

Dec 12, 2022 - 02:43 am GMT

PDB ID	:	6TMK
EMDB ID	:	EMD-10524
Title	:	Cryo-EM structure of Toxoplasma gondii mitochondrial ATP synthase dimer, composite model
Authors	:	Muhleip, A.; Kock Flygaard, R.; Amunts, A.
Deposited on	:	2019-12-04
Resolution	:	2.90 Å(reported)
This is	a I	Full wwPDB EM 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/EMValidationReportHelp 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 (1)) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

## 1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:  $ELECTRON\ MICROSCOPY$ 

The reported resolution of this entry is 2.90 Å.

Ramachandran outliers

Sidechain outliers

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

Metric	;	Percentile Ranks	Value
Ramachandran outliers			0.0%
Sidechain outliers			0.3%
	Worse		Better
	Percentile relativ	ve to all structures	
	Percentile relativ	ve to all EM structures	
			1
Motria		Whole archive	EM structures
Wietric		(# Entries)	(# Entries)

154571

154315

The table below summarises the geometric issues observed across the polymeric chains and their fit
to the map. The red, orange, yellow and green segments of the 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 EM
map (all-atom inclusion $< 40\%$ ). The numeric value is given above the bar.

4023

3826

Mol	Chain	Length	Quality of chain						
1	Q	134	98%	••					
1	q	134	99%						
2	Ι	236	38%	62%					
2	i	236	38%	62%					
3	Т	133	69%	31%					
3	t	133	69%	31%					
4	G	252	44%	56%					
4	g	252	44%	56%					
5	Ο	157	95%	5%					



Mol	Chain	Length	Quality of chain					
5	0	157	95	% 5%				
6	Κ	224	52%	48%				
6	k	224	52%	48%				
7	J	229	76%	23%				
7	j	229	76%	23%				
8	S	128	74%	26%				
8	s	128	74%	26%				
9	U	126	75%	25%				
9	u	126	75%	25%				
10	Н	239	94	% 5%				
10	h	239	94	% 5%				
11	E	325	43%	57%				
11	e	325	/3%	57%				
19	x	83	0, CF	200/				
12	v	83		•				
12	D	571	18%	99% ·				
10	D L	571	12%	15%				
13	D	571	9%	15%				
14	R	134	7%	•				
14	r	134		•				
15	Р	138	78%	22%				
15	р	138	78%	22%				
16	V	111		99% •				
16	V	111		99% .				
17	L	208		100%				
17	1	208		100%				



Chain Length Quality of chain Mol 18 С 398 31% 69% 39818 $\mathbf{c}$ 31% 69% 19D 31082% 18% d 1931082% 18% 20М 20547% 53% 20205 $\mathbf{m}$ 47% 53% i 21Ν 16696% • • i 21. . 166n 96% i 22F 26770% 30% i  $\mathbf{f}$ 2226770% 30% i 23W 106• 8% 91% 23106W 91% • 8% 5% 24536А 13% 87% 6% 24 $\mathbf{a}$ 53687% 13% 25i1 14528% 72% 25i2 14528% 72% 38% 26565A190% 9% 51% A22656590% 9% 16% C12656590% 10% 15% C25652690% 10% 33% 26E156590% 10% 42% E22656590% 10% 16% 27B1 56084% 14% 21% B22756085% 14% 19% 27D1 56085% 15%



Mol	Chain	Length	Quality of chain	
27	D2	560	85%	15%
27	F1	560	45%	• 15%
	Fa	<b>×</b> 60	52%	
27	F2	560	<u>84%</u>	15%
28	g1	314	87%	13%
28	g2	314	87%	13%
29	d1	183	78%	22%
29	d2	183	78%	22%
30	e1	73	89%	11%
30	e2	73	<b>●</b> 89%	11%
31	G1	252	39% 71%	29%
31	G2	252	47%	29%
32	H1	166	40% •	57%
32	H2	166	43%	57%
32	I1	166	42%	57%
32	I2	166	<b>4</b> 2% •	57%
32	J1	166	6%	57%
32	J2	166	43%	57%
32	K1	166	8% 42%	57%
32	K2	166	43%	57%
32	L1	166	<b>4</b> 2%	57%
32		166	5% 42%	57%
32	M1	166	42%	57%
		100	5%	
32	M2	166	43%	57%
32	N1	166	43%	57%
32	N2	166	43%	57% ntinued on next page



Contr	nuea jron	<i>i</i> previous	page	
Mol	Chain	Length	Qual	ity of chain
32	O1	166	• 43%	57%
32	O2	166	43%	57%
32	P1	166	43%	57%
32	P2	166	43%	57%
32	Q1	166	42%	57%
32	Q2	166	43%	57%



## 2 Entry composition (i)

There are 38 unique types of molecules in this entry. The entry contains 266834 atoms, of which 134048 are hydrogens and 0 are deuteriums.

In the tables below, 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.

Mol	Chain	Residues	Atoms					AltConf	Trace	
1	a	133	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
	Ч	100	2119	674	1044	194	202	5	0	0
1	0	122	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
	Q	100	2119	674	1044	194	202	5	0	U

• Molecule 1 is a protein called ATPTG11.

• Molecule 2 is a protein called ATPTG7.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	i	90	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
	1	90	1386	433	678	136	129	10	0	0
9	т	00	Total	С	Η	Ν	0	S	0	0
	I	90	1386	433	678	136	129	10	0	0

• Molecule 3 is a protein called ATPTG14.

Mol	Chain	Residues	Atoms					AltConf	Trace	
3	+	02	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
5	3 t	92	1439	463	716	127	129	4	0	0
2	Т	02	Total	С	Η	Ν	0	S	0	0
5	1	92	1439	463	716	127	129	4	0	0

• Molecule 4 is a protein called ATPTG5.

Mol	Chain	Residues	Atoms						AltConf	Trace
4	ď	112	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
-1	g		1732	548	856	152	168	8	0	0
4	С	119	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
4	4 G	112	1732	548	856	152	168	8	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g	51	VAL	PHE	conflict	UNP S7WD71
				<i>a</i>	7 /



Chain	Residue	Modelled	Actual	Comment	Reference
g	73	CYS	SER	conflict	UNP S7WD71
g	110	LYS	GLU	conflict	UNP S7WD71
g	233	THR	MET	conflict	UNP S7WD71
G	51	VAL	PHE	conflict	UNP S7WD71
G	73	CYS	SER	conflict	UNP S7WD71
G	110	LYS	GLU	conflict	UNP S7WD71
G	233	THR	MET	conflict	UNP S7WD71

• Molecule 5 is a protein called subunit k.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	0 149	Total	С	Η	Ν	0	S	0	0	
5 0	149	2415	786	1195	210	219	5	0	0	
5	0	140	Total	С	Н	Ν	0	S	0	0
0	5 U	149	2415	786	1195	210	219	5	0	0

• Molecule 6 is a protein called subunit a.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	6 k 117	Total	С	Η	Ν	0	S	0	0	
0		111	1904	645	952	145	155	7	0	0
6	3 K	K 117	Total	С	Η	Ν	0	S	0	0
0 K	Γ	117	1904	645	952	145	155	$\overline{7}$	0	0

• Molecule 7 is a protein called subunit i/j.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	i	176	Total	С	Η	Ν	0	S	0	0
1	J 170	2981	1003	1469	261	244	4	0	0	
7	т	176	Total	С	Η	Ν	0	S	0	0
( J	170	2981	1003	1469	261	244	4	0	0	

• Molecule 8 is a protein called ATPTG13.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	8 9	05	Total	С	Η	Ν	0	S	0	0
8 S	90	1570	526	770	130	142	2	0	0	
8	S	S 95	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
0 2			1570	526	770	130	142	2		U

• Molecule 9 is a protein called ATPTG15.



Mol	Chain	Residues	Atoms						AltConf	Trace
0	9 11 94	04	Total	С	Η	Ν	0	S	0	0
9 u	94	1492	482	741	132	133	4	0	0	
0	) U	04	Total	С	Η	Ν	0	S	0	0
9		U	0 94	1492	482	741	132	133	4	0

• Molecule 10 is a protein called ATPTG6.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	h 226	Total	С	Η	Ν	0	S	0	0	
10		3589	1157	1741	334	348	9	0		
10	10 H 226	Total	С	Η	Ν	0	S	0	0	
10		220	3589	1157	1741	334	348	9		U

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
h	89	ASN	HIS	conflict	UNP A0A125YL08
Н	89	ASN	HIS	conflict	UNP A0A125YL08

• Molecule 11 is a protein called ATPTG3.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	11 е	140	Total	С	Η	Ν	Ο	S	0	0
			2179	719	1064	187	204	5	0	0
11	F	140	Total	С	Η	Ν	0	S	0	0
	Ľ		2179	719	1064	187	204	5	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
e	?	-	LYS	deletion	UNP A0A125YLR0
e	63	PRO	SER	conflict	UNP A0A125YLR0
e	99	LEU	PRO	conflict	UNP A0A125YLR0
e	312	ALA	THR	conflict	UNP A0A125YLR0
Е	?	-	LYS	deletion	UNP A0A125YLR0
E	63	PRO	SER	conflict	UNP A0A125YLR0
E	99	LEU	PRO	conflict	UNP A0A125YLR0
E	312	ALA	THR	conflict	UNP A0A125YLR0

• Molecule 12 is a protein called ATPTG17.



Mol	Chain	Residues	Atoms						AltConf	Trace
19	x 82	80	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
12 X	02	1298	420	639	116	120	3	0	0	
19	$\mathbf{v}$	V 89	Total	С	Η	Ν	Ο	S	0	0
12	Λ	02	1298	420	639	116	120	3	0	0

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
X	77	TRP	-	expression tag	UNP S7W180
X	78	MET	-	expression tag	UNP S7W180
X	79	PHE	-	expression tag	UNP S7W180
X	80	GLY	-	expression tag	UNP S7W180
X	81	ASN	-	expression tag	UNP S7W180
X	82	SER	-	expression tag	UNP S7W180
X	83	TYR	-	expression tag	UNP S7W180
Х	77	TRP	-	expression tag	UNP S7W180
Х	78	MET	-	expression tag	UNP S7W180
Х	79	PHE	-	expression tag	UNP S7W180
Х	80	GLY	-	expression tag	UNP S7W180
X	81	ASN	-	expression tag	UNP S7W180
Х	82	SER	-	expression tag	UNP S7W180
Х	83	TYR	-	expression tag	UNP S7W180

• Molecule 13 is a protein called subunit b.

Mol	Chain	Residues				AltConf	Trace				
12	h	b 484	Total	С	Н	Ν	0	S	0	0	
10 0	404	7841	2525	3909	652	740	15	0	0		
12	В	484	Total	С	Η	Ν	0	S	0	0	
10	13 B	484	7841	2525	3909	652	740	15	0	0	

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	48	LEU	SER	conflict	UNP S7V2T0
b	472	THR	ALA	conflict	UNP S7V2T0
В	48	LEU	SER	conflict	UNP S7V2T0
В	472	THR	ALA	conflict	UNP S7V2T0

• Molecule 14 is a protein called ATPTG12.



Mol	Chain	Residues			Atom		AltConf	Trace		
14	r	122	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
	100	2144	681	1073	182	202	6	0	0	
14	D	122	Total	С	Η	Ν	0	S	0	0
14 K	n	100	2144	681	1073	182	202	6	0	0

• Molecule 15 is a protein called ATPTG10.

Mol	Chain	Residues			Aton		AltConf	Trace		
15	n	108	Total	С	Η	Ν	0	S	0	0
15 p	р	108	1711	553	847	148	157	6	0	0
15	D	108	Total	С	Н	Ν	0	S	0	0
10	I.	100	1711	553	847	148	157	6	0	U

• Molecule 16 is a protein called subunit f.

Mol	Chain	Residues			Aton		AltConf	Trace		
16	v 110	110	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
	v	110	1801	590	888	170	148	5	0	0
16	V	110	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
10	v	110	1801	590	888	170	148	5	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	54	ALA	VAL	conflict	UNP S7UQT7
V	54	ALA	VAL	conflict	UNP S7UQT7

• Molecule 17 is a protein called ATPTG8.

Mol	Chain	Residues			Atom		AltConf	Trace		
17	1	207	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
11 1	207	3273	1013	1647	298	305	10	0	U	
17	т	207	Total	С	Η	Ν	0	S	0	0
11		207	3273	1013	1647	298	305	10	0	0

• Molecule 18 is a protein called ATPTG1.

Mol	Chain	Residues			AltConf	Trace				
18	0	199	Total	С	Н	Ν	0	S	0	0
10	С	122	2029	656	999	189	184	1	0	0
18	С	199	Total	С	Н	Ν	0	S	0	0
10		122	2029	656	999	189	184	1		0



• Molecule 19 is a protein called ATPTG2.

Mol	Chain	Residues				AltConf	Trace			
10	d	255	Total	С	Η	Ν	0	S	0	0
19 a	200	4056	1326	1975	366	381	8	0	0	
10	П	255	Total	С	Η	Ν	0	S	0	0
19	D	200	4056	1326	1975	366	381	8	0	0

• Molecule 20 is a protein called subunit 8.

Mol	Chain	Residues			Aton		AltConf	Trace		
20	20 m 06	06	Total	С	Η	Ν	0	S	0	0
20	111	90	1509	501	744	126	131	7	0	0
20	М	06	Total	С	Η	Ν	0	S	0	0
20	111	90	1509	501	744	126	131	7	0	0

• Molecule 21 is a protein called ATPTG9.

Mol	Chain	Residues			Aton		AltConf	Trace		
21	n	160	Total 2449	С 774	Н 1202	N 227	O 235	S 11	0	0
21	N	160	Total 2449	С 774	Н 1202	N 227	0 235	S 11	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
n	140	SER	ALA	conflict	UNP A0A125YUZ2
N	140	SER	ALA	conflict	UNP A0A125YUZ2

• Molecule 22 is a protein called ATPTG4.

Mol	Chain	Residues			Atom		AltConf	Trace		
<u> </u>	f	199	Total	С	Η	Ν	0	S	0	0
	1	100	2867	919	1425	245	274	4	0	0
<u> </u>	Г	199	Total	С	Η	Ν	0	S	0	0
22	Г	100	2867	919	1425	245	274	4	U	U

• Molecule 23 is a protein called ATPTG16.

Mol	Chain	Residues			Aton		AltConf	Trace		
23	W	97	Total 1520	C 497	Н 760	N 128	0 131	$\begin{array}{c} \mathrm{S} \\ \mathrm{4} \end{array}$	0	0



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Mol	Chain	Residues			Aton	ns			AltConf	Trace
23	W	97	Total 1520	C 497	Н 760	N 128	0 131	$\frac{S}{4}$	0	0

• Molecule 24 is a protein called subunit d.

Mol	Chain	Residues				AltConf	Trace			
24	2	467	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
24	a	407	7396	2405	3616	656	698	21	0	0
24	Δ	467	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
24	А	407	7396	2405	3616	656	698	21	0	U

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	351	THR	ALA	conflict	UNP S7V493
А	351	THR	ALA	conflict	UNP S7V493

• Molecule 25 is a protein called Inhibitor of F1.

Mol	Chain	Residues		A	AltConf	Trace				
25	;9	40	Total	С	Η	Ν	0	S	0	0
20	12	40	660	213	324	56	66	1	0	0
25	;1	40	Total	С	Η	Ν	0	S	0	0
20		40	660	213	324	56	66	1	0	U

• Molecule 26 is a protein called ATP synthase subunit alpha, subunit alpha.

Mol	Chain	Residues			Atom	S			AltConf	Trace
26	12	519	Total	С	Η	Ν	0	$\mathbf{S}$	0	0
20	$\Lambda 2$	512	7925	2464	4003	688	751	19	0	0
26	FO	507	Total	С	Η	Ν	0	S	0	0
20		507	7848	2441	3962	682	744	19	0	0
26	C2	507	Total	С	Η	Ν	0	S	0	0
20	02	507	7849	2442	3967	682	739	19	0	0
26	Δ.1	519	Total	С	Η	Ν	0	S	0	0
20		512	7925	2464	4003	688	751	19	0	0
26	F1	507	Total	С	Η	Ν	0	S	0	0
20	171	507	7848	2441	3962	682	744	19	0	0
26	C1	507	Total	С	Η	Ν	0	S	0	0
20		507	7849	2442	3967	682	739	19	0	0

• Molecule 27 is a protein called ATP synthase subunit beta.



Mol	Chain	Residues			Atom	.s			AltConf	Trace
97	Bo	470	Total	С	Η	Ν	0	S	0	0
21	D2	419	7314	2293	3676	628	703	14	0	0
97	FO	475	Total	С	Η	Ν	0	S	0	0
21	ΓΔ	410	7265	2278	3653	624	696	14	0	0
27	D9	475	Total	С	Η	Ν	0	S	0	0
21		410	7265	2278	3653	624	696	14	0	0
27	B1	470	Total	С	Η	Ν	0	S	0	0
21	DI	419	7314	2293	3676	628	703	14	0	0
27	F1	475	Total	С	Η	Ν	0	S	0	0
21	I I	410	7265	2278	3653	624	696	14	0	0
27	D1	475	Total	С	Η	Ν	Ο	S	0	0
		410	7265	2278	3653	624	696	14		U

• Molecule 28 is a protein called ATP synthase subunit gamma.

Mol	Chain	Residues			AltConf	Trace				
28	g2	272	Total	C 1220	H 2172	N 276	0 204	S 16	0	0
			4209	1550	2173	370	394	10		
28	1	979	Total	С	Н	Ν	Ο	$\mathbf{S}$	0	0
20	gı	212	4289	1330	2173	376	394	16		U

• Molecule 29 is a protein called ATP synthase subunit delta.

Mol	Chain	Residues			Atom		AltConf	Trace		
20	40	149	Total	С	Η	Ν	0	S	0	0
29	02	140	2145	667	1076	181	216	5	0	0
20	d1	149	Total	С	Η	Ν	0	S	0	0
29	u1	140	2145	667	1076	181	216	5	0	0

• Molecule 30 is a protein called ATP synthase subunit epsilon.

Mol	Chain	Residues		A	Atom		AltConf	Trace		
30	o?	65	Total	С	Η	Ν	Ο	S	0	0
50	62	00	1077	337	539	99	98	4	0	0
30	01	65	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
- 50	el	00	1077	337	539	99	98	4	U	0

• Molecule 31 is a protein called Oligomycin sensitivity conferring protein (OSCP).

Mol	Chain	Residues	Atoms						AltConf	Trace
31	G2	180	Total 2901	C 895	Н 1486	N 255	O 261	$\frac{S}{4}$	0	0



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Mol	Chain	Residues			Atom	S			AltConf	Trace
31	G1	180	Total 2901	C 895	H 1486	N 255	0 261	${S \over 4}$	0	0

• Molecule 32 is a protein called subunit c.

Mol	Chain	Residues		A	Atom	s			AltConf	Trace
20	ЦЭ	71	Total	С	Н	Ν	Ο	S	0	0
32	112	11	1028	328	527	77	92	4	0	0
20	19	71	Total	С	Н	Ν	0	S	0	0
32	12	11	1028	328	527	77	92	4	0	0
30	19	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	52	11	1028	328	527	77	92	4	0	0
39	K2	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	112	11	1028	328	527	77	92	4	0	0
30	1.9	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52		11	1028	328	527	77	92	4	0	0
30	M9	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	1112	11	1028	328	527	77	92	4	0	0
30	N2	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	112	11	1028	328	527	77	92	4	0	0
30	$O^2$	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	02	11	1028	328	527	77	92	4	0	0
30	Рŋ	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	1 2	11	1028	328	527	77	92	4	0	0
30	$O^2$	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	Q2	11	1028	328	527	77	92	4	0	0
39	H1	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	111	11	1028	328	527	77	92	4	0	0
39	T1	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	11	11	1028	328	527	77	92	4	0	0
39	T1	71	Total	С	Η	Ν	Ο	$\mathbf{S}$	0	0
52	51	11	1028	328	527	77	92	4	0	0
32	K1	71	Total	$\mathbf{C}$	Η	Ν	Ο	$\mathbf{S}$	0	0
02	111	11	1028	328	527	77	92	4	0	0
39	L1	71	Total	$\mathbf{C}$	Η	Ν	Ο	$\mathbf{S}$	0	0
52	1/1	11	1028	328	527	77	92	4	0	0
39	M1	71	Total	$\mathbf{C}$	Η	Ν	Ο	$\mathbf{S}$	0	0
52	IVI I	11	1028	328	527	77	92	4	0	0
32	N1	71	Total	$\mathbf{C}$	Η	Ν	Ο	$\mathbf{S}$	0	0
	111	11	1028	328	527	77	92	4	0	0
32	01	71	Total	C	H	N	Ō	S	0	0
		11	1028	328	527	77	92	4		0



Continued from	m previous	page
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Mol	Chain	Residues		A	Atom	s			AltConf	Trace	
20	D1	71	Total	С	Η	Ν	Ο	S	0	0	
32	11	11	1028	328	527	77	92	4	0	0	
20	01	71	Total	С	Η	Ν	Ο	S	0	0	
32	QI	QI	11	1028	328	527	77	92	4	0	0

• Molecule 33 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (three-letter code: PC1) (formula: C<sub>44</sub>H<sub>88</sub>NO<sub>8</sub>P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
22	0	1	Total C H N O P	0
55	0	1	284  88  176  2  16  2	0
22	0	1	Total C H N O P	0
55	0	I	284  88  176  2  16  2	0
33	V	1	Total C H N O P	0
- 55	v	T	142  44  88  1  8  1	0
22	0	1	Total C H N O P	0
55	0	1	284  88  176  2  16  2	0
22	0	1	Total C H N O P	0
55	0	1	284  88  176  2  16  2	0
22	V	1	Total C H N O P	0
55	v	L	142  44  88  1  8  1	0

• Molecule 34 is DODECYL-BETA-D-MALTOSIDE (three-letter code: LMT) (formula:  $\rm C_{24}H_{46}O_{11}).$ 





Mol	Chain	Residues		Ator	ns		AltConf
24	_	1	Total	С	Η	0	0
34	0	1	81	24	46	11	0
24	1-	1	Total	С	Η	0	0
34	n	1	81	24	46	11	0
94		1	Total	С	Η	0	0
54	X	1	81	24	46	11	0
24		1	Total	С	Η	0	0
54	С	1	162	48	92	22	0
94		1	Total	С	Η	0	0
54	С	1	162	48	92	22	0
94	d	1	Total	С	Η	0	0
54	a	1	162	48	92	22	0
24	d	1	Total	С	Η	0	0
34	u	1	162	48	92	22	0
24	0	1	Total	С	Η	0	0
04	0	1	81	24	46	11	0
24	п	1	Total	С	Η	0	0
- 04	11	1	81	24	46	11	0
24	v	1	Total	С	Η	0	0
04	Λ	1	81	24	46	11	0
24	C	1	Total	С	Η	0	0
04	U	1	162	48	92	22	0
24	С	1	Total	С	Η	0	0
-04		1	162	48	92	22	0
3/		1	Total	С	Η	Ο	0
04		1	162	48	92	22	0
34		1	Total	С	Η	0	0
04		L	162	48	92	22	



• Molecule 35 is CARDIOLIPIN (three-letter code: CDL) (formula:  $C_{81}H_{156}O_{17}P_2$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues		At	oms			AltConf
25		1	Total	С	Н	0	Р	0
- 55	0	1	256	81	156	17	2	0
25		1	Total	С	Н	0	Р	0
- 50	u	1	256	81	156	17	2	0
35	h	1	Total	С	Н	Ο	Р	0
- 55	11	1	256	81	156	17	2	0
35	0	1	Total	С	Н	Ο	Р	0
- 55	е	I	256	81	156	17	2	0
35	h	1	Total	С	Η	Ο	Р	0
- 00	D	1	512	162	312	34	4	0
35	h	1	Total	С	Η	Ο	Р	0
		I	512	162	312	34	4	0
35	v	1	Total	С	Η	Ο	Р	0
	v	1	256	81	156	17	2	0
35	C	1	Total	С	Η	Ο	Р	0
00	C	1	256	81	156	17	2	0
35	d	1	Total	С	Η	Ο	Р	0
	u	1	256	81	156	17	2	0
35	0	1	Total	С	Η	Ο	Р	0
		1	256	81	156	17	2	0
35	U	1	Total	С	Η	Ο	Р	0
	Ŭ	*	256	81	156	17	2	
35	Н	1	Total	С	Η	Ο	Р	0
		-	256	81	156	17	2	



Mol	Chain	Residues	Atoms	AltConf
25	F	1	Total C H O P	0
- 33	Ľ	1	256  81  156  17  2	0
35	В	1	Total C H O P	0
- 33	D	1	512 162 312 34 4	0
35	В	1	Total C H O P	0
- 33	D	1	512 162 312 34 4	0
35	V	1	Total C H O P	0
- 55	v	1	256 81 156 17 2	0
35	С	1	Total C H O P	0
- 55	U	1	256 81 156 17 2	0
35	Л	1	Total C H O P	0
00			256  81  156  17  2	0

• Molecule 36 is 1,2-Dioleoyl-sn-glycero-3-phosphoethanolamine (three-letter code: PEE) (formula: C<sub>41</sub>H<sub>78</sub>NO<sub>8</sub>P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
26	;	1	Total C H N O P	0
- 30	J	L	266  82  164  2  16  2	0
26	;	1	Total C H N O P	0
- 30	J	L	266  82  164  2  16  2	0
26	0	1	Total C H N O P	0
- 30	C	L	133 $41$ $82$ $1$ $8$ $1$	0
26	т	1	Total C H N O P	0
50	J	T	266  82  164  2  16  2	0
36	т	1	Total C H N O P	0
- 50	J	L	266 82 164 2 16 2	



Mol	Chain	Residues		Atoms					
26	С	1	Total	С	Η	Ν	Ο	Р	0
- 50	C	L	133	41	82	1	8	1	0

• Molecule 37 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula:  $C_{10}H_{16}N_5O_{13}P_3$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues		A	ton	ıs			AltConf
37	٨.2	1	Total	С	Η	Ν	Ο	Р	0
- 57	$\Lambda \Delta$	1	42	10	11	5	13	3	0
37	FЭ	1	Total	С	Η	Ν	Ο	Р	0
- 57		1	42	10	11	5	13	3	0
37	CD	1	Total	С	Η	Ν	Ο	Р	0
- 57	02	1	42	10	11	5	13	3	0
37	Δ.1	1	Total	С	Η	Ν	Ο	Р	0
- 57	$\Lambda 1$	I	42	10	11	5	13	3	0
37	<b>F</b> 1	1	Total	С	Η	Ν	Ο	Р	0
51	171	1	42	10	11	5	13	3	0
37	C1	1	Total	С	Η	Ν	Ο	Р	0
51	UI		43	10	12	5	13	3	0

• Molecule 38 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ) (labeled as "Ligand of Interest" by depositor).





