Full wwPDB X-ray Structure Validation Report (i)

Jan 4, 2024 – 03:06 pm GMT

PDB ID	:	5FL7
Title	:	Structure of the F1c10 complex from Yarrowia lipolytica ATP synthase
Authors	:	Parey, K.; Bublitz, M.; Meier, T.
Deposited on	:	2015-10-22
Resolution	:	3.50 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:

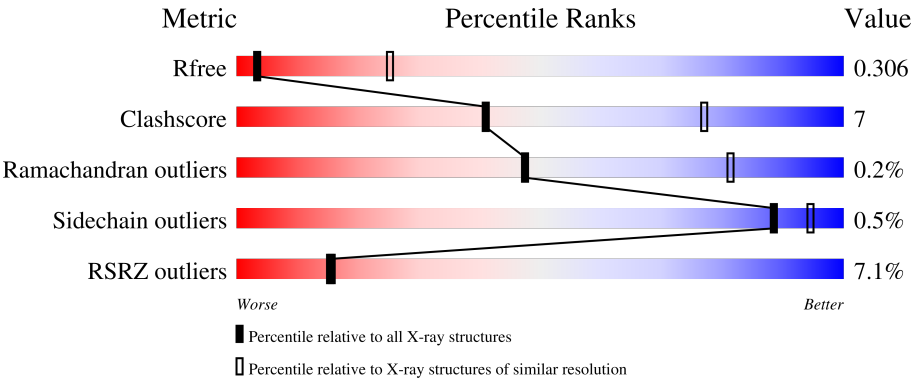
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.50 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	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	536	3% 73% 17% 10%
1	B	536	6% 73% 16% 11%
1	C	536	5% 76% 14% 10%
2	D	509	5% 76% 16% 8%
2	E	509	8% 74% 18% 8%

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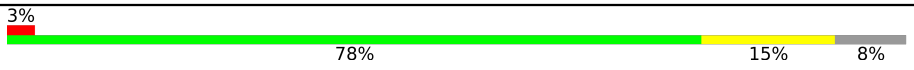
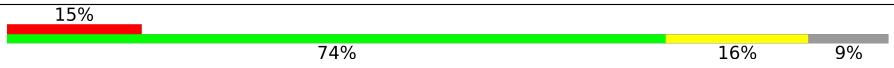
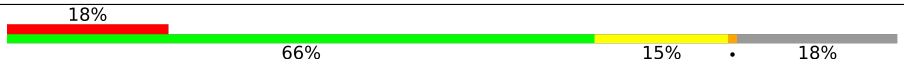
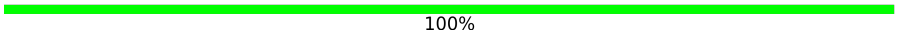
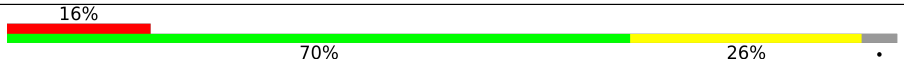
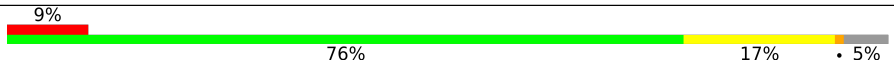
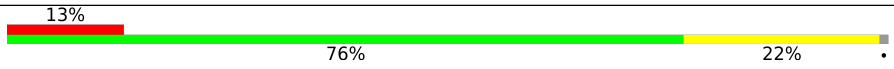
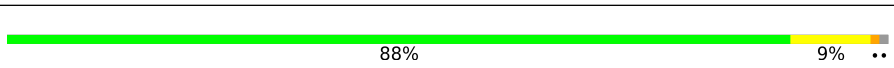
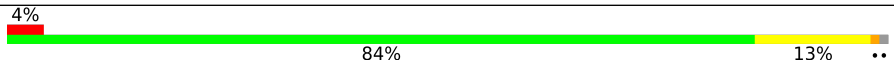
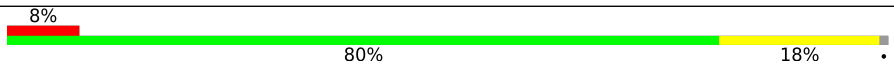
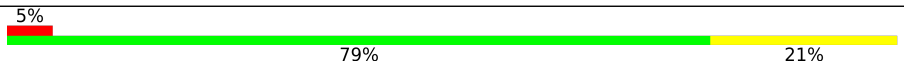
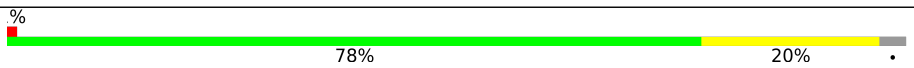
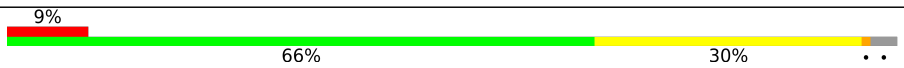
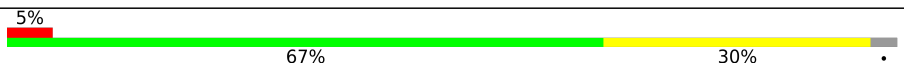
Mol	Chain	Length	Quality of chain
2	F	509	
3	G	293	
4	H	137	
5	I	16	
6	K	76	
6	L	76	
6	M	76	
6	N	76	
6	O	76	
6	P	76	
6	Q	76	
6	R	76	
6	S	76	
6	T	76	

2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 30119 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 ATP SYNTHASE SUBUNIT ALPHA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	485	Total	C	N	O	S	0	0	0
			3699	2341	645	704	9			
1	B	479	Total	C	N	O	S	0	0	0
			3653	2310	638	696	9			
1	C	485	Total	C	N	O	S	0	0	0
			3699	2341	645	704	9			

- Molecule 2 is a protein called ATP SYNTHASE SUBUNIT BETA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	470	Total	C	N	O	S	0	0	0
			3535	2226	605	696	8			
2	E	468	Total	C	N	O	S	0	0	0
			3524	2219	603	694	8			
2	F	470	Total	C	N	O	S	0	0	0
			3535	2226	605	696	8			

- Molecule 3 is a protein called ATP SYNTHASE SUBUNIT GAMMA CHAIN, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	G	267	Total	C	N	O	S	0	0	0
			2068	1291	357	411	9			

- Molecule 4 is a protein called ATP SYNTHASE DELTA CHAIN, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	H	113	Total	C	N	O	0	0	0
			843	525	135	183			

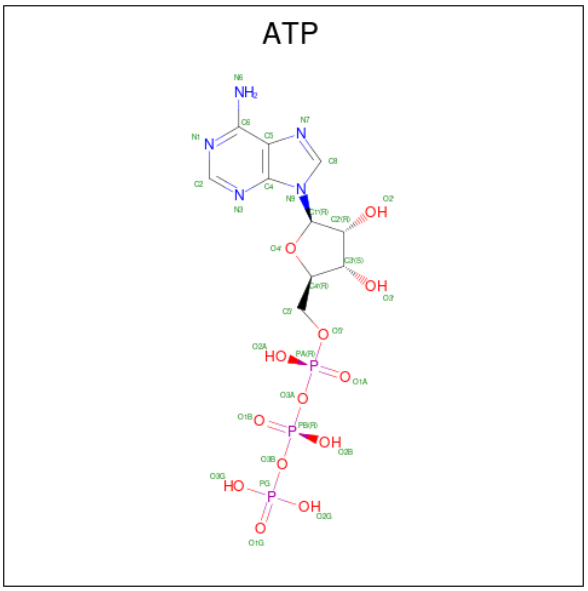
- Molecule 5 is a protein called ATP SYNTHASE EPSILON CHAIN, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
5	I	16	Total	C	N	O	0	0	0
			80	48	16	16			

- Molecule 6 is a protein called ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	K	73	Total	C	N	O	S	0	0	0
			524	353	82	88	1			
6	L	72	Total	C	N	O	S	0	0	0
			512	344	81	86	1			
6	M	75	Total	C	N	O	S	0	0	0
			536	361	84	90	1			
6	N	75	Total	C	N	O	S	0	0	0
			537	361	84	90	2			
6	O	75	Total	C	N	O	S	0	0	0
			537	361	84	91	1			
6	P	75	Total	C	N	O	S	0	0	0
			537	361	84	90	2			
6	Q	76	Total	C	N	O	S	0	0	0
			544	366	85	91	2			
6	R	74	Total	C	N	O	S	0	0	0
			529	356	83	89	1			
6	S	74	Total	C	N	O	S	0	0	0
			529	356	83	89	1			
6	T	74	Total	C	N	O	S	0	0	0
			529	356	83	89	1			

- Molecule 7 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).

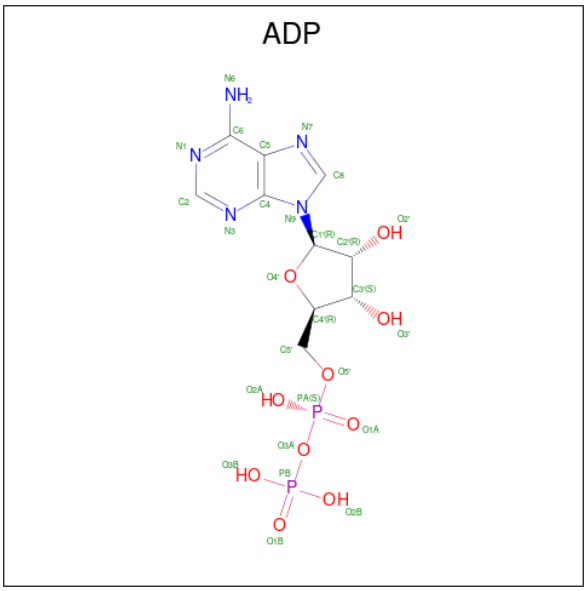


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
7	A	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
7	B	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
7	C	1	Total	C	N	O	P	0	0
			31	10	5	13	3		

- Molecule 8 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	1	Total	Mg	0	0
			1	1		
8	B	1	Total	Mg	0	0
			1	1		
8	C	1	Total	Mg	0	0
			1	1		
8	D	1	Total	Mg	0	0
			1	1		
8	F	1	Total	Mg	0	0
			1	1		

- Molecule 9 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	D	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
9	F	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

- Molecule 10 is water.

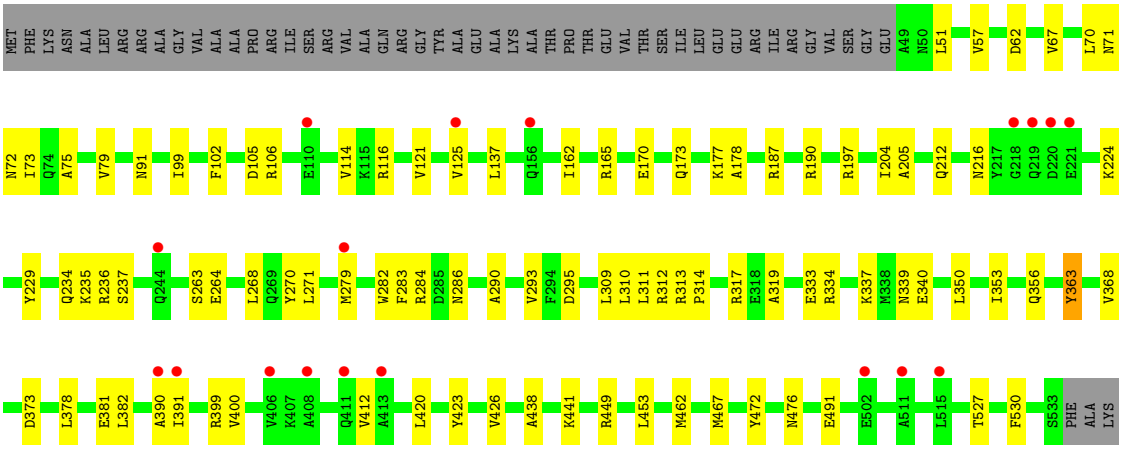
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	3	Total	O	0	0
			3	3		
10	B	3	Total	O	0	0
			3	3		
10	C	3	Total	O	0	0
			3	3		
10	D	4	Total	O	0	0
			4	4		
10	F	4	Total	O	0	0
			4	4		

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.

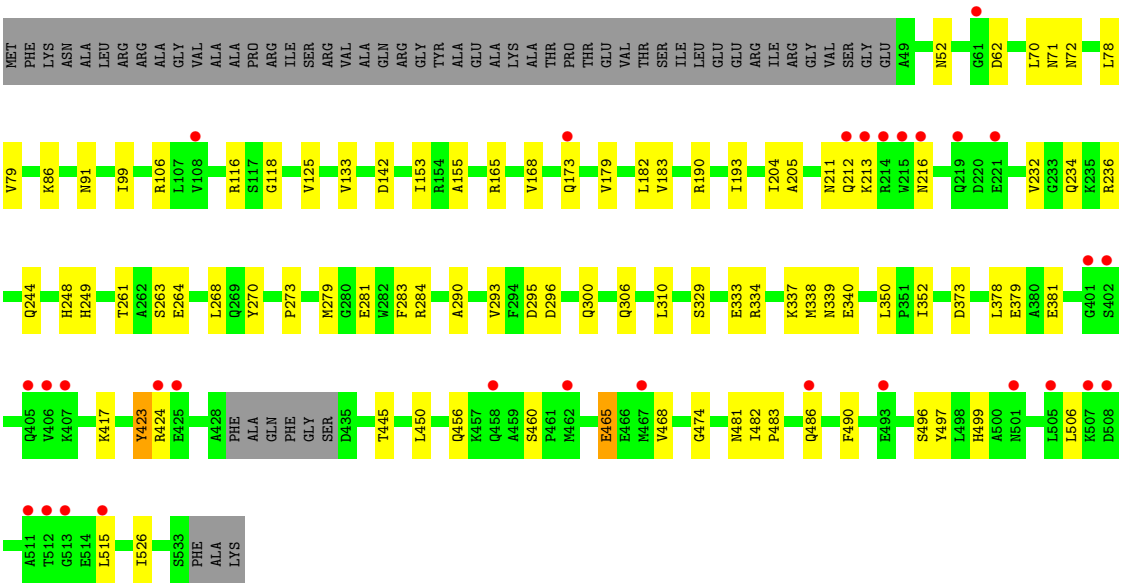
• Molecule 1: ATP SYNTHASE SUBUNIT ALPHA

Chain A:



