.49
2:B:254:VAL:CG1	2:B:257:GLU:HG2	2.43	0.49
5:E:60:ILE:CD1	5:E:116:ILE:HG21	2.43	0.49
5:E:88:LYS:N	5:E:153:ASN:HD21	2.11	0.49
3:C:264:ASP:O	3:C:265:CYS:HB2	2.12	0.49
1:A:370:HIS:HE1	10:A:907:HOH:O	1.94	0.49
6:F:20:LEU:HD12	6:F:132:VAL:CG2	2.43	0.49
2:B:170:TYR:CB	2:B:175:LEU:HD11	2.41	0.48
3:C:284:ARG:HD3	3:C:286:ASP:O	2.13	0.48
2:B:182:LEU:HD11	2:B:278:VAL:H	1.78	0.48
4:D:71:GLY:HA2	4:D:74:GLU:OE1	2.14	0.48
5:E:16:ILE:HD12	5:E:125:GLU:HG3	1.95	0.48
4:D:147:ARG:HB2	4:D:150:GLU:HB2	1.94	0.48
3:C:129:ASN:HB2	3:C:131:TRP:CZ3	2.48	0.48
6:F:60:LYS:HE3	6:F:112:TYR:CE2	2.48	0.48
3:C:367:LYS:NZ	3:C:368:ASP:HB3	2.28	0.48
5:E:169:MET:O	5:E:171:LYS:HG2	2.13	0.48
1:A:343:VAL:O	1:A:347:LEU:HD13	2.12	0.48
2:B:159:SER:HB3	2:B:308:THR:HG23	1.94	0.48
6:F:12:VAL:HG12	6:F:136:ILE:HD11	1.96	0.48
1:A:239:VAL:HG23	1:A:240:LYS:N	2.29	0.48
2:B:186:GLY:HA3	9:B:902:ANP:O3'	2.13	0.48
3:C:13:CYS:SG	3:C:58:VAL:HG23	2.53	0.48
1:A:164:THR:HA	1:A:180:VAL:O	2.14	0.48
3:C:212:ALA:HB3	3:C:255:GLU:OE2	2.14	0.48
1:A:14:THR:HG22	1:A:79:ARG:HH21	1.77	0.47
7:G:68:SER:O	7:G:71:VAL:HG12	2.14	0.47
1:A:79:ARG:HA	1:A:79:ARG:NE	2.29	0.47
3:C:179:ARG:HG3	3:C:179:ARG:NH1	2.18	0.47
4:D:106:LYS:N	4:D:106:LYS:HD2	2.29	0.47
5:E:150:ASP:C	5:E:152:GLN:N	2.67	0.47
7:G:87:LYS:N	7:G:87:LYS:CD	2.77	0.47
1:A:239:VAL:HG23	1:A:240:LYS:H	1.79	0.47
4:D:241:ILE:HA	4:D:244:ILE:HG22	1.95	0.47
1:A:170:SER:OG	1:A:325:SER:HB2	2.13	0.47
1:A:183:GLY:CA	1:A:413:VAL:HG21	2.42	0.47
2:B:170:TYR:CD2	2:B:171:GLU:HG2	2.49	0.47
3:C:365:ALA:C	3:C:366:LEU:HD12	2.35	0.47
1:A:372:MET:SD	1:A:372:MET:N	2.88	0.47
1:A:400:TYR:CE1	1:A:405:PRO:HB3	2.49	0.47
1:A:140:TYR:HB2	1:A:394:CYS:SG	2.55	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:23:PRO:HB3	5:E:35:GLU:HA	1.97	0.47
5:E:70:TYR:CZ	5:E:133:LEU:HG	2.50	0.47
1:A:225:LYS:HE3	1:A:229:GLU:OE1	2.14	0.47
5:E:74:TYR:OH	5:E:98:LEU:HD12	2.15	0.47
1:A:21:TYR:OH	1:A:103:ALA:HB2	2.15	0.47
3:C:254:THR:HA	3:C:340:ALA:O	2.14	0.47
4:D:61:LEU:HD23	4:D:63:PHE:CZ	2.49	0.47
5:E:87:SER:OG	5:E:90:GLN:HB2	2.13	0.47
5:E:116:ILE:HG22	5:E:117:TYR:CD1	2.50	0.47
2:B:184:ILE:HD12	2:B:271:ILE:HD11	1.95	0.46
5:E:60:ILE:HD12	5:E:116:ILE:HD13	1.96	0.46
3:C:14:HIS:HA	3:C:24:ALA:O	2.15	0.46
3:C:72:THR:HA	3:C:98:ALA:CB	2.44	0.46
5:E:130:ARG:HG3	5:E:130:ARG:HH11	1.79	0.46
5:E:150:ASP:C	5:E:152:GLN:H	2.19	0.46
2:B:254:VAL:HG12	2:B:258:ARG:HG3	1.97	0.46
3:C:144:THR:H	6:F:28:GLN:NE2	2.14	0.46
3:C:363:GLU:OE2	3:C:371:ILE:HD12	2.16	0.46
1:A:289:ASN:ND2	1:A:291:ASP:H	2.13	0.46
2:B:182:LEU:HD11	2:B:278:VAL:N	2.30	0.46
2:B:229:GLN:NE2	6:F:40:VAL:CB	2.78	0.46