Mol	Chain	Residues	Atoms			AltConf			
20	ВJ	1	Total	С	Η	Ν	Ο	Р	0
30	DZ	1	39	10	12	5	10	2	0
20	DЭ	1	Total	С	Η	Ν	Ο	Р	0
30	$D^2$	1	38	10	11	5	10	2	0
20	P1	1	Total	С	Η	Ν	Ο	Р	0
30	DI	1	38	10	11	5	10	2	0
20	D1	1	Total	С	Η	Ν	Ο	Р	0
30		1	38	10	11	5	10	2	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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: ATPTG11



• Molecule 3: ATPTC	G14					
Chain t:	69%			31%		
MET PRO ALA PRO ALA ALA ALA ALA ALA ALA ALA ALA ALA LEU SER LEU SER SER	ILE A18 F109 MET ARG PR0 PR0 PR0 FR0 THR	GLN ASP PRO GLU THR GLN ALA ALA ALA	ALA PRO GLN LYS GLY GLN ALA ASN			
• Molecule 3: ATPTC	G14					
Chain T:	69%			31%	_	
MET PRO ALA PLA ALA ALA ALA ALA ALA ALA ALA ALA	ILLE A18 F109 MET ARG ARG PR0 PR0 FR0 FR0 FR0	GLN ASP PRO GLU GLU GLN LYS ALA	ALA PRO GLN LYS GLY GLN ALA ASN			
• Molecule 4: ATPTC	35					
Chain g:	44%		56%			
MET GLN GLN ASN ALY PHE THR THR ALA ASN ASN ASN ASN ASN ASN ASN ASN ASN AS	SER GLY ALA ALA ASP SER SER SER GLN SER CLN	LEU LEU ARG SER PRO SER PRO LEU	SER LEU PRO ARG ARG PHE ILE PHE	LEU ARG SER ALA SER VAL ASP	LEU SER GLU ARG	SER SER LEU ALA
CYS LLEU ALA ALA ALA PHE PHE CYS CYS SER ALA ALA CYS CYS CYS SER SER SER SER SER SER	ALA PHE SER ELEU PHE PHE ALA ARG ARG CLY	ARG PRO CYS PHE PHE PHE PHE PHE TLE	PHE PHE ARG VAL SER PHE ALA ALA	ASN PHE ARG GLY LYS ARG VAL	LYS MET A115	<mark>E226</mark> LYS GLN PRO
GLU PRO THR LEU LEU SER ALA ALA ALA ALA CYS CYS CYS LEU LEU	GLY ILE ARG PRO ALA ALA					
• Molecule 4: ATPTC	G5					
Chain G:	44%		56%			
MET MET GLN ASN CLN CLN CLN ALL ASN ALA ASN ASN ASN ALA ASN ASN ASN ASN ASN ASN ASN ASN ASN AS	SER GLY ALA ALA ASP SER PRO SER SER SER SER SER SER	LEU LEU ARG SER PRO PRO LEU	SER LEU PRO ARG ARG PHE TLE PHE	LEU ARG SER ALA SER VAL ASP	LEU SER GLU ARG	SER SER LEU ALA
CVS LLEU ALA ALA ALA PHE PHE CVS CVS CVS CVS CVS CVS CVAL CVAL CVAL CVAL SER SER SER SER SER SER	ALA PHE SER LLEU PRO PHE PHE ARG ARG ACA	ARG CYS CYS PHE PHE PHE PHE TLE	PHE PHE ARG VAL SER PHE ALA ALA	ASN PHE ARG GLY LYS ARG VAL	LYS MET A115	<mark>E226</mark> LYS GLN PRO
GLU PRO PRO THR LLEU SER SER ALA ALA ALA ALA LLEU LLEU LLEU LLEU	GLY ILE HIS ARG PRO ALA ALA					
• Molecule 5: subunit	; k					
Chain o:		95%			5%	
MET PHLR ALA ALA ALA ALA ALA LIS7						
• Molecule 5: subunit	; k					
Chain O:		95%			5%	
MET ALA PHE ALA ALA ALA ALA ALA <b>P<mark>9</mark> ILIST</b>						

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• Molecule 6:	subunit a			
Chain k:	52%		48%	
MET ALA ALA ALA GLY SER PHE PHE PHE CYS	THR ALA ALA ALA LEU LEU CLEU PRO CLY ALG ALG CLY ALG	THR PHE PHE ALA GLY GLY GLV SER ALA SER ALA ALA ALA	ALA ALA LYS LYS THR LEU GLN PRO PRO	LEU ARG ALA PRO SER GLN CLU LEU PHE PRO
				•
VAL GLY ASN ASN ASC CLEU CLEU CLEU CLEU CLEU SER SER SER	ARG LEU VAL VAL ALA ALA ALA ARG PHE PHE PHE ALA ALA	ALA SER ALA ALA LYS ALA THR ALA ALA CLU CLU CLU CLU CLU	LIAN GLY SER VAL ALA PHE THR R108 R108	F224
• Molecule 6:	subunit a			
Chain K:	52%		48%	
MET ALA ALA GLY SER ARG PHE PHE CYS	THR ALA ALA ALA CEU CEU CEU PRO CLV PRO CLU CEU CEU CEU CEU	THR PHE PHE ALA GLY GLV SER GLN ALA ARG GLN ALA ARG	ALA ALA LYS LYS LYS LEU GLN ARG PRO PHE	LEU ARG ALA PRO SER GLN GLN LEU PHE PRO
VAL GLY ASN ASN ASC CLEU CLEU CLEU CLEU SER SER SER ALA	ARG ARG LEU VAL ALA ALA ALA ARG PHE PHE ALA ALA	ALA SER ALA LYS ALA THR HIS ALA ALA CLN CLN FRO GLN THR	1 III GLY SER VAL ALA PHE THR R108 R108	F224
• Molecule 7:	subunit i/j			
Chain j:	76%		23%	
				A
MET GLYY SER PHE ALA ALA ALA ALA	ALA CVIX CVIX CVIX ARG ALA ARG ASIN SER SER SER SER CVAL	LEU LEU ARG ARG ARG ARG ARG ALA	FRU ALA ALA ALA ALA F89 F89	H22 GLU GLU GLU GLY H1S H1S
• Molecule 7:	subunit i/j			
Chain J:	76%		23%	
MET GLY SER PRO ALA ALA ALA ALA ALA	ALA CYS CYS ARG ARG ALA ALA ALA ALA ALA ALA ARA SER SER SER SER SER SER SER SER SER	LLEU LLEU ARG SER SER PRO PRO ARC ALA ALA ALA	FRU ALA GLU ALA ALA F89 F89	H222 GLU GLU ALA ALA ALA HIS HIS
• Molecule 8:	ATPTG13			
Chain s:	74%		26%	
MET SER ALA ALA ALA ALA ALA ALA ALA ARG CA ARC	SER SER PROR ARG ALY LEU LEU CLEU VAL LEV VAL LEV CLEU CLEU CLEU CLEU CLEU CLEU CLEU CLEU	GLY ALA CLV CLU ARG T12 LEU		
• Molecule 8:	ATPTG13			
Chain S:	74%		26%	
MET SER TRP TRR ALA ALA ARG LEU LEU ARG MET	SER SER PRO ARG CLEU CLEU CLEU CLEU CLEU CLEU CLEU CLEU	GLY ALA LYS GLU ARG V33 T127 LEU		
• Molecule 9:	ATPTG15			



Chain u:	75%	25%
MET ALA ALA PRO PRO CLEU GLV GLY ASP ACA PRO ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN	ALA THR LYR SER CYS CYS CYS CYS CYS CIV ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	
• Molecule 9: ATPTC	G15	
Chain U:	75%	25%
MET ALA ALA PRO PRO PRO CLU GLY ALA ALA ASN ASN ASN ASN ASN ALA	ALA THR LYR PRO PRO PRO CYS CYS CYS CLY CLY CLA ALA ALA ALA ALA ALA ALA ALA ALA ALA	
• Molecule 10: ATPT	G6	
Chain h:	94%	5%
MET ALA GLU GLU GLU GLU GLV GLV GLY GLY ALA ALA ALA ALA ALA	0 10 10 10 10 10 10 10 10 10 10 10 10 10	
• Molecule 10: ATPT	'G6	
Chain H:	94%	5%
MET ALA ALA GLU THR ALC GLU GLU GLN GLY ALA ALA ALA SI4 SI4 SI17 S117 S117 S117 S117 S117 S117 S117	0 0 0	
• Molecule 11: ATPT	G3	
Chain e:	43%	57%
MET MET 012 012 012 012 012 012 012 012 012 012	GLY GLY GLY GLY GLY GLY GLY GLU GLU GLU GLU GLU GLU GLU GLU CLY CLY CLY CLY CLY CLY CLY CLY CLY CLY	LIN ARG VAL VAL ARG CLU GLU GLU ALA ASP ASP ASP ALA ALA ALA ALA ILR ILR
ALA LEU PHE PHE SER ARG ARG CLU CLU ARG ARG ARG	GLN CVAL CVAL VAL LEU SER ASIA ASIA ASIA ASIA CEU VAL LEU VAL LEU VAL LEU SER SER SER SER SER SER SER SER SER SER	SER SER SER PRO PRO PRO PRO CYS PRO CYS SER VAL LEU VAL LEU VAL LEU VAL
LYS ASP LYS MET ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	GLN GLN GLY ALA ALA ALA ALA ALA SER ALA ALA ALA CLY TTR TTR TTR TTR TTR TTR TTR CUL CUL CUL	LLV LLVS LLVS THLA THLA THLA SIGA SIGA ALA ALA ALA ALA ALA ALA ALA ALA ALA CLY SER THR SER CLY CLY
GLY CYS PRO TLE PRO THR ASP PHE		
• Molecule 11: ATPT	G3	
Chain E:	43%	57%
MET MET CLV CLV CLV CLV CLV CLV CLV CLV CLV CLV	GLY GLY GLY GLY GLY GLY GLU GLU GLU GLU GLU ASP GLU GLU SSR ASP CLU CVAL VAL VAL	LIN ARG ARG ARG CILU CYS ARG ARG ARG ALU CYS ALA ASP ALA ASP CLU CILU CILU THR THR THR THR THR THR THR THR THR THR
ALA LEU PRO PRO PRE ARA ARA SER ARA CLU CLU ARA ARA	CLUN CLUN CLUN CLUL CLUL CLUL SERR ASIR ASIR ASIR ASIR ASIR ASIR ASIR AS	SER SER SER SER SER PRO SER PRO PRO PRO PRO PRO LEU LEU LEU LEU LEU LEU LEU LEU LEU FRO PRO PRO PRO PRO PRO PRO PRO PRO PRO P



LYS LYS NET LYS ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	ARG ARG PRO CLY ARG CLY TTR ARP ASP ASP ASP ARG ARG ARG ARG ARG ARG ARG ARG ARG ARG	ALA CLY ALA ALA ALA ALA ALA CLY CLY CLY CLY
CICY CICS PRO PILE ASP PHE PHE		
• Molecule 12: ATPTG17		
Chain x:	99%	
• Molecule 12: ATPTG17		
Chain X:	99%	
WET X 33		
• Molecule 13: subunit b		
Chain b:	85%	15%
ABR ABR PHE SER SER SER SER ARG ARG ARG ARG CIN TRP ARG CIN TRP ARG CIN THR ARG ARG CIN THR ARG ARG ARG ARG ARG ARG ARG ARG ARG AR	ALA ALA ARG ALA ARG ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	CLY ASP VAL CYS CYS CYS PRO LLEU ALA ALA
VAL ALA ALA ALA ALA ALA ALA ALA ALA ALA	1374 13331 13332 13331 13332 13332 13335 133555 13355 133555 133555 133555 133555 133555 133555 133555 133555 133555 133555 133555 133555 1335555 1335555 133555 1335555 1335555 1335555 13355555 13355555 13355555555	PA03 E404 P406 P406 P406 P415 P415 P415 P414 A14 A14 A124 M424
P426 P426 A429 K432 K433 A423 C437 L438 C437 L438 C444 V441 V444 V444 V444 V444 V444 V444	P4450 P4450 P4450 C4452 T453 T453 P465 R464 R465 R465 R465 R465 R465 R465 R	1486 1486 K489 6493 6493 7496 F496 F496 F496 F498 H499 A500 L501 S502 D503 D503 R507 R519
1524 1525 8529 8531 8531 8531 8531		
• Molecule 13: subunit b		
Chain B:	85%	15%
MET MET PHE SER SER SER SER ALA ALA ALA ALA ALA CLN VAL CLN CLN CLN CLN CLN CLN ALA ARG CLN ARG ARG CLN ALA ARG ARG ARG ARG ARG ARG ARG ARG ARG AR	ALA ALA ALA ALA ARG ARG ARG ARG ARG ARG ALA HIS SER ALA ALA ALA ALA ALA CUU PHE PHE PHE PHE CLN CLN CLN CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	LLE GLY GLY GLY CYS LLYS LLEU PRO LLEU ALA
AL ELA ELA ELA ELA SIS SIS SIS SIS SIS SIS SIS SIS SIS SI	375     375     375     375     375     386     387     388 </td <td>3355 3395 3395 400 401 407 404 407 404 407 415</td>	3355 3395 3395 400 401 407 404 407 404 407 415
	н да дохлад > хнан ох	HXUDXXXXCH D C



D488       K489       K489       K491       K492       K492       K493       K493       K494       K494       K494       K494       K494       K494       F496       F500       F504       F505       R506       F507       R608       R607       R607       R607       R607       R607       R607       R608       R607       R608       R607       R608       R607       R608       R609       R600       R600       R600       R600       R600       R600    <	N560 A567 H568 A569 F570 V571
• Molecule 14: ATPTG12	
Chain r: 99%	·
M1 E111 E111 Q119 Q119 C122 C122 C122 C122 C122 C122 C122 C	
• Molecule 14: ATPTG12	
Chain R: 99%	·
M1 EN115 A115 A118 A118 Q119 Q120 C120 C120 C120 C120 C120 C120 C120 C	
• Molecule 15: ATPTG10	
Chain p: 78%	22%
MET SER PRO PRO PRO PRO PRO SER ALA SER SER ALA ASP ALA ASP ALA ASP ALA ASP ALA ASP ALA ASP ALA ASP ASR ASR ASP ASR ASP ASR ASP ASS ASR ASP ASS ASR ASP ASS ASS ASS ASS ASS ASS ASS ASS ASS	
• Molecule 15: ATPTG10	
Chain P: 78%	22%
MET PRO PRO PRO PRO PRO ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	
• Molecule 16: subunit f	
Chain v: 99%	
MET CONTRACTOR R111	
• Molecule 16: subunit f	
Chain V: 99%	
MET 2 R111	
• Molecule 17: ATPTG8	
Chain l: 100%	

W O R L D W I D E PROTEIN DATA BANK

MET T2 K208	
• Molecule 17:	ATPTG8
Chain L:	100%
MET T2 K208	
• Molecule 18:	ATPTG1
Chain c:	31% 69%
MET GLY GLY GLY GLY GLY GLY GLY ALA LEU LEU LEU LEY	PHED PRO PRO CLY TYR TYR TYR CLYS TILE THE PRO CLN WAL THE PRO CLN WAL
PHE TRP PHE LYS SER LEU PHE HIS SER HIS ASP	PROC SER VAL ARG ARG GLU VAL TYR TYR ARG CLU VAL TYR ARG CLU CYS SER ARG CLU CYS SER TYR ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CLU CYS SER ARG CUU CYS SER CUU CYS SER ARG CUU CYS SER CUU C CYS SER ARG CUU CYS SER ARG CUU CYS SER ARG CUU CYS SER ARG CUU CYS SER ARG CUU CYS SER ARG CUU CYS SER ARG CUU CYS SER C C C C C C C C C C C C C C C C C C C
ASP GLY PRO ASN ASN GLN GLV TYR TYR TYR	PRO CLY CLY CLY CLY CLY CLY CLY CLY PRO CLY ASS ASS ASS ASS ASS ASS ASS ASS ASS AS
GLY GLY TYR ARG ASP PRO PRO GLU CLV VAL	ARE ARE CALY TYR TYR TYR ARP ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN
TRP ALA ALA ALA GLU PRO PRO ALA ASP GLU ARG CLU	TYR CUTY CUTY CUTY CUTY CUTY CUTY CUTY CUTY
• Molecule 18:	ATPTG1
Chain C:	31% 69%
MET GLY GLY GLY GLY GLY GLY GLY ASN LEU LEU LEU LEV	PHE PHC LYS LYS LYS LYS LYS LYS LYS LYS LYS MET PRO PRO CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN
PHE TRP PHE LYS SER LEU PHE HIS SER HIS ASP	PRIC SER VAL ARG ARG ARG ARG ARG ARG ARG ARG ARG ARG
ASP PRO PRO ASP GLN GLN MET THR	PRIC PRO CLY CLY CLY CLY CLY CLY ASP PRO PRO PRO PRO CLU CLU CLU CLU CLU CLU CLU CLU
GLY GLY TYR ARG ASP PRO PRO GLU GLV GLU	ARG ARG CITY LEU TTYR ARR ASR ASR ASR ASR ASR ASR ASR ASR AS
TRP ALA ALA GLU PRO PRO ALA ASP ASP ASP ASP CLU CVS	TYR TYR CUN CUN CUN CUN CUN CUN CUN CUN CUN CUN
• Molecule 19:	ATPTG2
Chain d:	82% 18%
MET SER PRO VAL GLY GLY ARG LEU LEU LEU CLY CLY SER	LEUS LEUS ALA ALA ALA ALA CLUN GLUN GLUN PHE ALA ALA ALA ALA ALA ALA ALA ALA ALA AL

## K310

• Molecule 19: ATPTG2

Chain D:	82%	18%
MET SER PRO VAL GLY ARG LEU PHE	LEU SER SER LLRU LLEU LLEU ALA ALA ALA PHE CLN PRO CLN PRO CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN	ARG PHE SER SER GLY GLY ALIA ALIA ALIA ALIA ALIA ALIA ALIA AL
K310		
• Molecule	20: subunit 8	
Chain m:	47%	53%
MET ASN THR PHE LEU LEU PRO	ALA ALA ALA ALA ALA ALA ARG ARG SER SER SER SER SER SER SER SER SER SER	VAL ALA LEU ARG PRO PRO PRO ARG ALA ARG ALA ARG ALA ALA ALA ALA ALA ALA ALA ALA ARG CUN CUN CUN CUN CUN ARG ARC ARA ARA ARA ARA ARA ARA ARA ARA ARA
LYS ALA HIS GLY GLY SER GLY	LYS LYS GLN GLN SER GLN SER GLY GLY ARG GLY ARG ARG ARG ARG ARG ARG ARG ARG CLY CLY CLY CCS	ALEU ALA ALA ALA ALA ALA ALA ALA ALA ALA AL
• Molecule	20: subunit 8	
Chain M:	47%	53%
MET ASN THR PHE PHE LEU THR PRO	ALA ALA ALA ALA ALA ARG ARG ARG VAL ARG SER ARA SER SER SER SER SER ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	VAL LEU LEU ALA LEU PRO PRO PRO GLU ARG ALA ARG ALA ALA ALA ALA ALA ALA ALA ALA ALA AL
LYS ALA HIS GLY GLN SER CLY	LYS LYS GLN GLN SER TTR SER CLU GLY ARG ARG ARG ARG ARG ARG ARG ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	ALA ALA ALA ASP ASP ASP ALA ALA ALA ALA CLYS SER THR SER SER LYS LYS LYS
• Molecule	21: ATPTG9	
Chain n:	96%	• •
MET SER GLY ASP SER VAL	A166	
• Molecule	21: ATPTG9	
Chain N:	96%	
MET SER GLY ASP SER VAT	A106	
• Molecule	22: ATPTG4	
Chain f:	70%	30%







MET GLN GLN GLN LEU ARG GLY ALA ALA ALA TLE PRO SER SER LEU LEU LEU	LEU PRO ARG ARG ASP ASP PS6 P56 P56 P56 P56 P59 P59 P59 P63 P63 P63 P63 P63 P63	E68 869 872 875 875 876 897 128 897 1298 893 897 1100 814 814	THR PRO ALA PRO CIOT CIOT CIOT CIOT CIOT CIOT CIOT CIO
L2385 A2365 A2365 A2365 A2365 A245 A14 A14 A14 A14 A14 A14 A14 A14 A14 A14	PRO VAL ASP VAL ASP CLU HISS HISS HISS CLU CLV CLV CLV CLV CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	dun LYS LYS ALA ALA ALA ALA ALA ALA CLN CLN CLN CLN CLN CLN CLN CLN	
• Molecule 25: Inh	ibitor of F1		
Chain i2: 2	3%	72%	
MET SER SER SER PRO CYS CYS CYS CYS ALA ALA ARG ARG ARG ARG ARG ARG ARG ARG ARG AR	THR THR LEU SER GLU SER GLV ARG CLN VAL VAL THR SER SER SER SER SER SER SER PHE	GLN CLN CLN CLN CLN CLN CLN CLN CLN SSR SSR SSR CLN CLN CLN CLN CLN CLN CLN CLN CLN CLN	SER SER VES K59
DTT S965 VAL ASP ASP ASP ASS ALA ALA ALA CLU VAL CLU VAL SER SER	ALA ARG ARG ARG ARG ARG ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	AFR AFR SER TLE SER TLE TLE ALA ALA ALA ALA ALA ALA ALA SER LYS SER LYS SER LYS	
• Molecule 25: Inh	ibitor of F1		
Chain i1: 2	3%	72%	
MET SER SER PRO PRO CYS CYS CYS CYS ALA ARG ARG ARG ARG ARG	THR LEU LEU GLU GLU GLU GLU ARG GLU ARG CLI VAL ARP ARP SER ASP FRE PHE PHE	CLAN CLAN CLAN CLAN CLAN CLAN CLAN CLAN	
896 VAL ASP ASP HIS MET AIA GLU CLU CLU CLU CLU CLU CLU AIA ARG ARG	ASP THLE THR ALA ALA CYS GLN GLN GLN GLN GLN ALA ASP ALA ALA ALA ALA ALA ALA ALA ALA	ILE SER ILE PHE GLY ALA HIS GLY GLY GLY ALA ASN SER LYS	
• Molecule 26: AT	P synthase subunit alpha, sub	unit alpha	
Chain A2:	51% 90%	9%	
MET THR TILE TILE HLS SER CYS CYS CYS LEU ALA ARG ARG ALA SER VAL SER VAL	ALA ALA SER SER ALA SER ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	GLAN SER ARIC ARIC LLEU LLEU LLEU LLEU HLR SER ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	SEO SEO SEO
R61 1.62 1.63 E64 E65 1.67 A68 0.69 W70 W71	172 ← 172 ← 174 ← 174 ← 177 ← 177 ← 177 ← 177 ← 177 ← 177 ← 177 ← 177 ← 178 ← 178 ← 178 ← 178 ← 188 ←	Aloc Re 1 192 F93 F93 F93 694 697 695 699 A100 6101 F103 F103 F103	F106 0107 0107 0108 0108 0108 0108 0108 0118 01115 01120 0120
G123 V124 V125 C128 C128 C128 C128 C128 C128 C128 C128	E135 4 0136 0136 136 136 136 136 136 136 136 136 139 1142 1142 1142 1142 1145 1144 1144 1145 1145	C155 C155 C155 C155 C155 C155 C155 C155	1172 + P173 + A174 + K175 + E176 + R177 + R177 + R177 + R177 + R177 + R177 + R177 + R179 + R180 + F181 +
S192 V193 H194 E195 M198 T199 G200 L201 K202 C203	D205 A206 L207 Q211 Q214 V229 V229 A233 A233 A233 A233 A233 A233 A233 A	q237 K238 E239 E239 T240 N241 D245 D245 E247 S248 K249 K249 K249 K226 L261	C253 1254 7255 7255 7259 6259 7269 7269 7269 7269 7273 7273 7273
D276	A288 E290 A291 A291 A292 A295 B304 B304 B311 S312 C313 C313 C313 C313 C313 C313 C313 C	Y320 Y324 S324 K325 Q326 A327 A327 A327 A327 A327 A326 A327 A327 A327 A327 A327 A327 A326 A329 A320 A	G348 V350 F351 F351 F355 R355 R355 R355 R355 C365 C365

WORLDWIDE PROTEIN DATA BANK













• Molecule 27: ATP synthase subunit beta










• Molecule 29: ATP synthase subunit delta



Chain d1:	78%	22%	-
		• • • • • •	
MET PHE PHE ARG ARG PHE SER PHE ALA ALA ALA ALA ALA ALA	PRLA PRLA GLN GLN GLY TRP TRP TRP ALA ALA ALA ALA ALA ALA ALA ALA	GLY ASIN ASIN PRO F41 F41 C79 C79 C79 C97 C95 C97 C95 C97 C95 C97 C97 C97 C97 C97 C79 C79 C79 C79 C79	G100 D101 E102 V103 E104 R105 D120
D121 5122 6156 A157 6155 A156 A156 D161 E162 A166	E173		
• Molecule 30: ATP	synthase subunit epsilon		
Chain e2:	89%	11%	-
M1 Q49 A1A A1A A1A A1A A1A A1A A1A A1			
• Molecule 30: ATP	synthase subunit epsilon		
Chain e1:	89%	11%	-
M1 A65 A1A A1A A1A A1A A1A A1A CVY GLY GLY CLY			
• Molecule 31: Oligo	mycin sensitivity conferring	protein (OSCP)	
Chain G2:	47%	29%	_
MET ALA LLEU PRO PRO ALA ALA ALA ARG ARG ARG SER SER SER SER SER	VAL ARG GLY GLN GLN PRO BRR SER ASN ASN ASN ASN LEU LEU LEU LEU LLEU ARG ARG ARG ALC	HIS GLY SER LEU SER SER SER PRO PRO PRO PRO PRO ALA ALA ALA ALA ALA CLN ULL ULEU	SER SER ARG TLLE ALA
•			
PHE SER THR ALA ALA ALA ALA ALA ALA SER SER SER SER TT7 T75	E76 Y79 V86 V86 X88 X88 X88 X86 X86 X86 X86 X86 X86 X	N105 A106 L107 K108 S110 S111 S111 E112 F113 F114 F115 F115 F115 V117 V117 V117 S119	P120 A121 V122 S123 V124 Q125 Q125 Q125 K127 L128 D129 V130 V130
R132 Q133 C134 C135 N136 R137 Y138 F140 F140 D141 P142 P142	1144 1145 1146 1147 1149 1149 1154 1154 1155 1155 1155 1156 1156 1156	V163 V163 A164 A164 A166 F167 F167 K172 K175 K179 C180 C180 L181	S184 A185 P187 P187 L188 S189 A190 A194 A199 A199 A199 L200
q201 N202 R203 A204 G205 G205 R205 R209 R209 R209 R209 R209 R211 I211	213 Y214 A215 A215 P216 2217 P218 Q219 V225 R227 C229 G229 G229 G229 G220 G229 G221 Q231	L233 D234 V237 A235 A235 L241 L241 L244 L244 L245 L249 L249 L249 L249 L249	2251
• Molecule 31: Oligor	mycin sensitivity conferring	protein (OSCP)	
Chain G1:	39% 71%	29%	_
MET ALA LLEU PRO LLEU LLEU LLEU ALA ARG ARG CLEU PHE SER SER SER SER	PAL ARG CLY CLY CLY CLY PRO CLY PRO FRA SRR ASR SRR ASN VAL LEU VAL LEU VAL LEU VAL LEU VAL LEU VAL LEU VAL CLEU VAL CLY PRO C C C C C C C C C C C C C C C C C C C	HIS GLY CILY CILY SER SER FRO PRO PRO PRO PRO PRO ANG CILU CILU	SER SER ARG ALA ALA ALA