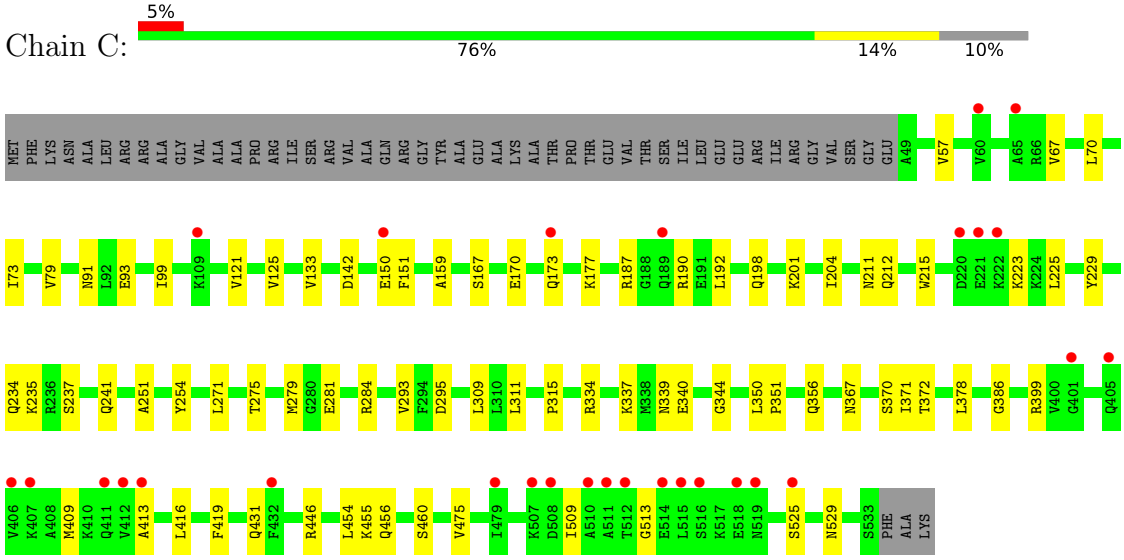
• Molecule 1: ATP SYNTHASE SUBUNIT ALPHA

Chain B:



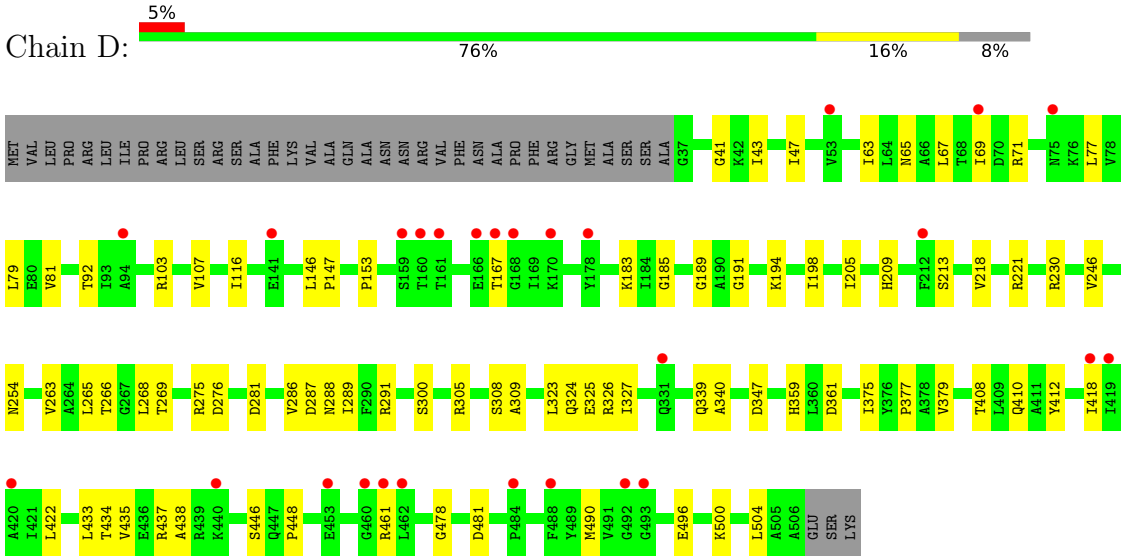
• Molecule 1: ATP SYNTHASE SUBUNIT ALPHA

Chain C:



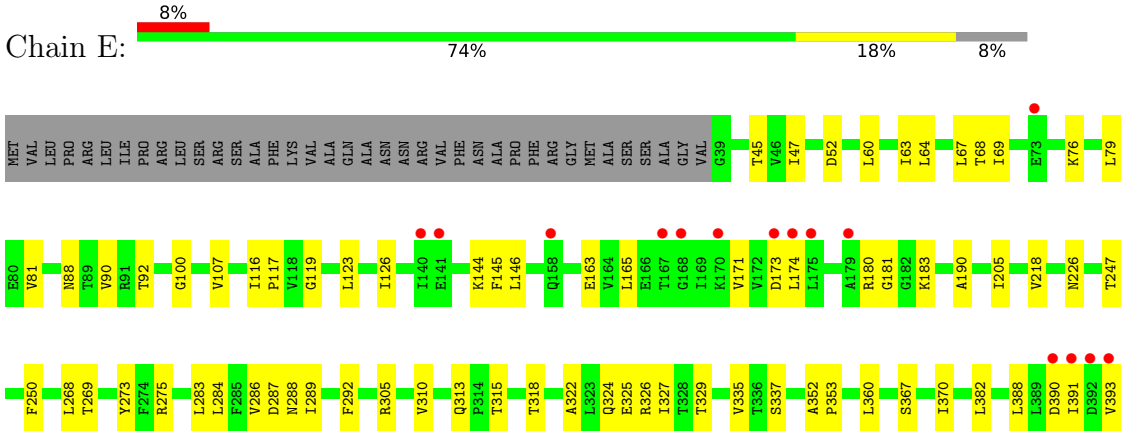
• Molecule 2: ATP SYNTHASE SUBUNIT BETA

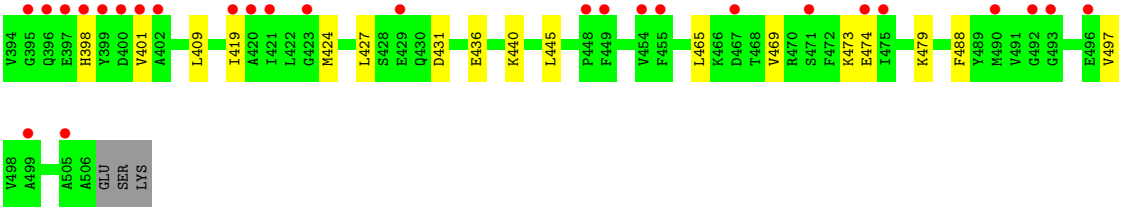
Chain D:



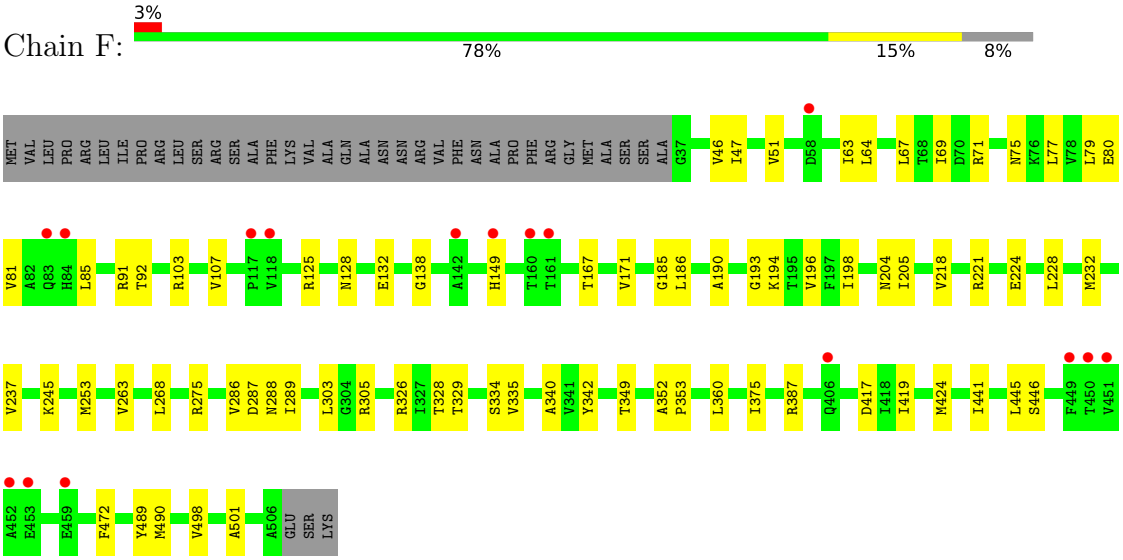
• Molecule 2: ATP SYNTHASE SUBUNIT BETA

Chain E:

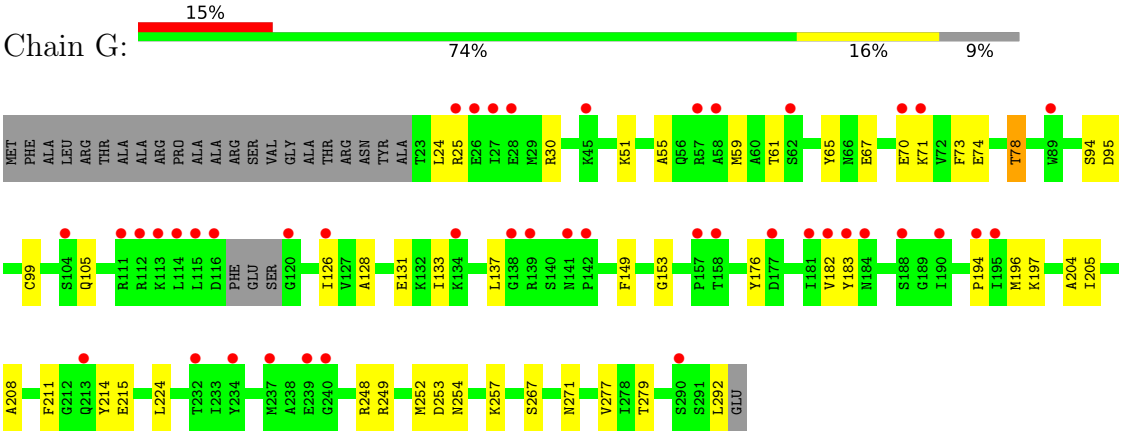




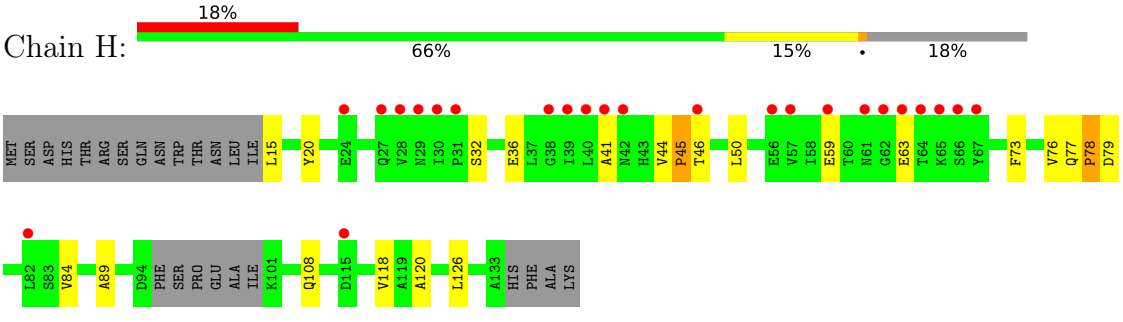
• Molecule 2: ATP SYNTHASE SUBUNIT BETA



• Molecule 3: ATP SYNTHASE SUBUNIT GAMMA CHAIN, MITOCHONDRIAL



• Molecule 4: ATP SYNTHASE DELTA CHAIN, MITOCHONDRIAL



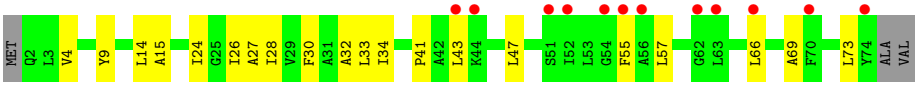
• Molecule 5: ATP SYNTHASE EPSILON CHAIN, MITOCHONDRIAL

Chain I:

There are no outlier residues recorded for this chain.

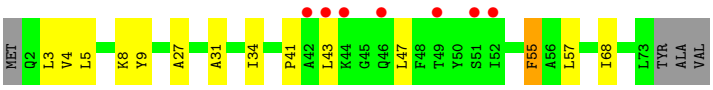
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain K:



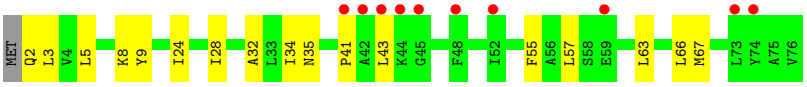
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain L:



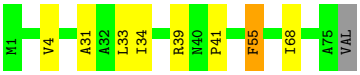
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain M:



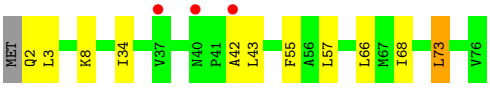
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain N:



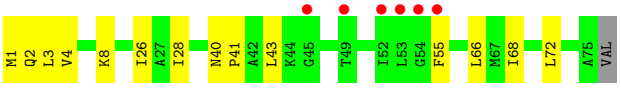
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain O:



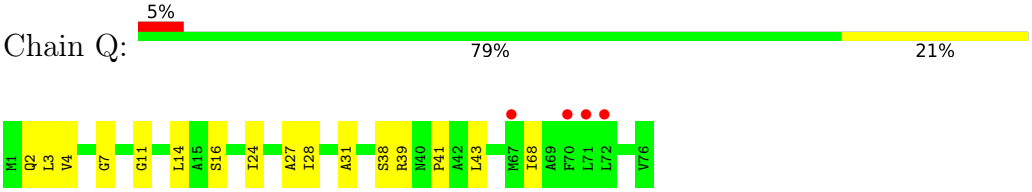
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain P:



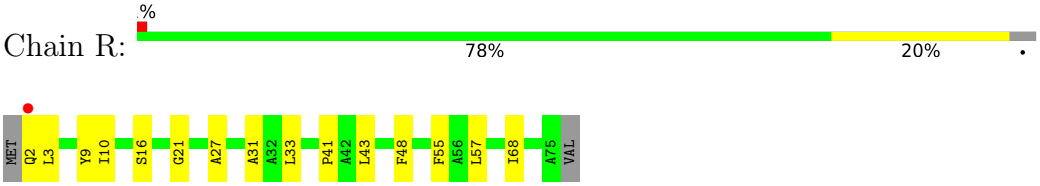
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain Q:



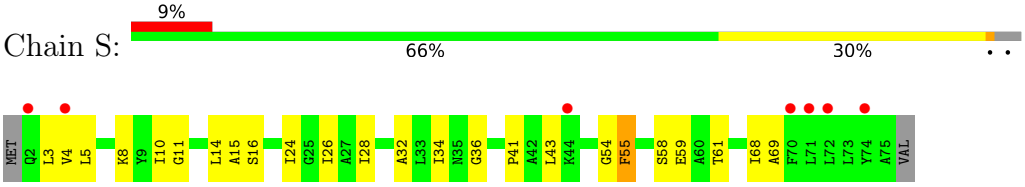
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain R:



