wwPDB X-ray Structure Validation Summary Report (i)

Sep 17, 2023 – 08:59 AM EDT

PDB ID	:	4PKH
Title	:	Complex of ADP-actin With the N-terminal Actin-Binding Domain of Tropomodulin
Authors	:	Rao, J.N.; Dominguez, R.
Deposited on	:	2014-05-14
Resolution	:	2.15 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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:

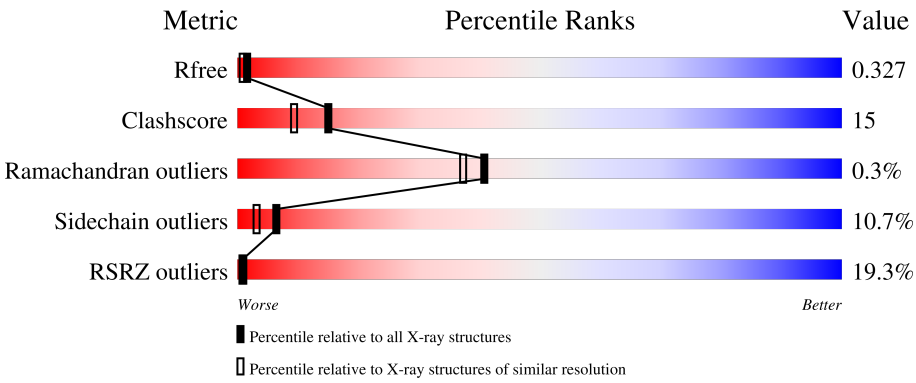
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.15 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1479 (2.16-2.16)
Clashscore	141614	1585 (2.16-2.16)
Ramachandran outliers	138981	1560 (2.16-2.16)
Sidechain outliers	138945	1559 (2.16-2.16)
RSRZ outliers	127900	1456 (2.16-2.16)

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	377	3%, 62%, 30%, • 5%
1	D	377	2%, 71%, 22%, • 5%
1	F	377	33%, 59%, 33%, 5% •
1	I	377	37%, 52%, 37%, 6% 5%
2	B	186	5%, 70%, 17%, • 11%

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Mol	Chain	Length	Quality of chain
2	E	186	2% 48% 17% 33%
2	G	186	23% 41% 32% 23%
2	J	186	26% 40% 23% 5% 32%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 31981 atoms, of which 15522 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, alpha skeletal muscle.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	359	5592	1787	2775	469	541	20	0	2	0
1	D	360	5609	1790	2786	473	541	19	0	1	0
1	F	365	5678	1812	2821	481	544	20	0	0	0
1	I	360	5609	1790	2786	473	540	20	0	1	0

- Molecule 2 is a protein called Gelsolin,Tropomodulin-1 chimera.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
2	B	165	2622	859	1291	225	246	1	0	0	0
2	E	125	1944	642	952	165	184	1	0	0	0
2	G	143	2245	738	1102	191	212	2	0	0	0
2	J	126	1970	650	965	166	187	2	0	1	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	177	GLY	-	linker	UNP P06396
B	178	GLY	-	linker	UNP P06396
B	179	SER	-	linker	UNP P06396
B	180	GLY	-	linker	UNP P06396
B	181	GLY	-	linker	UNP P06396
B	182	SER	-	linker	UNP P06396
B	183	GLY	-	linker	UNP P06396
B	184	GLY	-	linker	UNP P06396

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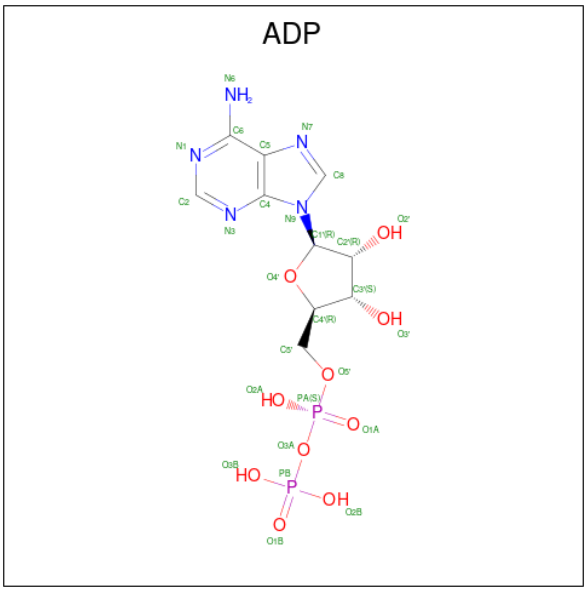
Chain	Residue	Modelled	Actual	Comment	Reference
B	185	SER	-	linker	UNP P06396
E	177	GLY	-	linker	UNP P06396
E	178	GLY	-	linker	UNP P06396
E	179	SER	-	linker	UNP P06396
E	180	GLY	-	linker	UNP P06396
E	181	GLY	-	linker	UNP P06396
E	182	SER	-	linker	UNP P06396
E	183	GLY	-	linker	UNP P06396
E	184	GLY	-	linker	UNP P06396
E	185	SER	-	linker	UNP P06396
G	177	GLY	-	linker	UNP P06396
G	178	GLY	-	linker	UNP P06396
G	179	SER	-	linker	UNP P06396
G	180	GLY	-	linker	UNP P06396
G	181	GLY	-	linker	UNP P06396
G	182	SER	-	linker	UNP P06396
G	183	GLY	-	linker	UNP P06396
G	184	GLY	-	linker	UNP P06396
G	185	SER	-	linker	UNP P06396
J	177	GLY	-	linker	UNP P06396
J	178	GLY	-	linker	UNP P06396
J	179	SER	-	linker	UNP P06396
J	180	GLY	-	linker	UNP P06396
J	181	GLY	-	linker	UNP P06396
J	182	SER	-	linker	UNP P06396
J	183	GLY	-	linker	UNP P06396
J	184	GLY	-	linker	UNP P06396
J	185	SER	-	linker	UNP P06396

- Molecule 3 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	C	H	N	O	P		
3	A	1	38	10	11	5	10	2	0	0
3	D	1	38	10	11	5	10	2	0	0
3	F	1	38	10	11	5	10	2	0	0
3	I	1	38	10	11	5	10	2	0	0

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Ca		
4	A	2	2	2	0	0
4	B	1	1	1	0	0
4	D	2	2	2	0	0
4	E	1	1	1	0	0
4	F	2	2	2	0	0
4	G	1	1	1	0	0
4	I	2	2	2	0	0
4	J	1	1	1	0	0

- Molecule 5 is water.