5:E:56:LYS:HD2	5:E:56:LYS:N	2.31	0.46
2:B:160:GLY:O	2:B:185:ALA:HB1	2.16	0.46
2:B:303:LEU:CD2	2:B:314:PRO:HG3	2.46	0.46
3:C:90:LEU:HD12	3:C:91:VAL:H	1.79	0.46
3:C:7:LEU:HD12	3:C:9:GLU:HB2	1.98	0.46
4:D:66:GLU:OE1	4:D:144:ILE:HA	2.16	0.46
4:D:263:HIS:HD2	4:D:266:MET:CE	2.29	0.46
2:B:161:ASP:H	9:B:902:ANP:PG	2.39	0.46
4:D:265:ARG:NH2	6:F:148:GLU:HB3	2.30	0.46
1:A:169:ASP:HA	1:A:322:SER:O	2.15	0.46
1:A:328:PHE:CZ	9:A:901:ANP:H2	2.51	0.46
2:B:161:ASP:OD2	2:B:187:ARG:HB3	2.16	0.46
1:A:246:ASP:OD1	5:E:50:LYS:HE3	2.16	0.45
2:B:151:LEU:CD1	2:B:300:HIS:CD2	2.89	0.45
2:B:160:GLY:HA3	9:B:902:ANP:O3G	2.16	0.45
3:C:250:VAL:HG22	3:C:251:THR:N	2.31	0.45
5:E:95:MET:HA	5:E:95:MET:CE	2.46	0.45
2:B:227:ILE:HD11	2:B:263:GLU:OE2	2.16	0.45
2:B:182:LEU:HG	2:B:281:LEU:HD12	1.98	0.45
1:A:258:GLY:O	1:A:266:GLU:HA	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:182:LEU:HD23	2:B:182:LEU:HA	1.85	0.45
5:E:63:GLU:CD	5:E:63:GLU:H	2.20	0.45
1:A:18:LYS:N	1:A:18:LYS:HD3	2.32	0.45
1:A:232:SER:HA	1:A:275:ARG:O	2.16	0.45
2:B:184:ILE:HD13	2:B:265:LEU:HA	1.97	0.45
2:B:317:LEU:HB3	2:B:344:ILE:HD13	1.98	0.45
2:B:340:PHE:CE2	2:B:342:ILE:HD11	2.52	0.45
3:C:119:VAL:HG23	3:C:137:ILE:O	2.17	0.45
3:C:319:ALA:HB2	6:F:127:TYR:CZ	2.51	0.45
1:A:191:LYS:HB2	1:A:303:VAL:HG22	1.97	0.45
1:A:324:GLY:O	1:A:327:MET:HG2	2.17	0.45
1:A:68:GLU:O	1:A:70:PRO:HD3	2.17	0.45
1:A:55:VAL:HG22	1:A:58:LEU:CD1	2.45	0.45
3:C:219:TRP:CE2	3:C:227:CYS:HB2	2.52	0.44
4:D:137:GLU:OE2	4:D:158:LYS:HE2	2.17	0.44
6:F:4:THR:CG2	6:F:55:ARG:HE	2.16	0.44
1:A:193:ILE:HG23	1:A:292:PHE:CE2	2.52	0.44
1:A:240:LYS:O	1:A:244:LYS:HG3	2.17	0.44
1:A:311:VAL:O	1:A:314:PRO:HD2	2.18	0.44
1:A:317:LYS:HE3	1:A:364:ASP:HB3	1.99	0.44
2:B:318:GLU:HG3	2:B:344:ILE:HD12	1.99	0.44
3:C:107:ASN:ND2	3:C:107:ASN:C	2.71	0.44
7:G:140:SER:O	7:G:144:VAL:HG23	2.16	0.44
1:A:260:ASN:HB3	1:A:263:SER:HB3	1.99	0.44
1:A:302:GLU:O	1:A:306:ASN:ND2	2.50	0.44
1:A:393:VAL:HG21	1:A:414:PHE:CD2	2.53	0.44
2:B:240:LEU:HB2	10:B:908:HOH:O	2.16	0.44
6:F:71:ARG:HA	6:F:116:PHE:O	2.17	0.44
6:F:145:GLU:HG3	6:F:149:MET:CE	2.47	0.44
7:G:68:SER:OG	7:G:71:VAL:HG12	2.17	0.44
2:B:353:MET:O	2:B:354:VAL:C	2.55	0.44
4:D:223:ILE:HD12	4:D:223:ILE:N	2.32	0.44
1:A:190:ILE:O	1:A:191:LYS:HD3	2.17	0.44
2:B:225:TYR:CZ	2:B:319:ARG:HD2	2.52	0.44
7:G:52:THR:O	7:G:56:GLN:HG3	2.18	0.44
1:A:87:ASP:CG	4:D:264:THR:HG22	2.38	0.44
1:A:106:GLU:HG2	1:A:135:ASN:HB2	1.99	0.44
2:B:151:LEU:HD22	2:B:300:HIS:CD2	2.53	0.44
2:B:286:ILE:C	2:B:288:ALA:H	2.21	0.44
3:C:284:ARG:CD	3:C:286:ASP:O	2.65	0.44