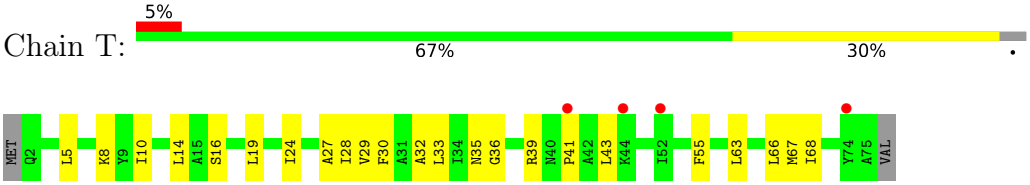
• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain S:



• Molecule 6: ATP SYNTHASE SUBUNIT 9, MITOCHONDRIAL

Chain T:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	169.50Å 182.20Å 193.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.37 – 3.50 49.37 – 3.50	Depositor EDS
% Data completeness (in resolution range)	99.9 (49.37-3.50) 100.0 (49.37-3.50)	Depositor EDS
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.07 (at 3.48Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.274 , 0.305 0.274 , 0.306	Depositor DCC
R_{free} test set	1898 reflections (2.50%)	wwPDB-VP
Wilson B-factor (Å^2)	157.5	Xtriage
Anisotropy	0.391	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 94.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.41$, $< L^2 > = 0.23$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	30119	wwPDB-VP
Average B, all atoms (Å^2)	166.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.48% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, ADP, ATP

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	0.24	0/3755	0.41	0/5076
1	B	0.24	0/3706	0.41	0/5009
1	C	0.24	0/3755	0.40	0/5076
2	D	0.24	0/3587	0.40	0/4868
2	E	0.24	0/3576	0.41	0/4853
2	F	0.24	0/3587	0.40	0/4868
3	G	0.23	0/2090	0.38	0/2812
4	H	0.24	0/851	0.43	0/1157
6	K	0.24	0/532	0.36	0/720
6	L	0.24	0/519	0.35	0/702
6	M	0.24	0/544	0.36	0/737
6	N	0.24	0/545	0.35	0/737
6	O	0.25	0/545	0.38	0/737
6	P	0.24	0/545	0.33	0/737
6	Q	0.25	0/552	0.38	0/747
6	R	0.24	0/537	0.35	0/727
6	S	0.25	0/537	0.33	0/727
6	T	0.25	0/537	0.38	0/727
All	All	0.24	0/30300	0.40	0/41017

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3699	0	3781	59	0
1	B	3653	0	3741	52	0
1	C	3699	0	3781	49	0
2	D	3535	0	3562	60	0
2	E	3524	0	3551	58	0
2	F	3535	0	3562	49	0
3	G	2068	0	2099	31	0
4	H	843	0	824	18	0
5	I	80	0	18	0	0
6	K	524	0	565	20	0
6	L	512	0	556	15	0
6	M	536	0	579	15	0
6	N	537	0	582	8	0
6	O	537	0	579	10	0
6	P	537	0	582	15	0
6	Q	544	0	591	15	0
6	R	529	0	570	15	0
6	S	529	0	570	22	0
6	T	529	0	570	22	0
7	A	31	0	12	0	0
7	B	31	0	12	0	0
7	C	31	0	12	2	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
8	C	1	0	0	0	0
8	D	1	0	0	0	0
8	F	1	0	0	0	0
9	D	27	0	12	3	0
9	F	27	0	12	3	0
10	A	3	0	0	0	0
10	B	3	0	0	0	0
10	C	3	0	0	0	0
10	D	4	0	0	0	0
10	F	4	0	0	2	0
All	All	30119	0	30723	432	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 7.