PHE SER THA ALA ALA ALA ASP ASP ALA ALA ALA ETC CT7	Y79   Y79   F84   F84   F84   F84   K85   K88   K89   K89   K89   K89   K89   K89   K90   K91   C92   E94   K95   E94   K95   S110	R114 V117 D118 D118 F120 F120 V122 S123 S123 V126 Q126 Q126	L128 D129 V130 L131 R132 Q133 U135 N135 N135 N135 Y138
K139 F140 P141 L143 L148 K155 K155 R165	N105 K173 V178 V178 K179 C180 C180 C180 K185 P187 N186 K186 K186 K194 K194	NZUZ R203 A204 G205 G205 A208 R209 I210 I211 I211 I211 V214	V216 S217 P218 Q219 Q219 V226 K227 L228 C229 G231 Q231 V232
L233 • 2234 • 2237 • 2237 • 2237 • 2237 • 2238 • 2238 • 2238 • 2238 • 2242 • 2242 • 2242 • 2242 • 2242 • 2242 • 2242 • 2245 • 2255 • 22	L248 1249 A250 P251 L252		
• Molecule 32: subunit	t c		
Chain H2:	43%	57%	
MET PHE PHE SER ARG LEU LEU LEU LLV ALA ALA ALA ALA	ARG ALA ALA ALA ALA ALA CLU CLU ALA ALA ALA ALA ALA ALA ALA ALA ALA A	LI S PHE PHE PHE PRO SER ASN ASN ASN ASN ASN ASN PHE CLU CLU CLU	LYS THR
	••• •	<b>.</b>	
PRO VAL CYS CYS CYS CYS CYS ALN ALA ALA ALA ALA ALA ALA VAL LEU VAL CYN	GLN MET MET MET MET MET ARA MET ASN MET ASN MET ASN MET ASN MET ASN MET ASN MET ASN MET ASN MET ASN MET ASN MET ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN	A161 S166	
• Molecule 32: subunit	t c		
Chain I2:	42% •	57%	
MET PHE PHE SER SER ARG LEU LEU SER ALA ALA ALA ALA	ARG ARG LU LEU ALA ALA ALA CLY CLY EER ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	PHE PHE PHE PHE PHE PHC PHC ARC ARC ARC ARC CLN PHE CLN PRO CLN PRO CLN	LYS HIIS THR
	••	<b>*</b> _	
PRO VAL HIS CYS ASN ALN ALA ALA ALA ALA ALA ALA CLU VAL CEU VAL	GLN MET MET MET ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	21 66 21 66	
• Molecule 32: subunit	t c		
Chain J2:	43%	57%	
MET PHE SPHE SER ARG LEU LEU SER ALA ALA ALA ALA	ALU ALU ALA ALA ALA ALA CLU CLU SER ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	LILS PHE PHE PHE PRO SER ASN ASN ASN SER CLU PRO PRO CLU CLU	LYS HIS THR
	• •	• •• •	
PRO VAL HIS CYS CYS ASN ASN ASN ASN ALA ALA ALA ALA ALA ALA ALA CLU VAL CUN	PRD MET MET MET MET ARD ARD ARD ARD ARD ARD ARD ARD ARD ARD	F151 L152 C153 L154 L158 S166 S166	
• Molecule 32: subunit	t c		
Chain K2:	43%	57%	
MET PHE PHE SER ARG LEU LEU LEU LLEU ALA ALA ALA ALA	ARG ALA ALA ALA ALA ALA ALA CLU CLU ALA ALA ALA ALA ALA ALA ALA ALA ALA A	PHE PHE PHE PRO PRO ASN ASN ASN ASN ASN ASN PRO CLN PLEU PLEU CLN	нтя тнк
PRO VAL VISL CYS CYS ASN ASN ASN ALA ALA ALA ALA ALA ALA ALA ALA THR PRO CLN	PR0 PR0 ALA ALA ALA ARA GLN CLN ARA ALA ALA ALA ALA ARG ALA ASC ASP ASB ASP ASB ASP ASP ASP ASP ASP ASP ASP ASP ASP ASP	- <mark>1158 ↔</mark>	



• Molecule 32: subun	it c	
Chain L2:	42%	57%
MET PHE PHE SER SER ARG LEU LEU LEU LEU LEU LEU ALA ALA ALA	ARG GLU ALLEU ALLEU CLEU CLEU CLEU CLEU CLEU SER SER SER SER SER SER SER SER SER SER	LYSS PHE PHE PHE PHE PHE PER ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN
	••	
PRO VAL VAL VAL CYS CYS CYS CYS CYS ASN GLN VAL LEU LEU LEU VAL LEU VAL CTHR	GLN GLN ALA ALA ALA ALA GLN GLN GLN GLN GLN GLN GLN GLN GLN GLN	1105 1130 1134 1134 1134 1136 1154 1154 1154 1154 1154
• Molecule 32: subun	it c	
Chain M2:	43%	57%
MET PHE PHE SER SER ARG LEU SER LEU LLV LYS ALA ALA ALA	ARG ALA ALA ALA ALA CLEU CLEU CLEU CLEU CLEU SER SER SER SER SER SER SER SER SER SER	LYS PHE PHE PHE SER SER ARG SER ARG CLN SER PRO CLN CLN CLN CLN THR THR
	••	
PRO VAL VAL CYS CYS CYS CYS CYS CYS CYS CILE CILEU CIL	GLN: ALA ALA ALA ALA ALA GLY ALA ASN ALA ASN ASN ASN ASN ASN ASN ASN ASN ASN AS	D137 1154 1156 8166
• Molecule 32: subun	it c	
Chain N2:	43%	57%
MET PHE PHE SER SER LEU LEU LEU LLY ALA ALA ALA ALA	ARC ALA ALA ALA ALA CLEU ARC ARC ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	L YS PHE PHE SER SER ARG ARG ARG ARG SER PRO SER CLU CLU CLU CLU CLU CLU CLU THR THR THR
	• •	• • •
PRO VAL HIS CYS CYS ASN GIN ALA ALA SER ALA SER ALA LEU VAL LEU VAL CTHR	GLU GLU ALLA ALLA ALLA ALLA ALLA ALLA AL	E136 5166 5166
• Molecule 32: subun	it c	
Chain O2:	43%	57%
MET PHE PHE SER SER SER LEU LEU LLV ALA ALA ALA	ARC ALLA ALLA ALLA ALLA ALLA ALLA ALLA A	L 12 PHE PHE SER SER ARC ARC ARC CIN CIN CIN CIN CIN CIN CIN CIN CIN CI
	• •	_
PRO VAL HTS CYS CYS ASN GLN ALA ALA ALA ALA LEU VAL LEU VAL CTN CIN	GLAN GLAN ALLA MET ARA ARA GLA ARA ALA ARA ARA ARA ARA ARA ARA ARA A	8199 8
• Molecule 32: subun	it c	
Chain P2:	43%	57%
MET PHE PHE SER SER SER SER LEU LEU LEU LLY ALA ALA ALA ALA	ARC ALLA ALLA ALLA PRO PRO LEU ALA ALA ALA ALA ALA ALA ALA ALA ALA AL	LYEN PHE PHE SER SER ARC ASN ARC ASN ARC CLU CLU CLU CLU CLU CLU CLU CLU CLU CL
	• •	
PRO VAL HIS CYS CYS CYS AIS ALA ALA ALA ALA LEU VAL LEU VAL CFU	dLA PRO PRO AFRO AFRO AFRO ALA ALA ALA ALA ALA ALA ALA AGA A161	5 16 6

• Molecule 32: subunit c



Chair	1 Q2:		43%		57%	-
MET PHE PHE SER	ARG LEU SER LEU SER	ALA LEU LYS ALA ALA PRO ALA ARG	GLU ALA LEU PRO GLY LEU LEU SER ARG GLN	SER PHE SER SER ALA ALA CLY PHE SER SER SER SER	LAN LAYS PHE PHE PHE SER PHE PHE ARG ASN ASN ASN ASN ASN CLU PHE SER CLU PRO	GLN LYS HIS THR
_				•		
PRO VAL HIS CYS	ASN GLN ARG TLE ALA	SER ALA LEU VAL PRO FRO GLN GLN	PRO ALA MET MET ARG GLN PRO PRO PRO ALA	MET MET GLN GLN GLY ALA ARG ASP ASP ASP ASP ASP ASP ASP ASP ASP ASP		
• Mol	lecule	32: subunit	C			
Chair	n H1:		40%	•	57%	1
MET PHE PHE SER	ARG LEU SER LEU SER	ALA LEU LYS ALA ALA PRO ALA ARG	GLU ALA ALA PRO GLY CLY CLY LEU SER SER SER GLN	SER PHE SER SER SER CLY CLY PHE SER SER SER SER	dLN LYS PHE PHE SER PRO SER ARG ARG ARG ARG ARG CIN SER SER CLU	GLN GLN HIS THR
			_			
PRO VAL HIS CYS	ASN GLN ARG TLE ALA	SER ALA ALEU LEU VAL PRO FRO GLN GLN	PRO ALA MET MET ARG GLN ASN PRO PRO ALA	MET MET GLN GLY GLY ALA ALA ALA ALA ALA ALA ALA ASP ASP ASP C	A11, 811, 113, 113, 113, 113, 114, 115, 115, 115, 115, 115, 115, 115	
• Mol	lecule 3 5	32: subunit %	C			
Chair	n I1:		42%	·	57%	
MET PHE PHE SER	ARG LEU SER LEU	ALA LEU LEV ALA ALA ALA ALA ARG	GLU ALA ALA ALA CLEU CLEU CLEU SER SER ARG GLN	SER PHE SER SER ALA ALA CLY PHE SER CLN PHE SER SER	LLN LYKS PHE PHE SER PRE PRE ASN PRE ASN PRE CLEU VLEU VLEU	GLN LYS HIS THR
0 J 0 0	22004					<b>0</b> 0
PR VA HI CY	AR GL AR AL	A L E L E L E L E L E L E L E L E L E L	PR ALL ALL ALL ALL PR AL	ME GL GL GL GL GL AS AS AS AS AS AS AS AS AS AS AS AS AS	R R R R R R R R R R R R R R R R R R R	7
• Mol	lecule :	32: subunit 6%	c C			
Chair	n J1:		43%		57%	1
MET PHE PHE SER	ARG LEU SER LEU SER	ALA LEU LYS LYS ALA ALA ALA ALA ARG	GLU ALA ALA ALA CLY CLY CLY LEU LEU ARG SER ARG GLN	SER PHE SER SER ALA ALA CLY PHE SER SER SER SER SER SER SER SER	LULM PHE PHE PHE PHE PRE PRE ARG ARG ARG ARG ARG CAR CLEU	GLN LYS HIS THR
KD KL KS	SN RG	A D H D H N N N	A T T T T T T T T T T T T T T T T T T T			•
			AT A A A A A A A A A A A A A A A A A A	MI GI AI AI AI AI AI AI AI AI AI AI AI AI AI	<b>2 5 8 6 8 7 3</b>	<u>о</u>
• Mo.	lecule .	32: subunit	C			
Chair	1 K1:		42%	•	57%	
MET PHE PHE SER	ARG LEU SER LEU SER	ALA LEU LEU ALA ALA ALA ALA ALA ARG	GLU ALA PRO GLY FLU CLY FLU SER ARG GLN GLN	SER PHE SER SER ALA ALA CLY PHE SER CLN CLN SER SER SER SER SER	LALA LALA PHE PHE PHE PRE PRE ARG ARG ARG ARG ARG CAR CAR CAR CAR CAR CAR CAR CAR CAR CAR	GLN LYS HIS THR
<u>ចំ ។ ល ល</u>	N N D H A	K A D H O K N N	0 4 1 4 9 N N O & 4		<mark>70 8 80 1 41 86 84 1 84 84 84 84 84 84 84 84 84 84 84 84 84 </mark>	€ € € 28 54 50
PR VA HI CY	AR GL AR IL	AL LE AL SE	PR MEL AR AR AR AR AR AR AR AR AR AR AR AR AR	ME GL GL GL AL AS AS AS AS	С1 81 81 81 81 81 81 81 81 81 81 81 81 81	

• Molecule 32: subunit c



Chain L1:	42%		57%
MET PHE PHE SER ARG LEU SER SER ALA	LLEU ALA ALA ALA ALA PRO ALA ALA ALA ALA CLU CLU CLU CLU SER ARG CLN CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	SER PHE SER SER ALA ALA GLY PHE SER SER SER CLN SER SER	PHE PHE PHE SER SER SER ARG ARG ARG ARG ARG ARG CLN SER PRO CLN CLN HIS THR
PRO VAL HIS CYS CYS ASN ALN ALL ALL ALL	LEU LEU PAL PARO THR CLN GLN GLN ALA ASN ASN ASN ASN ASN ALA ASN ALA	MET GLN VAL GLY ALA ALA ARG ASP A96 A96 A146 B150	F151 1154 1164 1166
• Molecule 32:	subunit c		
Chain M1:	42%	•	57%
MET PHE PHE SER ARG LEU SER SER SER	LYS LYS ALA ALA ALA ALA ALA ALA ALA CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	SER PHE SER SER GLV CLN SER SER SER CVS	PHE PHE SER SER SER ASR ASR ASR ASR ASR ASR ASR ASR ASR AS
PRO VAL HIS CYS CYS ASN ASN ALN ALLE ALLE ALLA	LEU LEU PAL PARO THR CLN GLN GLN ALA ASN ASN ASN ASN ASN ALA ALA	MET GLN VAL VAL ALA ARG ARG ARG ARG ARG TT28 A96	€168 168
• Molecule 32:	subunit c		
Chain N1:	43%		57%
MET PHE PHE SER ARG LEU SER LEU SER ALA	LFU LYS ALA ALA ALA ALA ALA ALA CLEU CLEU CLEU CLEU CLEU CLEU CLEU CLEU	SER PHE SER SER ALA ALA CLN CLN SER SER SER SER SER SER SER	PHE PHE SER SER SER ARG ASN ASN ASN ASN ASN ASN CLU PHE CLU PHE CLU FIC CLU THR THR
• Molecule 32	subunit c	MET CLN VAL ALA ARG ARG ARG ASP ASP ASP ASP ASP ASP ASP ASP ASP ASP	
Chain O1:	43%		57%
MET PHE PHE SER SER LEU SER SER SER	LYS LYS ALA ALA ALA ALA ALA ALA GLU CLEU CLEU CLEU CLEU CLEU CLEU CLEU CL	SER PHE SER SER CLA CLA CLA SER SER SER CLA	PHE PHE SER SER ASC ASC ASC ASC ASC ASC ASC ASC ASC ASC
PRO VAL HIS CYS ASN GLN ALA ALA ALA ALA	LELA VALU VALU PRO GLN GLN GLN ALA ALA ALA ALA ALA ALA ALA ALA ALA A	MET GLN VAL GLY ALA ALA ALA ASP A96 E150 €	
• Molecule 32:	subunit c		
Chain P1:	43%		57%
MET PHE PHE SER ARG LEU SER LEU SER SER ALA	LYS LYS ALA ALA ALA ALA ALA ALA ALA CLU CLU CLU CLU CLU CLU CLU CLU CLU CLU	SER PHE SER SER ALA GLY PHE CLN PHE SER SER CLN CLN	PHE PHE SER SER ASN ASN ASN ASN ASN ASN ASN ASN ASN ASN
Molecule 32	supunit c	MET MLN VAL ALA ALA ARG ASP ASP A96 S166	
Chain O1.	120		570/
Unann Q1.	42%	• • • • • • • • • • • • • •	۲ <i>۲</i> ۵



# 4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	101505	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE	Depositor
	CORRECTION	
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{\AA}^2)$	30	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	165000	Depositor
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.375	Depositor
Minimum map value	-0.174	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.024	Depositor
Map size (Å)	464.8, 464.8, 464.8	wwPDB
Map dimensions	560, 560, 560	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	Depositor



# 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: PC1, CDL, ADP, ATP, LMT, PEE

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).

Mal	Chain	Bond	lengths	Bond angles	
WIOI	Ullalli	RMSZ	# Z  > 5	RMSZ	# Z  > 5
1	Q	0.32	0/1103	0.43	0/1496
1	q	0.31	0/1103	0.43	0/1496
2	Ι	0.34	0/719	0.42	0/962
2	i	0.34	0/719	0.42	0/962
3	Т	0.32	0/741	0.45	0/1007
3	t	0.32	0/741	0.44	0/1007
4	G	0.34	0/896	0.43	0/1216
4	g	0.34	0/896	0.44	0/1216
5	0	0.41	0/1250	0.46	0/1682
5	0	0.41	0/1250	0.45	0/1682
6	K	0.37	0/981	0.42	0/1321
6	k	0.37	0/981	0.42	0/1321
7	J	0.48	0/1573	0.47	0/2137
7	j	0.48	0/1573	0.47	0/2137
8	S	0.38	0/826	0.44	0/1119
8	S	0.38	0/826	0.44	0/1119
9	U	0.44	0/770	0.45	0/1040
9	u	0.44	0/770	0.46	0/1040
10	Н	0.43	0/1902	0.44	0/2575
10	h	0.43	0/1902	0.44	0/2575
11	Е	0.42	0/1154	0.45	0/1572
11	е	0.42	0/1154	0.45	0/1572
12	Х	0.36	0/678	0.42	0/923
12	Х	0.36	0/678	0.42	0/923
13	В	0.35	0/4016	0.43	0/5422
13	b	0.35	0/4016	0.43	0/5422
14	R	0.34	0/1092	0.44	0/1470
14	r	0.34	0/1092	0.46	0/1470
15	Р	0.36	0/888	0.39	0/1202
15	р	0.36	0/888	0.40	0/1202
16	V	0.44	0/944	0.47	0/1280
16	V	0.44	0/944	0.47	0/1280



Mal	Chain	Bond	lengths	Bond angles	
	Unain	RMSZ	# Z  > 5	RMSZ	# Z  > 5
17	L	0.38	0/1651	0.45	0/2227
17	1	0.38	0/1651	0.45	0/2227
18	С	0.42	0/1057	0.46	0/1428
18	с	0.41	0/1057	0.46	0/1428
19	D	0.41	0/2143	0.46	0/2912
19	d	0.41	0/2143	0.46	0/2912
20	М	0.41	0/789	0.45	0/1065
20	m	0.40	0/789	0.45	0/1065
21	Ν	0.34	0/1280	0.42	0/1734
21	n	0.34	0/1280	0.42	0/1734
22	F	0.35	0/1475	0.44	0/2009
22	f	0.35	0/1475	0.44	0/2009
23	W	0.41	0/784	0.48	0/1064
23	W	0.41	0/784	0.48	0/1064
24	А	0.32	0/3883	0.40	0/5262
24	a	0.32	0/3883	0.40	0/5262
25	i1	0.27	0/343	0.38	0/459
25	i2	0.27	0/343	0.37	0/459
26	A1	0.25	0/3979	0.44	0/5372
26	A2	0.25	0/3979	0.44	0/5372
26	C1	0.25	0/3938	0.44	0/5314
26	C2	0.25	0/3938	0.43	0/5314
26	E1	0.24	0/3942	0.43	0/5322
26	E2	0.24	0/3942	0.43	0/5322
27	B1	0.26	0/3698	0.46	0/5016
27	B2	0.26	0/3698	0.45	0/5016
27	D1	0.25	0/3672	0.44	0/4980
27	D2	0.25	0/3672	0.44	0/4980
27	F1	0.25	0/3672	0.47	1/4980~(0.0%)
27	F2	0.25	0/3672	0.45	0/4980
28	g1	0.26	0/2145	0.40	0/2890
28	g2	0.26	0/2145	0.41	0/2890
29	d1	0.25	0/1083	0.43	0/1466
29	d2	0.26	0/1083	0.44	0/1466
30	e1	0.29	0/547	0.43	0/733
30	e2	0.28	$\overline{0/547}$	0.42	0/733
31	G1	0.25	0/1431	0.44	0/1929
31	G2	0.24	$0/1\overline{431}$	0.43	0/1929
32	H1	0.30	0/507	0.55	0/686
32	H2	0.27	0/507	0.41	0/686
32	I1	0.30	0/507	0.47	0/686
32	I2	0.26	0/507	0.41	0/686
32	J1	0.29	0/507	0.44	0/686



Mol	Chain	Bond	lengths	B	ond angles
WIOI	Ullalli	RMSZ	# Z  > 5	RMSZ	# Z  > 5
32	J2	0.27	0/507	0.42	0/686
32	K1	0.28	0/507	0.46	0/686
32	K2	0.26	0/507	0.40	0/686
32	L1	0.29	0/507	0.47	0/686
32	L2	0.28	0/507	0.55	0/686
32	M1	0.28	0/507	0.43	0/686
32	M2	0.26	0/507	0.40	0/686
32	N1	0.27	0/507	0.41	0/686
32	N2	0.26	0/507	0.40	0/686
32	01	0.28	0/507	0.41	0/686
32	O2	0.28	0/507	0.41	0/686
32	P1	0.31	0/507	0.46	0/686
32	P2	0.30	0/507	0.46	0/686
32	Q1	0.29	0/507	0.46	0/686
32	Q2	0.28	0/507	0.42	0/686
All	All	0.32	0/132230	0.44	1/178892~(0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
7	J	0	1
7	j	0	1
26	A1	0	1
26	A2	0	1
27	B1	0	1
27	B2	0	1
27	F1	1	0
All	All	1	6

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
27	F1	538	MET	N-CA-CB	6.08	121.55	110.60

All (1) chirality outliers are listed below:



Mol	Chain	Res	Type	Atom
$\overline{27}$	F1	538	MET	CA

All (6) planarity outliers are listed below:

Mol	Chain	$\operatorname{Res}$	Type	Group
26	A1	198	MET	Peptide
26	A2	198	MET	Peptide
27	B1	357	ALA	Peptide
27	B2	357	ALA	Peptide
7	J	89	PHE	Peptide
7	j	89	PHE	Peptide

### 5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 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 PDB entries followed by that with respect to all EM entries.

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	Perce	ntiles
1	Q	131/134~(98%)	125~(95%)	6 (5%)	0	100	100
1	q	131/134~(98%)	126~(96%)	5 (4%)	0	100	100
2	Ι	88/236~(37%)	85~(97%)	3 (3%)	0	100	100
2	i	88/236~(37%)	85~(97%)	3 (3%)	0	100	100
3	Т	90/133~(68%)	87~(97%)	3 (3%)	0	100	100
3	t	90/133~(68%)	87~(97%)	3 (3%)	0	100	100
4	G	110/252~(44%)	102 (93%)	8 (7%)	0	100	100
4	g	110/252~(44%)	102 (93%)	8 (7%)	0	100	100
5	Ο	147/157~(94%)	141 (96%)	6 (4%)	0	100	100
5	0	147/157~(94%)	141 (96%)	6 (4%)	0	100	100



Mol	Chain	Analysed	Favoured	Allowed	Outliers	Perce	ntiles
6	K	115/224~(51%)	112 (97%)	3 (3%)	0	100	100
6	k	115/224~(51%)	111 (96%)	4 (4%)	0	100	100
7	J	174/229~(76%)	166 (95%)	8 (5%)	0	100	100
7	j	174/229~(76%)	166 (95%)	8 (5%)	0	100	100
8	S	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
8	s	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
9	U	92/126~(73%)	90 (98%)	2 (2%)	0	100	100
9	u	92/126~(73%)	90 (98%)	2 (2%)	0	100	100
10	Н	224/239~(94%)	216 (96%)	8 (4%)	0	100	100
10	h	224/239~(94%)	214 (96%)	10 (4%)	0	100	100
11	Е	138/325~(42%)	135 (98%)	3 (2%)	0	100	100
11	е	138/325~(42%)	135 (98%)	3 (2%)	0	100	100
12	Х	80/83~(96%)	76 (95%)	4 (5%)	0	100	100
12	х	80/83~(96%)	76 (95%)	4 (5%)	0	100	100
13	В	480/571~(84%)	466 (97%)	14 (3%)	0	100	100
13	b	480/571 (84%)	465 (97%)	15 (3%)	0	100	100
14	R	131/134~(98%)	122 (93%)	9 (7%)	0	100	100
14	r	131/134~(98%)	124 (95%)	7 (5%)	0	100	100
15	Р	106/138~(77%)	104 (98%)	2 (2%)	0	100	100
15	р	106/138~(77%)	104 (98%)	2 (2%)	0	100	100
16	V	108/111~(97%)	108 (100%)	0	0	100	100
16	v	108/111~(97%)	108 (100%)	0	0	100	100
17	L	205/208~(99%)	201 (98%)	4 (2%)	0	100	100
17	1	205/208~(99%)	201 (98%)	4 (2%)	0	100	100
18	С	120/398~(30%)	114 (95%)	6 (5%)	0	100	100
18	с	120/398~(30%)	114 (95%)	6 (5%)	0	100	100
19	D	251/310 (81%)	246 (98%)	5 (2%)	0	100	100
19	d	$251/\overline{310}\;(\overline{81\%})$	246 (98%)	5 (2%)	0	100	100
20	М	94/205~(46%)	91 (97%)	3 (3%)	0	100	100
20	m	94/205~(46%)	91 (97%)	3 (3%)	0	100	100
21	N	$158/\overline{166}~(95\%)$	156 (99%)	2(1%)	0	100	100



Mol	Chain	Analysed	Favoured	Allowed	Outliers	Perce	ntiles
21	n	158/166~(95%)	156 (99%)	2 (1%)	0	100	100
22	F	184/267~(69%)	173 (94%)	11 (6%)	0	100	100
22	f	184/267~(69%)	173 (94%)	11 (6%)	0	100	100
23	W	93/106~(88%)	87 (94%)	6 (6%)	0	100	100
23	W	93/106~(88%)	88 (95%)	5 (5%)	0	100	100
24	А	461/536~(86%)	445 (96%)	16 (4%)	0	100	100
24	a	461/536~(86%)	445 (96%)	16 (4%)	0	100	100
25	i1	38/145~(26%)	38 (100%)	0	0	100	100
25	i2	38/145~(26%)	38 (100%)	0	0	100	100
26	A1	510/565~(90%)	488 (96%)	22 (4%)	0	100	100
26	A2	510/565~(90%)	489 (96%)	21 (4%)	0	100	100
26	C1	503/565~(89%)	487 (97%)	16 (3%)	0	100	100
26	C2	503/565~(89%)	485 (96%)	18 (4%)	0	100	100
26	E1	505/565~(89%)	482 (95%)	23 (5%)	0	100	100
26	E2	505/565~(89%)	485 (96%)	20 (4%)	0	100	100
27	B1	477/560~(85%)	453 (95%)	22 (5%)	2 (0%)	34	66
27	B2	477/560~(85%)	454 (95%)	21 (4%)	2 (0%)	34	66
27	D1	473/560 (84%)	455 (96%)	18 (4%)	0	100	100
27	D2	473/560~(84%)	452 (96%)	21 (4%)	0	100	100
27	F1	473/560~(84%)	455 (96%)	18 (4%)	0	100	100
27	F2	473/560~(84%)	455 (96%)	18 (4%)	0	100	100
28	g1	270/314~(86%)	260 (96%)	10 (4%)	0	100	100
28	g2	270/314~(86%)	260 (96%)	10 (4%)	0	100	100
29	d1	141/183 (77%)	136 (96%)	5 (4%)	0	100	100
29	d2	141/183~(77%)	137 (97%)	4 (3%)	0	100	100
30	e1	63/73~(86%)	59 (94%)	4 (6%)	0	100	100
30	e2	63/73~(86%)	59 (94%)	4 (6%)	0	100	100
31	G1	178/252~(71%)	159 (89%)	19 (11%)	0	100	100
31	G2	178/252~(71%)	159 (89%)	19 (11%)	0	100	100
32	H1	69/166~(42%)	69 (100%)	0	0	100	100
32	H2	69/166~(42%)	68 (99%)	1 (1%)	0	100	100