1:A:191:LYS:HB2	1:A:303:VAL:CG2	2.47	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:346:ASP:HB3	3:C:74:ARG:HH12	1.83	0.44
2:B:350:ARG:O	2:B:350:ARG:HG2	2.16	0.44
1:A:111:LEU:HD23	1:A:111:LEU:C	2.38	0.44
5:E:140:THR:O	5:E:144:LEU:HB2	2.18	0.44
1:A:158:VAL:HG23	1:A:158:VAL:O	2.17	0.43
1:A:359:LYS:NZ	1:A:359:LYS:HB3	2.33	0.43
4:D:230:ARG:NH1	4:D:230:ARG:HB2	2.34	0.43
5:E:55:PHE:C	5:E:56:LYS:HD2	2.38	0.43
5:E:153:ASN:OD1	5:E:154:ASP:N	2.52	0.43
6:F:45:GLU:HB3	7:G:24:PHE:CG	2.53	0.43
3:C:257:SER:OG	3:C:372:VAL:HA	2.19	0.43
3:C:259:VAL:HG12	3:C:332:ILE:CD1	2.49	0.43
5:E:166:ARG:HG2	5:E:166:ARG:HH11	1.83	0.43
6:F:45:GLU:HB3	7:G:24:PHE:CD2	2.53	0.43
1:A:193:ILE:HA	1:A:194:PRO:HD3	1.86	0.43
7:G:62:PRO:HA	7:G:63:PRO:HD3	1.93	0.43
3:C:119:VAL:CG2	3:C:120:ILE:H	2.31	0.43
4:D:220:ILE:CG2	4:D:221:GLY:N	2.81	0.43
1:A:19:LEU:HG	1:A:29:PHE:HB2	2.01	0.43
2:B:161:ASP:N	9:B:902:ANP:O3G	2.51	0.43
3:C:326:LYS:HA	3:C:326:LYS:HD3	1.90	0.43
3:C:267:PRO:HD2	3:C:286:ASP:HB2	2.00	0.42
5:E:95:MET:HG2	5:E:141:GLY:C	2.40	0.42
3:C:254:THR:OG1	3:C:372:VAL:HG13	2.19	0.42
5:E:10:ASP:HB3	5:E:12:ASP:OD1	2.19	0.42
2:B:178:LEU:O	2:B:285:THR:HG23	2.19	0.42
3:C:155:VAL:HG21	3:C:180:PRO:CG	2.47	0.42
4:D:67:LEU:HD13	4:D:120:CYS:O	2.20	0.42
5:E:20:ALA:HB3	5:E:22:LEU:CD2	2.49	0.42
5:E:23:PRO:O	5:E:24:ILE:CG2	2.68	0.42
3:C:183:THR:HG23	3:C:184:PRO:CD	2.49	0.42
7:G:113:GLY:HA3	7:G:125:LEU:HD11	2.01	0.42
1:A:251:LYS:HD2	1:A:251:LYS:N	2.34	0.42
1:A:284:HIS:N	1:A:285:PRO:HD3	2.35	0.42
2:B:175:LEU:N	2:B:175:LEU:CD1	2.80	0.42
4:D:109:ILE:HG23	10:D:312:HOH:O	2.20	0.42
5:E:134:GLN:HA	5:E:137:ARG:CZ	2.49	0.42
1:A:397:LYS:HE2	1:A:401:GLU:OE2	2.20	0.42
3:C:17:ASN:HB3	3:C:60:TRP:CZ2	2.55	0.42
5:E:20:ALA:HB3	5:E:22:LEU:HD21	2.01	0.42
6:F:137:HIS:CE1	6:F:141:GLU:HG3	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:164:THR:HB	2:B:182:LEU:HB3	2.01	0.42
4:D:247:PHE:O	4:D:250:TYR:HB3	2.19	0.42
9:B:902:ANP:H1'	10:B:906:HOH:O	2.19	0.42
3:C:93:LEU:HB2	3:C:95:ILE:HG12	2.02	0.42
2:B:322:LYS:CB	7:G:16:VAL:HG11	2.48	0.42
3:C:360:ARG:HG3	3:C:361:SER:N	2.35	0.42
5:E:24:ILE:HG12	5:E:32:ALA:HB1	2.01	0.42
6:F:14:ALA:O	6:F:17:GLN:HB2	2.19	0.42
1:A:295:PRO:HD2	1:A:298:GLU:CD	2.41	0.42
2:B:254:VAL:HG13	2:B:257:GLU:CG	2.49	0.42
3:C:228:LEU:C	3:C:228:LEU:HD23	2.40	0.42
5:E:60:ILE:HD11	5:E:116:ILE:HG21	2.02	0.42
10:F:186:HOH:O	7:G:117:PRO:HG2	2.19	0.42
2:B:323:GLN:NE2	7:G:12:ARG:HA	2.34	0.41
4:D:199:LEU:N	4:D:199:LEU:HD12	2.34	0.41
1:A:116:PRO:HG2	1:A:178:ILE:HD13	2.01	0.41
1:A:286:GLU:O	5:E:56:LYS:HD3	2.21	0.41
3:C:183:THR:HG21	3:C:185:TRP:HD1	1.86	0.41
5:E:74:TYR:CE1	5:E:137:ARG:HD2	2.56	0.41