All (432) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:329:SER:HB2	2:F:253:MET:HB3	1.66	0.77
3:G:208:ALA:HB3	3:G:211:PHE:HB2	1.71	0.73
2:D:189:GLY:O	2:D:194:LYS:NZ	2.22	0.73
1:C:370:SER:HB3	2:D:291:ARG:HH22	1.57	0.70
1:B:450:LEU:HD21	1:B:474:GLY:HA3	1.73	0.70
1:C:309:LEU:HD21	1:C:315:PRO:HB3	1.76	0.67
1:A:236:ARG:NH1	2:D:153:PRO:O	2.28	0.66
2:F:198:ILE:HD11	2:F:340:ALA:HB2	1.76	0.66
6:L:3:LEU:HD21	6:M:3:LEU:HD13	1.77	0.66
6:R:68:ILE:HD12	6:S:16:SER:HB3	1.77	0.66
2:D:183:LYS:HZ1	2:D:324:GLN:HB3	1.61	0.66
2:D:375:ILE:HG23	2:D:446:SER:HB2	1.78	0.65
1:A:177:LYS:NZ	1:A:491:GLU:OE2	2.30	0.65
6:P:4:VAL:HG23	6:Q:2:GLN:HG3	1.79	0.65
1:B:106:ARG:HA	2:E:63:ILE:HB	1.77	0.65
1:A:121:VAL:HG11	1:A:271:LEU:HD21	1.78	0.65
3:G:126:ILE:HD13	3:G:137:LEU:HD23	1.78	0.65
2:E:69:ILE:HG12	2:E:107:VAL:HG22	1.79	0.65
3:G:267:SER:O	3:G:271:ASN:ND2	2.30	0.65
6:S:26:ILE:HD11	6:S:59:GLU:HB2	1.79	0.64
6:K:47:LEU:HD22	6:L:34:ILE:HG23	1.80	0.64
1:B:62:ASP:OD1	2:E:305:ARG:NH2	2.30	0.64
3:G:128:ALA:HB1	3:G:133:ILE:HG23	1.80	0.64
6:L:47:LEU:HD13	6:M:34:ILE:HG23	1.79	0.63
1:A:106:ARG:NH1	2:D:65:ASN:OD1	2.31	0.63
2:D:500:LYS:HE2	2:D:504:LEU:HD11	1.79	0.63
2:F:417:ASP:OD2	3:G:30:ARG:NH2	2.31	0.63
1:C:235:LYS:NZ	1:C:237:SER:OG	2.29	0.62
2:D:198:ILE:HD11	2:D:340:ALA:HB2	1.81	0.62
1:B:70:LEU:O	2:F:103:ARG:NH2	2.33	0.62
1:A:235:LYS:HE3	1:A:237:SER:HB3	1.81	0.62
2:D:347:ASP:HB2	3:G:25:ARG:HH12	1.64	0.62
1:B:456:GLN:NE2	1:B:460:SER:O	2.33	0.62
6:S:26:ILE:HG23	6:S:55:PHE:HB2	1.81	0.62
6:M:43:LEU:HD11	6:N:41:PRO:HB3	1.81	0.61
2:E:67:LEU:HB2	2:E:79:LEU:HB2	1.83	0.61
1:A:197:ARG:NH1	1:A:356:GLN:OE1	2.34	0.61
2:D:408:THR:HG23	2:D:434:THR:HG23	1.81	0.61
2:D:461:ARG:NH1	2:D:496:GLU:OE2	2.34	0.61
2:F:71:ARG:HH21	2:F:77:LEU:HD22	1.65	0.61
1:A:62:ASP:OD1	2:D:305:ARG:NH2	2.33	0.60
1:C:212:GLN:HG3	1:C:225:LEU:HD22	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:275:ARG:HD3	2:E:335:VAL:HG23	1.83	0.60
6:R:43:LEU:HD11	6:S:41:PRO:HG3	1.82	0.60
6:P:43:LEU:HD11	6:Q:41:PRO:HG3	1.82	0.60
6:Q:43:LEU:HD11	6:R:41:PRO:HG3	1.82	0.60
6:R:33:LEU:HA	6:S:34:ILE:HG21	1.83	0.60
1:A:235:LYS:NZ	2:D:361:ASP:OD1	2.35	0.59
6:S:68:ILE:HD11	6:T:66:LEU:HD12	1.85	0.59
1:C:121:VAL:HG11	1:C:271:LEU:HD21	1.84	0.59
2:E:419:ILE:HD12	2:E:424:MET:HG2	1.84	0.59
6:K:41:PRO:HG3	6:T:43:LEU:HD11	1.85	0.58
2:D:41:GLY:O	2:D:107:VAL:N	2.35	0.58
1:C:234:GLN:NE2	1:C:295:ASP:OD2	2.37	0.58
1:B:212:GLN:O	1:B:216:ASN:ND2	2.36	0.58
1:C:125:VAL:HG12	1:C:279:MET:HA	1.86	0.58
2:F:194:LYS:HB2	10:F:2001:HOH:O	2.04	0.58
1:A:70:LEU:HD13	1:A:73:ILE:HD12	1.86	0.57
2:D:268:LEU:HD13	2:D:327:ILE:HG12	1.86	0.57
1:C:339:ASN:OD1	1:C:340:GLU:N	2.37	0.57
6:M:28:ILE:HG22	6:N:31:ALA:HB2	1.87	0.57
2:F:125:ARG:NH2	2:F:138:GLY:O	2.37	0.57
1:A:234:GLN:NE2	1:A:295:ASP:OD2	2.38	0.57
1:A:173:GLN:O	1:A:212:GLN:NE2	2.37	0.56
2:D:418:ILE:HG23	2:D:422:LEU:HD12	1.86	0.56
2:E:388:LEU:HD22	2:E:393:VAL:HG11	1.85	0.56
6:K:28:ILE:HB	6:L:27:ALA:HB1	1.86	0.56
2:F:167:THR:O	2:F:204:ASN:ND2	2.39	0.56
6:K:30:PHE:CZ	6:T:29:VAL:HG22	2.40	0.56
1:C:57:VAL:HG22	1:C:67:VAL:HG22	1.88	0.56
1:B:284:ARG:NH1	1:B:338:MET:SD	2.79	0.56
1:C:177:LYS:HD2	1:C:454:LEU:HA	1.88	0.56
1:A:282:TRP:O	1:A:286:ASN:ND2	2.35	0.56
1:C:192:LEU:HB2	1:C:372:THR:HG21	1.88	0.56
6:L:5:LEU:HA	6:L:8:LYS:HD3	1.88	0.56
1:A:263:SER:HB3	2:D:325:GLU:HG3	1.88	0.56
2:D:69:ILE:HG12	2:D:107:VAL:HG22	1.88	0.56
2:F:275:ARG:NH1	2:F:328:THR:O	2.39	0.56
1:A:178:ALA:HB3	1:A:391:ILE:HD12	1.87	0.55
1:B:236:ARG:HG2	1:B:261:THR:HG21	1.88	0.55
2:D:433:LEU:HD21	2:D:437:ARG:HH21	1.71	0.55
2:E:205:ILE:HG13	2:E:283:LEU:HD11	1.89	0.55
3:G:24:LEU:HD22	3:G:277:VAL:HG21	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:95:ASP:HB3	3:G:131:GLU:H	1.71	0.55
1:B:339:ASN:OD1	1:B:340:GLU:N	2.39	0.55
6:O:43:LEU:HD21	6:P:41:PRO:HB3	1.88	0.55
6:K:43:LEU:HD11	6:L:41:PRO:HG3	1.87	0.55
2:E:401:VAL:HG11	2:E:469:VAL:HG13	1.88	0.54
1:B:78:LEU:HD11	1:B:86:LYS:HB3	1.88	0.54
1:B:293:VAL:HG22	1:B:350:LEU:HB2	1.89	0.54
1:B:62:ASP:HB3	1:B:310:LEU:HD22	1.88	0.54
3:G:249:ARG:O	3:G:253:ASP:N	2.36	0.54
1:A:339:ASN:OD1	1:A:340:GLU:N	2.40	0.54
1:C:133:VAL:HB	1:C:142:ASP:HB3	1.89	0.54
4:H:36:GLU:OE1	6:P:40:ASN:ND2	2.35	0.54
2:D:167:THR:HA	2:D:205:ILE:HD11	1.90	0.54
2:F:80:GLU:OE2	2:F:149:HIS:NE2	2.40	0.54
1:B:179:VAL:HG13	1:B:183:VAL:HG23	1.90	0.54
2:E:63:ILE:HG22	2:E:64:LEU:HG	1.90	0.54
4:H:44:VAL:O	4:H:46:THR:N	2.39	0.54
1:A:399:ARG:HH12	2:E:190:ALA:HB3	1.73	0.54
2:D:183:LYS:HZ1	2:D:359:HIS:HB3	1.73	0.54
1:A:62:ASP:HB3	1:A:310:LEU:HD13	1.90	0.53
1:B:486:GLN:O	1:B:490:PHE:N	2.41	0.53
6:S:68:ILE:HD12	6:T:16:SER:HB3	1.89	0.53
1:A:309:LEU:HD11	1:A:319:ALA:HB1	1.90	0.53
2:E:81:VAL:HA	2:E:92:THR:HG22	1.90	0.53
2:F:193:GLY:HA2	9:F:600:ADP:O1A	2.08	0.53
6:K:66:LEU:HD12	6:T:68:ILE:HD11	1.89	0.53
1:A:293:VAL:HG22	1:A:350:LEU:HB2	1.89	0.53
2:F:194:LYS:N	9:F:600:ADP:O1B	2.40	0.53
4:H:77:GLN:O	4:H:79:ASP:N	2.35	0.53
1:A:91:ASN:HB2	2:E:47:ILE:HG12	1.90	0.53
1:C:159:ALA:HB3	2:D:254:ASN:HD22	1.72	0.53
1:C:93:GLU:O	2:D:103:ARG:NH1	2.40	0.53
1:A:170:GLU:OE2	1:A:337:LYS:NZ	2.42	0.53
1:A:412:VAL:HG12	1:A:472:TYR:HD1	1.74	0.53
1:C:284:ARG:NH1	1:C:334:ARG:O	2.41	0.53
1:A:527:THR:HA	1:A:530:PHE:CE2	2.44	0.53
2:D:448:PRO:HD3	2:D:490:MET:HA	1.91	0.53
2:F:375:ILE:HG23	2:F:446:SER:HB2	1.89	0.53
1:B:244:GLN:O	1:B:248:HIS:N	2.42	0.53
1:B:204:ILE:HD12	1:B:378:LEU:HD11	1.90	0.52
3:G:70:GLU:O	3:G:74:GLU:N	2.41	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:O:3:LEU:HB3	6:P:2:GLN:HG2	1.90	0.52
2:F:171:VAL:HG12	2:F:445:LEU:HD22	1.92	0.52
6:L:43:LEU:HD11	6:M:41:PRO:HG3	1.91	0.52
1:C:456:GLN:NE2	1:C:460:SER:O	2.31	0.52
2:F:85:LEU:HD21	2:F:91:ARG:HE	1.75	0.52
2:D:300:SER:HB2	2:D:305:ARG:HD2	1.90	0.52
2:E:60:LEU:HD21	2:E:88:ASN:HA	1.91	0.52
6:S:61:THR:HB	6:T:19:LEU:HD21	1.91	0.52
6:S:43:LEU:HD11	6:T:41:PRO:HG3	1.90	0.52
1:B:445:THR:HG23	1:B:481:ASN:HB2	1.91	0.52
1:C:509:ILE:HG23	1:C:513:GLY:HA2	1.91	0.52
6:N:4:VAL:HG23	6:O:2:GLN:HG3	1.91	0.52
2:F:128:ASN:HD21	2:F:132:GLU:HB3	1.74	0.52
6:S:11:GLY:HA2	6:S:14:LEU:HB2	1.91	0.52
1:B:496:SER:O	1:B:499:HIS:ND1	2.36	0.51
1:C:204:ILE:HD12	1:C:378:LEU:HD11	1.91	0.51
3:G:214:TYR:HA	4:H:45:PRO:HB2	1.92	0.51
4:H:108:GLN:HA	4:H:126:LEU:HD21	1.90	0.51
6:S:14:LEU:HD13	6:T:14:LEU:HG	1.91	0.51
6:Q:4:VAL:HG13	6:R:9:TYR:HE2	1.76	0.51
1:B:205:ALA:HB1	1:B:293:VAL:HG11	1.91	0.51
6:R:21:GLY:HA2	6:S:24:ILE:HG13	1.91	0.51
1:A:312:ARG:HH12	3:G:292:LEU:HD12	1.76	0.51
2:E:174:LEU:HA	2:E:398:HIS:HE1	1.74	0.51
2:F:489:TYR:CD1	2:F:490:MET:HG2	2.46	0.51
3:G:182:VAL:HG22	3:G:196:MET:HG2	1.92	0.51
4:H:59:GLU:HB2	4:H:63:GLU:HB2	1.91	0.51
6:K:14:LEU:HD21	6:T:14:LEU:HD13	1.92	0.51
3:G:99:CYS:HA	3:G:248:ARG:HA	1.92	0.51
1:A:79:VAL:HG21	1:A:99:ILE:HD13	1.93	0.51
1:C:79:VAL:HG21	1:C:99:ILE:HD13	1.92	0.51
3:G:105:GLN:HE21	3:G:194:PRO:HG3	1.75	0.51
1:A:284:ARG:NH1	1:A:334:ARG:O	2.44	0.51
3:G:55:ALA:O	3:G:59:MET:N	2.44	0.51
4:H:45:PRO:HA	4:H:76:VAL:HB	1.92	0.51
2:E:268:LEU:HD21	2:E:326:ARG:HB2	1.93	0.50
1:A:105:ASP:HB3	2:D:63:ILE:HD12	1.94	0.50
1:C:173:GLN:O	1:C:211:ASN:ND2	2.44	0.50
2:E:367:SER:HB3	2:E:370:ILE:HG12	1.94	0.50
6:K:9:TYR:CD2	6:T:8:LYS:HG2	2.47	0.50
1:C:281:GLU:OE2	1:C:284:ARG:NH2	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:268:LEU:HD21	2:F:326:ARG:HB2	1.93	0.50
4:H:41:ALA:HB3	6:O:42:ALA:HB2	1.94	0.50
1:A:381:GLU:OE2	2:D:410:GLN:NE2	2.44	0.50
1:A:472:TYR:O	1:A:476:ASN:ND2	2.37	0.50
1:C:215:TRP:CD1	1:C:223:LYS:HB3	2.47	0.50
2:D:286:VAL:HG11	2:D:289:ILE:HD13	1.94	0.50
1:A:317:ARG:HH11	1:A:363:TYR:HB2	1.77	0.50
1:C:241:GLN:HE22	2:F:387:ARG:HE	1.60	0.50
1:B:190:ARG:O	1:B:373:ASP:N	2.45	0.50
1:B:263:SER:HB3	2:E:325:GLU:HG3	1.94	0.50
3:G:254:ASN:HA	3:G:257:LYS:HG2	1.93	0.50
1:A:67:VAL:HG21	1:A:114:VAL:HG21	1.94	0.49
1:A:204:ILE:HD12	1:A:378:LEU:HD11	1.92	0.49
1:B:283:PHE:HB2	1:B:290:ALA:HB2	1.94	0.49
6:K:30:PHE:HA	6:K:33:LEU:HB3	1.94	0.49
1:B:72:ASN:O	1:B:116:ARG:NH1	2.45	0.49
1:C:201:LYS:N	7:C:600:ATP:O1B	2.39	0.49
4:H:20:TYR:OH	4:H:84:VAL:O	2.24	0.49
6:T:32:ALA:O	6:T:36:GLY:N	2.46	0.49
1:A:283:PHE:HB2	1:A:290:ALA:HB2	1.94	0.49
2:E:67:LEU:HD12	2:E:92:THR:HG21	1.94	0.49
6:K:73:LEU:HD11	6:T:68:ILE:HG23	1.93	0.49
6:Q:28:ILE:HG22	6:R:31:ALA:HB2	1.95	0.49
1:A:75:ALA:HB3	2:E:100:GLY:H	1.78	0.49
1:C:150:GLU:HG2	1:C:151:PHE:CD2	2.47	0.49
2:D:194:LYS:NZ	9:D:600:ADP:O2B	2.33	0.49
2:D:412:TYR:HE1	2:D:435:VAL:HG13	1.77	0.49
1:C:198:GLN:HA	7:C:600:ATP:O3B	2.12	0.49
2:F:190:ALA:HB2	2:F:342:TYR:HE1	1.78	0.49
1:B:165:ARG:NH2	1:B:333:GLU:O	2.45	0.49
2:F:69:ILE:HG12	2:F:107:VAL:HG22	1.93	0.49
2:D:67:LEU:HB2	2:D:79:LEU:HB2	1.94	0.49
2:E:163:GLU:OE2	2:E:180:ARG:NH1	2.46	0.49
2:F:352:ALA:HB3	2:F:353:PRO:HD3	1.95	0.49
6:K:32:ALA:HB1	6:L:34:ILE:HB	1.94	0.49
2:D:116:ILE:HG21	2:D:266:THR:HG23	1.94	0.49
1:A:57:VAL:HG22	1:A:67:VAL:HG22	1.95	0.49
2:E:45:THR:HB	2:E:52:ASP:HB2	1.95	0.49
2:F:67:LEU:HB2	2:F:79:LEU:HB2	1.94	0.49
3:G:67:GLU:HB2	3:G:71:LYS:HB2	1.94	0.49
6:T:30:PHE:HA	6:T:33:LEU:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:438:ALA:HA	1:A:441:LYS:HE2	1.95	0.48
2:F:81:VAL:HA	2:F:92:THR:HG22	1.95	0.48
6:L:4:VAL:HG13	6:M:9:TYR:HE2	1.77	0.48
1:C:251:ALA:HA	1:C:254:TYR:CE2	2.48	0.48
6:S:5:LEU:HA	6:S:8:LYS:HD3	1.95	0.48
1:C:446:ARG:NH2	1:C:475:VAL:O	2.47	0.48
6:R:3:LEU:HD21	6:S:3:LEU:HD13	1.96	0.48
1:A:423:TYR:HA	1:A:426:VAL:HG12	1.96	0.48
2:E:352:ALA:HB3	2:E:353:PRO:HD3	1.95	0.48
3:G:70:GLU:HA	3:G:73:PHE:HB3	1.95	0.48
6:K:26:ILE:HG23	6:K:55:PHE:HB2	1.96	0.48
6:L:68:ILE:HD11	6:M:66:LEU:HD12	1.96	0.48
2:E:68:THR:HB	2:E:76:LYS:HE2	1.96	0.48
2:F:419:ILE:HG23	2:F:424:MET:HG2	1.96	0.48
6:T:63:LEU:O	6:T:67:MET:N	2.47	0.48
2:E:436:GLU:O	2:E:440:LYS:HG2	2.14	0.47
1:B:52:ASN:HA	1:B:71:ASN:HB2	1.96	0.47
2:E:171:VAL:HG22	2:E:445:LEU:HD22	1.95	0.47
6:O:3:LEU:HD21	6:P:3:LEU:HD13	1.96	0.47
1:A:420:LEU:HA	1:A:423:TYR:HB3	1.96	0.47
1:B:423:TYR:CE1	1:B:424:ARG:HG3	2.49	0.47
1:B:379:GLU:HG3	1:B:381:GLU:H	1.79	0.47
2:D:268:LEU:HD21	2:D:326:ARG:HB2	1.97	0.47
6:Q:68:ILE:HD12	6:R:16:SER:HB3	1.97	0.47
1:A:190:ARG:O	1:A:373:ASP:N	2.46	0.47
1:A:353:ILE:HD11	1:A:368:VAL:HG21	1.97	0.47
2:E:173:ASP:HB3	2:E:465:LEU:HD13	1.96	0.47
6:K:28:ILE:HG22	6:L:31:ALA:HB2	1.96	0.47
6:L:4:VAL:HG23	6:M:2:GLN:HG3	1.97	0.47
6:O:68:ILE:HD11	6:P:66:LEU:HD12	1.97	0.47
1:A:165:ARG:NH2	1:A:333:GLU:O	2.47	0.47
2:D:191:GLY:HA2	9:D:600:ADP:H5'1	1.97	0.47
1:A:125:VAL:HG12	1:A:279:MET:HA	1.97	0.46
2:D:43:ILE:HD11	2:D:69:ILE:HD13	1.97	0.46
2:E:81:VAL:HG13	2:E:90:VAL:HG13	1.96	0.46
2:E:390:ASP:OD1	2:E:391:ILE:N	2.48	0.46
6:S:4:VAL:HG22	6:T:5:LEU:HB2	1.97	0.46
1:A:382:LEU:HB2	1:A:390:ALA:HB1	1.96	0.46
1:C:167:SER:OG	2:D:230:ARG:NE	2.48	0.46
2:D:116:ILE:HD11	2:D:269:THR:HB	1.97	0.46
2:F:286:VAL:HG11	2:F:289:ILE:HD13	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:441:ILE:HG23	2:F:472:PHE:HE2	1.79	0.46
2:D:433:LEU:HG	2:D:437:ARG:HE	1.81	0.46
2:F:63:ILE:HG22	2:F:64:LEU:HG	1.97	0.46
2:F:221:ARG:NH1	2:F:224:GLU:OE2	2.47	0.46
3:G:215:GLU:OE2	6:N:39:ARG:NH1	2.48	0.46
1:A:264:GLU:HB3	1:A:268:LEU:HD12	1.96	0.46
2:E:183:LYS:HB3	2:E:360:LEU:HD23	1.97	0.46
6:K:9:TYR:HD2	6:T:8:LYS:HG2	1.79	0.46
3:G:61:THR:HG23	4:H:15:LEU:O	2.16	0.46
2:D:67:LEU:HD12	2:D:92:THR:HG21	1.98	0.46
6:M:63:LEU:O	6:M:67:MET:N	2.48	0.46
1:A:449:ARG:O	1:A:453:LEU:N	2.45	0.46
1:B:79:VAL:HG21	1:B:99:ILE:HD13	1.97	0.46
6:M:32:ALA:HA	6:M:35:ASN:HB3	1.98	0.46
2:E:318:THR:O	2:E:322:ALA:N	2.44	0.46
3:G:224:LEU:HA	4:H:73:PHE:HE2	1.81	0.46
6:S:28:ILE:HB	6:T:27:ALA:HB1	1.98	0.46
6:T:35:ASN:O	6:T:39:ARG:HG2	2.17	0.46
1:C:271:LEU:HG	1:C:275:THR:HG23	1.97	0.45
1:C:293:VAL:HG22	1:C:350:LEU:HB2	1.98	0.45
1:B:482:ILE:HD12	1:B:483:PRO:HD2	1.98	0.45
2:D:287:ASP:HA	2:D:288:ASN:HA	1.56	0.45
2:E:123:LEU:HD23	2:E:247:THR:HB	1.98	0.45
2:E:287:ASP:HA	2:E:288:ASN:HA	1.55	0.45
6:Q:3:LEU:HB3	6:R:2:GLN:HB3	1.97	0.45
1:A:162:ILE:O	2:E:226:ASN:ND2	2.49	0.45
6:K:34:ILE:HG21	6:T:33:LEU:HA	1.99	0.45
1:B:468:VAL:HG11	1:B:515:LEU:HD11	1.99	0.45
1:C:192:LEU:HA	1:C:351:PRO:HD2	1.99	0.45
2:D:183:LYS:NZ	2:D:324:GLN:HB3	2.30	0.45
1:A:170:GLU:HB2	1:A:187:ARG:HB2	1.97	0.45
1:A:216:ASN:HA	1:A:224:LYS:HD3	1.98	0.45
2:E:117:PRO:HA	2:E:144:LYS:HA	1.98	0.45
2:D:71:ARG:NH1	2:D:77:LEU:HB2	2.31	0.45
2:D:185:GLY:HA2	2:D:339:GLN:O	2.16	0.45
1:B:116:ARG:HH21	1:B:118:GLY:HA2	1.81	0.45
1:C:356:GLN:HB3	2:F:349:THR:HG22	1.99	0.45
2:E:116:ILE:HD11	2:E:269:THR:HB	1.98	0.45
2:D:218:VAL:HG22	2:D:263:VAL:HG13	1.99	0.45
2:D:308:SER:OG	2:D:309:ALA:N	2.50	0.45
2:D:437:ARG:HH12	2:D:478:GLY:N	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:329:THR:HG23	2:F:334:SER:HA	1.99	0.45
6:K:57:LEU:HD13	6:L:55:PHE:CE1	2.52	0.45
6:S:10:ILE:HB	6:T:10:ILE:HG12	1.99	0.45
2:F:186:LEU:HB2	2:F:340:ALA:HA	1.99	0.44
4:H:36:GLU:N	6:Q:39:ARG:O	2.51	0.44
6:N:33:LEU:HA	6:O:34:ILE:HG21	1.99	0.44
1:A:70:LEU:HB3	1:A:73:ILE:HB	1.99	0.44
6:Q:7:GLY:HA2	6:R:10:ILE:HD11	1.98	0.44
1:A:399:ARG:NH1	2:E:190:ALA:HB3	2.32	0.44
1:B:173:GLN:O	1:B:211:ASN:ND2	2.50	0.44
1:B:465:GLU:HB3	1:B:506:LEU:HB3	2.00	0.44
2:E:181:GLY:HA3	2:E:329:THR:OG1	2.17	0.44
2:E:145:PHE:HD2	2:E:146:LEU:HG	1.82	0.44
6:M:5:LEU:HA	6:M:8:LYS:HD3	1.99	0.44
6:S:15:ALA:HB3	6:S:69:ALA:HB2	1.99	0.44
2:E:218:VAL:HG11	2:E:292:PHE:HB2	2.00	0.44
2:E:286:VAL:HG11	2:E:289:ILE:HD13	2.00	0.44
2:E:313:GLN:OE1	2:E:313:GLN:N	2.43	0.44
1:B:279:MET:HE2	1:B:279:MET:HB3	1.93	0.44
1:C:70:LEU:HD13	1:C:73:ILE:HD12	2.00	0.44
2:F:303:LEU:HD12	2:F:305:ARG:HH12	1.83	0.44
3:G:65:TYR:HD1	4:H:15:LEU:HD12	1.82	0.44
1:C:190:ARG:HH22	2:D:221:ARG:HB3	1.82	0.44
1:C:337:LYS:NZ	1:C:344:GLY:O	2.42	0.44
1:C:419:PHE:CE2	1:C:475:VAL:HG23	2.53	0.44
2:D:408:THR:HG22	2:D:438:ALA:HB2	2.00	0.44
6:R:27:ALA:O	6:R:31:ALA:N	2.46	0.44
2:F:218:VAL:HG22	2:F:263:VAL:HG13	1.98	0.44
1:A:72:ASN:O	1:A:116:ARG:NH1	2.50	0.43
1:B:125:VAL:HG21	1:B:153:ILE:HG13	1.98	0.43
2:D:275:ARG:NH1	2:D:276:ASP:OD1	2.51	0.43
2:E:310:VAL:H	3:G:279:THR:HG22	1.82	0.43
4:H:36:GLU:O	6:P:40:ASN:ND2	2.51	0.43
6:K:15:ALA:HB3	6:K:69:ALA:HB2	2.00	0.43
1:C:413:ALA:HA	1:C:416:LEU:HB3	2.01	0.43
2:F:221:ARG:NH1	10:F:2003:HOH:O	2.50	0.43
3:G:183:TYR:HE1	3:G:197:LYS:HB2	1.83	0.43
1:A:51:LEU:O	1:A:71:ASN:ND2	2.48	0.43
2:D:69:ILE:HD12	2:D:77:LEU:HD23	2.01	0.43
2:E:382:LEU:HD21	2:E:409:LEU:HB2	2.00	0.43
3:G:67:GLU:HB2	3:G:71:LYS:HD3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:K:24:ILE:O	6:K:28:ILE:HG13	2.19	0.43
6:M:24:ILE:O	6:M:28:ILE:HG13	2.18	0.43
1:A:205:ALA:HB1	1:A:293:VAL:HG11	1.99	0.43
1:B:232:VAL:HG11	1:B:300:GLN:HB2	1.99	0.43
1:C:170:GLU:OE2	1:C:337:LYS:NZ	2.44	0.43
1:C:431:GLN:OE1	1:C:431:GLN:N	2.52	0.43
6:K:4:VAL:HG13	6:L:9:TYR:HE2	1.84	0.43
6:P:43:LEU:HD12	6:Q:38:SER:HA	1.99	0.43
1:C:399:ARG:HE	9:D:600:ADP:H5'2	1.84	0.42
2:E:126:ILE:HG23	2:E:250:PHE:HD2	1.83	0.42
2:F:167:THR:HA	2:F:205:ILE:HD11	2.00	0.42
4:H:15:LEU:HD22	4:H:89:ALA:HB2	2.01	0.42
6:R:33:LEU:HD21	6:R:48:PHE:HE1	1.83	0.42
1:C:367:ASN:O	1:C:371:ILE:HG13	2.19	0.42
2:F:275:ARG:HD3	2:F:335:VAL:HG23	2.00	0.42
6:L:57:LEU:HD13	6:M:55:PHE:CZ	2.54	0.42
1:B:281:GLU:HG3	1:B:284:ARG:HE	1.85	0.42
1:A:102:PHE:CE2	1:A:137:LEU:HD21	2.53	0.42
1:B:155:ALA:O	1:B:334:ARG:NH1	2.52	0.42
2:D:71:ARG:HH12	2:D:77:LEU:HB2	1.84	0.42
1:A:177:LYS:HE2	1:A:177:LYS:HB3	1.84	0.42
1:B:497:TYR:HE2	1:B:526:ILE:HD11	1.84	0.42
3:G:94:SER:HB2	3:G:153:GLY:HA3	2.02	0.42
6:T:24:ILE:O	6:T:28:ILE:HG13	2.20	0.42
1:C:409:MET:O	1:C:413:ALA:N	2.46	0.42
6:P:8:LYS:HB3	6:P:72:LEU:O	2.20	0.42
1:B:91:ASN:HB3	2:F:47:ILE:HG23	2.01	0.42
1:B:295:ASP:HA	1:B:296:ASP:HA	1.79	0.42
6:N:68:ILE:HD11	6:O:66:LEU:HD12	2.01	0.42
1:C:91:ASN:HB2	2:D:47:ILE:HG12	2.01	0.42
2:D:265:LEU:HD23	2:D:323:LEU:HD13	2.01	0.42
2:F:69:ILE:HB	2:F:77:LEU:HB3	2.01	0.42
6:S:58:SER:O	6:S:61:THR:OG1	2.36	0.42
6:K:27:ALA:HA	6:K:30:PHE:CE2	2.54	0.42
6:Q:11:GLY:HA2	6:Q:14:LEU:HD12	2.02	0.42
1:A:462:MET:HB2	1:A:467:MET:HE3	2.02	0.41
1:B:232:VAL:HG21	1:B:273:PRO:HG3	2.01	0.41
1:B:306:GLN:NE2	2:E:315:THR:HG22	2.34	0.41
2:E:174:LEU:HA	2:E:398:HIS:CE1	2.54	0.41
2:E:183:LYS:HB2	2:E:360:LEU:HA	2.00	0.41
2:E:327:ILE:HG21	2:E:337:SER:HB2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:473:LYS:HE2	2:E:473:LYS:HB3	1.87	0.41
6:M:32:ALA:HB1	6:N:34:ILE:HB	2.02	0.41
1:C:525:SER:O	1:C:529:ASN:ND2	2.54	0.41
2:E:183:LYS:HE2	2:E:324:GLN:HB3	2.02	0.41
3:G:73:PHE:HZ	3:G:205:ILE:HG12	1.85	0.41
2:D:81:VAL:HA	2:D:92:THR:HG22	2.02	0.41
6:O:8:LYS:HE2	6:O:73:LEU:HA	2.02	0.41
1:A:229:TYR:OH	1:A:295:ASP:OD2	2.34	0.41
2:F:237:VAL:HG13	2:F:245:LYS:HB3	2.02	0.41
6:P:26:ILE:HG23	6:P:55:PHE:HB2	2.02	0.41
6:P:68:ILE:HD12	6:Q:16:SER:HB3	2.02	0.41
2:E:427:LEU:HD22	2:E:431:ASP:HB3	2.02	0.41
2:F:185:GLY:HA3	2:F:360:LEU:HD13	2.02	0.41
2:D:478:GLY:HA2	2:D:481:ASP:HB2	2.01	0.41
2:F:69:ILE:HD11	2:F:79:LEU:HD11	2.01	0.41
2:F:498:VAL:HA	2:F:501:ALA:HB3	2.01	0.41
1:C:229:TYR:OH	1:C:295:ASP:OD2	2.26	0.41
2:D:412:TYR:CE1	2:D:435:VAL:HG13	2.56	0.41
6:P:28:ILE:HG22	6:Q:31:ALA:HB2	2.01	0.41
1:B:193:ILE:HB	1:B:352:ILE:HG12	2.03	0.41
1:C:91:ASN:HD21	1:C:311:LEU:HB3	1.85	0.41
1:A:313:ARG:HA	1:A:314:PRO:HD3	1.98	0.41
1:B:70:LEU:HD22	1:B:116:ARG:HG3	2.03	0.41
1:B:168:VAL:HG12	1:B:337:LYS:HB3	2.02	0.41
1:B:213:LYS:NZ	1:B:249:HIS:HB3	2.36	0.41
1:B:295:ASP:HB2	1:B:352:ILE:HD12	2.03	0.41
2:D:209:HIS:NE2	2:D:281:ASP:O	2.40	0.41
2:D:377:PRO:HB2	2:D:379:VAL:HG23	2.03	0.41
2:E:268:LEU:HD13	2:E:284:LEU:HD22	2.02	0.41
2:E:488:PHE:HE1	2:E:497:VAL:HG11	1.86	0.41
4:H:32:SER:HA	4:H:50:LEU:HA	2.02	0.41
4:H:45:PRO:HG3	4:H:78:PRO:HD3	2.02	0.41
6:O:57:LEU:HD13	6:P:55:PHE:CE2	2.55	0.41
6:S:32:ALA:O	6:S:36:GLY:N	2.54	0.41
1:A:91:ASN:HD21	1:A:311:LEU:HD22	1.86	0.41
1:B:182:LEU:HD22	1:B:417:LYS:HB2	2.03	0.41
1:C:187:ARG:NH2	1:C:225:LEU:HB2	2.36	0.41
2:E:119:GLY:HA2	2:E:273:TYR:CE2	2.56	0.41
2:E:165:LEU:HB2	2:E:180:ARG:HB2	2.03	0.41
2:F:194:LYS:HE3	2:F:342:TYR:HA	2.03	0.41
2:F:228:LEU:O	2:F:232:MET:HG2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:78:THR:HB	3:G:204:ALA:O	2.21	0.41
6:M:57:LEU:HD13	6:N:55:PHE:CE2	2.56	0.41
6:S:54:GLY:HA2	6:T:30:PHE:CD1	2.56	0.41
1:B:133:VAL:HB	1:B:142:ASP:HB3	2.03	0.40
2:F:245:LYS:HE2	2:F:245:LYS:HB2	1.93	0.40
3:G:51:LYS:O	3:G:55:ALA:N	2.53	0.40
6:P:28:ILE:HB	6:Q:27:ALA:HB1	2.02	0.40
6:Q:24:ILE:O	6:Q:28:ILE:HG13	2.21	0.40
6:R:33:LEU:HD21	6:R:48:PHE:CE1	2.56	0.40
2:D:146:LEU:HA	2:D:147:PRO:HD3	1.96	0.40
2:F:46:VAL:HG22	2:F:51:VAL:HG13	2.03	0.40
3:G:248:ARG:O	3:G:252:MET:HG2	2.21	0.40
4:H:32:SER:HA	4:H:50:LEU:HD23	2.02	0.40
6:R:57:LEU:HB2	6:S:26:ILE:HG21	2.02	0.40
1:C:386:GLY:O	1:C:455:LYS:HE2	2.20	0.40
2:E:474:GLU:O	2:E:479:LYS:HB2	2.21	0.40
2:F:196:VAL:HG23	9:F:600:ADP:O1A	2.22	0.40
1:B:264:GLU:HB3	1:B:268:LEU:HD12	2.03	0.40
2:D:213:SER:HB2	2:D:246:VAL:HG23	2.03	0.40
2:E:145:PHE:CD2	2:E:146:LEU:HG	2.57	0.40
2:F:287:ASP:HA	2:F:288:ASN:HA	1.56	0.40