Mol	Chain	Analysed	Favoured	Allowed	Outliers	Perce	ntiles
32	I1	69/166~(42%)	68~(99%)	1 (1%)	0	100	100
32	I2	69/166~(42%)	68~(99%)	1 (1%)	0	100	100
32	J1	69/166~(42%)	68~(99%)	1 (1%)	0	100	100
32	J2	69/166~(42%)	67~(97%)	2(3%)	0	100	100
32	K1	69/166~(42%)	67~(97%)	2(3%)	0	100	100
32	K2	69/166~(42%)	67~(97%)	2(3%)	0	100	100
32	L1	69/166~(42%)	68~(99%)	1 (1%)	0	100	100
32	L2	69/166~(42%)	68~(99%)	1 (1%)	0	100	100
32	M1	69/166~(42%)	63~(91%)	6 (9%)	0	100	100
32	M2	69/166~(42%)	64 (93%)	5 (7%)	0	100	100
32	N1	69/166~(42%)	69 (100%)	0	0	100	100
32	N2	69/166~(42%)	69 (100%)	0	0	100	100
32	01	69/166~(42%)	67~(97%)	2(3%)	0	100	100
32	O2	69/166~(42%)	67~(97%)	2(3%)	0	100	100
32	P1	69/166~(42%)	66~(96%)	3(4%)	0	100	100
32	P2	69/166~(42%)	66~(96%)	3 (4%)	0	100	100
32	Q1	69/166~(42%)	69~(100%)	0	0	100	100
32	Q2	69/166~(42%)	68~(99%)	1 (1%)	0	100	100
All	All	16388/22836~(72%)	15771 (96%)	613 (4%)	4 (0%)	100	100

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
27	B1	358	VAL
27	B2	357	ALA
27	B2	358	VAL
27	B1	357	ALA

#### 5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent side chain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	Perce	ntiles
1	Q	119/120~(99%)	117~(98%)	2(2%)	60	86
1	q	119/120~(99%)	119 (100%)	0	100	100
2	Ι	71/197~(36%)	71 (100%)	0	100	100
2	i	71/197~(36%)	71 (100%)	0	100	100
3	Т	77/106~(73%)	77~(100%)	0	100	100
3	t	77/106~(73%)	77~(100%)	0	100	100
4	G	93/214~(44%)	93~(100%)	0	100	100
4	g	93/214 (44%)	93 (100%)	0	100	100
5	О	127/129~(98%)	127 (100%)	0	100	100
5	О	127/129~(98%)	127 (100%)	0	100	100
6	К	100/175~(57%)	100 (100%)	0	100	100
6	k	100/175~(57%)	100 (100%)	0	100	100
7	J	160/195~(82%)	160 (100%)	0	100	100
7	j	160/195~(82%)	160 (100%)	0	100	100
8	S	86/113 (76%)	86 (100%)	0	100	100
8	s	86/113 (76%)	86 (100%)	0	100	100
9	U	76/98~(78%)	76 (100%)	0	100	100
9	u	76/98~(78%)	76 (100%)	0	100	100
10	Н	197/204~(97%)	196 (100%)	1 (0%)	88	96
10	h	197/204~(97%)	196 (100%)	1 (0%)	88	96
11	Е	118/258~(46%)	118 (100%)	0	100	100
11	е	118/258~(46%)	118 (100%)	0	100	100
12	Х	70/71~(99%)	70 (100%)	0	100	100
12	х	70/71~(99%)	70 (100%)	0	100	100
13	В	428/491~(87%)	427 (100%)	1 (0%)	93	98
13	b	428/491 (87%)	427 (100%)	1 (0%)	93	98
14	R	116/117~(99%)	116 (100%)	0	100	100
14	r	116/117~(99%)	116 (100%)	0	100	100
15	Р	91/113~(80%)	91 (100%)	0	100	100
15	р	91/113~(80%)	91 (100%)	0	100	100
16	V	86/87~(99%)	86 (100%)	0	100	100
16	v	86/87~(99%)	86 (100%)	0	100	100



Mol	Chain	Analysed	Rotameric	Outliers	Perce	ntiles
17	L	177/178~(99%)	177~(100%)	0	100	100
17	1	177/178~(99%)	177~(100%)	0	100	100
18	С	107/338~(32%)	107 (100%)	0	100	100
18	с	107/338~(32%)	107 (100%)	0	100	100
19	D	218/259~(84%)	218 (100%)	0	100	100
19	d	218/259~(84%)	217 (100%)	1 (0%)	88	96
20	М	77/156~(49%)	77 (100%)	0	100	100
20	m	77/156~(49%)	77 (100%)	0	100	100
21	Ν	138/144~(96%)	137 (99%)	1 (1%)	84	95
21	n	138/144~(96%)	137 (99%)	1 (1%)	84	95
22	F	155/218~(71%)	155 (100%)	0	100	100
22	f	155/218~(71%)	155 (100%)	0	100	100
23	W	84/89~(94%)	83 (99%)	1 (1%)	71	91
23	W	84/89~(94%)	83 (99%)	1 (1%)	71	91
24	А	392/447~(88%)	391 (100%)	1 (0%)	92	98
24	a	392/447~(88%)	390 (100%)	2 (0%)	88	96
25	i1	37/125~(30%)	37 (100%)	0	100	100
25	i2	37/125~(30%)	37~(100%)	0	100	100
26	A1	421/454 (93%)	421 (100%)	0	100	100
26	A2	421/454 (93%)	421 (100%)	0	100	100
26	C1	415/454 (91%)	415 (100%)	0	100	100
26	C2	415/454 (91%)	415 (100%)	0	100	100
26	E1	416/454~(92%)	416 (100%)	0	100	100
26	E2	416/454 (92%)	416 (100%)	0	100	100
27	B1	390/447~(87%)	384 (98%)	6 (2%)	65	87
27	B2	390/447~(87%)	389 (100%)	1 (0%)	92	98
27	D1	388/447~(87%)	388 (100%)	0	100	100
27	D2	388/447~(87%)	387 (100%)	1 (0%)	92	98
27	F1	388/447~(87%)	383~(99%)	5 (1%)	69	90
27	F2	388/447~(87%)	386 (100%)	2 (0%)	88	96
28	g1	228/257~(89%)	228 (100%)	0	100	100



Mol	Chain	Analysed	Rotameric	Outliers	Perce	ntiles
28	g2	228/257~(89%)	228 (100%)	0	100	100
29	d1	118/144~(82%)	118 (100%)	0	100	100
29	d2	118/144~(82%)	118 (100%)	0	100	100
30	e1	57/61~(93%)	57~(100%)	0	100	100
30	e2	57/61~(93%)	57~(100%)	0	100	100
31	G1	154/212~(73%)	153~(99%)	1 (1%)	86	96
31	G2	154/212 (73%)	153 (99%)	1 (1%)	86	96
32	H1	52/133~(39%)	48 (92%)	4 (8%)	13	35
32	H2	52/133~(39%)	52 (100%)	0	100	100
32	I1	52/133~(39%)	50~(96%)	2 (4%)	33	67
32	I2	52/133~(39%)	51 (98%)	1 (2%)	57	84
32	J1	52/133~(39%)	52 (100%)	0	100	100
32	J2	52/133~(39%)	52 (100%)	0	100	100
32	K1	52/133~(39%)	51 (98%)	1 (2%)	57	84
32	K2	52/133~(39%)	52 (100%)	0	100	100
32	L1	52/133~(39%)	51 (98%)	1 (2%)	57	84
32	L2	52/133~(39%)	50~(96%)	2(4%)	33	67
32	M1	52/133~(39%)	51 (98%)	1 (2%)	57	84
32	M2	52/133~(39%)	52 (100%)	0	100	100
32	N1	52/133~(39%)	52 (100%)	0	100	100
32	N2	52/133~(39%)	52 (100%)	0	100	100
32	O1	52/133~(39%)	52 (100%)	0	100	100
32	O2	52/133~(39%)	52 (100%)	0	100	100
32	P1	52/133~(39%)	52 (100%)	0	100	100
32	P2	52/133~(39%)	52 (100%)	0	100	100
32	Q1	52/133~(39%)	51 (98%)	1 (2%)	57	84
32	Q2	52/133~(39%)	52 (100%)	0	100	100
All	All	13790/18698 (74%)	13746 (100%)	44 (0%)	92	98

All (44) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
10	h	117	ARG
	-	-	



Mol	Chain	Res	Type
13	b	507	ARG
19	d	42	LYS
21	n	82	ARG
23	W	105	SER
24	a	122	SER
24	a	130	LYS
1	Q	15	ILE
1	Q	16	PHE
10	Н	117	ARG
13	В	507	ARG
21	Ν	82	ARG
23	W	105	SER
24	А	130	LYS
27	B2	435	ARG
27	F2	472	MET
27	F2	538	MET
27	D2	135	ASP
31	G2	207	GLN
32	I2	130	ARG
32	L2	130	ARG
32	L2	134	ILE
27	B1	335	ASP
27	B1	435	ARG
27	B1	527	GLU
27	B1	538	MET
27	B1	542	LEU
27	B1	543	GLU
27	F1	528	CYS
27	F1	536	PHE
27	F1	537	TYR
27	F1	538	MET
27	F1	542	LEU
31	G1	207	GLN
32	H1	101	LEU
32	H1	119	SER
32	H1	130	ARG
32	H1	131	ASN
32	I1	109	SER
32	I1	130	ARG
32	K1	108	MET
32	L1	146	MET
32	M1	128	THR



Continued from previous page...

Mol	Chain	Res	Type
32	Q1	130	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
2	i	202	GLN
10	h	67	ASN
13	b	517	ASN
24	a	321	GLN
2	Ι	206	HIS
10	Н	67	ASN
24	А	321	GLN
26	E2	527	ASN
27	B2	80	ASN
27	B2	86	GLN
27	B2	99	GLN
27	F2	80	ASN
27	D2	86	GLN
27	D2	269	HIS
32	N2	115	GLN
26	E1	527	ASN
26	C1	490	ASN
27	B1	80	ASN
27	B1	99	GLN
27	D1	269	HIS
29	d1	172	GLN
32	L1	115	GLN
32	N1	115	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)

54 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with |Z| > 2 is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mal	Iol Type Chain Bog		Dog	Link	Bond lengths			Bond angles		
WIOI	туре	Ullalli	nes		Counts	RMSZ	# Z >2	Counts	RMSZ	# Z >2
35	CDL	h	302	-	99,99,99	0.87	6 (6%)	105,111,111	0.98	4 (3%)
35	CDL	С	401	-	99,99,99	0.88	6 (6%)	105,111,111	0.91	4 (3%)
34	LMT	Н	301	-	36,36,36	1.13	2 (5%)	47,47,47	1.03	2 (4%)
34	LMT	d	401	-	36,36,36	1.15	2 (5%)	47,47,47	0.90	1 (2%)
34	LMT	С	404	-	36,36,36	1.11	2 (5%)	47,47,47	1.14	3 (6%)
37	ATP	C1	601	-	26,33,33	4.78	9 (34%)	31,52,52	2.52	9 (29%)
35	CDL	е	401	-	99,99,99	0.88	8 (8%)	105,111,111	1.01	4 (3%)
33	PC1	0	204	5	53,53,53	0.95	4 (7%)	59,61,61	1.04	2 (3%)
35	CDL	u	201	-	99,99,99	0.88	7 (7%)	105,111,111	1.01	4 (3%)
35	CDL	В	602	-	99,99,99	0.88	8 (8%)	105,111,111	0.98	4 (3%)
35	CDL	Е	401	-	99,99,99	0.88	8 (8%)	105,111,111	1.01	4 (3%)
37	ATP	E1	601	-	26,33,33	4.81	8 (30%)	31,52,52	2.49	8 (25%)
33	PC1	0	201	-	53,53,53	0.96	3 (5%)	59,61,61	1.05	3 (5%)
37	ATP	A2	601	-	26,33,33	4.80	7 (26%)	31,52,52	2.49	8 (25%)
37	ATP	C2	601	-	26,33,33	4.82	8 (30%)	31,52,52	2.47	8 (25%)
36	PEE	С	403	-	50,50,50	1.15	5 (10%)	$53,\!55,\!55$	1.00	2 (3%)
34	LMT	Х	101	-	36,36,36	1.16	2 (5%)	47,47,47	1.03	<mark>3 (6%)</mark>
34	LMT	С	402	-	36,36,36	1.10	2 (5%)	47,47,47	1.00	1 (2%)
35	CDL	V	202	-	99,99,99	0.88	7 (7%)	105,111,111	0.97	4 (3%)
33	PC1	V	201	-	53,53,53	0.99	3 (5%)	59,61,61	0.98	2 (3%)
33	PC1	V	201	-	53,53,53	0.99	3 (5%)	59,61,61	0.99	2 (3%)
35	CDL	V	202	-	99,99,99	0.88	7 (7%)	105,111,111	0.98	4 (3%)
34	LMT	d	403	-	36,36,36	1.12	2(5%)	47,47,47	0.85	1 (2%)
34	LMT	Ο	202	-	36,36,36	1.12	2(5%)	47,47,47	0.94	1 (2%)
36	PEE	J	302	-	$50,\!50,\!50$	1.14	6 (12%)	$53,\!55,\!55$	1.15	3 (5%)
35	CDL	В	601	-	99,99,99	0.87	7 (7%)	105,111,111	1.00	3 (2%)



Mal	True	Chain	Dec	Tinle	Bo	ond leng	ths	Bond angles		
IVI01	Type	Chain	Res	LINK	Counts	RMSZ	# Z >2	Counts	RMSZ	# Z >2
33	PC1	0	201	-	53,53,53	0.96	4 (7%)	59,61,61	1.04	3 (5%)
35	CDL	d	402	-	99,99,99	0.88	8 (8%)	105,111,111	1.02	3 (2%)
36	PEE	с	403	-	50,50,50	1.15	5 (10%)	$53,\!55,\!55$	1.01	2 (3%)
34	LMT	D	403	-	36,36,36	1.11	2 (5%)	47,47,47	0.89	1 (2%)
34	LMT	h	301	-	36,36,36	1.13	2 (5%)	47,47,47	1.03	2 (4%)
35	CDL	С	401	-	99,99,99	0.88	6 (6%)	105,111,111	0.85	3 (2%)
38	ADP	B1	601	-	24,29,29	3.67	9 (37%)	29,45,45	3.44	6 (20%)
35	CDL	b	601	-	99,99,99	0.87	8 (8%)	105,111,111	1.00	4 (3%)
34	LMT	х	101	-	36,36,36	1.16	2 (5%)	47,47,47	1.03	3 (6%)
38	ADP	D2	601	-	24,29,29	3.68	9 (37%)	29,45,45	3.46	6 (20%)
38	ADP	D1	601	-	24,29,29	<b>3.69</b>	8 (33%)	29,45,45	3.58	7 (24%)
33	PC1	0	204	5	53,53,53	0.96	4 (7%)	59,61,61	1.04	2 (3%)
35	CDL	b	602	-	99,99,99	0.88	8 (8%)	105,111,111	0.98	4 (3%)
35	CDL	U	201	-	99,99,99	0.88	7 (7%)	105,111,111	1.00	4 (3%)
34	LMT	с	404	-	36,36,36	1.11	2(5%)	47,47,47	1.07	2 (4%)
37	ATP	E2	601	-	26,33,33	4.80	8 (30%)	31,52,52	2.47	9 (29%)
34	LMT	D	401	-	36,36,36	1.15	2 (5%)	47,47,47	0.86	1 (2%)
36	PEE	j	301	-	50,50,50	1.12	6 (12%)	$53,\!55,\!55$	1.08	3 (5%)
35	CDL	D	402	-	99,99,99	0.88	8 (8%)	105,111,111	1.02	3 (2%)
38	ADP	B2	601	-	24,29,29	3.67	9 (37%)	29,45,45	3.70	8 (27%)
37	ATP	A1	601	-	26,33,33	4.81	7 (26%)	31,52,52	2.43	8 (25%)
34	LMT	с	402	-	36,36,36	1.10	2(5%)	47,47,47	1.01	1 (2%)
35	CDL	Н	302	-	99,99,99	0.87	7 (7%)	105,111,111	0.98	4 (3%)
34	LMT	О	202	-	36,36,36	1.12	2 (5%)	47,47,47	0.91	1 (2%)
35	CDL	Ο	203	-	99,99,99	0.88	7 (7%)	105,111,111	1.00	5 (4%)
35	CDL	О	203	-	99,99,99	0.88	7 (7%)	105,111,111	1.00	5 (4%)
36	PEE	J	301	-	50,50,50	1.12	6 (12%)	53,55,55	1.07	3 (5%)
36	PEE	j	302	-	50,50,50	1.14	6 (12%)	53,55,55	1.08	3 (5%)

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
35	CDL	h	302	-	-	45/110/110/110	-



Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
35	CDL	с	401	-	-	64/110/110/110	_
34	LMT	Н	301	-	-	9/21/61/61	0/2/2/2
34	LMT	d	401	-	-	9/21/61/61	0/2/2/2
34	LMT	С	404	-	-	7/21/61/61	0/2/2/2
37	ATP	C1	601	-	-	5/18/38/38	0/3/3/3
35	CDL	е	401	-	-	49/110/110/110	-
33	PC1	0	204	5	-	25/57/57/57	_
35	CDL	u	201	-	-	37/110/110/110	_
35	CDL	В	602	-	-	48/110/110/110	-
35	CDL	Е	401	-	-	49/110/110/110	-
37	ATP	E1	601	-	-	3/18/38/38	0/3/3/3
33	PC1	Ο	201	-	-	22/57/57/57	-
37	ATP	A2	601	-	-	0/18/38/38	0/3/3/3
37	ATP	C2	601	-	-	4/18/38/38	0/3/3/3
36	PEE	С	403	-	-	22/54/54/54	-
34	LMT	Х	101	-	-	12/21/61/61	0/2/2/2
34	LMT	С	402	-	-	8/21/61/61	0/2/2/2
35	CDL	V	202	-	-	39/110/110/110	_
33	PC1	V	201	-	-	31/57/57/57	_
33	PC1	V	201	-	-	31/57/57/57	_
35	CDL	V	202	-	-	40/110/110/110	_
34	LMT	d	403	-	-	5/21/61/61	0/2/2/2
34	LMT	Ο	202	-	-	4/21/61/61	0/2/2/2
36	PEE	J	302	-	-	19/54/54/54	-
35	CDL	В	601	-	-	39/110/110/110	-
33	PC1	0	201	-	-	23/57/57/57	-
35	CDL	d	402	-	-	45/110/110/110	-
36	PEE	с	403	-	_	22/54/54/54	-
34	LMT	D	403	-	_	5/21/61/61	0/2/2/2
34	LMT	h	301	-	-	9/21/61/61	0/2/2/2
35	CDL	С	401	-	-	60/110/110/110	-
38	ADP	B1	601	-	-	4/12/32/32	0/3/3/3
35	CDL	b	601	-	-	39/110/110/110	-
34	LMT	x	101	-	_	12/21/61/61	0/2/2/2



Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
38	ADP	D2	601	-	-	2/12/32/32	0/3/3/3
38	ADP	D1	601	-	-	0/12/32/32	0/3/3/3
33	PC1	0	204	5	-	25/57/57/57	-
35	CDL	b	602	-	-	50/110/110/110	-
35	CDL	U	201	-	-	38/110/110/110	-
34	LMT	с	404	-	-	7/21/61/61	0/2/2/2
37	ATP	E2	601	-	-	3/18/38/38	0/3/3/3
34	LMT	D	401	-	-	11/21/61/61	0/2/2/2
36	PEE	j	301	-	-	22/54/54/54	-
35	CDL	D	402	-	-	46/110/110/110	-
38	ADP	B2	601	-	-	4/12/32/32	0/3/3/3
37	ATP	A1	601	-	-	0/18/38/38	0/3/3/3
34	LMT	с	402	-	-	8/21/61/61	0/2/2/2
35	CDL	Н	302	-	-	45/110/110/110	-
34	LMT	0	202	-	-	4/21/61/61	0/2/2/2
35	CDL	Ο	203	-	-	40/110/110/110	-
35	CDL	0	203	-	-	40/110/110/110	-
36	PEE	J	301	-	-	22/54/54/54	-
36	PEE	j	302	-	-	20/54/54/54	-

All (295) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	C2	601	ATP	C2'- $C1$ '	-17.47	1.27	1.53
37	A2	601	ATP	C2'-C1'	-17.41	1.27	1.53
37	A1	601	ATP	C2'-C1'	-17.40	1.27	1.53
37	E1	601	ATP	C2'-C1'	-17.34	1.27	1.53
37	E2	601	ATP	C2'-C1'	-17.33	1.27	1.53
37	C1	601	ATP	C2'-C1'	-17.28	1.27	1.53
37	E1	601	ATP	O4'-C1'	11.21	1.56	1.41
37	A1	601	ATP	O4'-C1'	11.17	1.56	1.41
37	E2	601	ATP	O4'-C1'	11.16	1.56	1.41
37	C2	601	ATP	O4'-C1'	11.15	1.56	1.41
37	A2	601	ATP	O4'-C1'	11.05	1.56	1.41
37	C1	601	ATP	O4'-C1'	11.00	1.56	1.41
38	B1	601	ADP	C2'- $C3$ '	-10.64	1.24	1.53
38	D2	601	ADP	C2'-C3'	-10.57	1.24	1.53
38	D1	601	ADP	C2'-C3'	-10.51	1.24	1.53



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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
38	B2	601	ADP	C2'-C3'	-10.39	1.24	1.53
37	A1	601	ATP	C3'-C4'	-9.35	1.29	1.53
37	E1	601	ATP	C3'-C4'	-9.34	1.29	1.53
37	A2	601	ATP	C3'-C4'	-9.32	1.29	1.53
37	C2	601	ATP	C3'-C4'	-9.31	1.29	1.53
37	E2	601	ATP	C3'-C4'	-9.31	1.29	1.53
37	C1	601	ATP	C3'-C4'	-9.28	1.29	1.53
38	D2	601	ADP	O4'-C1'	7.91	1.52	1.41
38	B1	601	ADP	O4'-C1'	7.83	1.52	1.41
38	D1	601	ADP	O4'-C1'	7.78	1.51	1.41
38	B2	601	ADP	O4'-C1'	7.62	1.51	1.41
38	B2	601	ADP	O4'-C4'	-6.63	1.30	1.45
38	D1	601	ADP	O4'-C4'	-6.29	1.30	1.45
38	B1	601	ADP	O4'-C4'	-6.22	1.31	1.45
38	D2	601	ADP	O4'-C4'	-6.17	1.31	1.45
38	B1	601	ADP	C3'-C4'	5.95	1.68	1.53
38	D2	601	ADP	C3'-C4'	5.92	1.68	1.53
38	D1	601	ADP	C3'-C4'	5.90	1.68	1.53
38	B2	601	ADP	C3'-C4'	5.77	1.67	1.53
38	D1	601	ADP	C2'-C1'	5.04	1.61	1.53
38	B2	601	ADP	C2'-C1'	4.97	1.61	1.53
37	C1	601	ATP	C2'-C3'	4.89	1.66	1.53
37	E2	601	ATP	C2'-C3'	4.83	1.66	1.53
37	A2	601	ATP	C2'-C3'	4.82	1.66	1.53
37	E1	601	ATP	C2'-C3'	4.77	1.66	1.53
37	C2	601	ATP	C2'-C3'	4.74	1.66	1.53
37	C2	601	ATP	O4'-C4'	4.71	1.55	1.45
37	A1	601	ATP	C2'-C3'	4.70	1.66	1.53
37	A1	601	ATP	O4'-C4'	4.67	1.55	1.45
37	E2	601	ATP	O4'-C4'	4.66	1.55	1.45
37	E1	601	ATP	O4'-C4'	4.65	1.55	1.45
38	D2	601	ADP	C2'-C1'	4.65	1.60	1.53
37	A2	601	ATP	O4'-C4'	4.58	1.55	1.45
37	C1	601	ATP	O4'-C4'	4.48	1.55	1.45
38	B1	601	ADP	C2'-C1'	4.45	1.60	1.53
38	D1	601	ADP	O2'-C2'	3.88	1.52	1.43
38	D2	601	ADP	O2'-C2'	3.86	1.52	1.43
38	B2	601	ADP	O2'-C2'	3.84	1.52	1.43
38	B1	601	ADP	O2'-C2'	3.81	1.51	1.43
36	J	302	PEE	C39-C38	3.74	1.53	1.31
36	j	302	PEE	C39-C38	3.74	1.53	1.31
36	C	403	PEE	C19-C18	3.72	1.53	1.31



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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	с	403	PEE	C39-C38	3.71	1.53	1.31
36	с	403	PEE	C19-C18	3.71	1.53	1.31
36	С	403	PEE	C39-C38	3.70	1.53	1.31
36	J	302	PEE	C19-C18	3.66	1.53	1.31
36	J	301	PEE	C39-C38	3.65	1.53	1.31
36	j	301	PEE	C39-C38	3.65	1.52	1.31
36	j	302	PEE	C19-C18	3.64	1.52	1.31
36	J	301	PEE	C19-C18	3.60	1.52	1.31
36	j	301	PEE	C19-C18	3.58	1.52	1.31
34	D	401	LMT	O5B-C1B	3.47	1.50	1.41
34	d	401	LMT	O5B-C1B	3.47	1.50	1.41
34	Х	101	LMT	O5B-C1B	3.44	1.50	1.41
34	Х	101	LMT	O5B-C1B	3.44	1.50	1.41
34	0	202	LMT	O5B-C1B	3.42	1.50	1.41
34	0	202	LMT	O5B-C1B	3.41	1.50	1.41
38	B1	601	ADP	C5-C4	-3.37	1.32	1.40
34	h	301	LMT	O5'-C1'	3.35	1.50	1.41
34	Н	301	LMT	O5B-C1B	3.35	1.50	1.41
38	D2	601	ADP	C5-C4	-3.34	1.32	1.40
34	Н	301	LMT	O5'-C1'	3.33	1.50	1.41
34	h	301	LMT	O5B-C1B	3.32	1.50	1.41
38	B2	601	ADP	C5-C4	-3.32	1.32	1.40
34	d	403	LMT	O5B-C1B	3.29	1.50	1.41
37	E2	601	ATP	C6-N6	3.29	1.46	1.34
37	A2	601	ATP	C6-N6	3.29	1.46	1.34
34	с	402	LMT	O5B-C1B	3.28	1.50	1.41
34	D	403	LMT	O5B-C1B	3.28	1.50	1.41
37	E1	601	ATP	C6-N6	3.28	1.46	1.34
37	C2	601	ATP	C6-N6	3.27	1.46	1.34
38	D1	601	ADP	C5-C4	-3.27	1.32	1.40
34	С	402	LMT	O5B-C1B	3.26	1.50	1.41
34	D	401	LMT	O5'-C1'	3.26	1.50	1.41
34	С	404	LMT	O5B-C1B	3.26	1.50	1.41
37	A1	601	ATP	C6-N6	3.25	1.45	1.34
34	с	404	LMT	O5B-C1B	3.25	1.50	1.41
37	C1	601	ATP	C6-N6	3.25	1.45	1.34
34	d	401	LMT	O5'-C1'	3.23	1.50	1.41
34	Х	101	LMT	O5'-C1'	3.22	1.50	1.41
34	Х	101	LMT	O5'-C1'	3.22	1.50	1.41
38	D1	601	ADP	C6-N6	3.15	1.45	1.34
38	D2	601	ADP	C6-N6	3.15	1.45	1.34
38	B1	601	ADP	C6-N6	3.11	1.45	1.34