1:A:53:LYS:O	1:A:56:ASP:OD2	2.38	0.41
6:F:76:VAL:HG23	6:F:113:ASP:HB2	2.03	0.41
3:C:44:GLN:NE2	3:C:47:GLU:OE1	2.52	0.41
3:C:102:VAL:HA	3:C:112:ALA:O	2.21	0.41
2:B:144:LEU:O	2:B:145:THR:C	2.59	0.41
1:A:233:TYR:O	1:A:276:PHE:HA	2.21	0.41
2:B:191:ARG:O	2:B:194:ILE:HB	2.20	0.41
3:C:27:PRO:HG2	3:C:29:ASN:OD1	2.21	0.41
3:C:128:GLU:H	3:C:128:GLU:HG3	1.68	0.41
4:D:63:PHE:CD2	4:D:146:TYR:HA	2.56	0.41
1:A:174:VAL:HG13	1:A:193:ILE:O	2.21	0.41
1:A:311:VAL:O	1:A:311:VAL:HG22	2.20	0.41
2:B:274:GLU:OE1	2:B:275:GLY:N	2.52	0.41
3:C:124:TYR:HB2	3:C:176:VAL:HG11	2.02	0.41
4:D:37:ASP:HB3	4:D:41:VAL:HB	2.00	0.41
2:B:220:LEU:HD11	10:B:916:HOH:O	2.20	0.41
4:D:198:VAL:C	4:D:199:LEU:HD12	2.41	0.41
5:E:166:ARG:HG2	5:E:166:ARG:NH1	2.35	0.41
6:F:20:LEU:HD12	6:F:132:VAL:HG22	2.03	0.41
1:A:176:HIS:CD2	1:A:192:HIS:CD2	3.08	0.41
2:B:156:VAL:HG22	2:B:302:VAL:HG13	2.03	0.41
2:B:229:GLN:HE22	6:F:40:VAL:HB	1.82	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:322:LYS:HG3	2:B:342:ILE:HD12	2.03	0.41
3:C:73:ASP:O	3:C:74:ARG:HB2	2.21	0.41
3:C:119:VAL:HG21	3:C:136:HIS:HB3	2.03	0.41
5:E:152:GLN:O	5:E:155:LYS:HB2	2.21	0.41
1:A:36:ALA:HB2	1:A:66:ALA:HB1	2.03	0.40
1:A:234:VAL:HG21	1:A:331:PHE:HA	2.02	0.40
1:A:248:ASP:OD2	1:A:251:LYS:HD3	2.21	0.40
2:B:347:PRO:HA	2:B:348:PRO:HD2	1.99	0.40
3:C:29:ASN:O	3:C:54:GLN:HA	2.21	0.40
2:B:330:LEU:C	2:B:332:GLY:H	2.23	0.40
4:D:35:PHE:CD2	4:D:35:PHE:N	2.89	0.40
5:E:60:ILE:CD1	5:E:116:ILE:CG2	2.98	0.40
1:A:263:SER:C	1:A:265:LYS:N	2.74	0.40
2:B:175:LEU:HD22	2:B:178:LEU:HD12	2.03	0.40
2:B:205:ASN:ND2	2:B:207:SER:H	2.19	0.40
5:E:146:GLU:CG	5:E:147:LYS:N	2.84	0.40
6:F:145:GLU:HG3	6:F:149:MET:HE2	2.03	0.40
2:B:158:ASP:HB2	2:B:304:SER:HB3	2.04	0.40
3:C:131:TRP:HE3	3:C:131:TRP:O	2.03	0.40
3:C:249:ALA:HB1	3:C:332:ILE:HG22	2.03	0.40
4:D:37:ASP:HB2	4:D:43:TYR:CE1	2.57	0.40
4:D:212:THR:C	4:D:214:ALA:H	2.25	0.40
7:G:68:SER:C	7:G:70:ALA:H	2.25	0.40
2:B:287:GLN:HG2	2:B:298:TYR:OH	2.22	0.40
3:C:26:CYS:SG	3:C:55:VAL:HB	2.61	0.40
3:C:74:ARG:HH11	6:F:31:GLU:CD	2.25	0.40
4:D:260:ALA:O	4:D:263:HIS:HB2	2.20	0.40
5:E:105:ILE:HB	5:E:106:PRO:HD2	2.03	0.40
6:F:4:THR:C	6:F:7:PRO:HD2	2.42	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	390/418 (93%)	357 (92%)	31 (8%)	2 (0%)	29	47
2	B	216/394 (55%)	189 (88%)	21 (10%)	6 (3%)	5	7
3	C	337/372 (91%)	316 (94%)	19 (6%)	2 (1%)	25	42
4	D	276/300 (92%)	264 (96%)	10 (4%)	2 (1%)	22	39
5	E	172/178 (97%)	154 (90%)	16 (9%)	2 (1%)	13	23
6	F	165/168 (98%)	157 (95%)	8 (5%)	0	100	100
7	G	110/151 (73%)	103 (94%)	5 (4%)	2 (2%)	8	15
All	All	1666/1981 (84%)	1540 (92%)	110 (7%)	16 (1%)	15	27