There are no symmetry-related clashes.

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	483/536 (90%)	456 (94%)	26 (5%)	1 (0%)	47 81
1	B	475/536 (89%)	454 (96%)	21 (4%)	0	100 100
1	C	483/536 (90%)	456 (94%)	27 (6%)	0	100 100
2	D	468/509 (92%)	448 (96%)	20 (4%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	E	466/509 (92%)	443 (95%)	23 (5%)	0	100 100
2	F	468/509 (92%)	439 (94%)	28 (6%)	1 (0%)	47 81
3	G	263/293 (90%)	242 (92%)	21 (8%)	0	100 100
4	H	109/137 (80%)	92 (84%)	13 (12%)	4 (4%)	3 26
6	K	71/76 (93%)	71 (100%)	0	0	100 100
6	L	70/76 (92%)	67 (96%)	3 (4%)	0	100 100
6	M	73/76 (96%)	71 (97%)	2 (3%)	0	100 100
6	N	73/76 (96%)	71 (97%)	2 (3%)	0	100 100
6	O	73/76 (96%)	73 (100%)	0	0	100 100
6	P	73/76 (96%)	72 (99%)	1 (1%)	0	100 100
6	Q	74/76 (97%)	71 (96%)	3 (4%)	0	100 100
6	R	72/76 (95%)	72 (100%)	0	0	100 100
6	S	72/76 (95%)	70 (97%)	2 (3%)	0	100 100
6	T	72/76 (95%)	71 (99%)	1 (1%)	0	100 100
All	All	3938/4325 (91%)	3739 (95%)	193 (5%)	6 (0%)	47 81

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	F	75	ASN
4	H	120	ALA
4	H	45	PRO
1	A	400	VAL
4	H	78	PRO
4	H	118	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	391/429 (91%)	389 (100%)	2 (0%)	88 94

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	B	387/429 (90%)	383 (99%)	4 (1%)	76 88
1	C	391/429 (91%)	391 (100%)	0	100 100
2	D	377/409 (92%)	377 (100%)	0	100 100
2	E	376/409 (92%)	376 (100%)	0	100 100
2	F	377/409 (92%)	377 (100%)	0	100 100
3	G	224/242 (93%)	221 (99%)	3 (1%)	69 86
4	H	92/114 (81%)	92 (100%)	0	100 100
6	K	50/52 (96%)	50 (100%)	0	100 100
6	L	49/52 (94%)	48 (98%)	1 (2%)	55 79
6	M	51/52 (98%)	51 (100%)	0	100 100
6	N	51/52 (98%)	50 (98%)	1 (2%)	55 79
6	O	51/52 (98%)	49 (96%)	2 (4%)	32 64
6	P	51/52 (98%)	50 (98%)	1 (2%)	55 79
6	Q	52/52 (100%)	52 (100%)	0	100 100
6	R	50/52 (96%)	49 (98%)	1 (2%)	55 79
6	S	50/52 (96%)	49 (98%)	1 (2%)	55 79
6	T	50/52 (96%)	49 (98%)	1 (2%)	55 79
All	All	3120/3390 (92%)	3103 (100%)	17 (0%)	88 94

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	270	TYR
1	A	363	TYR
1	B	234	GLN
1	B	270	TYR
1	B	423	TYR
1	B	465	GLU
3	G	78	THR
3	G	149	PHE
3	G	176	TYR
6	L	55	PHE
6	N	55	PHE
6	O	55	PHE
6	O	73	LEU
6	P	1	MET

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Mol	Chain	Res	Type
6	R	55	PHE
6	S	55	PHE
6	T	55	PHE

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

Mol	Chain	Res	Type
1	C	203	GLN
6	S	46	GLN

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 10 ligands modelled in this entry, 5 are monoatomic - leaving 5 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	$\#\|Z\| > 2$
7	ATP	C	600	8	26,33,33	0.93	1 (3%)	31,52,52	1.53	5 (16%)
7	ATP	A	600	8	26,33,33	0.94	1 (3%)	31,52,52	1.58	5 (16%)
7	ATP	B	600	8	26,33,33	0.94	1 (3%)	31,52,52	1.58	5 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
9	ADP	F	600	8	24,29,29	0.96	1 (4%)	29,45,45	1.47	4 (13%)
9	ADP	D	600	8	24,29,29	0.97	1 (4%)	29,45,45	1.46	4 (13%)

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
7	ATP	C	600	8	-	1/18/38/38	0/3/3/3
7	ATP	A	600	8	-	0/18/38/38	0/3/3/3
7	ATP	B	600	8	-	0/18/38/38	0/3/3/3
9	ADP	F	600	8	-	5/12/32/32	0/3/3/3
9	ADP	D	600	8	-	2/12/32/32	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	600	ATP	C5-C4	2.53	1.47	1.40
7	B	600	ATP	C5-C4	2.52	1.47	1.40
9	F	600	ADP	C5-C4	2.49	1.47	1.40
7	C	600	ATP	C5-C4	2.49	1.47	1.40
9	D	600	ADP	C5-C4	2.49	1.47	1.40