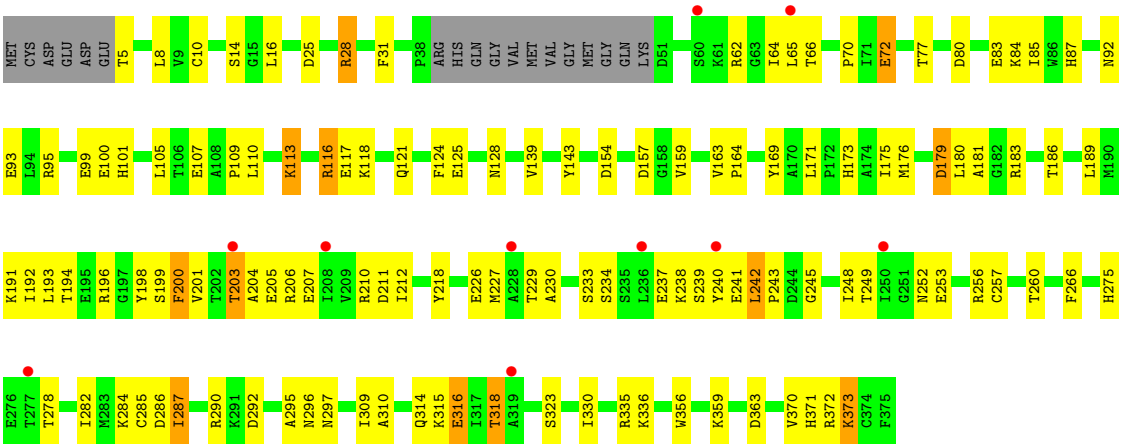
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	88	88	88	0	0
			Total	O		
5	B	82	82	82	0	0
			Total	O		
5	D	87	87	87	0	0
			Total	O		
5	E	77	77	77	0	0
			Total	O		
5	F	63	63	63	0	0
			Total	O		
5	G	49	49	49	0	0
			Total	O		
5	I	62	62	62	0	0
			Total	O		
5	J	40	40	40	0	0

3 Residue-property plots (i)

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

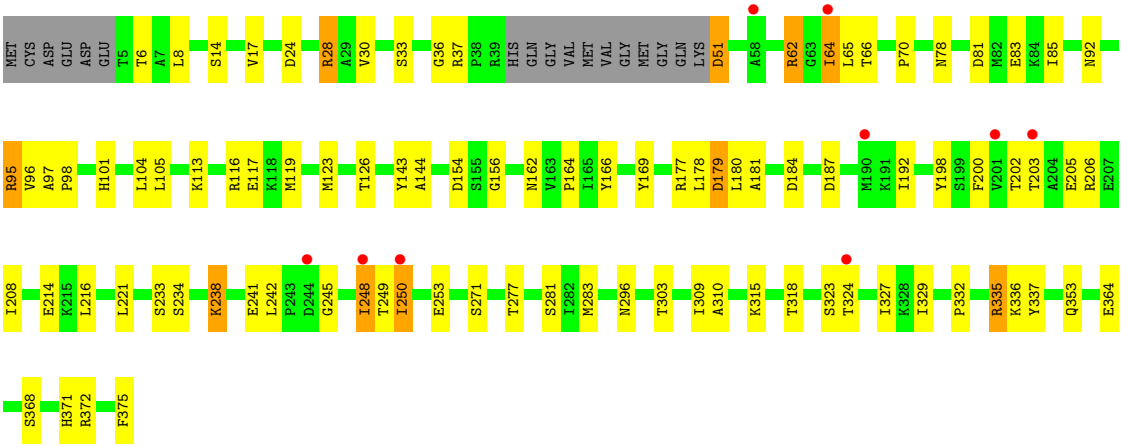
• Molecule 1: Actin, alpha skeletal muscle

Chain A:



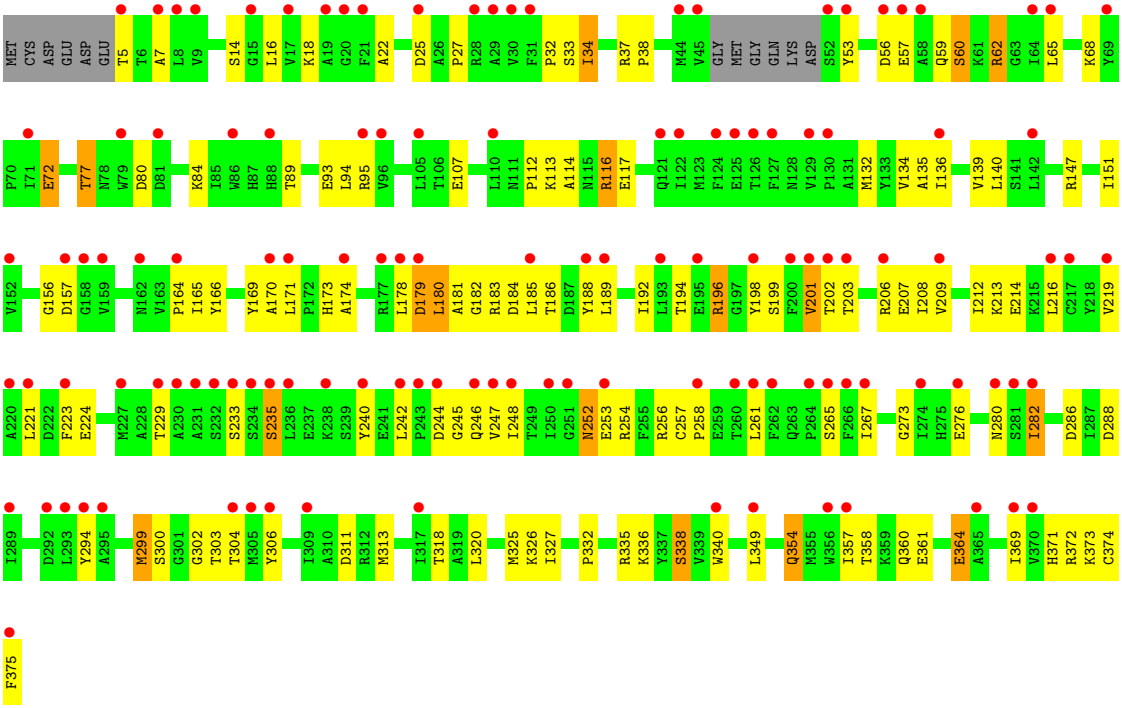
• Molecule 1: Actin, alpha skeletal muscle

Chain D:



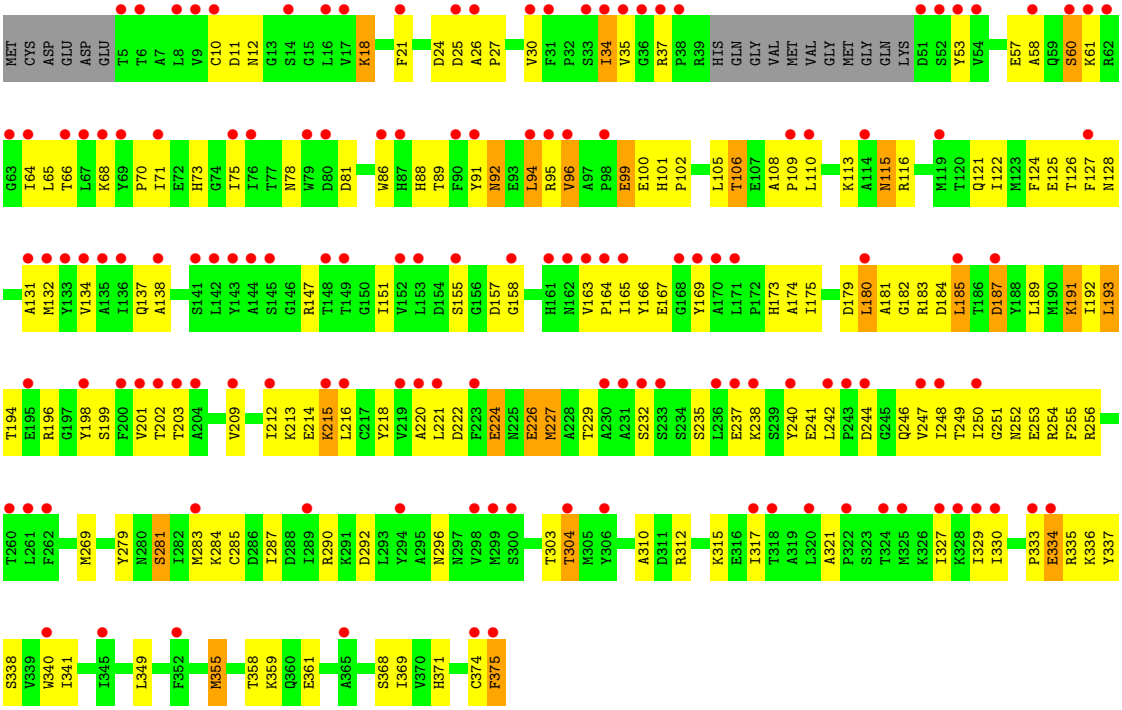
• Molecule 1: Actin, alpha skeletal muscle

Chain F:



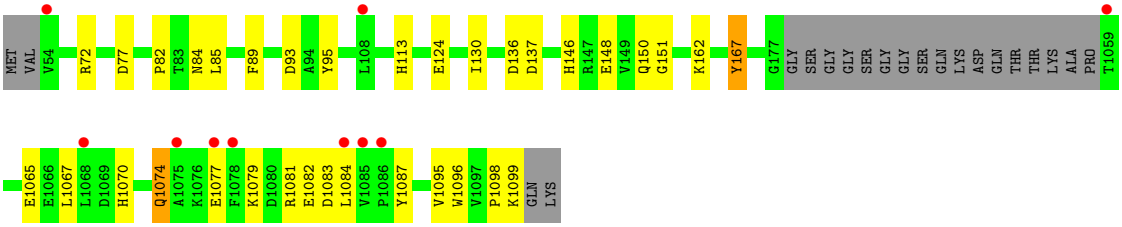
- Molecule 1: Actin, alpha skeletal muscle

Chain I:



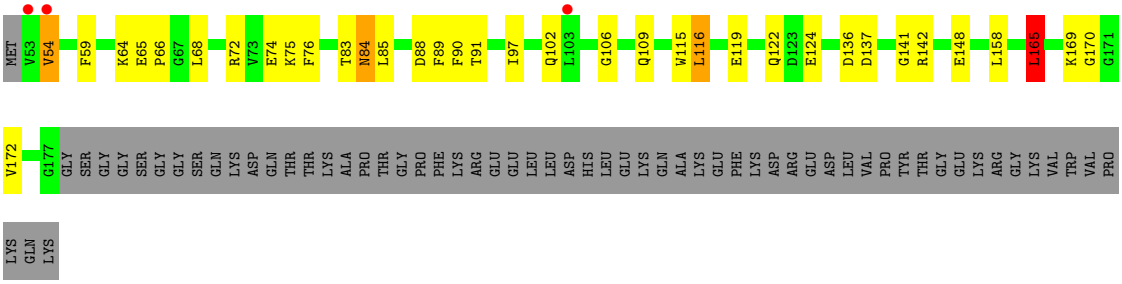
- Molecule 2: Gelsolin,Tropomodulin-1 chimera

Chain B:



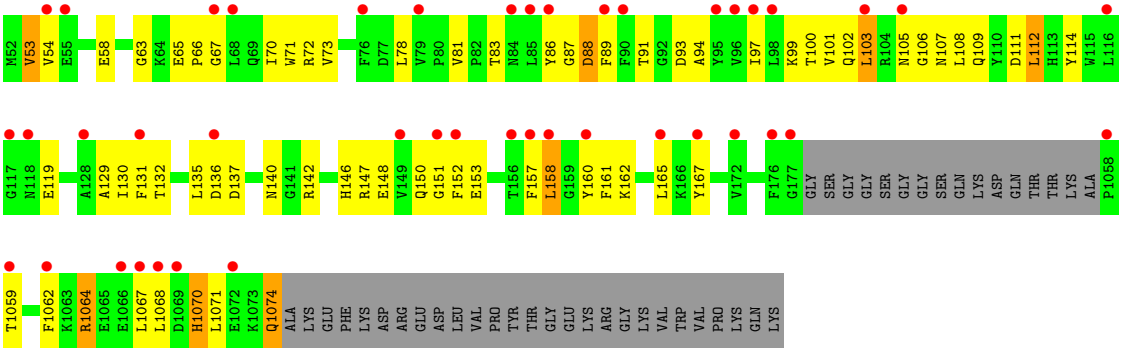
• Molecule 2: Gelsolin,Tropomodulin-1 chimera

Chain E:



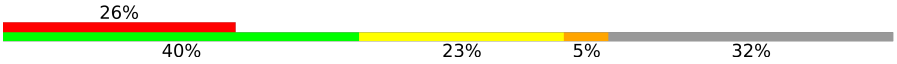
• Molecule 2: Gelsolin,Tropomodulin-1 chimera