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	263	SER
5	E	153	ASN
7	G	118	SER
2	B	184	ILE
2	B	278	VAL
4	D	237	ARG
2	B	334	VAL
3	C	50	GLU
4	D	208	GLU
1	A	33	SER
2	B	145	THR
2	B	171	GLU
3	C	179	ARG
5	E	151	PRO
7	G	22	ASN
2	B	347	PRO

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	346/363 (95%)	324 (94%)	22 (6%)	17	31

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	169/345 (49%)	159 (94%)	10 (6%)	19	34
3	C	288/313 (92%)	276 (96%)	12 (4%)	30	49
4	D	245/264 (93%)	236 (96%)	9 (4%)	34	54
5	E	156/159 (98%)	148 (95%)	8 (5%)	24	41
6	F	154/155 (99%)	150 (97%)	4 (3%)	46	66
7	G	90/124 (73%)	86 (96%)	4 (4%)	28	47
All	All	1448/1723 (84%)	1379 (95%)	69 (5%)	25	44

All (69) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	ARG
1	A	19	LEU
1	A	25	THR
1	A	55	VAL
1	A	68	GLU
1	A	71	THR
1	A	117	LEU
1	A	143	VAL
1	A	191	LYS
1	A	251	LYS
1	A	255	GLN
1	A	289	ASN
1	A	297	SER
1	A	318	ASN
1	A	335	LEU
1	A	340	LYS
1	A	351	GLU
1	A	363	ILE
1	A	372	MET
1	A	373	GLN
1	A	394	CYS
1	A	413	VAL
2	B	153	THR
2	B	180	ARG
2	B	182	LEU
2	B	200	ARG
2	B	220	LEU
2	B	240	LEU
2	B	274	GLU

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Mol	Chain	Res	Type
2	B	281	LEU
2	B	303	LEU
2	B	320	GLU
3	C	21	THR
3	C	107	ASN
3	C	131	TRP
3	C	140	PRO
3	C	179	ARG
3	C	284	ARG
3	C	321	LEU
3	C	346	CYS
3	C	367	LYS
3	C	370	LYS
3	C	371	ILE
3	C	372	VAL
4	D	49	ASN
4	D	84	LEU
4	D	106	LYS
4	D	107	ASP
4	D	116	LEU
4	D	118	ARG
4	D	141	ARG
4	D	171	ASP
4	D	248	ARG
5	E	25	ARG
5	E	35	GLU
5	E	82	LEU
5	E	95	MET
5	E	133	LEU
5	E	144	LEU
5	E	145	CYS
5	E	151	PRO
6	F	101	PHE
6	F	102	PHE
6	F	104	LEU
6	F	165	LEU
7	G	27	GLU
7	G	87	LYS
7	G	90	ASP
7	G	122	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	122	ASN
1	A	157	GLN
1	A	192	HIS
1	A	205	GLN
1	A	255	GLN
1	A	289	ASN
1	A	306	ASN
1	A	318	ASN
2	B	205	ASN
2	B	229	GLN
2	B	231	GLN
2	B	284	ASN
2	B	300	HIS
2	B	323	GLN
3	C	33	HIS
3	C	65	ASN
3	C	107	ASN
3	C	331	GLN
4	D	21	ASN
4	D	26	ASN
4	D	140	ASN
4	D	231	HIS
4	D	263	HIS
5	E	90	GLN
5	E	134	GLN
5	E	138	GLN
5	E	167	GLN
6	F	129	HIS
6	F	137	HIS
6	F	167	ASN
7	G	96	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 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 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	$\#|Z| > 2$
9	ANP	B	902	8	29,33,33	1.18	3 (10%)	31,52,52	1.54	3 (9%)
9	ANP	A	901	8	29,33,33	1.15	1 (3%)	31,52,52	2.17	6 (19%)

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
9	ANP	B	902	8	-	6/14/38/38	0/3/3/3
9	ANP	A	901	8	-	0/14/38/38	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	A	901	ANP	PB-O2B	-3.16	1.48	1.56
9	B	902	ANP	PB-O2B	-3.01	1.48	1.56
9	B	902	ANP	PB-O3A	2.32	1.62	1.59
9	B	902	ANP	O4'-C1'	2.28	1.44	1.41

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	A	901	ANP	O2B-PB-O1B	7.33	125.30	109.92
9	A	901	ANP	O3A-PB-N3B	-4.81	93.23	106.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	B	902	ANP	N3-C2-N1	-4.48	121.68	128.68
9	A	901	ANP	N3-C2-N1	-4.46	121.71	128.68
9	B	902	ANP	O2B-PB-O1B	4.11	118.54	109.92
9	A	901	ANP	O4'-C1'-C2'	-3.94	101.17	106.93
9	A	901	ANP	PB-O3A-PA	-3.16	121.50	132.62
9	B	902	ANP	PB-O3A-PA	-2.88	122.48	132.62
9	A	901	ANP	O2B-PB-O3A	-2.31	96.94	104.64

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	B	902	ANP	PG-N3B-PB-O1B
9	B	902	ANP	C5'-O5'-PA-O1A
9	B	902	ANP	C5'-O5'-PA-O2A
9	B	902	ANP	PB-O3A-PA-O1A
9	B	902	ANP	PB-O3A-PA-O2A
9	B	902	ANP	C5'-O5'-PA-O3A

There are no ring outliers.