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	600	ATP	PA-O3A-PB	-3.96	119.24	132.83
7	B	600	ATP	PA-O3A-PB	-3.75	119.96	132.83
7	C	600	ATP	PB-O3B-PG	-3.59	120.52	132.83
9	F	600	ADP	C3'-C2'-C1'	3.43	106.14	100.98
9	D	600	ADP	C3'-C2'-C1'	3.41	106.11	100.98
7	B	600	ATP	C3'-C2'-C1'	3.38	106.07	100.98
9	F	600	ADP	PA-O3A-PB	-3.35	121.34	132.83
7	B	600	ATP	PB-O3B-PG	-3.33	121.41	132.83
9	D	600	ADP	PA-O3A-PB	-3.31	121.48	132.83
7	A	600	ATP	PB-O3B-PG	-3.27	121.62	132.83
9	D	600	ADP	N3-C2-N1	-3.21	123.66	128.68
7	A	600	ATP	N3-C2-N1	-3.19	123.70	128.68
7	B	600	ATP	N3-C2-N1	-3.17	123.72	128.68
7	C	600	ATP	N3-C2-N1	-3.17	123.73	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	C	600	ATP	C3'-C2'-C1'	3.15	105.73	100.98
9	F	600	ADP	N3-C2-N1	-3.15	123.76	128.68
7	A	600	ATP	C3'-C2'-C1'	3.09	105.62	100.98
7	C	600	ATP	PA-O3A-PB	-2.91	122.83	132.83
7	C	600	ATP	C4-C5-N7	-2.65	106.64	109.40
7	B	600	ATP	C4-C5-N7	-2.64	106.64	109.40
7	A	600	ATP	C4-C5-N7	-2.62	106.67	109.40
9	D	600	ADP	C4-C5-N7	-2.61	106.68	109.40
9	F	600	ADP	C4-C5-N7	-2.49	106.80	109.40

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	F	600	ADP	C5'-O5'-PA-O2A
9	F	600	ADP	O4'-C4'-C5'-O5'
9	F	600	ADP	C3'-C4'-C5'-O5'
9	D	600	ADP	O4'-C4'-C5'-O5'
9	D	600	ADP	C3'-C4'-C5'-O5'
9	F	600	ADP	C5'-O5'-PA-O3A
7	C	600	ATP	PG-O3B-PB-O2B
9	F	600	ADP	C5'-O5'-PA-O1A

There are no ring outliers.

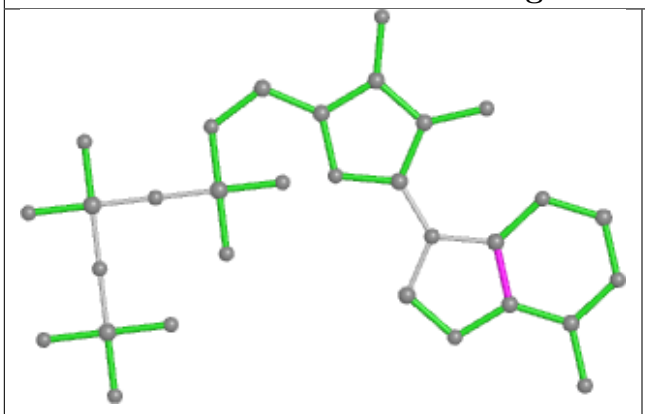
3 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	C	600	ATP	2	0
9	F	600	ADP	3	0
9	D	600	ADP	3	0

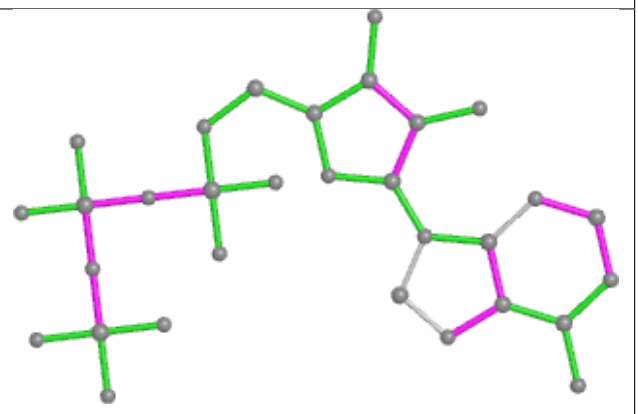
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