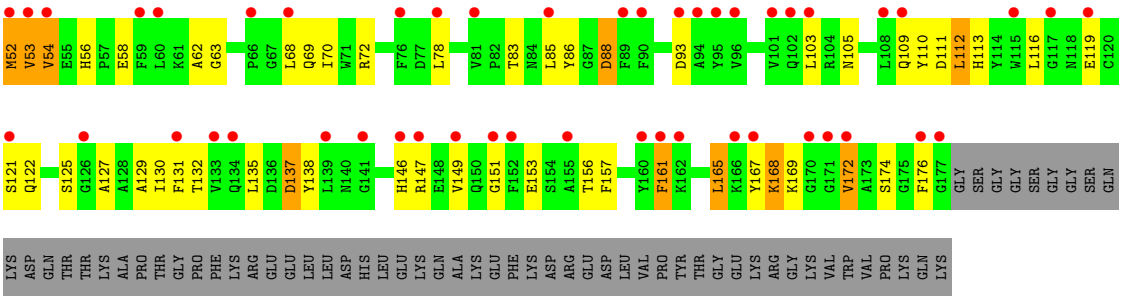
Chain G:



• Molecule 2: Gelsolin,Tropomodulin-1 chimera

Chain J:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	69.22Å 135.14Å 140.55Å 90.00° 94.41° 90.00°	Depositor
Resolution (Å)	44.90 – 2.15 44.91 – 2.15	Depositor EDS
% Data completeness (in resolution range)	98.4 (44.90-2.15) 72.6 (44.91-2.15)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.94 (at 2.14Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.4_1496)	Depositor
R, R_{free}	0.274 , 0.326 0.280 , 0.327	Depositor DCC
R_{free} test set	2019 reflections (1.46%)	wwPDB-VP
Wilson B-factor (Å^2)	30.9	Xtriage
Anisotropy	0.407	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 50.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.43$, $< L^2 > = 0.26$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	31981	wwPDB-VP
Average B, all atoms (Å^2)	70.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 28.64 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.7803e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: ADP, 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	0.95	2/2884 (0.1%)	0.92	4/3909 (0.1%)
1	D	0.99	2/2887 (0.1%)	0.95	5/3912 (0.1%)
1	F	0.63	0/2919	0.72	0/3955
1	I	0.59	0/2887	0.71	0/3912
2	B	1.07	3/1365 (0.2%)	0.92	1/1840 (0.1%)
2	E	1.29	3/1018 (0.3%)	1.05	5/1377 (0.4%)
2	G	0.73	0/1172	0.75	1/1581 (0.1%)
2	J	0.70	0/1035	0.76	0/1399
All	All	0.86	10/16167 (0.1%)	0.85	16/21885 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	D	0	2
1	I	0	2
All	All	0	5

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	143	TYR	CD2-CE2	5.90	1.48	1.39
2	B	167	TYR	CE2-CZ	5.66	1.46	1.38
2	B	124	GLU	CG-CD	5.46	1.60	1.51
2	B	148	GLU	CB-CG	5.44	1.62	1.52
1	A	139	VAL	CA-CB	5.41	1.66	1.54

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	165	LEU	CA-CB-CG	8.16	134.08	115.30
2	B	77	ASP	CB-CG-OD2	7.65	125.19	118.30
2	E	142	ARG	NE-CZ-NH2	-7.42	116.59	120.30
1	A	25	ASP	CB-CG-OD1	6.49	124.14	118.30
1	D	154	ASP	CB-CG-OD1	6.46	124.12	118.30

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	296	ASN	Mainchain
1	D	179	ASP	Peptide
1	D	296	ASN	Mainchain
1	I	235	SER	Peptide
1	I	57	GLU	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2817	2775	2785	94	1
1	D	2823	2786	2794	57	0
1	F	2857	2821	2830	94	1
1	I	2823	2786	2794	121	1
2	B	1331	1291	1295	20	0
2	E	992	952	955	28	0
2	G	1143	1102	1106	52	0
2	J	1005	965	966	43	1
3	A	27	11	12	0	0
3	D	27	11	12	2	0
3	F	27	11	12	6	0
3	I	27	11	12	3	0
4	A	2	0	0	0	0
4	B	1	0	0	0	0
4	D	2	0	0	0	0
4	E	1	0	0	0	0
4	F	2	0	0	0	0
4	G	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	I	2	0	0	0	0
4	J	1	0	0	0	0
5	A	88	0	0	11	0
5	B	82	0	0	2	0
5	D	87	0	0	2	0
5	E	77	0	0	7	0
5	F	63	0	0	7	0
5	G	49	0	0	4	0
5	I	62	0	0	13	0
5	J	40	0	0	4	0
All	All	16459	15522	15573	476	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 15.

The worst 5 of 476 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:J:72:ARG:NH1	2:J:93:ASP:OD2	1.76	1.17
1:I:95:ARG:NH1	5:I:501:HOH:O	1.89	1.04
2:J:52:MET:SD	2:J:52:MET:N	2.33	1.01
2:J:88:ASP:OD2	2:J:168:LYS:NZ	1.96	0.98
1:I:226:GLU:OE2	5:I:526:HOH:O	1.86	0.92

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:66:THR:OG1	1:I:224:GLU:OE2[2_557]	2.06	0.14
1:F:25:ASP:OD2	2:J:105:ASN:HD21[1_455]	1.57	0.03

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

The Analysed column shows the number of residues for which the backbone conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	357/377 (95%)	348 (98%)	9 (2%)	0	100	100
1	D	357/377 (95%)	349 (98%)	8 (2%)	0	100	100
1	F	361/377 (96%)	341 (94%)	19 (5%)	1 (0%)	41	37
1	I	357/377 (95%)	339 (95%)	17 (5%)	1 (0%)	41	37
2	B	161/186 (87%)	156 (97%)	5 (3%)	0	100	100
2	E	123/186 (66%)	118 (96%)	4 (3%)	1 (1%)	19	12
2	G	139/186 (75%)	135 (97%)	3 (2%)	1 (1%)	22	15
2	J	125/186 (67%)	122 (98%)	1 (1%)	2 (2%)	9	4
All	All	1980/2252 (88%)	1908 (96%)	66 (3%)	6 (0%)	41	37

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	201	VAL
2	G	53	VAL
2	E	54	VAL
1	I	34	ILE
2	J	54	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	307/320 (96%)	284 (92%)	23 (8%)	13	8
1	D	307/320 (96%)	281 (92%)	26 (8%)	10	6
1	F	310/320 (97%)	260 (84%)	50 (16%)	2	1
1	I	307/320 (96%)	266 (87%)	41 (13%)	4	1
2	B	138/153 (90%)	129 (94%)	9 (6%)	17	12
2	E	102/153 (67%)	97 (95%)	5 (5%)	25	21
2	G	119/153 (78%)	104 (87%)	15 (13%)	4	1

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	J	104/153 (68%)	91 (88%)	13 (12%)	4 1
All	All	1694/1892 (90%)	1512 (89%)	182 (11%)	6 3

5 of 182 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	G	102	GLN
1	I	180	LEU
2	G	114	TYR
1	I	60	SER
1	I	202	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 30 such sidechains are listed below:

Mol	Chain	Res	Type
1	F	73	HIS
2	J	69	GLN
1	F	280	ASN
2	J	140	ASN
1	I	162	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 16 ligands modelled in this entry, 12 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	$\#\|Z\| > 2$
3	ADP	F	401	-	24,29,29	1.10	3 (12%)	29,45,45	1.48	5 (17%)
3	ADP	I	401	4	24,29,29	1.18	3 (12%)	29,45,45	2.08	12 (41%)
3	ADP	A	401	4	24,29,29	1.34	5 (20%)	29,45,45	1.80	9 (31%)
3	ADP	D	401	4	24,29,29	1.08	3 (12%)	29,45,45	1.63	10 (34%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ADP	F	401	-	-	5/12/32/32	0/3/3/3
3	ADP	I	401	4	-	0/12/32/32	0/3/3/3
3	ADP	A	401	4	-	2/12/32/32	0/3/3/3
3	ADP	D	401	4	-	0/12/32/32	0/3/3/3

The worst 5 of 14 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	401	ADP	O4'-C1'	2.90	1.45	1.41
3	A	401	ADP	C2-N3	2.84	1.36	1.32
3	I	401	ADP	C2'-C1'	-2.67	1.49	1.53
3	F	401	ADP	O4'-C1'	2.48	1.44	1.41
3	A	401	ADP	C6-C5	2.44	1.52	1.43

The worst 5 of 36 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	401	ADP	C4-C5-N7	-4.73	104.47	109.40
3	I	401	ADP	PA-O3A-PB	-4.06	118.90	132.83
3	A	401	ADP	O3B-PB-O3A	-4.02	91.17	104.64
3	I	401	ADP	C1'-N9-C4	-3.95	119.70	126.64
3	I	401	ADP	O3'-C3'-C2'	-3.49	100.54	111.82

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	F	401	ADP	C5'-O5'-PA-O3A
3	F	401	ADP	O4'-C4'-C5'-O5'
3	F	401	ADP	C3'-C4'-C5'-O5'
3	A	401	ADP	PA-O3A-PB-O3B
3	F	401	ADP	C5'-O5'-PA-O1A

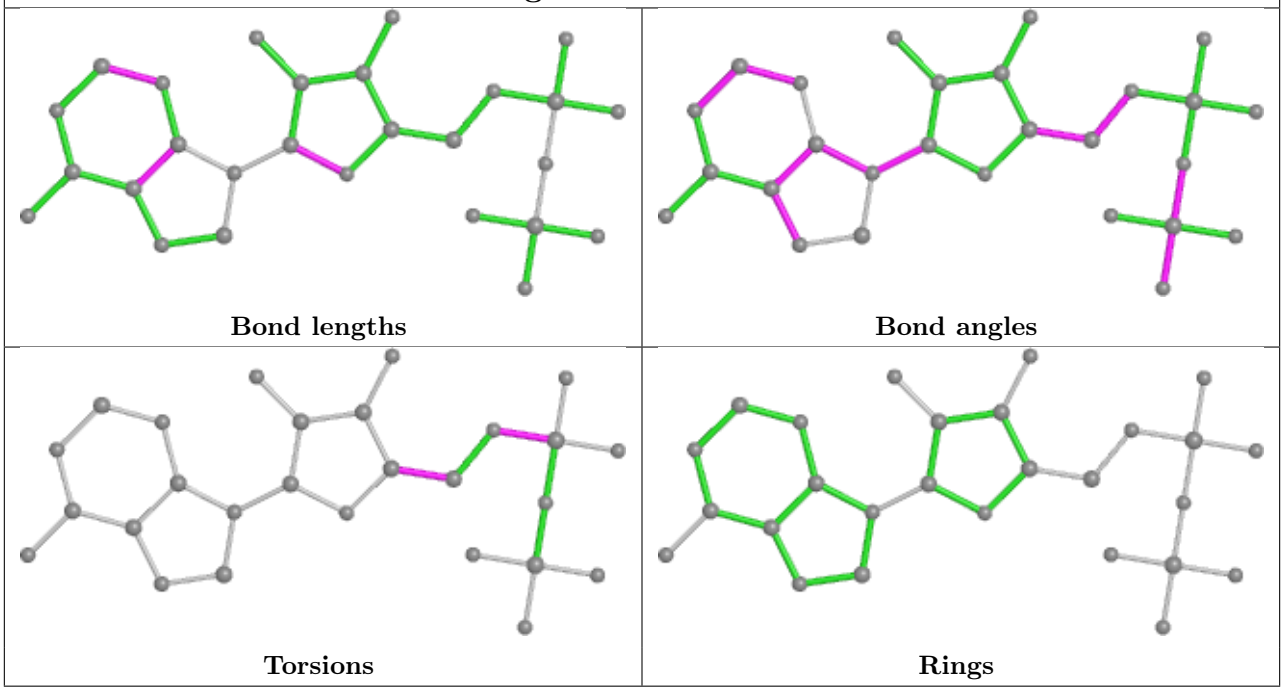
There are no ring outliers.

3 monomers are involved in 11 short contacts:

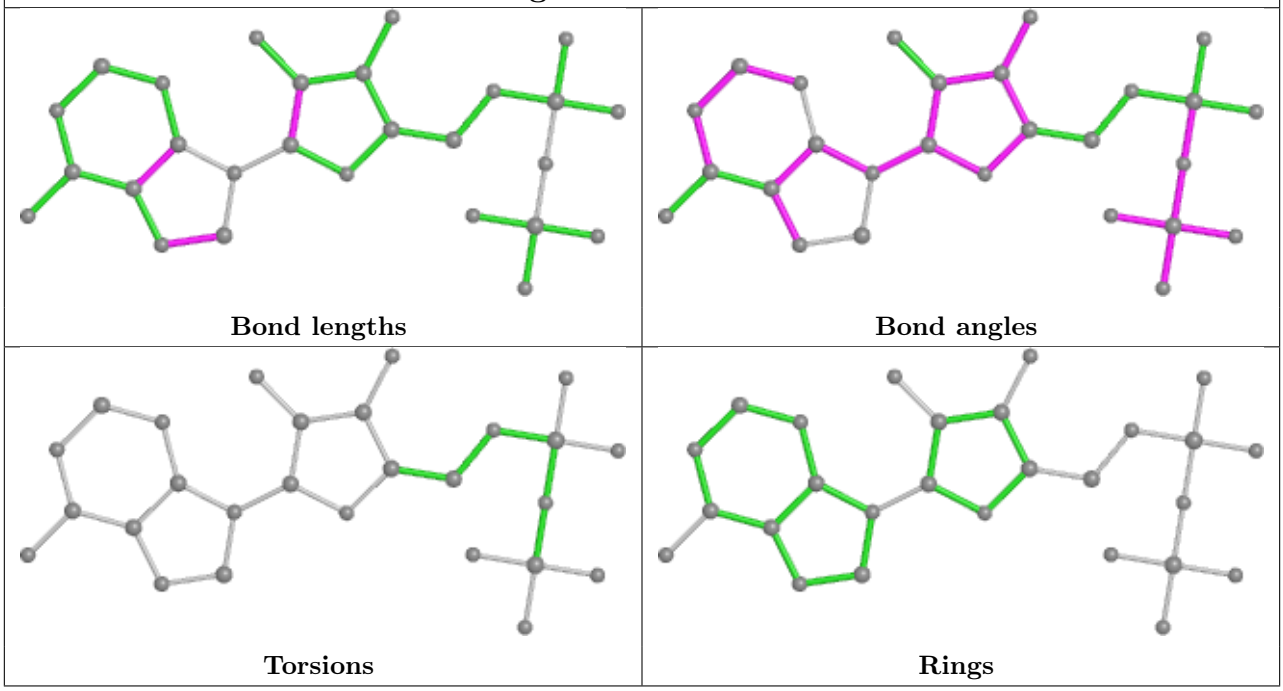
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	401	ADP	6	0
3	I	401	ADP	3	0
3	D	401	ADP	2	0