2 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	B	902	ANP	6	0
9	A	901	ANP	3	0

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

Ligand ANP B 902

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP A 901

Bond lengths

Bond angles

Torsions

Rings
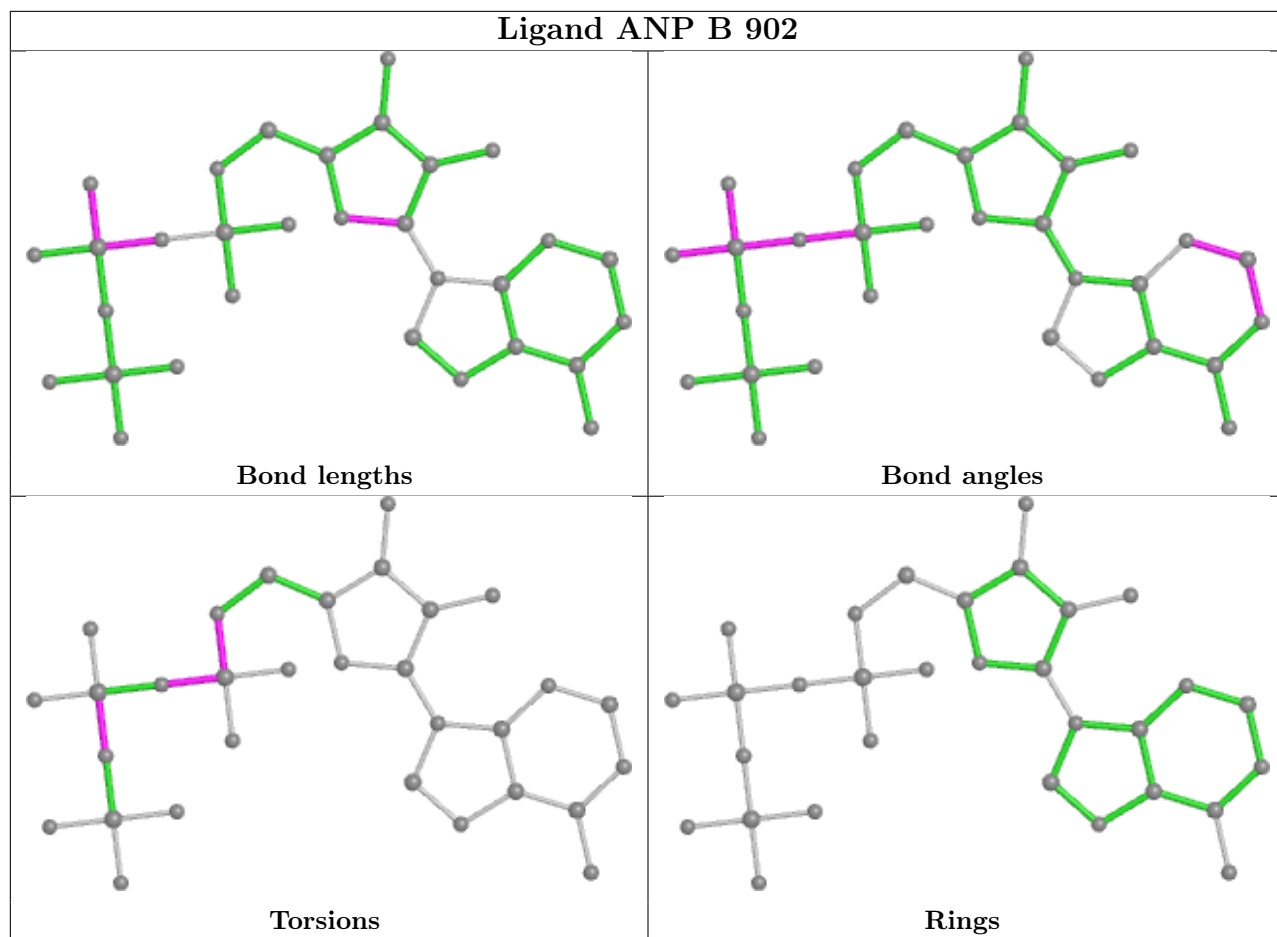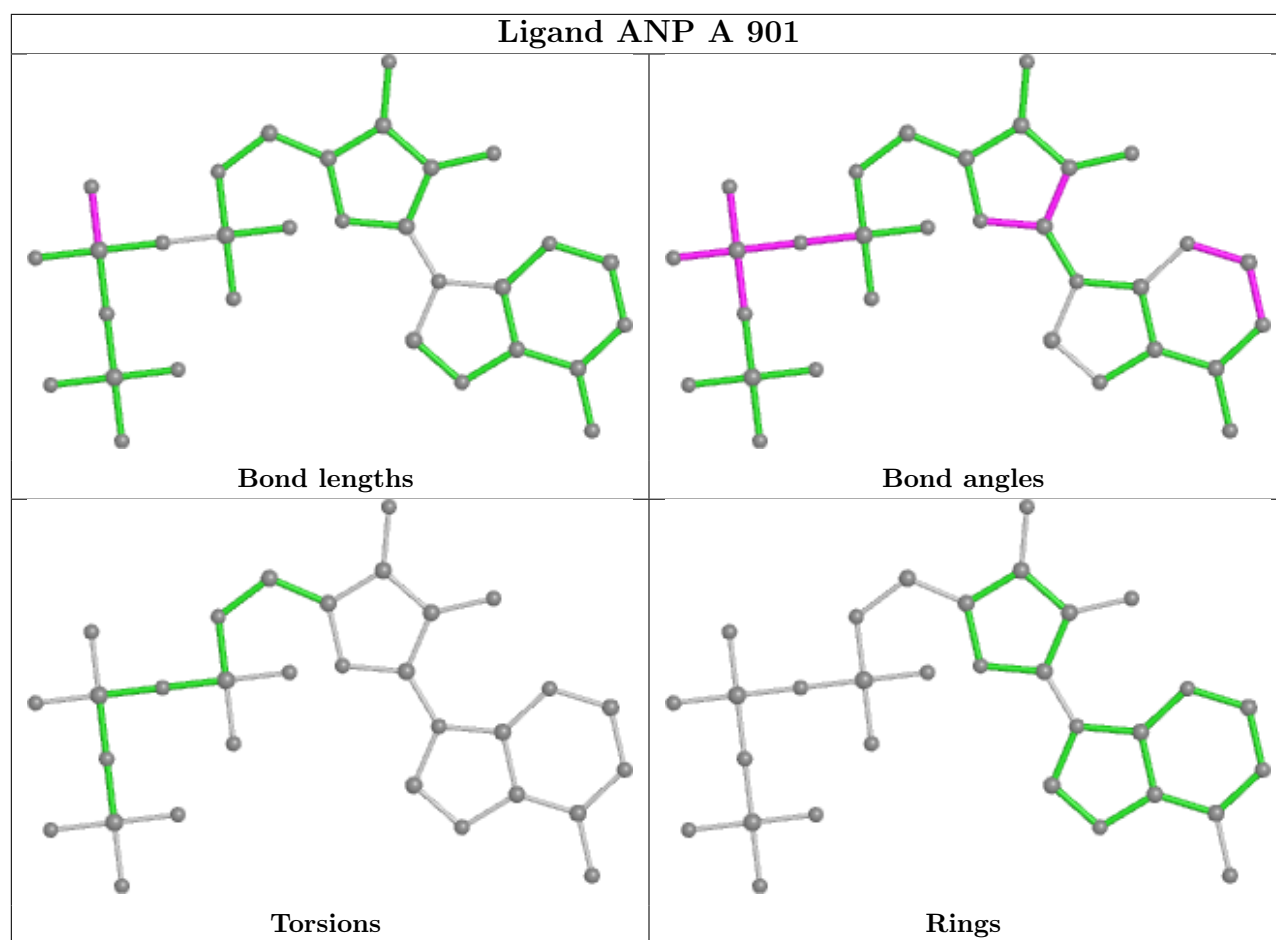
5.7 Other polymers ⓘ