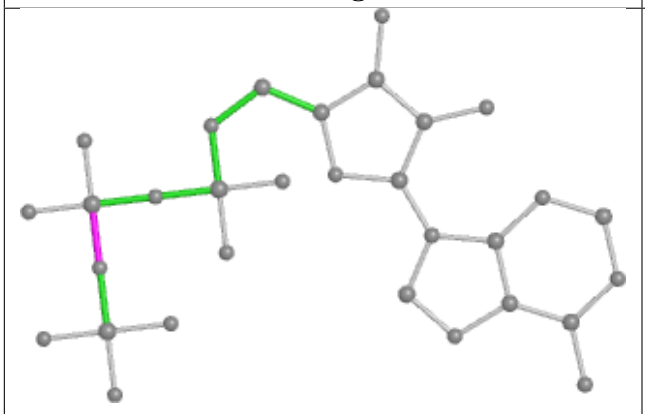
Ligand ATP C 600



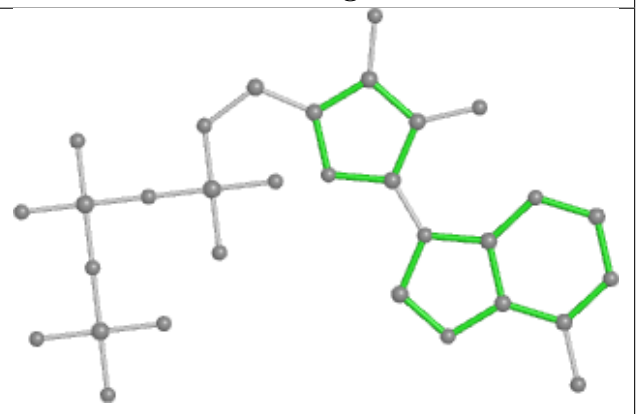
Bond lengths



Bond angles

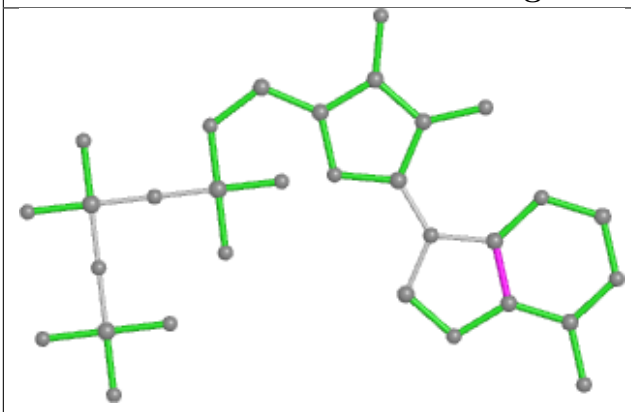


Torsions

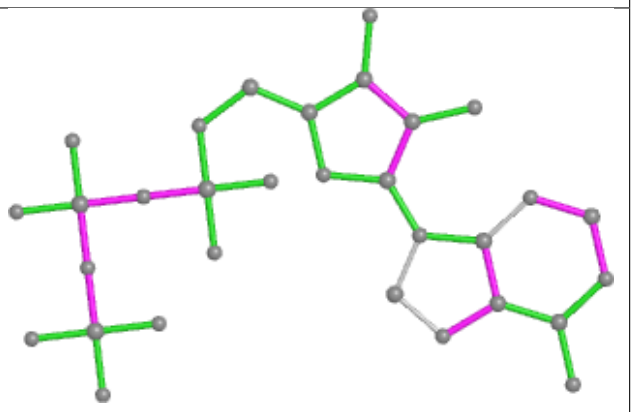


Rings

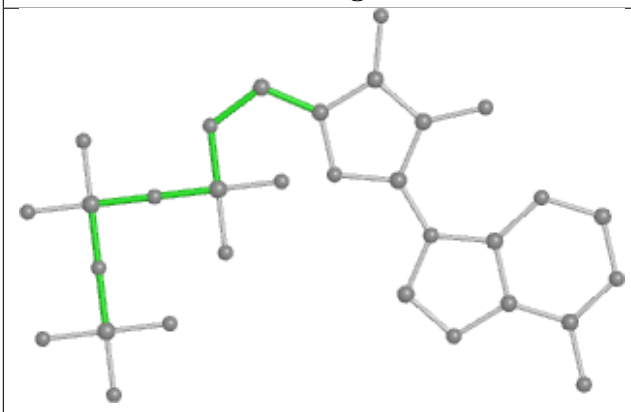
Ligand ATP A 600



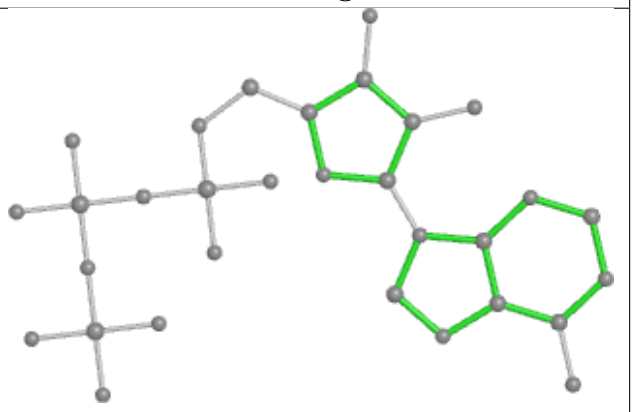
Bond lengths



Bond angles

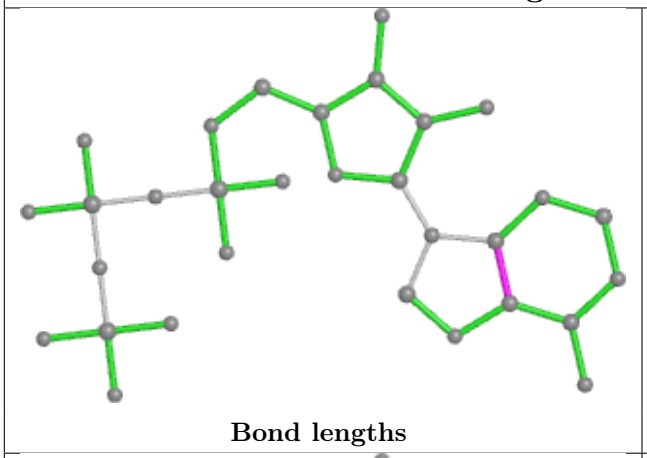


Torsions

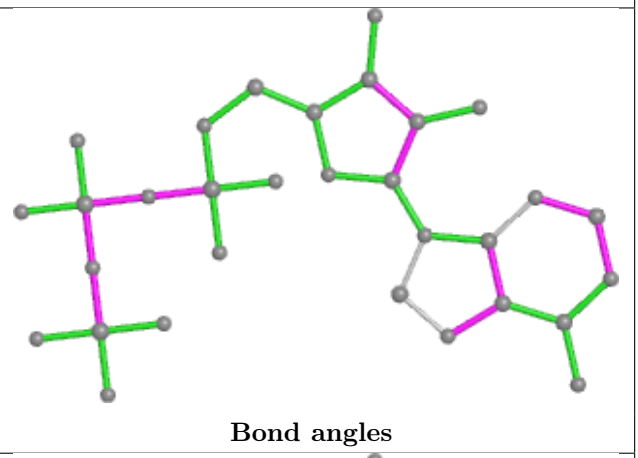


Rings

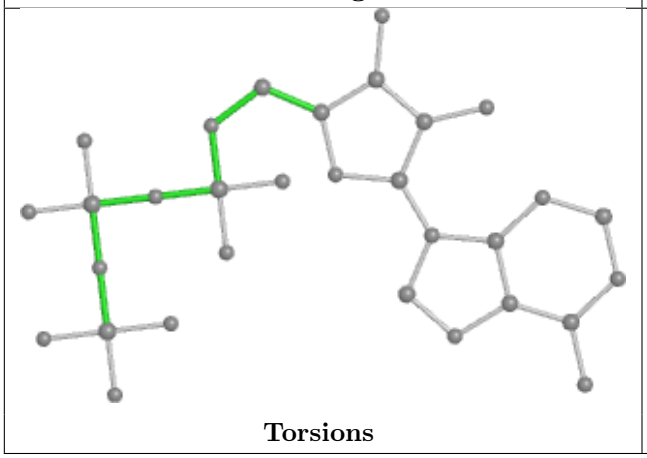
Ligand ATP B 600



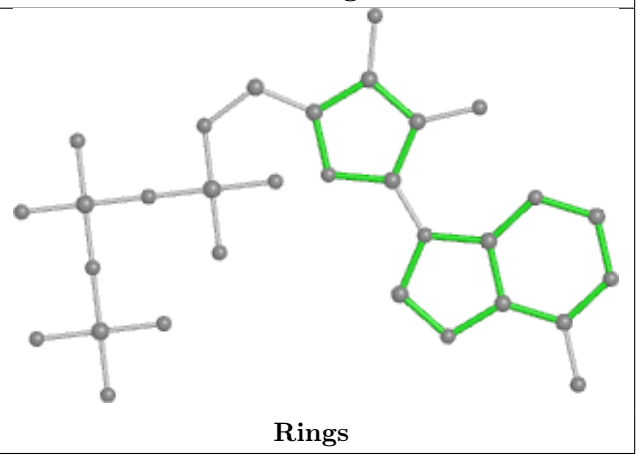
Bond lengths



Bond angles

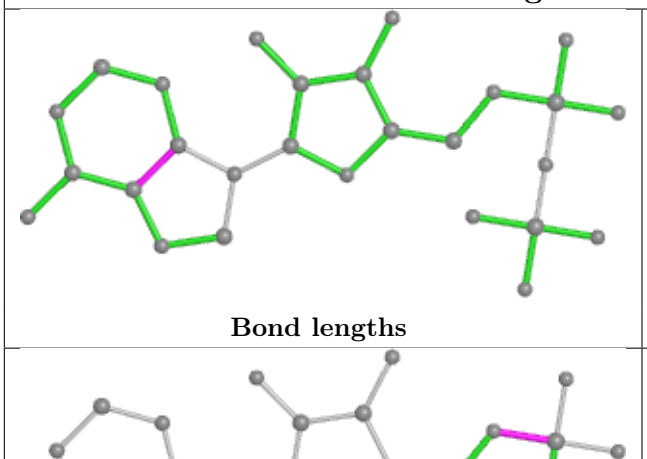


Torsions

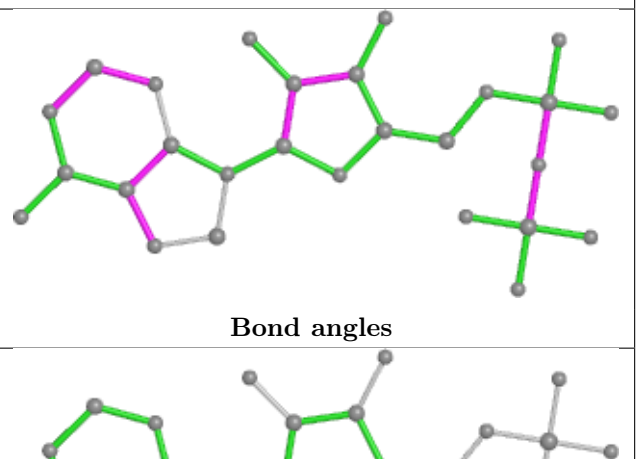


Rings

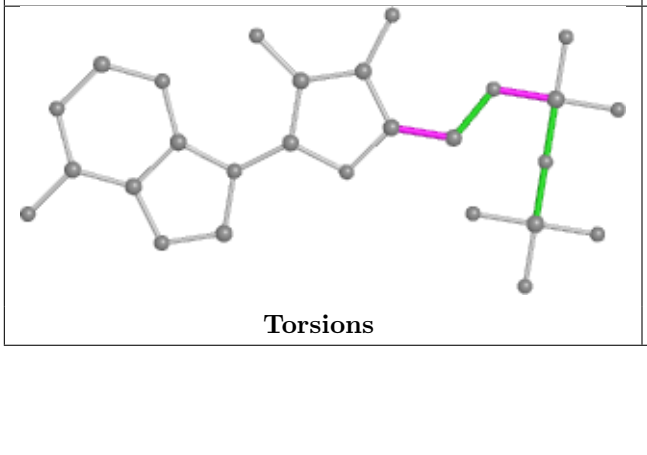
Ligand ADP F 600



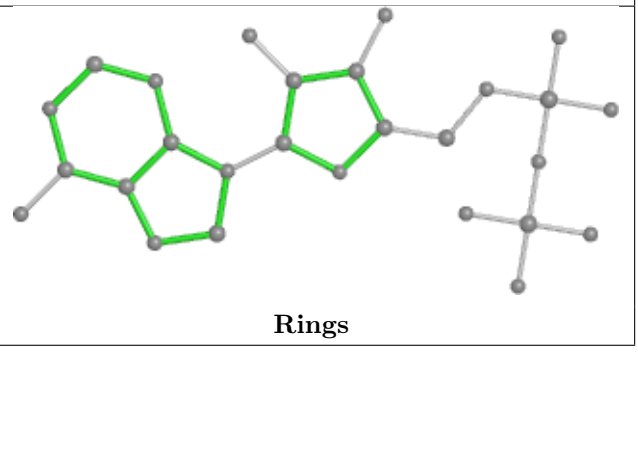
Bond lengths



Bond angles

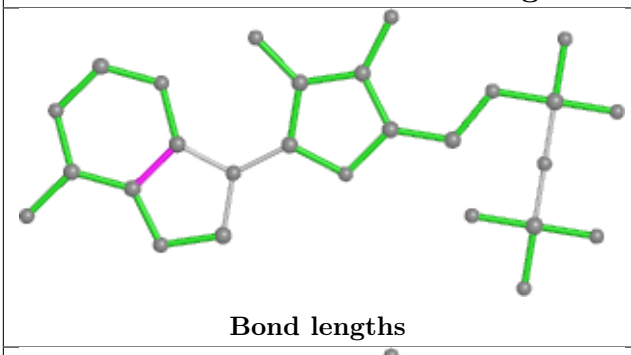


Torsions

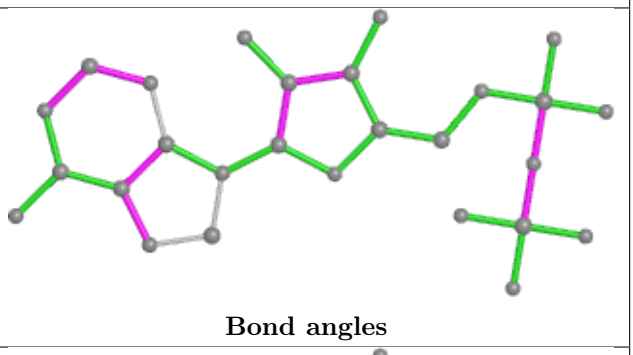


Rings

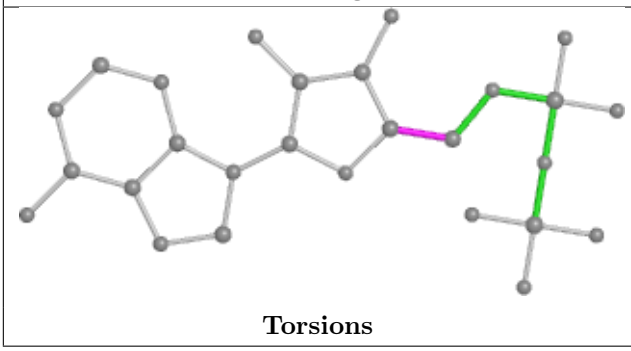
Ligand ADP D 600



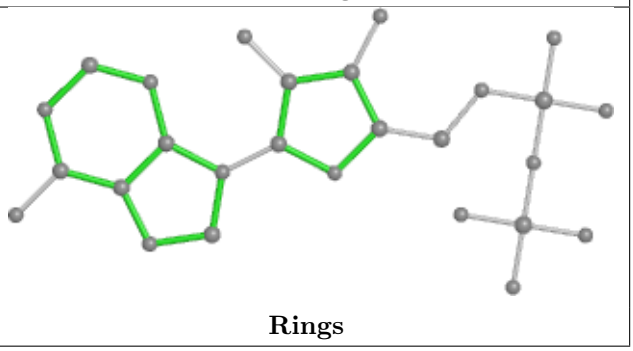
Bond lengths



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, 95^{th} 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	485/536 (90%)	0.11	18 (3%) 41 37	116, 153, 209, 224	0
1	B	479/536 (89%)	0.26	30 (6%) 20 18	104, 156, 234, 261	0
1	C	485/536 (90%)	0.21	29 (5%) 21 19	108, 150, 222, 280	0
2	D	470/509 (92%)	0.29	27 (5%) 23 21	108, 158, 195, 215	0
2	E	468/509 (91%)	0.34	42 (8%) 9 10	117, 160, 210, 248	0
2	F	470/509 (92%)	0.07	16 (3%) 45 40	113, 152, 192, 213	0
3	G	267/293 (91%)	0.70	43 (16%) 1 2	109, 185, 224, 241	0
4	H	113/137 (82%)	0.93	24 (21%) 0 1	161, 207, 255, 277	0
5	I	0/16	-	-	-	-
6	K	73/76 (96%)	0.45	12 (16%) 1 2	148, 184, 206, 218	0
6	L	72/76 (94%)	0.11	7 (9%) 7 8	154, 180, 213, 224	0
6	M	75/76 (98%)	0.17	10 (13%) 3 4	152, 179, 200, 213	0
6	N	75/76 (98%)	-0.30	0 100 100	140, 157, 188, 194	0
6	O	75/76 (98%)	0.15	3 (4%) 38 33	132, 158, 186, 192	0
6	P	75/76 (98%)	0.13	6 (8%) 12 12	132, 160, 200, 205	0
6	Q	76/76 (100%)	0.18	4 (5%) 26 24	150, 177, 198, 204	0
6	R	74/76 (97%)	-0.16	1 (1%) 75 69	162, 182, 197, 213	0
6	S	74/76 (97%)	0.16	7 (9%) 8 8	164, 179, 203, 217	0
6	T	74/76 (97%)	0.11	4 (5%) 25 23	163, 182, 205, 210	0
All	All	3980/4341 (91%)	0.24	283 (7%) 16 15	104, 163, 216, 280	0

All (283) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	219	GLN	9.8
3	G	116	ASP	8.6

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Mol	Chain	Res	Type	RSRZ
4	H	61	ASN	8.4
1	C	515	LEU	7.3
2	E	396	GLN	7.0
6	M	44	LYS	6.5
2	F	450	THR	6.2
2	F	453	GLU	6.0
1	A	515	LEU	5.6
4	H	27	GLN	5.5
3	G	26	GLU	5.5
1	C	516	SER	5.5
1	C	220	ASP	5.3
6	L	43	LEU	5.3
4	H	62	GLY	5.1
6	K	52	ILE	5.1
1	B	219	GLN	4.9
3	G	139	ARG	4.9
2	E	419	ILE	4.9
4	H	66	SER	4.8
1	C	413	ALA	4.8
1	C	510	ALA	4.7
6	K	55	PHE	4.6
2	E	399	TYR	4.6
2	D	492	GLY	4.6
1	B	511	ALA	4.5
1	C	221	GLU	4.5
2	D	160	THR	4.4
6	M	45	GLY	4.3
2	E	398	HIS	4.3
2	E	471	SER	4.3
2	E	455	PHE	4.3
6	K	74	TYR	4.3
1	C	173	GLN	4.2
1	B	216	ASN	4.2
6	K	51	SER	4.2
1	B	405	GLN	4.1
1	C	511	ALA	4.1
1	C	405	GLN	4.1
1	A	218	GLY	4.1
2	E	390	ASP	4.1
3	G	194	PRO	4.1
2	D	161	THR	4.0
6	Q	67	MET	4.0

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Mol	Chain	Res	Type	RSRZ
2	E	490	MET	4.0
1	B	507	LYS	4.0
6	O	40	ASN	4.0
4	H	56	GLU	4.0
2	E	174	LEU	3.9
6	P	52	ILE	3.9
2	E	392	ASP	3.8
2	E	449	PHE	3.8
4	H	67	TYR	3.8
3	G	28	GLU	3.8
3	G	188	SER	3.8
6	M	43	LEU	3.8
2	E	429	GLU	3.8
4	H	64	THR	3.7
3	G	112	ARG	3.7
3	G	240	GLY	3.7
4	H	65	LYS	3.7
2	E	73	GLU	3.7
6	K	54	GLY	3.6
6	Q	70	PHE	3.5
2	E	173	ASP	3.5
2	E	400	ASP	3.5
6	L	44	LYS	3.5
4	H	39	ILE	3.5
6	Q	71	LEU	3.5
4	H	28	VAL	3.5
6	S	44	LYS	3.5
1	C	406	VAL	3.5
2	D	168	GLY	3.5
3	G	27	ILE	3.4
3	G	115	LEU	3.4
6	K	56	ALA	3.4
1	B	402	SER	3.4
2	E	496	GLU	3.4
6	S	74	TYR	3.4
6	S	72	LEU	3.4
2	D	453	GLU	3.4
2	E	475	ILE	3.4
2	E	448	PRO	3.3
1	B	215	TRP	3.3
1	B	212	GLN	3.3
2	D	420	ALA	3.3

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Mol	Chain	Res	Type	RSRZ
2	F	459	GLU	3.3
6	K	66	LEU	3.3
1	C	189	GLN	3.3
3	G	120	GLY	3.2
3	G	142	PRO	3.2
2	E	493	GLY	3.2
6	O	42	ALA	3.2
6	S	4	VAL	3.2
6	P	49	THR	3.2
2	D	440	LYS	3.2
6	K	70	PHE	3.2
2	E	420	ALA	3.2
2	D	460	GLY	3.2
4	H	29	ASN	3.2
2	F	451	VAL	3.1
2	F	452	ALA	3.1
2	E	423	GLY	3.1
4	H	41	ALA	3.1
6	K	44	LYS	3.1
2	D	53	VAL	3.1
6	P	45	GLY	3.1
1	B	467	MET	3.1
2	F	449	PHE	3.1
1	B	512	THR	3.0
3	G	141	ASN	3.0
3	G	183	TYR	3.0
2	F	149	HIS	3.0
1	B	406	VAL	3.0
1	A	408	ALA	3.0
1	B	108	VAL	3.0
2	D	461	ARG	3.0
2	F	160	THR	2.9
2	E	140	ILE	2.9
1	B	462	MET	2.9
1	C	519	ASN	2.9
2	E	421	ILE	2.9
2	D	159	SER	2.9
3	G	71	LYS	2.9
2	E	391	ILE	2.9
2	E	141	GLU	2.9
6	M	74	TYR	2.9
6	M	59	GLU	2.9

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Mol	Chain	Res	Type	RSRZ
1	C	512	THR	2.8
6	P	53	LEU	2.8
2	D	170	LYS	2.8
2	F	142	ALA	2.8
2	D	462	LEU	2.8
1	A	244	GLN	2.8
2	E	167	THR	2.8
2	E	402	ALA	2.8
4	H	38	GLY	2.8
2	E	401	VAL	2.8
6	S	2	GLN	2.8
1	B	515	LEU	2.8
3	G	184	ASN	2.8
3	G	158	THR	2.7
2	E	454	VAL	2.7
2	D	493	GLY	2.7
3	G	239	GLU	2.7
6	L	51	SER	2.7
3	G	126	ILE	2.7
2	F	117	PRO	2.7
2	F	118	VAL	2.7
1	A	411	GLN	2.7
1	B	401	GLY	2.7
2	D	75	ASN	2.7
3	G	25	ARG	2.7
2	E	467	ASP	2.7
3	G	111	ARG	2.7
1	C	60	VAL	2.7
3	G	138	GLY	2.7
1	C	508	ASP	2.7
3	G	58	ALA	2.7
1	B	221	GLU	2.6
2	D	141	GLU	2.6
4	H	42	ASN	2.6
1	B	508	ASP	2.6
3	G	213	GLN	2.6
2	E	158	GLN	2.6
4	H	24	GLU	2.6
1	C	407	LYS	2.6
2	E	175	LEU	2.6
2	D	488	PHE	2.6
6	M	52	ILE	2.6