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.

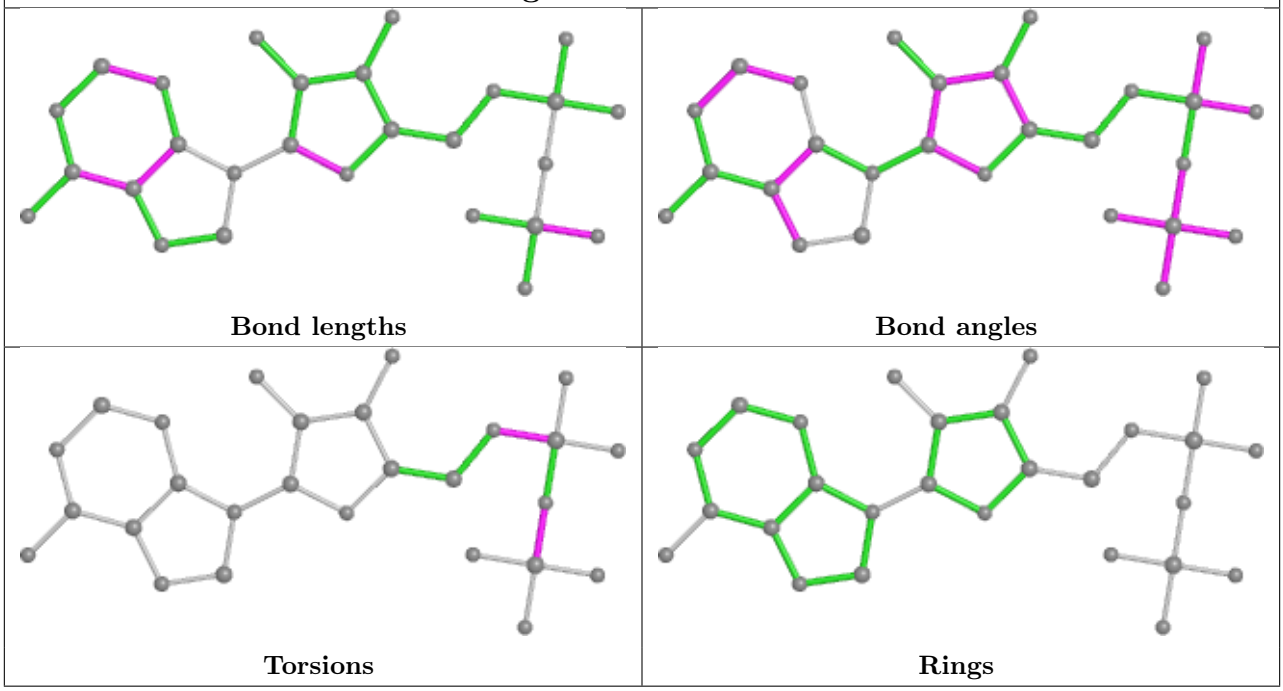
Ligand ADP F 401



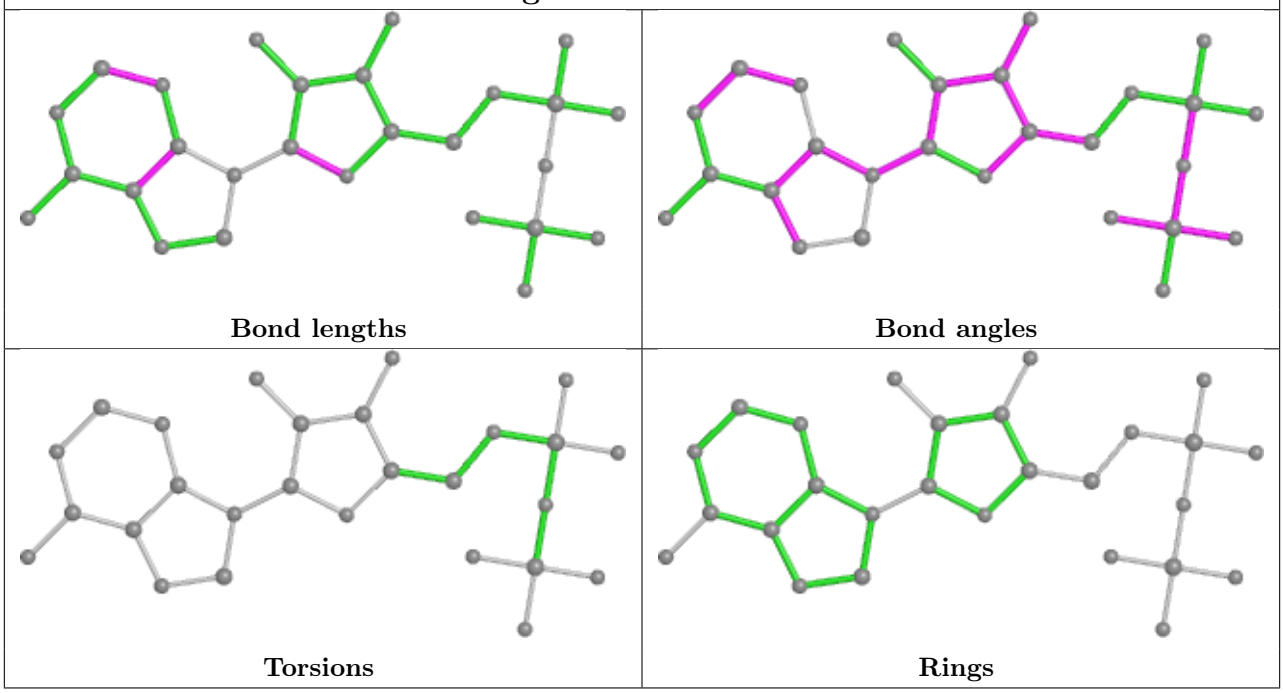
Ligand ADP I 401



Ligand ADP A 401



Ligand ADP D 401



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

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(Å^2)	Q<0.9
1	A	359/377 (95%)	0.29	10 (2%) 53 62	18, 46, 80, 120	1 (0%)
1	D	360/377 (95%)	0.19	9 (2%) 57 65	17, 38, 82, 116	0
1	F	365/377 (96%)	1.79	124 (33%) 0 0	56, 79, 127, 182	0
1	I	360/377 (95%)	1.97	139 (38%) 0 0	57, 81, 126, 166	0
2	B	165/186 (88%)	0.38	10 (6%) 21 28	18, 38, 101, 129	0
2	E	125/186 (67%)	0.01	3 (2%) 59 67	16, 29, 52, 95	0
2	G	143/186 (76%)	1.74	43 (30%) 0 0	57, 77, 110, 167	0
2	J	126/186 (67%)	1.87	48 (38%) 0 0	60, 80, 106, 142	0
All	All	2003/2252 (88%)	1.04	386 (19%) 1 1	16, 67, 111, 182	1 (0%)

The worst 5 of 386 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	I	327	ILE	14.0
1	F	209	VAL	10.2
2	G	55	GLU	9.1
1	I	91	TYR	8.2
1	I	54	VAL	8.1

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

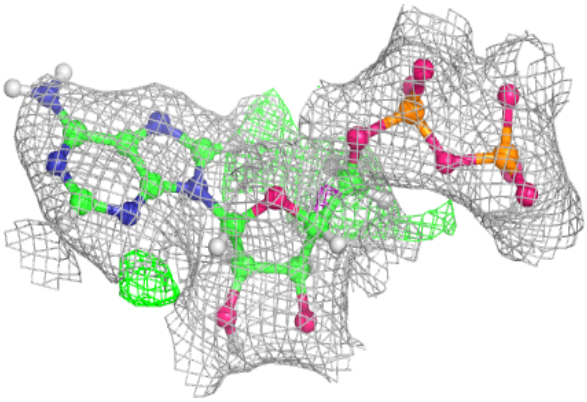
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