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Mol	Chain	Res	Type	Atoms	Ζ	Observed(Å)	Ideal(Å)
38	B2	601	ADP	C6-N6	3.11	1.45	1.34
34	d	403	LMT	O5'-C1'	3.06	1.49	1.41
34	D	403	LMT	O5'-C1'	3.03	1.49	1.41
34	0	202	LMT	O5'-C1'	3.01	1.49	1.41
34	С	404	LMT	O5'-C1'	3.00	1.49	1.41
34	С	402	LMT	O5'-C1'	3.00	1.49	1.41
34	с	404	LMT	O5'-C1'	2.98	1.49	1.41
34	с	402	LMT	O5'-C1'	2.97	1.49	1.41
34	0	202	LMT	O5'-C1'	2.96	1.49	1.41
33	0	201	PC1	O21-C2	-2.91	1.39	1.46
33	0	201	PC1	O21-C2	-2.89	1.39	1.46
35	0	203	CDL	OA6-CA4	-2.83	1.39	1.46
35	0	203	CDL	OA6-CA4	-2.79	1.39	1.46
35	Е	401	CDL	OA6-CA4	-2.79	1.39	1.46
35	е	401	CDL	OA6-CA4	-2.77	1.39	1.46
35	u	201	CDL	OA6-CA4	-2.77	1.39	1.46
35	U	201	CDL	OA6-CA4	-2.75	1.39	1.46
35	С	401	CDL	OB6-CB4	-2.74	1.39	1.46
35	V	202	CDL	OB6-CB4	-2.74	1.39	1.46
36	с	403	PEE	O2-C2	-2.74	1.39	1.46
35	U	201	CDL	OB6-CB4	-2.73	1.39	1.46
35	V	202	CDL	OB6-CB4	-2.73	1.39	1.46
35	b	601	CDL	OB6-CB4	-2.72	1.39	1.46
36	С	403	PEE	O2-C2	-2.72	1.39	1.46
35	h	302	CDL	OA6-CA4	-2.71	1.39	1.46
35	Н	302	CDL	OA6-CA4	-2.70	1.39	1.46
35	u	201	CDL	OB6-CB4	-2.69	1.39	1.46
35	В	601	CDL	OB6-CB4	-2.69	1.39	1.46
35	В	601	CDL	OA6-CA4	-2.64	1.40	1.46
35	Н	302	CDL	OB6-CB4	-2.63	1.40	1.46
35	b	601	CDL	OA6-CA4	-2.63	1.40	1.46
35	h	302	CDL	OB6-CB4	-2.63	1.40	1.46
37	E1	601	ATP	C5-C4	-2.62	1.34	1.40
35	с	401	CDL	OB6-CB4	-2.62	1.40	1.46
37	C1	601	ATP	C5-C4	-2.62	1.34	1.40
35	D	402	CDL	OB6-CB4	-2.62	1.40	1.46
35	d	402	CDL	OB6-CB4	-2.62	1.40	1.46
37	C2	601	ATP	C5-C4	-2.61	1.34	1.40
37	E2	601	ATP	C5-C4	-2.61	1.34	1.40
37	A2	601	ATP	C5-C4	-2.61	1.34	1.40
37	A1	601	ATP	C5-C4	-2.61	1.34	1.40
35	C	401	CDL	OA8-CA7	2.60	1.40	1.33



Mol	Chain	Res		Atoms	Z	Observed(Å)	Ideal(Å)
35	В	602	CDL	OB6-CB4	-2.59	1.40	1.46
35	V	202	CDL	OA6-CA4	-2.59	1.40	1.46
35	V	202	CDL	OA6-CA4	-2.58	1.40	1.46
35	0	203	CDL	OB6-CB4	-2.58	1.40	1.46
35	b	602	CDL	OB6-CB4	-2.57	1.40	1.46
35	с	401	CDL	OA8-CA7	2.57	1.40	1.33
35	Е	401	CDL	OB8-CB7	2.56	1.40	1.33
35	0	203	CDL	OB6-CB4	-2.56	1.40	1.46
36	j	301	PEE	O2-C2	-2.56	1.40	1.46
36	j	302	PEE	O2-C2	-2.56	1.40	1.46
36	J	302	PEE	O2-C2	-2.54	1.40	1.46
35	е	401	CDL	OB8-CB7	2.54	1.40	1.33
36	J	301	PEE	O2-C2	-2.54	1.40	1.46
35	С	401	CDL	OA6-CA4	-2.53	1.40	1.46
35	с	401	CDL	OA6-CA4	-2.53	1.40	1.46
35	Е	401	CDL	OB6-CB4	-2.53	1.40	1.46
35	b	602	CDL	OB8-CB7	2.51	1.40	1.33
35	с	401	CDL	OB8-CB7	2.51	1.40	1.33
35	е	401	CDL	OB6-CB4	-2.51	1.40	1.46
33	0	204	PC1	O21-C2	-2.50	1.40	1.46
33	V	201	PC1	O31-C31	2.49	1.40	1.33
33	V	201	PC1	O31-C31	2.49	1.40	1.33
35	b	602	CDL	OA8-CA7	2.48	1.40	1.33
35	С	401	CDL	OB8-CB7	2.48	1.40	1.33
35	В	602	CDL	OB8-CB7	2.48	1.40	1.33
35	V	202	CDL	OA8-CA7	2.48	1.40	1.33
35	В	602	CDL	OA8-CA7	2.47	1.40	1.33
35	V	202	CDL	OA8-CA7	2.47	1.40	1.33
36	С	403	PEE	O3-C30	2.47	1.40	1.33
35	U	201	CDL	OA8-CA7	2.46	1.40	1.33
36	с	403	PEE	O3-C30	2.45	1.40	1.33
35	U	201	CDL	OB8-CB7	2.45	1.40	1.33
33	V	201	PC1	O21-C2	-2.45	1.40	1.46
35	Н	302	CDL	OA8-CA7	2.45	1.40	1.33
33	0	204	PC1	O21-C2	-2.45	1.40	1.46
35	u	201	CDL	OB8-CB7	2.45	1.40	1.33
35	h	302	CDL	OA8-CA7	2.44	1.40	1.33
35	0	203	CDL	OB8-CB7	2.44	1.40	1.33
33	0	204	PC1	O31-C31	2.44	1.40	1.33
33	V	201	PC1	O21-C2	-2.44	1.40	1.46
35	u	201	CDL	OA8-CA7	2.44	1.40	1.33
33	0	204	PC1	031-C31	2.43	1.40	1.33



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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	d	402	CDL	OB8-CB7	2.42	1.40	1.33
35	0	203	CDL	OA8-CA7	2.42	1.40	1.33
35	D	402	CDL	OB8-CB7	2.42	1.40	1.33
35	0	203	CDL	OB8-CB7	2.42	1.40	1.33
35	d	402	CDL	OA6-CA4	-2.41	1.40	1.46
35	b	602	CDL	OA6-CA4	-2.41	1.40	1.46
33	0	201	PC1	O31-C3	-2.41	1.39	1.45
36	j	302	PEE	O3-C30	2.40	1.40	1.33
35	D	402	CDL	OA6-CA4	-2.40	1.40	1.46
35	В	602	CDL	OA6-CA4	-2.40	1.40	1.46
36	J	302	PEE	O3-C30	2.40	1.40	1.33
33	0	201	PC1	O31-C3	-2.39	1.39	1.45
35	V	202	CDL	OB8-CB6	-2.37	1.39	1.45
35	0	203	CDL	OA8-CA7	2.37	1.40	1.33
35	D	402	CDL	OA8-CA6	-2.37	1.39	1.45
35	d	402	CDL	OA8-CA6	-2.36	1.39	1.45
35	Е	401	CDL	OA8-CA7	2.35	1.40	1.33
35	В	601	CDL	OA8-CA7	2.35	1.40	1.33
35	е	401	CDL	OA8-CA7	2.34	1.40	1.33
35	V	202	CDL	OB8-CB7	2.34	1.40	1.33
35	b	601	CDL	OA8-CA6	-2.33	1.39	1.45
35	В	601	CDL	OA8-CA6	-2.33	1.39	1.45
36	J	301	PEE	O3-C3	-2.33	1.39	1.45
35	b	601	CDL	OA8-CA7	2.33	1.40	1.33
35	V	202	CDL	OB8-CB6	-2.33	1.39	1.45
35	h	302	CDL	OB8-CB7	2.31	1.40	1.33
35	V	202	CDL	OB8-CB7	2.31	1.40	1.33
35	b	601	CDL	OB8-CB7	2.31	1.40	1.33
36	j	301	PEE	O3-C30	2.30	1.40	1.33
35	Н	302	CDL	OB8-CB7	2.30	1.40	1.33
35	В	601	CDL	OB8-CB7	2.29	1.40	1.33
35	с	401	CDL	OB8-CB6	-2.28	1.40	1.45
36	j	301	PEE	O3-C3	-2.28	1.40	1.45
35	d	402	CDL	OA8-CA7	2.28	1.40	1.33
35	D	402	CDL	OA8-CA7	2.28	1.40	1.33
35	В	602	CDL	OA6-CA5	2.26	1.40	1.34
35	С	401	CDL	OB8-CB6	-2.24	1.40	1.45
35	В	601	CDL	OB8-CB6	-2.24	1.40	1.45
35	b	602	CDL	OA6-CA5	2.24	1.40	1.34
36	J	301	PEE	O3-C30	2.24	1.39	1.33
33	0	201	PC1	O31-C31	2.23	1.39	1.33
33	0	201	PC1	O31-C31	2.23	1.39	1.33



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Mol	Chain	Res	Type	Atoms	Z	Observed(A)	Ideal(Å)
35	0	203	CDL	OA8-CA6	-2.23	1.40	1.45
35	b	601	CDL	OB8-CB6	-2.22	1.40	1.45
35	0	203	CDL	OA8-CA6	-2.22	1.40	1.45
35	с	401	CDL	OA6-CA5	2.20	1.40	1.34
35	0	203	CDL	OB8-CB6	-2.19	1.40	1.45
33	V	201	PC1	O21-C21	2.18	1.40	1.34
33	0	204	PC1	O21-C21	2.17	1.40	1.34
36	j	302	PEE	O3-C3	-2.17	1.40	1.45
33	0	204	PC1	O21-C21	2.17	1.40	1.34
35	d	402	CDL	OA6-CA5	2.17	1.40	1.34
33	V	201	PC1	O21-C21	2.16	1.40	1.34
35	Н	302	CDL	OB8-CB6	-2.16	1.40	1.45
35	С	401	CDL	OA6-CA5	2.16	1.40	1.34
35	D	402	CDL	OB8-CB6	-2.15	1.40	1.45
36	J	302	PEE	O2-C10	2.15	1.40	1.34
35	Е	401	CDL	OA8-CA6	-2.15	1.40	1.45
35	0	203	CDL	OB8-CB6	-2.15	1.40	1.45
36	С	403	PEE	O3-C3	-2.14	1.40	1.45
35	U	201	CDL	OA8-CA6	-2.14	1.40	1.45
35	h	302	CDL	OB8-CB6	-2.14	1.40	1.45
35	d	402	CDL	OB6-CB5	2.14	1.40	1.34
35	u	201	CDL	OA8-CA6	-2.13	1.40	1.45
36	j	302	PEE	O2-C10	2.13	1.40	1.34
35	h	302	CDL	OA8-CA6	-2.13	1.40	1.45
35	е	401	CDL	OA8-CA6	-2.13	1.40	1.45
35	D	402	CDL	OA6-CA5	2.11	1.40	1.34
35	D	402	CDL	OB6-CB5	2.11	1.40	1.34
35	U	201	CDL	OA6-CA5	2.11	1.40	1.34
35	b	602	CDL	OB8-CB6	-2.11	1.40	1.45
38	D2	601	ADP	C2-N3	2.11	1.35	1.32
35	u	201	CDL	OA6-CA5	2.11	1.40	1.34
35	В	602	CDL	OA8-CA6	-2.11	1.40	1.45
35	е	401	CDL	OB8-CB6	-2.11	1.40	1.45
35	е	401	CDL	OB6-CB5	2.10	1.40	1.34
35	В	602	CDL	OB8-CB6	-2.10	1.40	1.45
36	с	403	PEE	O3-C3	-2.10	1.40	1.45
35	U	201	CDL	OB8-CB6	-2.10	1.40	1.45
35	Н	302	CDL	OA8-CA6	-2.10	1.40	1.45
35	0	203	CDL	OB6-CB5	2.10	1.40	1.34
35	d	402	CDL	OB8-CB6	-2.10	1.40	1.45
35	E	401	CDL	OB8-CB6	-2.09	1.40	1.45
35	E	401	CDL	OB6-CB5	2.09	1.40	1.34



Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	b	602	CDL	OA8-CA6	-2.09	1.40	1.45
36	J	302	PEE	O3-C3	-2.09	1.40	1.45
37	C1	601	ATP	C5'-C4'	2.08	1.58	1.51
36	j	301	PEE	O2-C10	2.08	1.40	1.34
35	v	202	CDL	OA8-CA6	-2.08	1.40	1.45
35	В	602	CDL	OB6-CB5	2.07	1.40	1.34
35	V	202	CDL	OA6-CA5	2.07	1.40	1.34
37	E2	601	ATP	C5'-C4'	2.07	1.58	1.51
35	0	203	CDL	OB6-CB5	2.06	1.40	1.34
35	V	202	CDL	OA8-CA6	-2.06	1.40	1.45
35	V	202	CDL	OA6-CA5	2.06	1.40	1.34
37	C2	601	ATP	C5'-C4'	2.05	1.58	1.51
35	b	602	CDL	OB6-CB5	2.05	1.40	1.34
37	E1	601	ATP	C5'-C4'	2.05	1.58	1.51
36	J	301	PEE	O2-C10	2.04	1.40	1.34
33	0	204	PC1	O31-C3	-2.04	1.40	1.45
35	b	601	CDL	OA6-CA5	2.04	1.40	1.34
35	е	401	CDL	OA6-CA5	2.03	1.40	1.34
38	B2	601	ADP	C2-N3	2.02	1.35	1.32
35	u	201	CDL	OB8-CB6	-2.02	1.40	1.45
35	В	601	CDL	OA6-CA5	2.02	1.40	1.34
38	B1	601	ADP	C2-N3	2.02	1.35	1.32
35	E	401	CDL	OA6-CA5	2.02	1.40	1.34
35	Н	302	CDL	OA6-CA5	2.02	1.40	1.34
35	b	601	CDL	OB6-CB5	2.01	1.40	1.34
33	0	204	PC1	O31-C3	-2.01	1.40	1.45
33	0	201	PC1	021-C21	2.01	1.40	1.34
37	C1	601	ATP	C2-N3	2.01	1.35	1.32

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All (200) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
38	B2	601	ADP	C1'-N9-C4	15.61	154.07	126.64
38	D1	601	ADP	C1'-N9-C4	14.69	152.45	126.64
38	D2	601	ADP	C1'-N9-C4	14.02	151.28	126.64
38	B1	601	ADP	C1'-N9-C4	13.90	151.06	126.64
37	E1	601	ATP	C5-C6-N6	7.56	131.84	120.35
37	A1	601	ATP	C5-C6-N6	7.55	131.82	120.35
37	C2	601	ATP	C5-C6-N6	7.55	131.82	120.35
38	D1	601	ADP	C5-C6-N6	7.54	131.81	120.35
37	E2	601	ATP	C5-C6-N6	7.52	131.77	120.35
38	D2	601	ADP	C5-C6-N6	7.51	131.76	120.35



Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
37	A2	601	ATP	C5-C6-N6	7.47	131.71	120.35
37	C1	601	ATP	C5-C6-N6	7.44	131.66	120.35
38	B2	601	ADP	C5-C6-N6	7.43	131.64	120.35
38	B1	601	ADP	C5-C6-N6	7.42	131.63	120.35
37	C1	601	ATP	C1'-N9-C4	5.75	136.74	126.64
37	E2	601	ATP	C1'-N9-C4	5.66	136.59	126.64
37	E1	601	ATP	C1'-N9-C4	5.66	136.59	126.64
38	B1	601	ADP	N3-C2-N1	-5.60	119.92	128.68
38	D2	601	ADP	N3-C2-N1	-5.58	119.95	128.68
37	A2	601	ATP	C1'-N9-C4	5.56	136.41	126.64
37	C2	601	ATP	C1'-N9-C4	5.56	136.40	126.64
37	C1	601	ATP	N3-C2-N1	-5.55	120.01	128.68
37	E1	601	ATP	N3-C2-N1	-5.51	120.06	128.68
38	D1	601	ADP	N3-C2-N1	-5.51	120.07	128.68
38	B2	601	ADP	N3-C2-N1	-5.50	120.08	128.68
37	A1	601	ATP	N3-C2-N1	-5.50	120.08	128.68
37	C2	601	ATP	N3-C2-N1	-5.49	120.09	128.68
37	E2	601	ATP	N3-C2-N1	-5.47	120.13	128.68
37	A2	601	ATP	N3-C2-N1	-5.46	120.15	128.68
37	A1	601	ATP	C1'-N9-C4	5.45	136.21	126.64
38	D1	601	ADP	N6-C6-N1	-5.08	108.03	118.57
38	D2	601	ADP	N6-C6-N1	-5.08	108.03	118.57
37	C2	601	ATP	N6-C6-N1	-5.05	108.09	118.57
37	A1	601	ATP	N6-C6-N1	-5.03	108.13	118.57
38	B1	601	ADP	N6-C6-N1	-5.00	108.19	118.57
37	E1	601	ATP	N6-C6-N1	-4.99	108.22	118.57
38	B2	601	ADP	N6-C6-N1	-4.97	108.25	118.57
37	C1	601	ATP	N6-C6-N1	-4.97	108.27	118.57
37	E2	601	ATP	N6-C6-N1	-4.96	108.27	118.57
37	A2	601	ATP	N6-C6-N1	-4.95	108.30	118.57
33	0	204	PC1	O21-C21-C22	4.63	121.47	111.50
33	0	204	PC1	O21-C21-C22	4.60	121.42	111.50
35	d	402	CDL	OB6-CB5-C51	4.21	120.58	111.50
33	V	201	PC1	O21-C21-C22	4.21	120.58	111.50
33	V	201	PC1	O21-C21-C22	4.20	120.56	111.50
33	0	201	PC1	O21-C21-C22	4.15	120.44	111.50
35	D	402	CDL	OB6-CB5-C51	4.14	120.43	111.50
35	0	203	CDL	OB6-CB5-C51	4.08	120.30	111.50
33	0	201	PC1	O21-C21-C22	4.06	120.24	111.50
35	0	203	CDL	OB6-CB5-C51	4.05	120.22	111.50
35	b	602	CDL	OB6-CB5-C51	4.02	120.16	111.50
35	В	602	CDL	OB6-CB5-C51	3.99	120.10	111.50



Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
36	J	302	PEE	O2-C10-C11	3.96	120.03	111.50
35	h	302	CDL	OB6-CB5-C51	3.93	119.97	111.50
35	Н	302	CDL	OB6-CB5-C51	3.92	119.95	111.50
36	j	301	PEE	O2-C10-C11	3.76	119.60	111.50
36	j	302	PEE	O2-C10-C11	3.75	119.59	111.50
35	D	402	CDL	OA6-CA5-C11	3.71	119.50	111.50
36	J	301	PEE	O2-C10-C11	3.71	119.49	111.50
35	d	402	CDL	OA6-CA5-C11	3.70	119.48	111.50
38	B2	601	ADP	C3'-C2'-C1'	3.68	106.52	100.98
35	е	401	CDL	OB6-CB5-C51	3.63	119.33	111.50
35	В	601	CDL	OB6-CB5-C51	3.62	119.29	111.50
35	u	201	CDL	OA6-CA5-C11	3.60	119.27	111.50
35	b	601	CDL	OB6-CB5-C51	3.60	119.26	111.50
35	Е	401	CDL	OB6-CB5-C51	3.57	119.20	111.50
37	C1	601	ATP	C3'-C2'-C1'	3.56	106.33	100.98
35	b	601	CDL	OA6-CA5-C11	3.55	119.15	111.50
35	U	201	CDL	OA6-CA5-C11	3.53	119.10	111.50
35	В	601	CDL	OA6-CA5-C11	3.52	119.09	111.50
35	е	401	CDL	OA6-CA5-C11	3.42	118.88	111.50
35	Е	401	CDL	OA6-CA5-C11	3.40	118.82	111.50
35	b	602	CDL	OA6-CA5-C11	3.38	118.79	111.50
35	u	201	CDL	OB6-CB5-C51	3.37	118.75	111.50
35	В	602	CDL	OA6-CA5-C11	3.35	118.72	111.50
34	Х	101	LMT	O5'-C5'-C4'	3.34	116.79	109.75
34	Х	101	LMT	O5'-C5'-C4'	3.33	116.77	109.75
35	U	201	CDL	OB6-CB5-C51	3.31	118.64	111.50
35	с	401	CDL	OA6-CA5-C11	3.25	118.51	111.50
37	A2	601	ATP	C3'-C2'-C1'	3.25	105.87	100.98
35	С	401	CDL	OA6-CA5-C11	3.22	118.45	111.50
35	с	401	CDL	OB6-CB5-C51	3.19	118.37	111.50
35	0	203	CDL	OA6-CA5-C11	3.16	118.31	111.50
38	B1	601	ADP	O4'-C1'-C2'	-3.12	102.36	106.93
37	E1	601	ATP	C3'-C2'-C1'	3.12	105.68	100.98
35	0	203	CDL	OA6-CA5-C11	3.11	118.20	111.50
35	V	202	CDL	OB6-CB5-C51	3.11	118.20	111.50
38	D1	601	ADP	C3'-C2'-C1'	3.11	105.66	100.98
35	V	202	CDL	OB6-CB5-C51	3.07	118.11	111.50
35	C	401	CDL	OB6-CB5-C51	3.06	118.10	111.50
35	V	202	CDL	OA6-CA5-C11	3.04	118.05	111.50
38	D2	601	ADP	O4'-C1'-C2'	-3.04	102.49	106.93
$\overline{35}$	h	302	CDL	OA6-CA5-C11	3.02	118.01	111.50
35	v	202	CDL	OA6-CA5-C11	2.98	117.93	111.50



Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
36	с	403	PEE	O2-C10-C11	2.98	117.92	111.50
36	С	403	PEE	O2-C10-C11	2.96	117.89	111.50
38	D1	601	ADP	C2'-C3'-C4'	2.89	108.27	102.64
35	u	201	CDL	OA8-CA7-C31	2.89	120.97	111.91
38	B2	601	ADP	PA-O3A-PB	-2.88	122.94	132.83
37	A2	601	ATP	PA-O3A-PB	-2.88	122.96	132.83
38	D2	601	ADP	PA-O3A-PB	-2.87	122.99	132.83
38	B1	601	ADP	PA-O3A-PB	-2.86	123.00	132.83
35	Н	302	CDL	OA6-CA5-C11	2.86	117.67	111.50
37	C2	601	ATP	PB-O3B-PG	-2.85	123.06	132.83
37	C2	601	ATP	O4'-C1'-C2'	-2.84	102.77	106.93
33	V	201	PC1	O31-C31-C32	2.83	120.80	111.91
35	U	201	CDL	OA8-CA7-C31	2.83	120.79	111.91
33	V	201	PC1	O31-C31-C32	2.82	120.77	111.91
34	d	401	LMT	C1B-O1B-C4'	-2.80	111.02	117.96
34	С	404	LMT	C1B-O1B-C4'	-2.80	111.04	117.96
37	C1	601	ATP	PB-O3B-PG	-2.79	123.24	132.83
37	E2	601	ATP	C3'-C2'-C1'	2.79	105.17	100.98
37	C1	601	ATP	PA-O3A-PB	-2.78	123.28	132.83
38	D1	601	ADP	PA-O3A-PB	-2.78	123.28	132.83
34	D	401	LMT	C1B-O1B-C4'	-2.77	111.11	117.96
35	0	203	CDL	OA8-CA7-C31	2.77	120.59	111.91
35	V	202	CDL	OA8-CA7-C31	2.76	120.55	111.91
37	C2	601	ATP	PA-O3A-PB	-2.75	123.39	132.83
35	0	203	CDL	OA8-CA7-C31	2.73	120.48	111.91
35	V	202	CDL	OA8-CA7-C31	2.72	120.46	111.91
37	E1	601	ATP	PA-O3A-PB	-2.72	123.51	132.83
37	E1	601	ATP	PB-O3B-PG	-2.70	123.55	132.83
35	е	401	CDL	OA8-CA7-C31	2.67	120.28	111.91
37	E2	601	ATP	PB-O3B-PG	-2.65	123.73	132.83
37	A1	601	ATP	PA-O3A-PB	-2.64	123.75	132.83
37	E2	601	ATP	PA-O3A-PB	-2.64	123.76	132.83
35	Ε	401	CDL	OA8-CA7-C31	2.63	120.15	111.91
37	A2	601	ATP	C2'-C3'-C4'	2.61	107.71	102.64
33	0	204	PC1	O31-C31-C32	2.61	120.09	111.91
$\overline{35}$	C	401	CDL	OA8-CA7-C31	2.61	120.09	111.91
35	D	402	CDL	OB8-CB7-C71	2.60	120.07	111.91
36	J	$30\overline{2}$	PEE	O3-C30-C31	2.60	120.06	111.91
35	d	$40\overline{2}$	CDL	OB8-CB7-C71	2.59	$120.0\overline{5}$	111.91
37	A1	601	ATP	PB-O3B-PG	-2.59	123.93	132.83
34	с	404	LMT	C1B-O1B-C4'	-2.59	111.56	117.96
37	A2	601	ATP	PB-O3B-PG	-2.58	123.98	132.83