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Mol	Chain	Res	Type	RSRZ
6	K	62	GLY	2.6
2	D	212	PHE	2.6
1	A	390	ALA	2.6
3	G	157	PRO	2.6
2	D	94	ALA	2.5
2	E	395	GLY	2.5
3	G	195	ILE	2.5
2	E	393	VAL	2.5
1	C	507	LYS	2.5
3	G	113	LYS	2.5
6	T	44	LYS	2.5
1	B	425	GLU	2.5
4	H	82	LEU	2.5
2	D	178	TYR	2.5
1	B	61	GLY	2.5
1	C	479	ILE	2.5
3	G	181	ILE	2.5
4	H	30	ILE	2.5
3	G	234	TYR	2.5
6	P	54	GLY	2.5
6	O	37	VAL	2.5
1	B	458	GLN	2.5
2	E	168	GLY	2.5
1	B	486	GLN	2.5
3	G	177	ASP	2.5
2	E	505	ALA	2.4
1	A	413	ALA	2.4
6	K	63	LEU	2.4
2	D	419	ILE	2.4
1	B	173	GLN	2.4
3	G	89	TRP	2.4
6	S	71	LEU	2.4
6	P	55	PHE	2.4
6	T	52	ILE	2.4
1	A	110	GLU	2.4
2	E	492	GLY	2.4
1	B	501	ASN	2.4
1	B	505	LEU	2.4
4	H	115	ASP	2.4
2	F	83	GLN	2.4
6	L	46	GLN	2.3
1	C	109	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	214	ARG	2.3
1	C	518	GLU	2.3
6	M	48	PHE	2.3
6	M	73	LEU	2.3
1	C	432	PHE	2.3
3	G	104	SER	2.3
1	A	220	ASP	2.3
3	G	114	LEU	2.3
1	A	406	VAL	2.3
1	B	513	GLY	2.3
6	T	74	TYR	2.3
1	B	407	LYS	2.3
1	A	502	GLU	2.3
6	K	43	LEU	2.3
6	L	49	THR	2.3
3	G	182	VAL	2.3
1	C	412	VAL	2.3
2	D	418	ILE	2.3
6	S	70	PHE	2.3
2	E	179	ALA	2.3
3	G	70	GLU	2.2
1	C	401	GLY	2.2
1	C	525	SER	2.2
1	C	514	GLU	2.2
3	G	290	SER	2.2
3	G	237	MET	2.2
2	E	397	GLU	2.2
4	H	46	THR	2.2
3	G	62	SER	2.2
1	A	391	ILE	2.2
1	C	222	LYS	2.2
1	B	493	GLU	2.2
1	A	125	VAL	2.2
3	G	45	LYS	2.2
2	E	474	GLU	2.2
2	F	161	THR	2.2
4	H	59	GLU	2.2
4	H	31	PRO	2.1
6	Q	72	LEU	2.1
1	B	424	ARG	2.1
4	H	40	LEU	2.1
2	D	69	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
4	H	63	GLU	2.1
6	T	41	PRO	2.1
1	C	411	GLN	2.1
1	A	511	ALA	2.1
6	R	2	GLN	2.1
1	A	279	MET	2.1
6	M	42	ALA	2.1
4	H	57	VAL	2.1
1	A	156	GLN	2.1
2	F	84	HIS	2.1
2	D	167	THR	2.1
2	D	484	PRO	2.1
3	G	57	ARG	2.1
3	G	232	THR	2.1
2	E	170	LYS	2.1
6	L	42	ALA	2.1
1	C	65	ALA	2.1
2	E	499	ALA	2.0
1	B	213	LYS	2.0
2	D	166	GLU	2.0
2	F	58	ASP	2.0
2	F	406	GLN	2.0
6	L	52	ILE	2.0
2	D	331	GLN	2.0
3	G	190	ILE	2.0
3	G	134	LYS	2.0
1	A	221	GLU	2.0
1	C	150	GLU	2.0
6	M	41	PRO	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

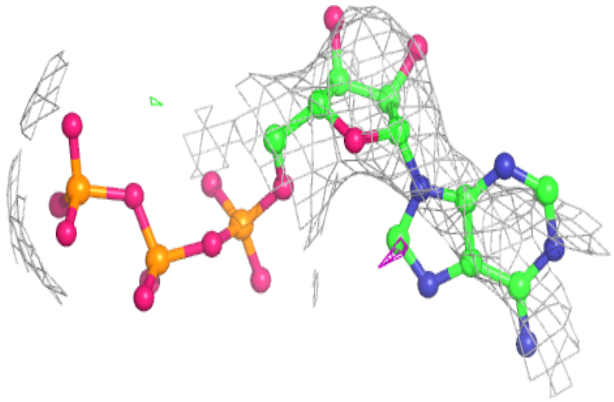
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

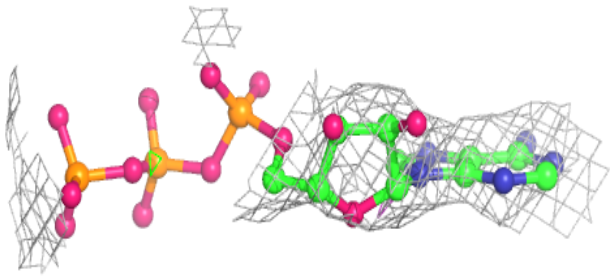
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
8	MG	D	601	1/1	0.83	0.17	183,183,183,183	0
7	ATP	B	600	31/31	0.89	0.29	149,182,193,201	0
8	MG	C	601	1/1	0.90	0.23	171,171,171,171	0
7	ATP	A	600	31/31	0.92	0.24	146,160,172,197	0
7	ATP	C	600	31/31	0.92	0.26	149,159,174,183	0
9	ADP	F	600	27/27	0.92	0.30	159,176,182,186	0
8	MG	F	601	1/1	0.93	0.13	189,189,189,189	0
9	ADP	D	600	27/27	0.95	0.26	159,164,170,173	0
8	MG	A	601	1/1	0.96	0.20	173,173,173,173	0
8	MG	B	601	1/1	0.98	0.18	154,154,154,154	0

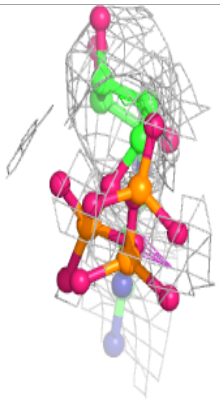
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around ATP B 600:

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

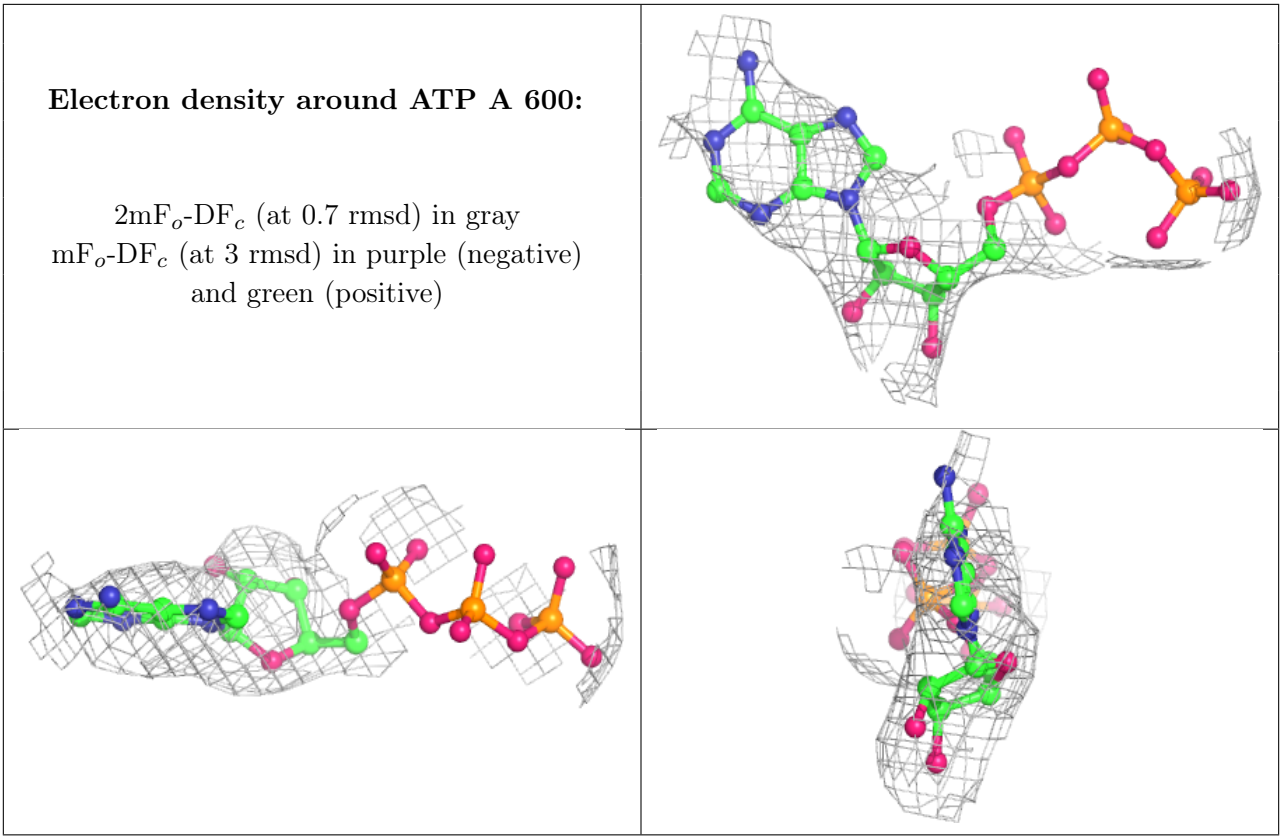






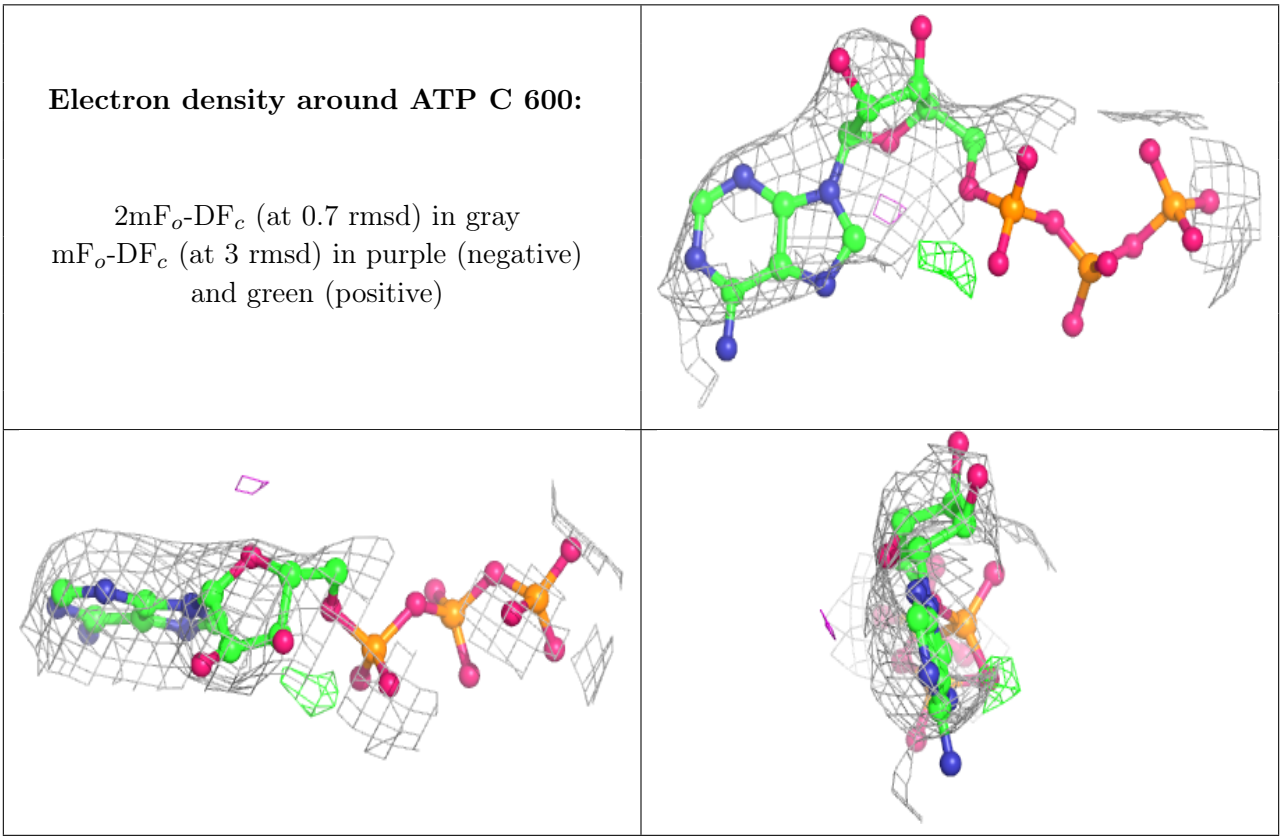
Electron density around ATP A 600:

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



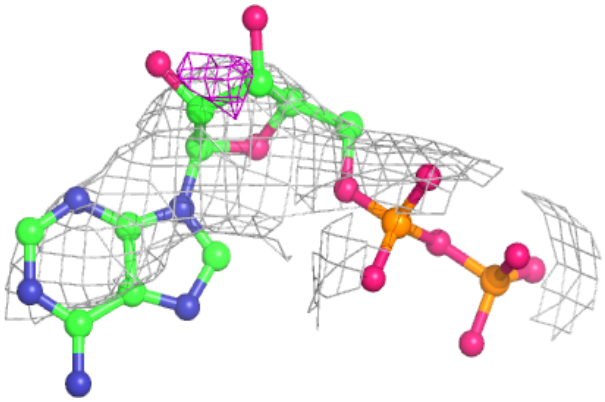
Electron density around ATP C 600:

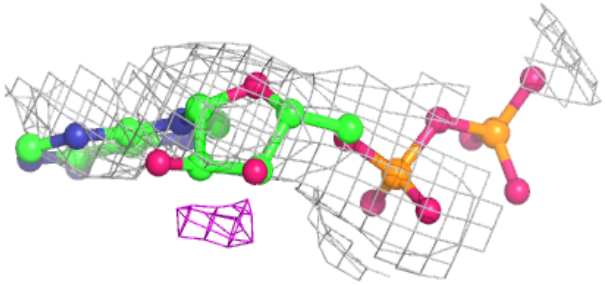
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

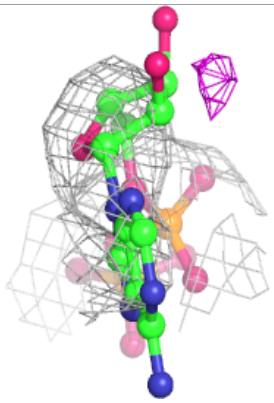


Electron density around ADP F 600:

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

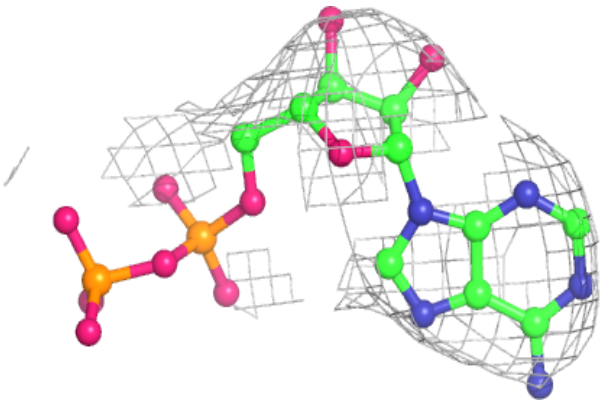


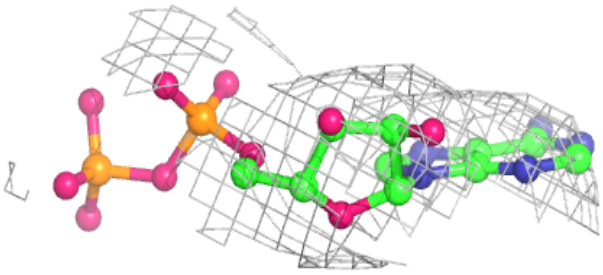


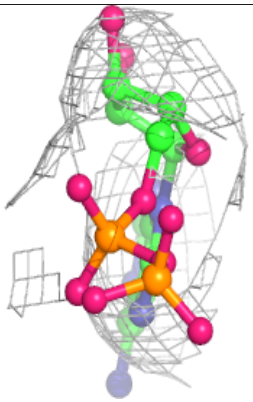


Electron density around ADP D 600:

$2mF_o$-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.