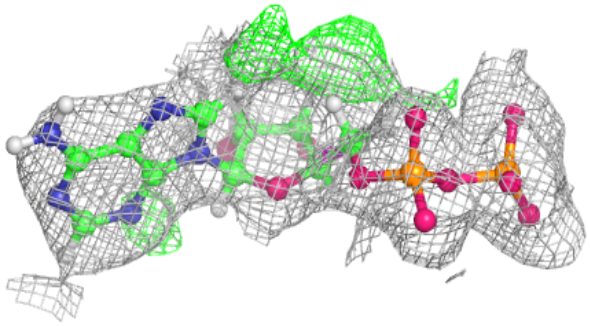
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	CA	F	402	1/1	0.70	0.09	91,91,91,91	0
4	CA	I	402	1/1	0.77	0.12	81,81,81,81	0
4	CA	D	403	1/1	0.88	0.07	63,63,63,63	0
4	CA	D	402	1/1	0.91	0.10	64,64,64,64	0
4	CA	I	403	1/1	0.91	0.10	67,67,67,67	0
3	ADP	I	401	27/27	0.92	0.13	35,48,59,62	0
4	CA	J	1201	1/1	0.92	0.13	60,60,60,60	0
3	ADP	F	401	27/27	0.94	0.12	38,57,69,74	0
4	CA	A	402	1/1	0.94	0.07	63,63,63,63	0
4	CA	F	403	1/1	0.96	0.24	55,55,55,55	0
3	ADP	A	401	27/27	0.96	0.13	18,41,55,57	0
3	ADP	D	401	27/27	0.97	0.11	16,30,40,42	0
4	CA	A	403	1/1	0.98	0.05	40,40,40,40	0
4	CA	B	1201	1/1	0.99	0.06	26,26,26,26	0
4	CA	E	1201	1/1	0.99	0.06	24,24,24,24	0
4	CA	G	1201	1/1	0.99	0.13	56,56,56,56	0

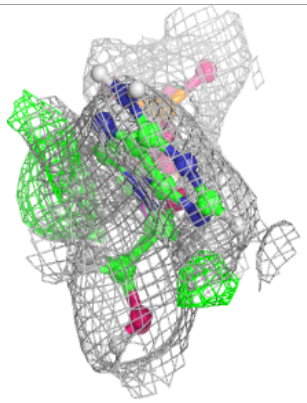
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around ADP I 401:

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

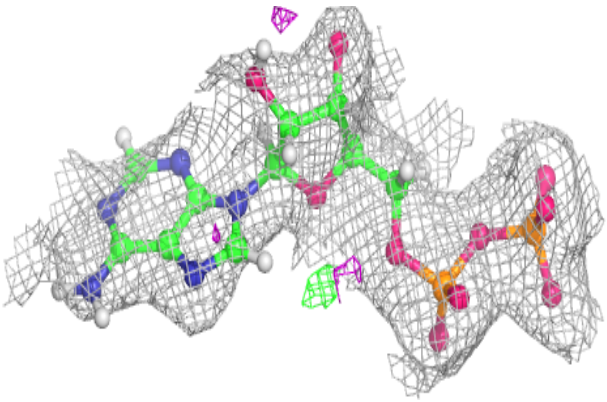


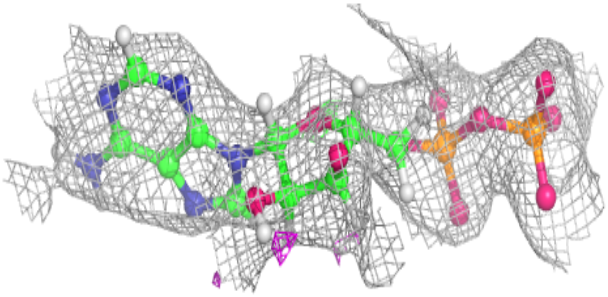


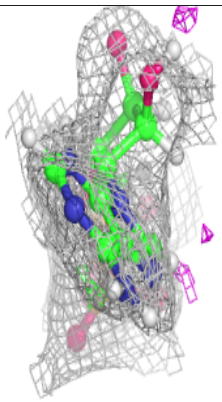


Electron density around ADP F 401:

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







Electron density around ADP A 401:

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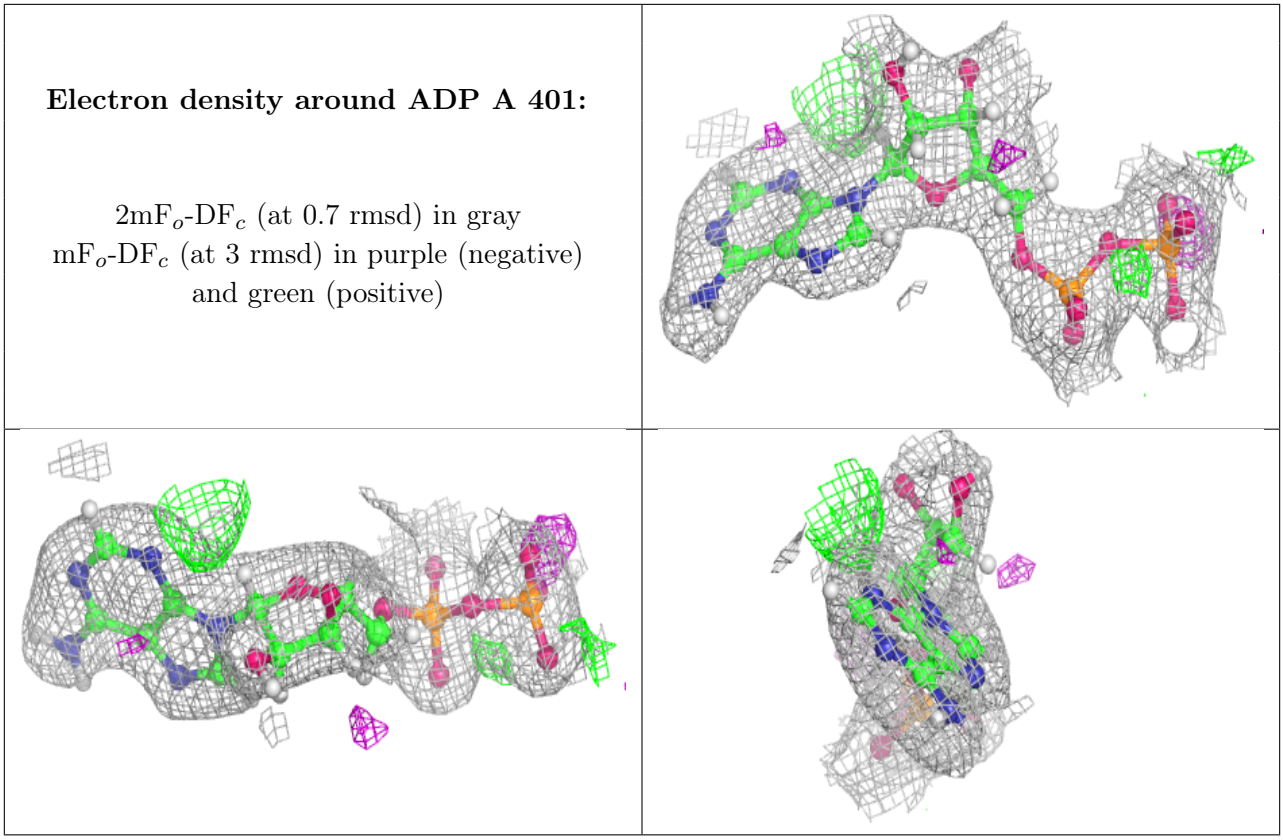
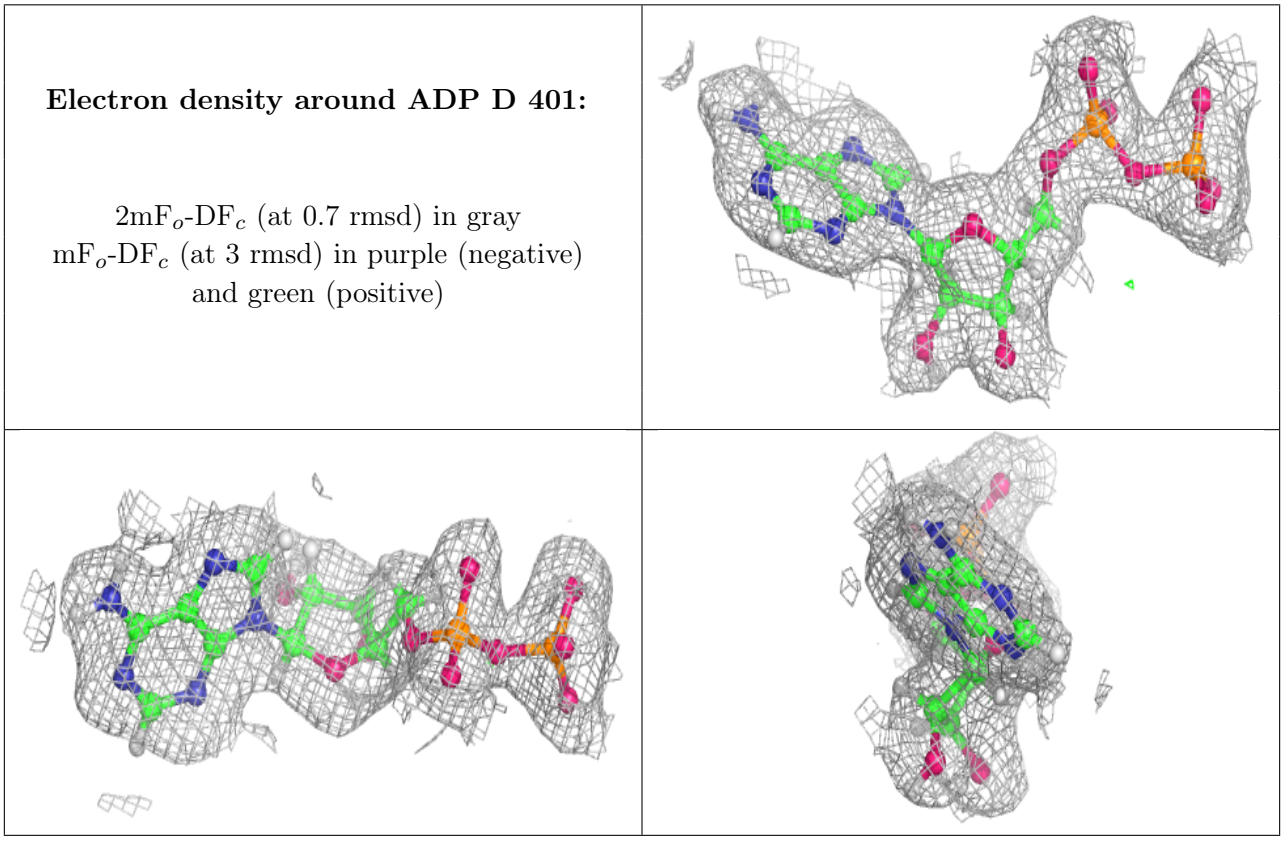
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around ADP 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)



6.5 Other polymers (i)

There are no such residues in this entry.