$\mathbf{Mol}$	Chain	$\mathbf{Res}$	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
35	h	302	CDL	OB8-CB7-C71	2.54	119.89	111.91
35	Н	302	CDL	OB8-CB7-C71	2.54	119.87	111.91
36	С	403	PEE	O3-C30-C31	2.53	119.86	111.91
33	0	201	PC1	C2-O21-C21	-2.53	111.56	117.79
33	0	204	PC1	O31-C31-C32	2.53	119.85	111.91
35	Е	401	CDL	OB8-CB7-C71	2.52	119.82	111.91
37	C1	601	ATP	C2'-C3'-C4'	2.52	107.53	102.64
36	с	403	PEE	O3-C30-C31	2.52	119.81	111.91
35	е	401	CDL	OB8-CB7-C71	2.49	119.74	111.91
33	0	201	PC1	C2-O21-C21	-2.48	111.69	117.79
37	E1	601	ATP	C2'-C3'-C4'	2.43	107.36	102.64
35	b	602	CDL	OB8-CB7-C71	2.41	119.48	111.91
38	B2	601	ADP	C2'-C3'-C4'	2.36	107.23	102.64
35	В	602	CDL	OB8-CB7-C71	2.35	119.28	111.91
34	Х	101	LMT	C3'-C4'-C5'	2.34	116.30	110.93
34	Х	101	LMT	C3'-C4'-C5'	2.34	116.29	110.93
35	u	201	CDL	OB8-CB7-C71	2.33	119.20	111.91
37	E2	601	ATP	C2'-C3'-C4'	2.31	107.14	102.64
36	j	301	PEE	O3-C30-C31	2.31	119.15	111.91
35	b	601	CDL	OB8-CB7-C71	2.29	119.09	111.91
33	0	201	PC1	O31-C31-C32	2.29	119.09	111.91
35	В	601	CDL	OB8-CB7-C71	2.28	119.07	111.91
35	В	602	CDL	OA8-CA7-C31	2.27	119.04	111.91
37	A1	601	ATP	O4'-C1'-C2'	-2.27	103.61	106.93
35	U	201	CDL	OB8-CB7-C71	2.26	118.98	111.91
33	0	201	PC1	O31-C31-C32	2.25	118.96	111.91
36	J	301	PEE	O3-C30-C31	2.24	118.95	111.91
35	b	602	CDL	OA8-CA7-C31	2.22	118.87	111.91
34	D	403	LMT	C1B-O5B-C5B	-2.21	109.36	113.69
35	0	203	CDL	CA4-OA6-CA5	-2.20	112.37	117.79
38	B2	601	ADP	O4'-C1'-C2'	-2.17	103.75	106.93
36	J	302	PEE	C17-C18-C19	-2.16	108.15	124.73
34	d	403	LMT	C1B-O5B-C5B	-2.16	109.45	113.69
35	V	202	CDL	OB8-CB7-C71	2.15	118.66	111.91
35	с	401	CDL	C42-C41-C40	2.15	125.35	114.42
34	Н	301	LMT	O5'-C1'-C2'	2.15	114.90	110.35
36	j	302	PEE	C17-C18-C19	-2.14	108.28	124.73
35	Н	302	CDL	OA8-CA7-C31	2.14	118.62	111.91
34	h	301	LMT	O5'-C1'-C2'	2.14	114.87	110.35
34	0	202	LMT	O5'-C5'-C4'	2.13	114.25	109.75
34	Х	101	LMT	C1B-O1B-C4'	-2.13	112.69	117.96

ATP

601

37

C1

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106.93

103.85



-2.11

O4'-C1'-C2'

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
35	0	203	CDL	CA4-OA6-CA5	-2.10	112.63	117.79
35	с	401	CDL	OB8-CB7-C71	2.10	118.49	111.91
35	V	202	CDL	OB8-CB7-C71	2.09	118.48	111.91
36	j	302	PEE	O3-C30-C31	2.08	118.43	111.91
34	Х	101	LMT	C1B-O1B-C4'	-2.08	112.83	117.96
34	h	301	LMT	O1B-C4'-C3'	2.08	112.80	107.28
34	0	202	LMT	O5'-C5'-C4'	2.07	114.12	109.75
34	С	402	LMT	C1B-O1B-C4'	-2.06	112.86	117.96
37	C2	601	ATP	C2'-C3'-C4'	2.06	106.65	102.64
35	0	203	CDL	OB8-CB7-C71	2.06	118.37	111.91
35	h	302	CDL	OA8-CA7-C31	2.05	118.34	111.91
34	с	404	LMT	O5'-C5'-C4'	2.05	114.07	109.75
34	С	404	LMT	O5'-C5'-C4'	2.04	114.06	109.75
34	С	404	LMT	C3'-C4'-C5'	2.04	115.61	110.93
34	с	402	LMT	C1B-O1B-C4'	-2.04	112.91	117.96
34	Н	301	LMT	O1B-C4'-C3'	2.04	112.71	107.28
35	0	203	CDL	OB8-CB7-C71	2.04	118.31	111.91
37	E2	601	ATP	O4'-C1'-C2'	-2.03	103.96	106.93
36	j	301	PEE	C20-C19-C18	-2.02	109.19	124.73
36	J	301	PEE	C20-C19-C18	-2.02	109.20	124.73
37	A1	601	ATP	C3'-C2'-C1'	2.02	104.02	100.98
35	b	601	CDL	OA8-CA7-C31	2.02	118.24	111.91

There are no chirality outliers.

All (	(1232)	) torsion	outliers	are	listed	below:
1 TII (	, <i>1202</i> ,	, 00151011	outificity	arc	moucu	00101.

Mol	Chain	Res	Type	Atoms
33	0	201	PC1	C1-O11-P-O14
33	0	201	PC1	O13-C11-C12-N
33	0	201	PC1	C22-C21-O21-C2
33	0	204	PC1	C11-O13-P-O14
33	0	204	PC1	C22-C21-O21-C2
33	V	201	PC1	C1-O11-P-O12
33	V	201	PC1	C1-O11-P-O14
33	V	201	PC1	C1-O11-P-O13
33	V	201	PC1	C12-C11-O13-P
33	V	201	PC1	O13-C11-C12-N
33	V	201	PC1	O22-C21-O21-C2
33	0	201	PC1	C1-O11-P-O14
33	0	201	PC1	O13-C11-C12-N
33	0	201	PC1	C22-C21-O21-C2
33	0	204	PC1	C11-O13-P-O14


Mol	Chain	$\mathbf{Res}$	Type	Atoms
33	0	204	PC1	C22-C21-O21-C2
33	V	201	PC1	C1-O11-P-O12
33	V	201	PC1	C1-011-P-014
33	V	201	PC1	C1-O11-P-O13
33	V	201	PC1	C12-C11-O13-P
33	V	201	PC1	O13-C11-C12-N
33	V	201	PC1	O22-C21-O21-C2
34	h	301	LMT	O5'-C1'-O1'-C1
34	X	101	LMT	C2'-C1'-O1'-C1
34	X	101	LMT	O5'-C1'-O1'-C1
34	d	403	LMT	C2-C1-O1'-C1'
34	Н	301	LMT	O5'-C1'-O1'-C1
34	Х	101	LMT	C2'-C1'-O1'-C1
34	Х	101	LMT	O5'-C1'-O1'-C1
34	D	403	LMT	C2-C1-O1'-C1'
35	0	203	CDL	C11-CA5-OA6-CA4
35	0	203	CDL	CB3-OB5-PB2-OB3
35	u	201	CDL	CA3-OA5-PA1-OA3
35	u	201	CDL	CA3-OA5-PA1-OA4
35	u	201	CDL	CB2-OB2-PB2-OB3
35	h	302	CDL	CB2-C1-CA2-OA2
35	h	302	CDL	CA2-OA2-PA1-OA4
35	h	302	CDL	CB2-OB2-PB2-OB3
35	h	302	CDL	OB7-CB5-OB6-CB4
35	е	401	CDL	CA3-OA5-PA1-OA4
35	е	401	CDL	CB2-OB2-PB2-OB3
35	е	401	CDL	CB2-OB2-PB2-OB4
35	е	401	CDL	CB3-OB5-PB2-OB2
35	е	401	CDL	CB3-OB5-PB2-OB3
35	е	401	CDL	CB3-OB5-PB2-OB4
35	b	601	CDL	OB7-CB5-OB6-CB4
35	b	601	CDL	C51-CB5-OB6-CB4
35	b	602	CDL	CA2-OA2-PA1-OA3
35	b	602	CDL	CA2-OA2-PA1-OA4
35	b	602	CDL	CA3-OA5-PA1-OA3
35	b	602	CDL	C51-CB5-OB6-CB4
35	V	202	CDL	O1-C1-CB2-OB2
35	V	202	$\overline{CDL}$	CA2-C1-CB2-OB2
35	V	202	$\overline{CDL}$	C1-CB2-OB2-PB2
35	с	401	CDL	CA3-OA5-PA1-OA2
35	с	401	CDL	CA3-OA5-PA1-OA3
35	с	401	CDL	CA3-OA5-PA1-OA4

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	J	1	1 5	
Mol	Chain	Res	Type	Atoms
35	С	401	CDL	CB3-OB5-PB2-OB2
35	с	401	CDL	CB3-OB5-PB2-OB3
35	с	401	CDL	CB3-OB5-PB2-OB4
35	d	402	CDL	O1-C1-CB2-OB2
35	d	402	CDL	CA2-C1-CB2-OB2
35	d	402	CDL	CA2-OA2-PA1-OA3
35	d	402	CDL	CB2-OB2-PB2-OB3
35	d	402	CDL	C51-CB5-OB6-CB4
35	0	203	CDL	C11-CA5-OA6-CA4
35	0	203	CDL	CB3-OB5-PB2-OB3
35	0	203	CDL	CB3-OB5-PB2-OB4
35	U	201	CDL	CA3-OA5-PA1-OA3
35	U	201	CDL	CA3-OA5-PA1-OA4
35	U	201	CDL	CB2-OB2-PB2-OB3
35	Н	302	CDL	CB2-C1-CA2-OA2
35	Н	302	CDL	CA2-OA2-PA1-OA4
35	Н	302	CDL	CB2-OB2-PB2-OB3
35	Н	302	CDL	OB7-CB5-OB6-CB4
35	Е	401	CDL	CA3-OA5-PA1-OA2
35	Е	401	CDL	CA3-OA5-PA1-OA4
35	Е	401	CDL	CB2-OB2-PB2-OB3
35	Е	401	CDL	CB2-OB2-PB2-OB4
35	Е	401	CDL	CB3-OB5-PB2-OB3
35	Е	401	CDL	CB3-OB5-PB2-OB4
35	В	601	CDL	OB7-CB5-OB6-CB4
35	В	601	CDL	C51-CB5-OB6-CB4
35	В	602	CDL	CA2-OA2-PA1-OA3
35	В	602	CDL	CA2-OA2-PA1-OA4
35	В	602	CDL	CA3-OA5-PA1-OA3
35	В	602	CDL	C51-CB5-OB6-CB4
35	V	202	CDL	O1-C1-CB2-OB2
35	V	202	CDL	CA2-C1-CB2-OB2
35	V	202	CDL	CA3-OA5-PA1-OA2
35	V	202	CDL	C1-CB2-OB2-PB2
35	С	401	CDL	O1-C1-CA2-OA2
35	С	401	CDL	C1-CA2-OA2-PA1
35	D	402	CDL	O1-C1-CB2-OB2
35	D	402	CDL	CA2-C1-CB2-OB2
35	D	402	CDL	CA2-OA2-PA1-OA3
35	D	402	CDL	CB2-OB2-PB2-OB3
35	D	402	CDL	C51-CB5-OB6-CB4
36	i	302	PEE	O4P-C4-C5-N

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Mol	Chain	Res	Type	Atoms
36	с	403	PEE	O4P-C4-C5-N
36	с	403	PEE	C17-C18-C19-C20
36	с	403	PEE	C1-O3P-P-O1P
36	с	403	PEE	C1-O3P-P-O4P
36	J	302	PEE	O4P-C4-C5-N
36	С	403	PEE	O4P-C4-C5-N
36	С	403	PEE	C17-C18-C19-C20
36	С	403	PEE	C1-O3P-P-O1P
36	С	403	PEE	C1-O3P-P-O4P
37	E2	601	ATP	C5'-O5'-PA-O1A
37	E2	601	ATP	C5'-O5'-PA-O3A
37	C2	601	ATP	C5'-O5'-PA-O1A
37	C2	601	ATP	C5'-O5'-PA-O2A
37	C2	601	ATP	C5'-O5'-PA-O3A
37	E1	601	ATP	C5'-O5'-PA-O1A
37	E1	601	ATP	C5'-O5'-PA-O3A
37	C1	601	ATP	C5'-O5'-PA-O1A
37	C1	601	ATP	C5'-O5'-PA-O2A
37	C1	601	ATP	C5'-O5'-PA-O3A
38	B2	601	ADP	C5'-O5'-PA-O3A
38	D2	601	ADP	C3'-C4'-C5'-O5'
38	B1	601	ADP	C5'-O5'-PA-O3A
38	B1	601	ADP	C3'-C4'-C5'-O5'
35	е	401	CDL	OA9-CA7-OA8-CA6
35	Е	401	CDL	OA9-CA7-OA8-CA6
35	h	302	CDL	OB9-CB7-OB8-CB6
35	b	601	CDL	OB9-CB7-OB8-CB6
35	с	401	CDL	OA9-CA7-OA8-CA6
35	Н	302	CDL	OB9-CB7-OB8-CB6
35	В	601	CDL	OB9-CB7-OB8-CB6
35	С	401	CDL	OA9-CA7-OA8-CA6
33	0	201	PC1	O22-C21-O21-C2
33	0	201	PC1	O22-C21-O21-C2
35	0	203	CDL	OA7-CA5-OA6-CA4
35	b	602	CDL	OB7-CB5-OB6-CB4
35	d	402	CDL	OB7-CB5-OB6-CB4
35	0	203	CDL	OA7-CA5-OA6-CA4
35	В	602	CDL	OB7-CB5-OB6-CB4
35	D	402	CDL	OB7-CB5-OB6-CB4
35	h	302	CDL	C71-CB7-OB8-CB6
35	е	401	CDL	C31-CA7-OA8-CA6
35	b	601	CDL	C71-CB7-OB8-CB6



Mol	Chain	Res	Type	Atoms
35	с	401	CDL	C31-CA7-OA8-CA6
35	Н	302	CDL	C71-CB7-OB8-CB6
35	Е	401	CDL	C31-CA7-OA8-CA6
35	В	601	CDL	C71-CB7-OB8-CB6
35	С	401	CDL	C31-CA7-OA8-CA6
33	v	201	PC1	C22-C21-O21-C2
33	V	201	PC1	C22-C21-O21-C2
35	h	302	CDL	C51-CB5-OB6-CB4
35	Н	302	CDL	C51-CB5-OB6-CB4
34	Х	101	LMT	O5B-C5B-C6B-O6B
34	h	301	LMT	C3'-C4'-O1B-C1B
34	Н	301	LMT	C3'-C4'-O1B-C1B
35	В	602	CDL	C31-CA7-OA8-CA6
36	j	301	PEE	C37-C38-C39-C40
36	J	301	PEE	C37-C38-C39-C40
34	D	403	LMT	O5B-C5B-C6B-O6B
33	0	204	PC1	O22-C21-O21-C2
33	0	204	PC1	O22-C21-O21-C2
35	0	203	CDL	OA9-CA7-OA8-CA6
35	0	203	CDL	OA9-CA7-OA8-CA6
35	b	601	CDL	C31-C32-C33-C34
35	В	601	CDL	C31-C32-C33-C34
35	h	302	CDL	O1-C1-CA2-OA2
35	Н	302	CDL	O1-C1-CA2-OA2
35	b	602	CDL	C31-CA7-OA8-CA6
34	d	403	LMT	C4B-C5B-C6B-O6B
35	0	203	CDL	CB7-C71-C72-C73
35	0	203	CDL	CB7-C71-C72-C73
34	Х	101	LMT	O5B-C5B-C6B-O6B
34	D	403	LMT	C4B-C5B-C6B-O6B
35	с	401	CDL	C40-C41-C42-C43
34	d	403	LMT	O5B-C5B-C6B-O6B
38	D2	601	ADP	04'-C4'-C5'-O5'
35	0	203	CDL	C31-CA7-OA8-CA6
35	0	203	CDL	C31-CA7-OA8-CA6
34	d	401	LMT	O5B-C5B-C6B-O6B
34	С	404	LMT	O5'-C5'-C6'-O6'
34	D	401	LMT	O5B-C5B-C6B-O6B
35	b	602	CDL	OA9-CA7-OA8-CA6
35	В	602	CDL	OA9-CA7-OA8-CA6
34	X	101	LMT	C4B-C5B-C6B-O6B
34	с	404	LMT	05'-C1'-O1'-C1



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Mol	Chain	Res	Type	Atoms
34	С	404	LMT	O5'-C1'-O1'-C1
34	Н	301	LMT	O5'-C5'-C6'-O6'
34	Х	101	LMT	O5B-C1B-O1B-C4'
35	С	401	CDL	CB2-C1-CA2-OA2
35	V	202	CDL	C71-CB7-OB8-CB6
35	V	202	CDL	C71-CB7-OB8-CB6
34	С	404	LMT	C4'-C5'-C6'-O6'
35	h	302	CDL	C20-C21-C22-C23
35	Н	302	CDL	C20-C21-C22-C23
34	Х	101	LMT	C4B-C5B-C6B-O6B
33	0	201	PC1	C31-C32-C33-C34
33	0	201	PC1	C31-C32-C33-C34
34	d	401	LMT	C4B-C5B-C6B-O6B
34	h	301	LMT	O5B-C5B-C6B-O6B
35	С	401	CDL	C51-CB5-OB6-CB4
34	Н	301	LMT	C4'-C5'-C6'-O6'
35	u	201	CDL	CA7-C31-C32-C33
35	е	401	CDL	CB5-C51-C52-C53
35	с	401	CDL	CA5-C11-C12-C13
35	U	201	CDL	CA7-C31-C32-C33
34	h	301	LMT	O5'-C5'-C6'-O6'
34	Н	301	LMT	O5B-C5B-C6B-O6B
34	D	401	LMT	C4B-C5B-C6B-O6B
35	D	402	CDL	C71-CB7-OB8-CB6
35	h	302	CDL	CB5-C51-C52-C53
35	Н	302	CDL	CB5-C51-C52-C53
35	Е	401	CDL	CB5-C51-C52-C53
34	X	101	LMT	O5B-C1B-O1B-C4'
35	h	302	CDL	CA5-C11-C12-C13
35	с	401	CDL	CB5-C51-C52-C53
35	Н	302	CDL	CA5-C11-C12-C13
35	С	401	CDL	CA5-C11-C12-C13
35	d	402	CDL	C71-CB7-OB8-CB6
35	h	302	CDL	CA4-CA3-OA5-PA1
35	Н	302	CDL	CA4-CA3-OA5-PA1
35	u	201	CDL	CB5-C51-C52-C53
35	b	601	CDL	CA7-C31-C32-C33
35	U	201	CDL	CB5-C51-C52-C53
35	B	601	CDL	CA7-C31-C32-C33
35	V	202	CDL	OB9-CB7-OB8-CB6
35	V	202	CDL	OB9-CB7-OB8-CB6
35	c ·	401	CDL	01-C1-CB2-OB2



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Mol	Chain	$\mathbf{Res}$	Type	Atoms
35	V	202	CDL	CB7-C71-C72-C73
35	V	202	CDL	CB7-C71-C72-C73
35	V	202	CDL	C63-C64-C65-C66
35	V	202	CDL	C63-C64-C65-C66
35	0	203	CDL	CB3-OB5-PB2-OB2
35	h	302	CDL	CA2-OA2-PA1-OA5
35	е	401	CDL	CA3-OA5-PA1-OA2
35	е	401	CDL	CB2-OB2-PB2-OB5
35	b	602	CDL	CA2-OA2-PA1-OA5
35	d	402	CDL	CB2-OB2-PB2-OB5
35	0	203	CDL	CB3-OB5-PB2-OB2
35	Н	302	CDL	CA2-OA2-PA1-OA5
35	Е	401	CDL	CB2-OB2-PB2-OB5
35	Е	401	CDL	CB3-OB5-PB2-OB2
35	В	602	CDL	CA2-OA2-PA1-OA5
35	С	401	CDL	CA3-OA5-PA1-OA2
35	С	401	CDL	CB3-OB5-PB2-OB2
35	D	402	CDL	CB2-OB2-PB2-OB5
33	0	201	PC1	C21-C22-C23-C24
35	с	401	CDL	C71-CB7-OB8-CB6
35	С	401	CDL	C71-CB7-OB8-CB6
33	0	201	PC1	C21-C22-C23-C24
35	с	401	CDL	CA2-C1-CB2-OB2
35	С	401	CDL	OB7-CB5-OB6-CB4
33	0	201	PC1	C32-C31-O31-C3
33	0	204	PC1	C3A-C3B-C3C-C3D
33	0	204	PC1	C3A-C3B-C3C-C3D
35	b	602	CDL	C38-C39-C40-C41
35	u	201	CDL	C11-CA5-OA6-CA4
35	с	401	CDL	C51-CB5-OB6-CB4
35	U	201	CDL	C11-CA5-OA6-CA4
38	B2	601	ADP	C3'-C4'-C5'-O5'
33	0	201	PC1	C3D-C3E-C3F-C3G
33	V	201	PC1	C35-C36-C37-C38
35	0	203	CDL	C16-C17-C18-C19
35	h	302	CDL	C71-C72-C73-C74
35	b	602	CDL	C77-C78-C79-C80
35	v	202	CDL	C35-C36-C37-C38
35	v	202	CDL	C57-C58-C59-C60
35	с	401	CDL	C17-C18-C19-C20
35	0	203	CDL	C16-C17-C18-C19
35	H	302	CDL	C71-C72-C73-C74



Mol	Chain	Res	Type	Atoms
35	R	602	CDL	C38-C39-C40-C41
35	B	602	CDL	C77-C78-C79-C80
35	U V	202	CDL	C35-C36-C37-C38
35	V	202	CDL	C57 C58 C50 C60
35		/01	CDL	$C_{21}C_{22}C_{23}C_{24}$
33	0	201	PC1	$\begin{array}{c} 021 \\ \hline 022 \\ \hline 022 \\ \hline 021 \\ 0$
22	U	201	PC1	$\begin{array}{c} 0.02 - 0.031 - 0.031 - 0.031 \\ \hline 0.025 & 0.026 & 0.027 & 0.028 \\ \hline \end{array}$
- <u>-</u>	V O	201	PC1	$\begin{array}{c} \text{C3D} \text{C3E} \text{C3E} \text{C3E} \text{C3C} \\ \hline \end{array}$
- 35 - 25	0	201	CDI	C5D-C5E-C5F-C5G
- 35 - 25	0	203	CDL	$C_{21}$ $C_{22}$ $C_{23}$ $C_{24}$ $C$
- 30 - 25	e	401	CDL	CT0-CT9-C80-C81
35	<u>с</u>	401	CDL	C52-C53-C54-C55
35	d	402	CDL	C42-C43-C44-C45
35	0	203	CDL	C51-C52-C53-C54
35		401	CDL	C35-C36-C37-C38
35	D	402	CDL	C42-C43-C44-C45
35	u	201	CDL	OA7-CA5-OA6-CA4
35	с	401	CDL	OB7-CB5-OB6-CB4
35	U	201	CDL	OA7-CA5-OA6-CA4
35	0	203	CDL	C38-C39-C40-C41
35	с	401	CDL	C53-C54-C55-C56
35	d	402	CDL	C60-C61-C62-C63
35	Ε	401	CDL	C78-C79-C80-C81
35	D	402	CDL	C60-C61-C62-C63
35	d	402	CDL	C1-CB2-OB2-PB2
35	D	402	CDL	C1-CB2-OB2-PB2
35	0	203	CDL	C12-C13-C14-C15
35	е	401	CDL	C31-C32-C33-C34
35	b	602	CDL	C22-C23-C24-C25
35	b	602	CDL	C40-C41-C42-C43
35	0	203	CDL	C12-C13-C14-C15
35	0	203	CDL	C38-C39-C40-C41
35	Н	302	CDL	C56-C57-C58-C59
35	Е	401	CDL	C31-C32-C33-C34
35	В	602	CDL	C22-C23-C24-C25
35	В	602	CDL	C40-C41-C42-C43
35	С	401	CDL	C11-C12-C13-C14
35	C	401	CDL	C22-C23-C24-C25
35	C	401	CDL	C33-C34-C35-C36
35	e	401	CDL	01-C1-CA2-OA2
35	Ē	401	CDL	01-C1-CA2-OA2
35	h	302	CDL	C56-C57-C58-C59
35	V	202	CDL	C72-C73-C74-C75



Mol	Chain	Res	Type	Atoms
35	с	401	CDL	C32-C33-C34-C35
33	V	201	PC1	C21-C22-C23-C24
35	В	602	CDL	CA7-C31-C32-C33
33	0	204	PC1	C27-C28-C29-C2A
33	V	201	PC1	C25-C26-C27-C28
33	0	204	PC1	C27-C28-C29-C2A
33	V	201	PC1	C25-C26-C27-C28
34	d	401	LMT	C3-C4-C5-C6
35	u	201	CDL	C41-C42-C43-C44
35	u	201	CDL	C75-C76-C77-C78
35	b	602	CDL	C52-C53-C54-C55
35	с	401	CDL	C21-C22-C23-C24
35	с	401	CDL	C22-C23-C24-C25
35	0	203	CDL	C23-C24-C25-C26
35	U	201	CDL	C41-C42-C43-C44
35	V	202	CDL	C72-C73-C74-C75
35	С	401	CDL	OB9-CB7-OB8-CB6
35	0	203	CDL	C23-C24-C25-C26
35	u	201	CDL	C62-C63-C64-C65
35	е	401	CDL	C58-C59-C60-C61
35	с	401	CDL	C19-C20-C21-C22
35	с	401	CDL	C74-C75-C76-C77
35	U	201	CDL	C75-C76-C77-C78
35	Е	401	CDL	C58-C59-C60-C61
35	В	601	CDL	C18-C19-C20-C21
35	В	602	CDL	C52-C53-C54-C55
33	V	201	PC1	C21-C22-C23-C24
34	Х	101	LMT	C5-C6-C7-C8
34	Х	101	LMT	C5-C6-C7-C8
35	b	601	CDL	C18-C19-C20-C21
35	С	401	CDL	C54-C55-C56-C57
35	с	401	CDL	OB9-CB7-OB8-CB6
35	d	402	CDL	OB9-CB7-OB8-CB6
35	D	402	CDL	OB9-CB7-OB8-CB6
35	h	302	CDL	C22-C23-C24-C25
35	b	601	CDL	C74-C75-C76-C77
35	b	602	CDL	C56-C57-C58-C59
35	с	401	CDL	C72-C73-C74-C75
35	U	201	CDL	C62-C63-C64-C65
35	Н	302	CDL	C22-C23-C24-C25
35	В	601	CDL	C74-C75-C76-C77
35	В	602	CDL	C56-C57-C58-C59