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	398/418 (95%)	0.06	21 (5%)	26	31	19, 45, 89, 127	0
2	B	222/394 (56%)	0.16	12 (5%)	25	31	27, 52, 82, 97	0
3	C	341/372 (91%)	-0.16	6 (1%)	68	76	24, 36, 65, 100	0
4	D	280/300 (93%)	-0.20	3 (1%)	80	86	23, 38, 70, 86	0
5	E	174/178 (97%)	0.41	15 (8%)	10	13	38, 59, 85, 108	0
6	F	167/168 (99%)	-0.33	1 (0%)	89	92	23, 35, 50, 87	0
7	G	116/151 (76%)	0.42	7 (6%)	21	26	30, 67, 86, 94	0
All	All	1698/1981 (85%)	0.01	65 (3%)	40	48	19, 43, 82, 127	0

All (65) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	359	LYS	7.4
5	E	154	ASP	6.5
1	A	351	GLU	5.3
1	A	360	PRO	4.8
2	B	356	LEU	4.6
7	G	120	ASN	4.3
2	B	355	PHE	4.2
1	A	350	SER	4.2
1	A	51	VAL	4.0
1	A	159	GLY	4.0
2	B	178	LEU	4.0
1	A	354	SER	3.9
6	F	2	THR	3.6
3	C	367	LYS	3.6
1	A	39	GLU	3.5
2	B	181	ARG	3.4
1	A	157	GLN	3.4