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Mol	Chain	Res	Type	Atoms
36	j	301	PEE	C14-C15-C16-C17
36	J	301	PEE	C14-C15-C16-C17
34	Х	101	LMT	C3-C4-C5-C6
35	0	203	CDL	C61-C62-C63-C64
35	b	602	CDL	CA7-C31-C32-C33
33	0	204	PC1	C32-C33-C34-C35
33	V	201	PC1	C3B-C3C-C3D-C3E
34	D	401	LMT	C5-C6-C7-C8
35	u	201	CDL	C14-C15-C16-C17
35	u	201	CDL	C23-C24-C25-C26
35	u	201	CDL	C77-C78-C79-C80
35	h	302	CDL	C53-C54-C55-C56
35	е	401	CDL	C81-C82-C83-C84
35	d	402	CDL	C52-C53-C54-C55
35	U	201	CDL	C14-C15-C16-C17
35	U	201	CDL	C23-C24-C25-C26
35	U	201	CDL	C77-C78-C79-C80
35	Н	302	CDL	C53-C54-C55-C56
35	Е	401	CDL	C40-C41-C42-C43
35	С	401	CDL	C14-C15-C16-C17
35	D	402	CDL	C52-C53-C54-C55
35	D	402	CDL	C82-C83-C84-C85
36	j	301	PEE	C34-C35-C36-C37
36	J	301	PEE	C34-C35-C36-C37
36	С	403	PEE	C22-C23-C24-C25
33	v	201	PC1	C3B-C3C-C3D-C3E
33	0	204	PC1	C32-C33-C34-C35
34	0	202	LMT	C7-C8-C9-C10
34	d	401	LMT	C7-C8-C9-C10
34	0	202	LMT	C7-C8-C9-C10
35	0	203	CDL	C37-C38-C39-C40
35	0	203	CDL	C61-C62-C63-C64
35	u	201	CDL	C35-C36-C37-C38
35	e	401	CDL	C40-C41-C42-C43
35	b	602	CDL	C80-C81-C82-C83
35	с	401	CDL	C55-C56-C57-C58
35	d	402	CDL	C82-C83-C84-C85
35	0	203	CDL	C37-C38-C39-C40
35	0	203	CDL	C83-C84-C85-C86
35	U	201	CDL	C35-C36-C37-C38
35	E	401	CDL	C81-C82-C83-C84
35	В	602	CDL	C80-C81-C82-C83

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Mol	Chain	Res	Type	Atoms
35	С	401	CDL	C74-C75-C76-C77
36	с	403	PEE	C22-C23-C24-C25
34	с	404	LMT	C1-C2-C3-C4
34	X	101	LMT	C3-C4-C5-C6
35	0	203	CDL	C31-C32-C33-C34
35	0	203	CDL	C83-C84-C85-C86
35	е	401	CDL	C37-C38-C39-C40
35	b	601	CDL	C72-C73-C74-C75
35	b	602	CDL	C11-C12-C13-C14
35	b	602	CDL	C73-C74-C75-C76
35	Е	401	CDL	C37-C38-C39-C40
35	В	601	CDL	C72-C73-C74-C75
35	В	602	CDL	C11-C12-C13-C14
35	В	602	CDL	C73-C74-C75-C76
35	С	401	CDL	C63-C64-C65-C66
35	d	402	CDL	C80-C81-C82-C83
35	0	203	CDL	C31-C32-C33-C34
35	D	402	CDL	C80-C81-C82-C83
35	b	602	CDL	C71-CB7-OB8-CB6
35	В	602	CDL	C71-CB7-OB8-CB6
36	с	403	PEE	C31-C30-O3-C3
36	С	403	PEE	C31-C30-O3-C3
35	h	302	CDL	C59-C60-C61-C62
35	Н	302	CDL	C59-C60-C61-C62
35	u	201	CDL	C79-C80-C81-C82
34	Х	101	LMT	C7-C8-C9-C10
34	Х	101	LMT	C7-C8-C9-C10
34	D	401	LMT	C11-C10-C9-C8
35	h	302	CDL	C80-C81-C82-C83
35	с	401	CDL	C39-C40-C41-C42
35	U	201	CDL	C79-C80-C81-C82
35	Н	302	CDL	C80-C81-C82-C83
35	Е	401	CDL	C23-C24-C25-C26
36	с	403	PEE	C23-C24-C25-C26
36	С	403	PEE	C23-C24-C25-C26
34	X	101	LMT	O5'-C5'-C6'-O6'
35	e	401	CDL	C23-C24-C25-C26
35	В	601	CDL	C41-C42-C43-C44
35	С	401	CDL	C58-C59-C60-C61
36	j	302	PEE	C31-C30-O3-C3
36	J	302	PEE	C31-C30-O3-C3
35	d	402	CDL	C11-CA5-OA6-CA4



Mol	Chain	Res	Type	Atoms
35	D	402	CDL	C11-CA5-OA6-CA4
35	b	601	CDL	C41-C42-C43-C44
35	с	401	CDL	C82-C83-C84-C85
35	V	202	CDL	C61-C62-C63-C64
35	С	401	CDL	C32-C33-C34-C35
36	j	301	PEE	C23-C24-C25-C26
36	J	301	PEE	C23-C24-C25-C26
35	V	202	CDL	C61-C62-C63-C64
34	С	404	LMT	C1-C2-C3-C4
33	V	201	PC1	C33-C34-C35-C36
35	С	401	CDL	C20-C21-C22-C23
33	0	201	PC1	O32-C31-O31-C3
33	0	201	PC1	O32-C31-O31-C3
35	е	401	CDL	CB2-C1-CA2-OA2
35	Е	401	CDL	CB2-C1-CA2-OA2
33	V	201	PC1	C33-C34-C35-C36
35	С	401	CDL	C15-C16-C17-C18
35	d	402	CDL	OA7-CA5-OA6-CA4
35	D	402	CDL	OA7-CA5-OA6-CA4
35	с	401	CDL	C43-C44-C45-C46
35	В	602	CDL	OB9-CB7-OB8-CB6
36	j	302	PEE	O5-C30-O3-C3
36	С	403	PEE	O5-C30-O3-C3
35	u	201	CDL	C60-C61-C62-C63
35	е	401	CDL	C74-C75-C76-C77
35	с	401	CDL	C51-C52-C53-C54
35	U	201	CDL	C60-C61-C62-C63
35	Ε	401	CDL	C74-C75-C76-C77
36	С	403	PEE	C21-C22-C23-C24
36	с	403	PEE	C21-C22-C23-C24
34	D	401	LMT	C3-C4-C5-C6
35	b	601	CDL	C36-C37-C38-C39
35	В	601	CDL	C36-C37-C38-C39
35	b	602	CDL	OB9-CB7-OB8-CB6
36	с	403	PEE	O5-C30-O3-C3
34	d	401	LMT	C4-C5-C6-C7
34	С	402	LMT	C3-C4-C5-C6
35	b	601	CDL	C56-C57-C58-C59
35	b	602	CDL	C62-C63-C64-C65
35	В	601	CDL	C56-C57-C58-C59
34	с	402	LMT	C3-C4-C5-C6
36	J	302	PEE	O5-C30-O3-C3



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	Chain		Type	Atoms
25	Ullalli	201	CDI	
- 50 - 25	u U	201	CDL	OD7 CD5 OD6 CD4
30	D	201	CDL	OB7-OB5-OB6-OB4
30	B	601 601	CDL	OA7-CA5-OA6-CA4
35	B	601	CDL	C62-C63-C64-C65
35	B	602	CDL	C62-C63-C64-C65
35	C	401	CDL	C41-C42-C43-C44
36	С	403	PEE	C13-C14-C15-C16
36	C	403	PEE	C13-C14-C15-C16
35	b	601	CDL	C62-C63-C64-C65
35	С	401	CDL	C55-C56-C57-C58
35	D	402	CDL	C73-C74-C75-C76
36	j	301	PEE	C10-C11-C12-C13
36	J	301	PEE	C10-C11-C12-C13
33	0	201	PC1	C26-C27-C28-C29
35	h	302	CDL	C58-C59-C60-C61
35	b	601	CDL	C16-C17-C18-C19
35	b	601	CDL	C78-C79-C80-C81
35	V	202	CDL	C62-C63-C64-C65
35	Н	302	CDL	C58-C59-C60-C61
35	В	601	CDL	C16-C17-C18-C19
35	V	202	CDL	C62-C63-C64-C65
33	0	201	PC1	C26-C27-C28-C29
33	0	204	PC1	C37-C38-C39-C3A
33	0	204	PC1	C37-C38-C39-C3A
35	h	302	CDL	C74-C75-C76-C77
35	V	202	CDL	C55-C56-C57-C58
35	d	402	CDL	C73-C74-C75-C76
35	Н	302	CDL	C74-C75-C76-C77
35	В	601	CDL	C43-C44-C45-C46
35	В	601	CDL	C78-C79-C80-C81
35	b	601	CDL	C43-C44-C45-C46
35	V	202	CDL	C55-C56-C57-C58
35	D	402	CDL	C40-C41-C42-C43
35	с	401	CDL	CA7-C31-C32-C33
35	u	201	CDL	C51-CB5-OB6-CB4
35	b	601	CDL	C11-CA5-OA6-CA4
35	U	201	CDL	C51-CB5-OB6-CB4
35	В	601	CDL	C11-CA5-OA6-CA4
33	V	201	PC1	C23-C24-C25-C26
33	V	201	PC1	C23-C24-C25-C26
35	d	402	CDL	C40-C41-C42-C43
35	b	601	CDL	OA7-CA5-OA6-CA4



Mol	Chain	Res	Type	Atoms
35	h	302	CDL	C76-C77-C78-C79
35	е	401	CDL	C53-C54-C55-C56
35	V	202	CDL	OA6-CA4-CA6-OA8
33	0	204	PC1	C39-C3A-C3B-C3C
33	0	204	PC1	C39-C3A-C3B-C3C
35	е	401	CDL	C14-C15-C16-C17
35	Е	401	CDL	C14-C15-C16-C17
35	Е	401	CDL	C53-C54-C55-C56
35	b	601	CDL	C58-C59-C60-C61
35	с	401	CDL	C12-C13-C14-C15
35	с	401	CDL	C81-C82-C83-C84
35	Н	302	CDL	C76-C77-C78-C79
35	В	601	CDL	C58-C59-C60-C61
36	с	403	PEE	C19-C20-C21-C22
36	С	403	PEE	C19-C20-C21-C22
35	d	402	CDL	C63-C64-C65-C66
34	d	401	LMT	C1-C2-C3-C4
38	B2	601	ADP	O4'-C4'-C5'-O5'
38	B1	601	ADP	O4'-C4'-C5'-O5'
34	С	404	LMT	C3-C4-C5-C6
34	D	401	LMT	C7-C8-C9-C10
35	D	402	CDL	C63-C64-C65-C66
36	с	403	PEE	C36-C37-C38-C39
36	С	403	PEE	C36-C37-C38-C39
34	с	402	LMT	C1-C2-C3-C4
33	0	201	PC1	C1-O11-P-O13
33	V	201	PC1	C11-O13-P-O11
33	V	201	PC1	C11-O13-P-O11
35	u	201	CDL	CA3-OA5-PA1-OA2
35	h	302	CDL	CB2-OB2-PB2-OB5
35	d	402	CDL	CB3-OB5-PB2-OB2
35	U	201	CDL	CA3-OA5-PA1-OA2
35	Н	302	CDL	CB2-OB2-PB2-OB5
35	D	402	CDL	CB3-OB5-PB2-OB2
35	D	402	CDL	C36-C37-C38-C39
35	е	401	CDL	CA7-C31-C32-C33
35	E	401	CDL	CA7-C31-C32-C33
34	h	301	LMT	C4'-C5'-C6'-O6'
35	C	401	CDL	OB5-CB3-CB4-CB6
34	с	404	LMT	C2-C3-C4-C5
35	b	601	CDL	C80-C81-C82-C83
35	0	203	CDL	C63-C64-C65-C66

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Mol	Chain	Res	Type	Atoms
35	В	601	CDL	C80-C81-C82-C83
34	С	402	LMT	C1-C2-C3-C4
34	D	401	LMT	C1-C2-C3-C4
35	d	402	CDL	C36-C37-C38-C39
36	j	301	PEE	C41-C42-C43-C44
35	h	302	CDL	C14-C15-C16-C17
35	0	203	CDL	C63-C64-C65-C66
35	Н	302	CDL	C14-C15-C16-C17
36	J	301	PEE	C41-C42-C43-C44
33	0	201	PC1	C37-C38-C39-C3A
34	Х	101	LMT	C2-C3-C4-C5
33	0	201	PC1	C37-C38-C39-C3A
34	Х	101	LMT	C2-C3-C4-C5
34	с	404	LMT	C3-C4-C5-C6
35	b	602	CDL	C51-C52-C53-C54
35	с	401	CDL	C44-C45-C46-C47
34	С	404	LMT	C2-C3-C4-C5
35	V	202	CDL	C59-C60-C61-C62
35	В	601	CDL	C63-C64-C65-C66
35	В	602	CDL	C51-C52-C53-C54
35	0	203	CDL	CB3-CB4-CB6-OB8
35	b	601	CDL	C63-C64-C65-C66
35	b	602	CDL	CB3-CB4-CB6-OB8
35	V	202	CDL	CA3-CA4-CA6-OA8
35	0	203	CDL	CB3-CB4-CB6-OB8
35	В	602	CDL	CB3-CB4-CB6-OB8
35	V	202	CDL	CA3-CA4-CA6-OA8
35	С	401	CDL	CB3-CB4-CB6-OB8
36	J	302	PEE	C17-C18-C19-C20
34	D	401	LMT	O5'-C5'-C6'-O6'
35	с	401	CDL	C31-C32-C33-C34
35	V	202	CDL	C59-C60-C61-C62
35	u	201	CDL	C84-C85-C86-C87
35	U	201	CDL	C84-C85-C86-C87
35	В	602	CDL	C44-C45-C46-C47
33	0	204	PC1	C3E-C3F-C3G-C3H
33	0	204	PC1	C3E-C3F-C3G-C3H
35	b	602	CDL	C44-C45-C46-C47
33	V	201	PC1	C36-C37-C38-C39
34	D	403	LMT	C3-C4-C5-C6
35	C	401	CDL	C84-C85-C86-C87
33	v	201	PC1	C36-C37-C38-C39



Mol	Chain	Res	Type	Atoms
34	d	403	LMT	C3-C4-C5-C6
36	J	302	PEE	C40-C41-C42-C43
34	d	401	LMT	O5'-C5'-C6'-O6'
36	j	302	PEE	C40-C41-C42-C43
36	J	302	PEE	C23-C24-C25-C26
35	V	202	CDL	C44-C45-C46-C47
36	j	302	PEE	C23-C24-C25-C26
35	h	302	CDL	CB3-CB4-OB6-CB5
35	d	402	CDL	CA6-CA4-OA6-CA5
35	Н	302	CDL	CB3-CB4-OB6-CB5
35	D	402	CDL	CA6-CA4-OA6-CA5
35	u	201	CDL	C38-C39-C40-C41
35	С	401	CDL	C19-C20-C21-C22
36	с	403	PEE	C42-C43-C44-C45
36	С	403	PEE	C42-C43-C44-C45
35	V	202	CDL	C44-C45-C46-C47
35	U	201	CDL	C38-C39-C40-C41
35	С	401	CDL	C34-C35-C36-C37
33	V	201	PC1	C38-C39-C3A-C3B
33	V	201	PC1	C38-C39-C3A-C3B
35	u	201	CDL	C58-C59-C60-C61
35	b	601	CDL	C32-C33-C34-C35
35	V	202	CDL	C74-C75-C76-C77
35	U	201	CDL	C58-C59-C60-C61
35	Н	302	CDL	C64-C65-C66-C67
35	0	203	CDL	C71-CB7-OB8-CB6
35	0	203	CDL	C71-CB7-OB8-CB6
33	V	201	PC1	O11-C1-C2-O21
35	b	601	CDL	OA5-CA3-CA4-OA6
35	b	602	CDL	OA5-CA3-CA4-OA6
35	В	601	CDL	OA5-CA3-CA4-OA6
36	j	302	PEE	C17-C18-C19-C20
35	С	401	CDL	CA7-C31-C32-C33
34	D	401	LMT	C6-C7-C8-C9
35	h	302	CDL	C64-C65-C66-C67
36	j	302	PEE	C21-C22-C23-C24
35	E	401	CDL	C42-C43-C44-C45
35	В	602	CDL	C58-C59-C60-C61
34	h	301	LMT	C4B-C5B-C6B-O6B
35	С	401	CDL	C60-C61-C62-C63
36	J	302	PEE	C21-C22-C23-C24
34	d	401	LMT	C5-C6-C7-C8



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Mol	Chain	Res	Type	Atoms	
35	V	202	CDL	C74-C75-C76-C77	
35	0	203	CDL	OB6-CB4-CB6-OB8	
35	е	401	CDL	OA6-CA4-CA6-OA8	
35	V	202	CDL	OA6-CA4-CA6-OA8	
35	0	203	CDL	OB6-CB4-CB6-OB8	
35	Е	401	CDL	OA6-CA4-CA6-OA8	
35	е	401	CDL	C42-C43-C44-C45	
35	В	601	CDL	C32-C33-C34-C35	
35	h	302	CDL	C34-C35-C36-C37	
35	b	601	CDL	C83-C84-C85-C86	
35	Н	302	CDL	C34-C35-C36-C37	
35	b	602	CDL	C58-C59-C60-C61	
35	В	601	CDL	C83-C84-C85-C86	
35	b	601	CDL	C52-C53-C54-C55	
35	с	401	CDL	C15-C16-C17-C18	
35	В	601	CDL	C17-C18-C19-C20	
35	b	601	CDL	C31-CA7-OA8-CA6	
35	d	402	CDL	C31-CA7-OA8-CA6	
35	В	601	CDL	C31-CA7-OA8-CA6	
35	D	402	CDL	C31-CA7-OA8-CA6	
35	с	401	CDL	C36-C37-C38-C39	
35	0	203	CDL	C35-C36-C37-C38	
34	X	101	LMT	O5'-C5'-C6'-O6'	
35	0	203	CDL	C35-C36-C37-C38	
35	В	602	CDL	C31-C32-C33-C34	
35	h	302	CDL	C24-C25-C26-C27	
35	b	601	CDL	C17-C18-C19-C20	
35	b	602	CDL	C31-C32-C33-C34	
35	Н	302	CDL	C24-C25-C26-C27	
35	С	401	CDL	C75-C76-C77-C78	
35	с	401	CDL	C14-C15-C16-C17	
36	J	302	PEE	C13-C14-C15-C16	
35	с	401	CDL	C13-C14-C15-C16	
35	В	601	CDL	C52-C53-C54-C55	
35	е	401	CDL	OB5-CB3-CB4-CB6	
35	Е	401	CDL	OB5-CB3-CB4-CB6	
35	0	203	CDL	C59-C60-C61-C62	
35	u	201	CDL	C64-C65-C66-C67	
35	V	202	CDL	C11-C12-C13-C14	
36	j	302	PEE	C13-C14-C15-C16	
34	c	402	LMT	O1'-C1-C2-C3	
34	С	402	LMT	O1'-C1-C2-C3	

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Mol	Chain	Res	Type	Atoms
35	U	201	CDL	C64-C65-C66-C67
35	0	203	CDL	C59-C60-C61-C62
35	V	202	CDL	C11-C12-C13-C14
35	С	401	CDL	C13-C14-C15-C16
35	С	401	CDL	C61-C62-C63-C64
36	J	302	PEE	C30-C31-C32-C33
35	с	401	CDL	C63-C64-C65-C66
35	V	202	CDL	C1-CA2-OA2-PA1
35	V	202	CDL	C52-C53-C54-C55
34	0	202	LMT	C2-C1-O1'-C1'
34	0	202	LMT	C2-C1-O1'-C1'
35	V	202	CDL	C52-C53-C54-C55
35	с	401	CDL	C59-C60-C61-C62
35	0	203	CDL	CA3-CA4-CA6-OA8
35	с	401	CDL	CB3-CB4-CB6-OB8
35	0	203	CDL	CA3-CA4-CA6-OA8
33	0	204	PC1	C26-C27-C28-C29
35	D	402	CDL	C71-C72-C73-C74
36	с	403	PEE	C34-C35-C36-C37
36	С	403	PEE	C34-C35-C36-C37
36	j	302	PEE	C30-C31-C32-C33
35	d	402	CDL	C71-C72-C73-C74
35	V	202	CDL	C15-C16-C17-C18
33	0	204	PC1	C26-C27-C28-C29
35	е	401	CDL	C32-C33-C34-C35
35	Ε	401	CDL	C32-C33-C34-C35
33	0	201	PC1	C1-O11-P-O13
35	u	201	CDL	CB2-OB2-PB2-OB5
35	V	202	CDL	CA3-OA5-PA1-OA2
35	U	201	CDL	CB2-OB2-PB2-OB5
34	D	401	LMT	O1'-C1-C2-C3
35	D	402	CDL	C56-C57-C58-C59
34	с	404	LMT	C4'-C5'-C6'-O6'
35	d	402	CDL	C56-C57-C58-C59
35	V	202	CDL	C33-C34-C35-C36
33	0	201	PC1	O11-C1-C2-O21
33	0	204	PC1	O11-C1-C2-O21
33	V	201	PC1	O11-C1-C2-O21
33	0	201	PC1	O11-C1-C2-O21
33	0	204	PC1	O11-C1-C2-O21
35	b	602	CDL	OB5-CB3-CB4-OB6
35	с	401	CDL	OB5-CB3-CB4-OB6



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Mol	Chain	Kes	Type	Atoms
35	В	602	CDL	OB5-CB3-CB4-OB6
35	С	401	CDL	C20-C21-C22-C23
33	0	201	PC1	C34-C35-C36-C37
35	V	202	CDL	C33-C34-C35-C36
33	V	201	PC1	C2B-C2C-C2D-C2E
35	V	202	CDL	C15-C16-C17-C18
35	С	401	CDL	C62-C63-C64-C65
35	b	601	CDL	OA9-CA7-OA8-CA6
35	В	601	CDL	OA9-CA7-OA8-CA6
33	0	201	PC1	C34-C35-C36-C37
33	V	201	PC1	C2B-C2C-C2D-C2E
35	с	401	CDL	C34-C35-C36-C37
35	h	302	CDL	C36-C37-C38-C39
35	е	401	CDL	C71-C72-C73-C74
35	Е	401	CDL	C71-C72-C73-C74
35	h	302	CDL	C1-CA2-OA2-PA1
35	0	203	CDL	CA4-CA3-OA5-PA1
35	Н	302	CDL	C1-CA2-OA2-PA1
35	V	202	CDL	C1-CA2-OA2-PA1
35	0	203	CDL	OB9-CB7-OB8-CB6
35	0	203	CDL	OB9-CB7-OB8-CB6
35	b	602	CDL	C63-C64-C65-C66
35	Н	302	CDL	C36-C37-C38-C39
35	В	602	CDL	C63-C64-C65-C66
35	0	203	CDL	C44-C45-C46-C47
35	0	203	CDL	C44-C45-C46-C47
34	Н	301	LMT	C4B-C5B-C6B-O6B
35	С	401	CDL	C31-C32-C33-C34
35	d	402	CDL	CA7-C31-C32-C33
35	D	402	CDL	CA7-C31-C32-C33
35	с	401	CDL	OB5-CB3-CB4-CB6
35	h	302	CDL	C78-C79-C80-C81
35	с	401	CDL	C75-C76-C77-C78
35	d	402	CDL	OA9-CA7-OA8-CA6
35	0	203	CDL	C72-C73-C74-C75
35	0	203	CDL	C72-C73-C74-C75
35	Н	302	CDL	C78-C79-C80-C81
34	Н	301	LMT	C5'-C4'-O1B-C1B
34	с	402	LMT	C6-C7-C8-C9
35	С	401	CDL	C56-C57-C58-C59
35	D	402	CDL	OA9-CA7-OA8-CA6
34	С	402	LMT	C6-C7-C8-C9
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Mol	Chain	Res	Type	Atoms
35	b	602	CDL	CB6-CB4-OB6-CB5
35	В	602	CDL	CB6-CB4-OB6-CB5
35	b	601	CDL	C61-C62-C63-C64
35	u	201	CDL	C11-C12-C13-C14
34	h	301	LMT	C5'-C4'-O1B-C1B
34	С	402	LMT	C11-C10-C9-C8
35	0	203	CDL	CA4-CA3-OA5-PA1
35	с	401	CDL	C1-CA2-OA2-PA1
35	V	202	CDL	CB3-CB4-CB6-OB8
35	Е	401	CDL	C17-C18-C19-C20
35	е	401	CDL	OB5-CB3-CB4-OB6
35	b	601	CDL	OB5-CB3-CB4-OB6
35	V	202	CDL	OA5-CA3-CA4-OA6
35	В	602	CDL	OA5-CA3-CA4-OA6
35	С	401	CDL	OB5-CB3-CB4-OB6
33	0	204	PC1	C23-C24-C25-C26
33	0	204	PC1	C23-C24-C25-C26
35	h	302	CDL	C16-C17-C18-C19
35	U	201	CDL	C11-C12-C13-C14
35	Н	302	CDL	C16-C17-C18-C19
35	В	601	CDL	C61-C62-C63-C64
34	с	402	LMT	C11-C10-C9-C8
34	Х	101	LMT	C9-C10-C11-C12
35	е	401	CDL	C59-C60-C61-C62
35	d	402	CDL	C38-C39-C40-C41
35	D	402	CDL	C38-C39-C40-C41
35	Е	401	CDL	C59-C60-C61-C62
35	h	302	CDL	OB6-CB4-CB6-OB8
35	b	602	CDL	OB6-CB4-CB6-OB8
35	V	202	CDL	OB6-CB4-CB6-OB8
35	с	401	CDL	OB6-CB4-CB6-OB8
35	Н	302	CDL	OB6-CB4-CB6-OB8
35	В	602	CDL	OB6-CB4-CB6-OB8
34	Х	101	LMT	C9-C10-C11-C12
35	0	203	CDL	C43-C44-C45-C46
36	С	403	PEE	C40-C41-C42-C43
35	0	203	CDL	C43-C44-C45-C46
35	е	401	CDL	C17-C18-C19-C20
36	J	301	PEE	C12-C13-C14-C15
35	d	402	CDL	C41-C42-C43-C44
35	D	402	CDL	C41-C42-C43-C44
36	i	301	PEE	C12-C13-C14-C15