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Mol	Chain	Res	Type	RSRZ
5	E	153	ASN	3.2
5	E	175	GLY	3.2
1	A	352	GLU	3.2
1	A	70	PRO	3.2
1	A	348	LYS	3.1
2	B	171	GLU	3.1
1	A	262	ILE	3.1
1	A	414	PHE	3.1
7	G	88	ALA	3.1
3	C	319	ALA	3.0
2	B	176	PRO	3.0
3	C	362	LEU	3.0
3	C	368	ASP	2.9
5	E	86	ASN	2.9
1	A	160	GLU	2.8
7	G	121	SER	2.8
4	D	209	LEU	2.8
7	G	84	ILE	2.7
3	C	360	ARG	2.7
2	B	276	VAL	2.7
4	D	207	LEU	2.7
2	B	274	GLU	2.7
5	E	155	LYS	2.6
7	G	11	PHE	2.6
5	E	149	PHE	2.6
5	E	35	GLU	2.5
5	E	89	SER	2.5
5	E	152	GLN	2.5
2	B	175	LEU	2.4
5	E	150	ASP	2.4
2	B	330	LEU	2.3
5	E	146	GLU	2.3
1	A	158	VAL	2.3
5	E	151	PRO	2.3
7	G	61	ASN	2.3
5	E	93	LYS	2.3
1	A	349	LEU	2.3
3	C	127	GLN	2.3
1	A	52	MET	2.2
1	A	256	TYR	2.2
7	G	90	ASP	2.2
2	B	275	GLY	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	261	ALA	2.2
5	E	27	GLN	2.1
5	E	90	GLN	2.1
4	D	215	ALA	2.1
1	A	415	GLY	2.1
2	B	354	VAL	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.

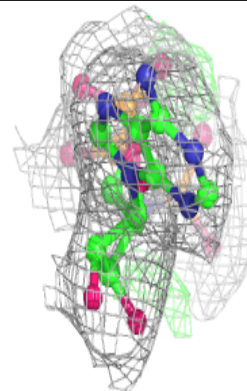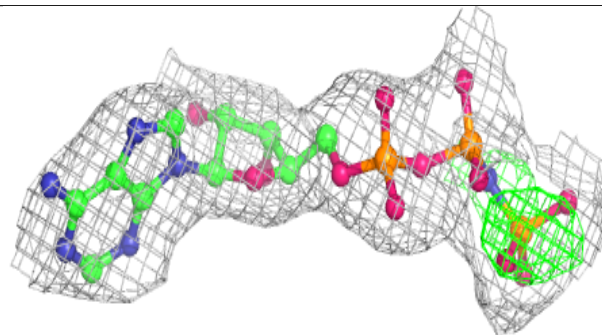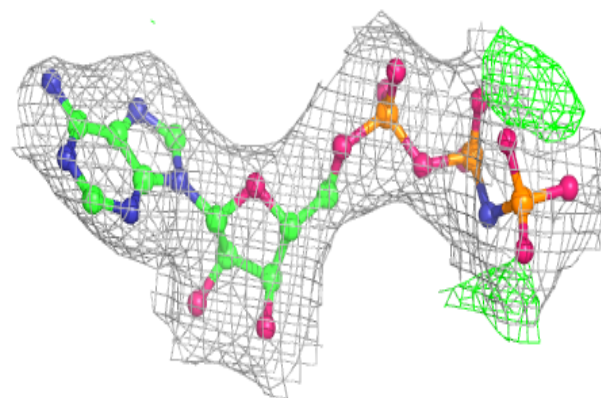| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	CA	B	802	1/1	0.91	0.13	70,70,70,70	0
9	ANP	B	902	31/31	0.92	0.14	43,54,86,87	0
8	CA	A	801	1/1	0.93	0.26	41,41,41,41	0
9	ANP	A	901	31/31	0.95	0.18	46,50,54,57	0

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 B 902:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
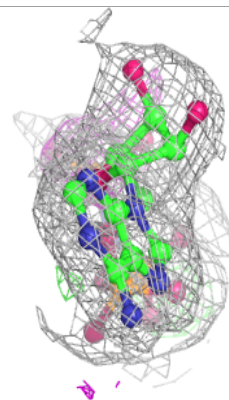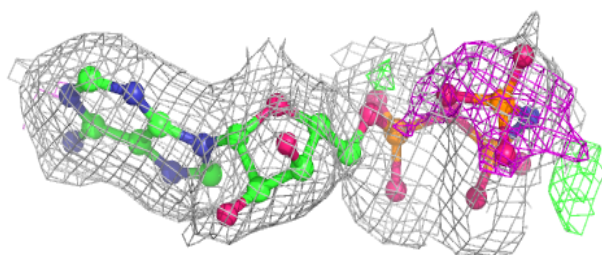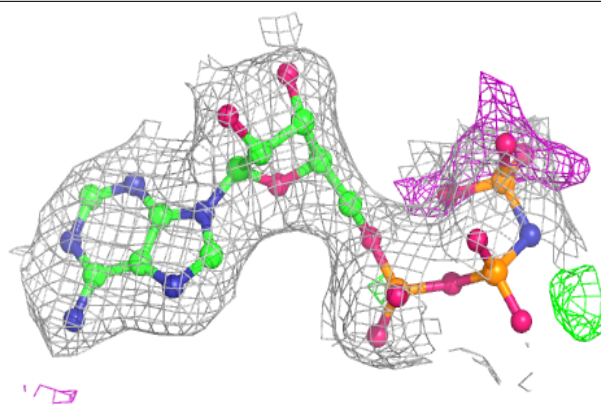
Electron density around ANP A 901:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.