Mol	Chain	Res	Type	Atoms
35	В	602	CDL	C71-C72-C73-C74
36	С	403	PEE	C40-C41-C42-C43
34	D	401	LMT	C4-C5-C6-C7
35	b	602	CDL	C71-C72-C73-C74
36	j	302	PEE	C44-C45-C46-C47
35	d	402	CDL	CA2-OA2-PA1-OA5
35	D	402	CDL	CA2-OA2-PA1-OA5
35	b	601	CDL	O1-C1-CA2-OA2
35	В	601	CDL	O1-C1-CA2-OA2
34	Х	101	LMT	C4-C5-C6-C7
36	J	302	PEE	C44-C45-C46-C47
34	Х	101	LMT	C4-C5-C6-C7
34	С	402	LMT	C3'-C4'-O1B-C1B
33	0	201	PC1	C1-O11-P-O12
33	V	201	PC1	C11-O13-P-O14
33	0	201	PC1	C1-O11-P-O12
33	V	201	PC1	C11-O13-P-O14
35	0	203	CDL	CB3-OB5-PB2-OB4
35	h	302	CDL	CA2-OA2-PA1-OA3
35	h	302	CDL	CB2-OB2-PB2-OB4
35	е	401	CDL	CA3-OA5-PA1-OA3
35	d	402	CDL	CB3-OB5-PB2-OB4
35	Н	302	CDL	CA2-OA2-PA1-OA3
35	Н	302	CDL	CB2-OB2-PB2-OB4
35	Е	401	CDL	CA3-OA5-PA1-OA3
35	С	401	CDL	CA3-OA5-PA1-OA3
35	С	401	CDL	CA3-OA5-PA1-OA4
35	С	401	CDL	CB3-OB5-PB2-OB3
35	D	402	CDL	CB3-OB5-PB2-OB4
37	E2	601	ATP	C5'-O5'-PA-O2A
37	E1	601	ATP	C5'-O5'-PA-O2A
38	B2	601	ADP	C5'-O5'-PA-O1A
38	B1	601	ADP	C5'-O5'-PA-O1A
35	D	402	CDL	C11-C12-C13-C14
33	V	201	PC1	O11-C1-C2-C3
33	V	201	PC1	011-C1-C2-C3
35	0	203	CDL	OA5-CA3-CA4-CA6
35	V	202	CDL	OA5-CA3-CA4-CA6
35	V	202	CDL	OA5-CA3-CA4-CA6
35	D	402	CDL	OA5-CA3-CA4-CA6
35	d	402	CDL	C11-C12-C13-C14
- 33	0	201	PC1	C38-C39-C3A-C3B



Mol	Chain	Res	Type	Atoms
33	0	201	PC1	C38-C39-C3A-C3B
35	Е	401	CDL	C20-C21-C22-C23
35	е	401	CDL	C20-C21-C22-C23
33	0	204	PC1	C12-C11-O13-P
33	0	204	PC1	C12-C11-O13-P
36	j	302	PEE	C14-C15-C16-C17
35	C	401	CDL	C17-C18-C19-C20
35	С	401	CDL	C43-C44-C45-C46
36	J	302	PEE	C14-C15-C16-C17
35	с	401	CDL	C54-C55-C56-C57
35	В	602	CDL	C59-C60-C61-C62
35	V	202	CDL	OA5-CA3-CA4-OA6
35	В	602	CDL	C15-C16-C17-C18
33	0	204	PC1	C3B-C3C-C3D-C3E
35	b	602	CDL	C59-C60-C61-C62
33	0	201	PC1	C2D-C2E-C2F-C2G
33	0	204	PC1	C3B-C3C-C3D-C3E
36	j	302	PEE	C41-C42-C43-C44
33	0	201	PC1	C2D-C2E-C2F-C2G
34	с	402	LMT	C3'-C4'-O1B-C1B
35	b	602	CDL	C15-C16-C17-C18
33	0	204	PC1	O13-C11-C12-N
33	0	204	PC1	O13-C11-C12-N
35	V	202	CDL	CB3-CB4-CB6-OB8
35	U	201	CDL	C18-C19-C20-C21
35	0	203	CDL	OA6-CA4-CA6-OA8
35	0	203	CDL	OA6-CA4-CA6-OA8
35	V	202	CDL	OB6-CB4-CB6-OB8
35	С	401	CDL	OB6-CB4-CB6-OB8
34	d	403	LMT	O1'-C1-C2-C3
36	J	302	PEE	C41-C42-C43-C44
35	u	201	CDL	C18-C19-C20-C21
34	D	403	LMT	O1'-C1-C2-C3
35	С	401	CDL	C53-C54-C55-C56
35	е	401	CDL	C1-CB2-OB2-PB2
35	E	401	CDL	C1-CB2-OB2-PB2
35	В	602	CDL	C83-C84-C85-C86
35	b	602	CDL	C83-C84-C85-C86
35	Н	302	CDL	C84-C85-C86-C87
33	v	201	PC1	C26-C27-C28-C29
35	U	201	CDL	C16-C17-C18-C19
35	V	202	CDL	C37-C38-C39-C40



Mol	Chain	Res	Type	Atoms
33	V	201	PC1	C26-C27-C28-C29
35	b	601	CDL	C60-C61-C62-C63
35	V	202	CDL	C37-C38-C39-C40
35	0	203	CDL	C19-C20-C21-C22
35	u	201	CDL	C16-C17-C18-C19
35	h	302	CDL	C84-C85-C86-C87
35	V	202	CDL	C81-C82-C83-C84
35	V	202	CDL	C81-C82-C83-C84
33	0	204	PC1	O31-C31-C32-C33
36	J	301	PEE	O4-C10-O2-C2
34	С	402	LMT	C5'-C4'-O1B-C1B
35	u	201	CDL	C33-C34-C35-C36
35	с	401	CDL	C23-C24-C25-C26
33	0	204	PC1	O31-C31-C32-C33
35	U	201	CDL	C33-C34-C35-C36
36	j	301	PEE	C20-C21-C22-C23
36	J	301	PEE	C20-C21-C22-C23
35	u	201	CDL	C36-C37-C38-C39
35	С	401	CDL	C83-C84-C85-C86
35	b	602	CDL	CA3-CA4-OA6-CA5
35	V	202	CDL	CA3-CA4-OA6-CA5
33	0	204	PC1	O11-C1-C2-C3
33	0	204	PC1	O11-C1-C2-C3
35	b	601	CDL	OA5-CA3-CA4-CA6
35	В	601	CDL	OA5-CA3-CA4-CA6
35	В	601	CDL	C60-C61-C62-C63
36	j	301	PEE	O4-C10-O2-C2
36	j	302	PEE	C16-C17-C18-C19
36	J	302	PEE	C16-C17-C18-C19
35	с	401	CDL	C80-C81-C82-C83
35	d	402	CDL	C74-C75-C76-C77
35	D	402	CDL	C74-C75-C76-C77
35	E	401	CDL	OB5-CB3-CB4-OB6
35	0	203	CDL	C19-C20-C21-C22
35	U	201	CDL	C36-C37-C38-C39
35	Н	302	CDL	C39-C40-C41-C42
33	V	201	PC1	C2F-C2G-C2H-C2I
33	V	201	PC1	C2F-C2G-C2H-C2I
35	d	402	CDL	OB6-CB4-CB6-OB8
35	D	402	CDL	OB6-CB4-CB6-OB8
33	0	204	PC1	C1-O11-P-O13
- 33	O	204	PC1	C1-O11-P-O13



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Mol	Chain	Res	Type	Atoms
35	0	203	CDL	CA2-OA2-PA1-OA5
35	0	203	CDL	CA2-OA2-PA1-OA5
36	с	403	PEE	C4-O4P-P-O3P
36	С	403	PEE	C4-O4P-P-O3P
35	V	202	CDL	C24-C25-C26-C27
33	0	204	PC1	C2B-C2C-C2D-C2E
35	V	202	CDL	C24-C25-C26-C27
36	j	301	PEE	O5-C30-O3-C3
35	В	601	CDL	C76-C77-C78-C79
36	j	301	PEE	C21-C22-C23-C24
36	J	301	PEE	C21-C22-C23-C24
33	0	204	PC1	C2B-C2C-C2D-C2E
34	с	402	LMT	C5'-C4'-O1B-C1B
35	В	601	CDL	C15-C16-C17-C18
35	h	302	CDL	C39-C40-C41-C42
35	b	601	CDL	C76-C77-C78-C79
33	V	201	PC1	O32-C31-O31-C3
33	V	201	PC1	O32-C31-O31-C3
33	0	201	PC1	C39-C3A-C3B-C3C
33	V	201	PC1	C32-C31-O31-C3
36	j	301	PEE	C2-C1-O3P-P
36	J	301	PEE	C2-C1-O3P-P
35	b	601	CDL	C15-C16-C17-C18
36	J	302	PEE	C34-C35-C36-C37
36	С	403	PEE	C33-C34-C35-C36
35	С	401	CDL	C39-C40-C41-C42
33	V	201	PC1	C32-C31-O31-C3
33	0	204	PC1	C25-C26-C27-C28
36	J	301	PEE	O5-C30-O3-C3
35	с	401	CDL	C35-C36-C37-C38
33	0	201	PC1	C39-C3A-C3B-C3C
33	0	204	PC1	C25-C26-C27-C28
36	с	403	PEE	C33-C34-C35-C36
35	d	402	CDL	OA5-CA3-CA4-CA6
35	0	203	CDL	OA5-CA3-CA4-CA6
36	j	301	PEE	O4P-C4-C5-N
36	J	301	PEE	O4P-C4-C5-N
35	b	602	CDL	C13-C14-C15-C16
35	0	203	CDL	C17-C18-C19-C20
35	е	401	CDL	OA5-CA3-CA4-OA6
35	В	601	CDL	OB5-CB3-CB4-OB6
35	0	203	CDL	C17-C18-C19-C20



Mol	Chain	Res	Type	Atoms
35	V	202	CDL	C76-C77-C78-C79
34	d	401	LMT	O1'-C1-C2-C3
35	е	401	CDL	C62-C63-C64-C65
36	j	302	PEE	C34-C35-C36-C37
36	J	302	PEE	C11-C12-C13-C14
35	u	201	CDL	C44-C45-C46-C47
35	с	401	CDL	C11-C12-C13-C14
33	V	201	PC1	C39-C3A-C3B-C3C
35	U	201	CDL	C44-C45-C46-C47
35	В	602	CDL	C13-C14-C15-C16
35	V	202	CDL	C76-C77-C78-C79
34	с	402	LMT	C7-C8-C9-C10
34	0	202	LMT	C5-C6-C7-C8
35	Е	401	CDL	C62-C63-C64-C65
36	j	302	PEE	C11-C12-C13-C14
33	V	201	PC1	C39-C3A-C3B-C3C
36	j	301	PEE	C31-C30-O3-C3
33	0	204	PC1	C29-C2A-C2B-C2C
34	С	402	LMT	C7-C8-C9-C10
33	0	204	PC1	C29-C2A-C2B-C2C
35	d	402	CDL	C16-C17-C18-C19
33	0	201	PC1	C3A-C3B-C3C-C3D
35	h	302	CDL	C63-C64-C65-C66
35	D	402	CDL	C16-C17-C18-C19
35	С	401	CDL	CB5-C51-C52-C53
33	0	201	PC1	C3A-C3B-C3C-C3D
35	d	402	CDL	C32-C33-C34-C35
36	J	301	PEE	C11-C10-O2-C2
35	d	402	CDL	CB3-CB4-CB6-OB8
35	D	402	CDL	CB3-CB4-CB6-OB8
34	0	202	LMT	C5-C6-C7-C8
36	С	403	PEE	C11-C12-C13-C14
35	d	402	CDL	C75-C76-C77-C78
36	J	301	PEE	C31-C30-O3-C3
34	с	404	LMT	O5'-C5'-C6'-O6'
33	0	204	PC1	C24-C25-C26-C27
35	D	402	CDL	C32-C33-C34-C35
35	Н	302	CDL	C63-C64-C65-C66
35	С	401	CDL	CB7-C71-C72-C73
35	D	402	CDL	C75-C76-C77-C78
35	h	302	CDL	CA3-CA4-OA6-CA5
35	h	302	CDL	CA6-CA4-OA6-CA5



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Mol	Chain	Ros	Type	

Mol	Chain	Res	Type	Atoms
35	с	401	CDL	CA6-CA4-OA6-CA5
35	d	402	CDL	CB3-CB4-OB6-CB5
35	Н	302	CDL	CA3-CA4-OA6-CA5
35	В	602	CDL	CA3-CA4-OA6-CA5
35	V	202	CDL	CA3-CA4-OA6-CA5
35	D	402	CDL	CB3-CB4-OB6-CB5
35	е	401	CDL	C55-C56-C57-C58
35	е	401	CDL	OB7-CB5-OB6-CB4
35	Е	401	CDL	OB7-CB5-OB6-CB4
36	с	403	PEE	C11-C12-C13-C14
35	b	602	CDL	C17-C18-C19-C20
35	В	602	CDL	C17-C18-C19-C20
35	Е	401	CDL	OA5-CA3-CA4-OA6
35	С	401	CDL	C16-C17-C18-C19
33	0	201	PC1	O11-C1-C2-C3
33	0	201	PC1	O11-C1-C2-C3
35	е	401	CDL	OA5-CA3-CA4-CA6
35	b	601	CDL	OB5-CB3-CB4-CB6
35	Е	401	CDL	OA5-CA3-CA4-CA6
33	0	204	PC1	C24-C25-C26-C27
36	j	301	PEE	C11-C10-O2-C2
36	j	301	PEE	C22-C23-C24-C25
35	Е	401	CDL	C55-C56-C57-C58
36	j	301	PEE	C42-C43-C44-C45
36	J	301	PEE	C22-C23-C24-C25
35	Е	401	CDL	OA7-CA5-OA6-CA4
35	В	602	CDL	C21-C22-C23-C24
35	0	203	CDL	C52-C51-CB5-OB6
35	D	402	CDL	C64-C65-C66-C67
35	d	402	CDL	C64-C65-C66-C67
36	J	301	PEE	C19-C20-C21-C22
35	е	401	CDL	C35-C36-C37-C38
35	b	602	CDL	C21-C22-C23-C24
35	с	401	CDL	C41-C42-C43-C44
36	с	403	PEE	C12-C13-C14-C15
36	J	301	PEE	C13-C14-C15-C16
36	J	301	PEE	C42-C43-C44-C45
35	D	402	CDL	C24-C25-C26-C27
36	j	301	PEE	C13-C14-C15-C16
35	e	401	CDL	C84-C85-C86-C87
36	С	403	PEE	C12-C13-C14-C15
36	j	301	PEE	C36-C37-C38-C39



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Mol	Chain	Res	Type	Atoms
36	J	301	PEE	C36-C37-C38-C39
35	0	203	CDL	C52-C51-CB5-OB6
35	Е	401	CDL	C35-C36-C37-C38
37	C1	601	ATP	PB-O3A-PA-O2A
36	j	301	PEE	C19-C20-C21-C22
34	С	404	LMT	C5-C6-C7-C8
35	С	401	CDL	C36-C37-C38-C39
35	с	401	CDL	C83-C84-C85-C86
35	u	201	CDL	C32-C31-CA7-OA8
35	U	201	CDL	C32-C31-CA7-OA8
34	Н	301	LMT	C5-C6-C7-C8
35	С	401	CDL	C82-C83-C84-C85
35	d	402	CDL	C24-C25-C26-C27
35	u	201	CDL	C43-C44-C45-C46
35	Е	401	CDL	C84-C85-C86-C87
35	V	202	CDL	C34-C35-C36-C37
34	h	301	LMT	C5-C6-C7-C8
36	с	403	PEE	C38-C39-C40-C41
36	С	403	PEE	C38-C39-C40-C41
35	Н	302	CDL	CB7-C71-C72-C73
35	V	202	CDL	C34-C35-C36-C37
35	U	201	CDL	C43-C44-C45-C46
35	h	302	CDL	CB7-C71-C72-C73
34	С	404	LMT	C5-C6-C7-C8
35	b	602	CDL	OA5-CA3-CA4-CA6
35	b	602	CDL	OB5-CB3-CB4-CB6
35	В	601	CDL	OB5-CB3-CB4-CB6
35	В	602	CDL	OA5-CA3-CA4-CA6
35	В	602	CDL	OB5-CB3-CB4-CB6
36	с	403	PEE	C18-C19-C20-C21
36	С	403	PEE	C18-C19-C20-C21
35	b	602	CDL	C60-C61-C62-C63
35	h	302	CDL	OA6-CA4-CA6-OA8
35	b	602	CDL	C72-C71-CB7-OB8
35	В	602	CDL	C72-C71-CB7-OB8
35	0	203	CDL	C34-C35-C36-C37
36	j	301	PEE	C32-C33-C34-C35
35	b	602	CDL	CA3-OA5-PA1-OA2
35	0	203	CDL	C34-C35-C36-C37
35	U	201	CDL	C54-C55-C56-C57
33	0	201	PC1	C2F-C2G-C2H-C2I
$\overline{35}$	u	201	CDL	C54-C55-C56-C57



Mol	Chain	Res	Type	Atoms
34	0	202	LMT	C9-C10-C11-C12
36	J	301	PEE	C32-C33-C34-C35
35	u	201	CDL	C52-C51-CB5-OB6
35	U	201	CDL	C52-C51-CB5-OB6
35	с	401	CDL	CA3-CA4-OA6-CA5
35	Н	302	CDL	CA6-CA4-OA6-CA5
35	С	401	CDL	CA6-CA4-OA6-CA5
36	j	302	PEE	C3-C2-O2-C10
33	0	201	PC1	C2F-C2G-C2H-C2I
35	е	401	CDL	OA7-CA5-OA6-CA4
35	0	203	CDL	C32-C31-CA7-OA8
33	V	201	PC1	C32-C33-C34-C35
33	V	201	PC1	C32-C33-C34-C35
34	0	202	LMT	C9-C10-C11-C12
35	В	602	CDL	C60-C61-C62-C63
35	0	203	CDL	C32-C31-CA7-OA8
35	е	401	CDL	CA3-CA4-CA6-OA8
35	С	401	CDL	C81-C82-C83-C84
35	V	202	CDL	C82-C83-C84-C85
35	V	202	CDL	C82-C83-C84-C85
35	0	203	CDL	C77-C78-C79-C80
36	j	302	PEE	O3-C30-C31-C32
35	В	602	CDL	C41-C42-C43-C44
35	Н	302	CDL	OA6-CA4-CA6-OA8
33	0	204	PC1	C28-C29-C2A-C2B
36	J	302	PEE	O3-C30-C31-C32
35	0	203	CDL	C80-C81-C82-C83
35	V	202	CDL	C83-C84-C85-C86
35	b	602	CDL	C41-C42-C43-C44
35	е	401	CDL	C51-CB5-OB6-CB4
35	с	401	CDL	C56-C57-C58-C59
35	b	601	CDL	C40-C41-C42-C43
35	v	202	CDL	C83-C84-C85-C86
35	0	203	CDL	C77-C78-C79-C80
35	С	401	CDL	C80-C81-C82-C83
35	b	601	CDL	C32-C31-CA7-OA8
37	C2	601	ATP	PB-O3A-PA-O2A
37	C1	601	ATP	PB-O3A-PA-O1A
36	С	403	PEE	C41-C42-C43-C44
36	с	403	PEE	C41-C42-C43-C44
35	Е	401	CDL	C51-CB5-OB6-CB4
35	В	602	CDL	C19-C20-C21-C22

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Mol	Chain	Res	Type	Atoms
35	R	601	CDL	C32-C31-CA7-OA8
35	0	203	CDL	C80-C81-C82-C83
35	H	302	CDL	C42-C43-C44-C45
- 00 	0	204	PC1	$C_{42}-C_{43}-C_{44}-C_{45}$
35	b	602	CDL	$C19_C20_C21_C22$
35	ם ס	402	CDL	$\begin{array}{c} 019 - 020 - 021 - 022 \\ \hline 031 \ 032 \ 033 \ 034 \end{array}$
25	d d	402	CDL	$\begin{array}{c} 0.01 \\ \hline 0.01 \\ \hline 0.02 $
25	u P	402 602	CDL	$\begin{array}{c} 0.01 \\ \hline 0.02 $
- J-J - 9-9	D	204	DDL DC1	$\begin{array}{c} C32 - C31 - CA7 - CA8 \\ \hline C38 - C30 - C3A - C3P \\ \hline \end{array}$
00 25	0	204	CDI	$\frac{\text{C20-C29-C2A-C2D}}{\text{C52-C51-CP5-OP7}}$
- 30 - 25	u D	201	CDL	$C_{02}$ - $C_{01}$ - $C_{00}$ - $C$
35	<u>В</u>	602 C02	CDL	$\begin{array}{c} \text{C72-C71-CB7-OB9} \\ \text{C22-C21-CA7-OA9} \end{array}$
35	D	602 401	CDL	015 016 017 019
35	e	401	CDL	C15-C16-C17-C18
35	E	401	CDL	C36-C37-C38-C39
35	h	302	CDL	C42-C43-C44-C45
35	b	602	CDL	C72-C71-CB7-OB9
35	0	203	CDL	C79-C80-C81-C82
35	В	601	CDL	C40-C41-C42-C43
35	Ε	401	CDL	CA3-CA4-CA6-OA8
34	h	301	LMT	O1'-C1-C2-C3
35	е	401	CDL	C36-C37-C38-C39
35	е	401	CDL	C80-C81-C82-C83
35	Ε	401	CDL	C72-C73-C74-C75
35	0	203	CDL	C79-C80-C81-C82
36	J	302	PEE	O5-C30-C31-C32
34	Н	301	LMT	O1'-C1-C2-C3
33	0	201	PC1	C11-O13-P-O14
33	V	201	PC1	C11-O13-P-O12
33	0	201	PC1	C11-O13-P-O14
33	V	201	PC1	C11-O13-P-O12
33	V	201	PC1	C11-C12-N-C15
35	V	202	CDL	CA2-OA2-PA1-OA3
35	V	202	CDL	CB2-OB2-PB2-OB4
35	V	202	CDL	CB3-OB5-PB2-OB3
35	с	401	CDL	CB2-OB2-PB2-OB3
35	V	202	CDL	CA2-OA2-PA1-OA3
35	V	202	CDL	CB2-OB2-PB2-OB4
35	Е	401	CDL	C15-C16-C17-C18
35	Е	401	CDL	C80-C81-C82-C83
35	U	201	CDL	C52-C51-CB5-OB7
35	h	302	CDL	C72-C71-CB7-OB8
35	U	201	CDL	C72-C71-CB7-OB8



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Mol	Chain	Res	Type	Atoms
35	U	201	CDL	OA5-CA3-CA4-CA6
36	j	302	PEE	O5-C30-C31-C32
33	0	204	PC1	C22-C23-C24-C25
35	е	401	CDL	C72-C73-C74-C75
33	0	204	PC1	C2C-C2D-C2E-C2F
35	b	602	CDL	CA6-CA4-OA6-CA5
36	j	302	PEE	C1-C2-O2-C10
36	J	302	PEE	C3-C2-O2-C10
35	u	201	CDL	C72-C71-CB7-OB8
35	Н	302	CDL	C72-C71-CB7-OB8
35	с	401	CDL	C16-C17-C18-C19
36	j	302	PEE	C42-C43-C44-C45
35	V	202	CDL	CA7-C31-C32-C33
35	V	202	CDL	CA7-C31-C32-C33
35	D	402	CDL	C33-C34-C35-C36
33	V	201	PC1	C11-C12-N-C14
33	0	204	PC1	C22-C23-C24-C25
33	V	201	PC1	C28-C29-C2A-C2B
35	С	401	CDL	C64-C65-C66-C67
35	с	401	CDL	C58-C59-C60-C61
35	с	401	CDL	C60-C61-C62-C63
36	J	302	PEE	C42-C43-C44-C45
35	u	201	CDL	C72-C71-CB7-OB9
35	b	601	CDL	C32-C31-CA7-OA9
35	b	602	CDL	C32-C31-CA7-OA9
35	U	201	CDL	C72-C71-CB7-OB9
35	В	602	CDL	C32-C31-CA7-OA9
35	D	402	CDL	C12-C13-C14-C15
35	В	601	CDL	C32-C31-CA7-OA9
33	V	201	PC1	O31-C31-C32-C33
33	V	201	PC1	C28-C29-C2A-C2B
35	d	402	CDL	C33-C34-C35-C36
35	С	401	CDL	C37-C38-C39-C40
35	h	302	CDL	C43-C44-C45-C46
36	j	301	PEE	O2-C10-C11-C12
36	J	301	PEE	02-C10-C11-C12
33	V	201	PC1	C11-C12-N-C15
33	V	201	PC1	C11-C12-N-C14
33	0	201	PC1	C3E-C3F-C3G-C3H
35	Н	302	CDL	C43-C44-C45-C46
33	V	201	PC1	O31-C31-C32-C33

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There are no ring outliers.



No monomer is involved in short contacts.

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.
























































































## 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 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-10524. These allow visual inspection of the internal detail of the map and identification of artifacts.

Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections (i)

## 6.1.1 Primary map



6.1.2 Raw map



The images above show the map projected in three orthogonal directions.



## 6.2 Central slices (i)

## 6.2.1 Primary map



X Index: 280



Y Index: 280



Z Index: 280

## 6.2.2 Raw map



X Index: 280

Y Index: 280



The images above show central slices of the map in three orthogonal directions.



## 6.3 Largest variance slices (i)

## 6.3.1 Primary map



X Index: 282



Y Index: 289



Z Index: 253

## 6.3.2 Raw map



X Index: 279

Y Index: 271



The images above show the largest variance slices of the map in three orthogonal directions.



## 6.4 Orthogonal surface views (i)

## 6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.024. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

# X Y Z

### 6.4.2 Raw map

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.



#### Mask visualisation (i) 6.5

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

#### $emd_{10524}_{msk}_{1.map}$ (i) 6.5.1



Υ



# 7 Map analysis (i)

This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution (i)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.



## 7.2 Volume estimate (i)



The volume at the recommended contour level is 964  $\rm nm^3;$  this corresponds to an approximate mass of 871 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.



## 7.3 Rotationally averaged power spectrum (i)



\*Reported resolution corresponds to spatial frequency of 0.345  ${\rm \AA^{-1}}$ 



# 8 Fourier-Shell correlation (i)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

## 8.1 FSC (i)



\*Reported resolution corresponds to spatial frequency of 0.345  $\mathrm{\AA^{-1}}$ 



## 8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.90	3.36	2.96
Unmasked-calculated*	3.42	4.07	3.50

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.42 differs from the reported value 2.9 by more than 10 %



# 9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-10524 and PDB model 6TMK. Per-residue inclusion information can be found in section 3 on page 22.

## 9.1 Map-model overlay (i)



The images above show the 3D surface view of the map at the recommended contour level 0.024 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.



## 9.2 Q-score mapped to coordinate model (i)

This section was not generated.

## 9.3 Atom inclusion mapped to coordinate model (i)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.024).



## 9.4 Atom inclusion (i)



At the recommended contour level, 72% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.



## 9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.024) and Q-score for the entire model and for each chain.

Chain	Atom inclusion
All	0.7151
А	0.8470
A1	0.4344
A2	0.3703
В	0.7263
B1	0.6197
B2	0.5914
С	0.8435
C1	0.6151
C2	0.6099
D	0.9319
D1	0.5764
D2	0.5552
Е	0.9328
E1	0.4687
E2	0.4098
F	0.9182
F1	0.3654
F2	0.3170
G	0.9404
G1	0.3517
G2	0.2880
Н	0.9411
H1	0.7042
H2	0.7445
I	0.9048
I1	0.6660
I2	0.7123
J	0.9651
J1	0.6559
J2	0.7143
K	0.8898
K1	0.6901
K2	0.7203
	0.9445



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Chain	Atom inclusion
L1	0.7123
L2	0.6761
М	0.9561
M1	0.7525
M2	0.6841
N	0.9059
N1	0.7505
N2	0.7304
0	0.8925
O1	0.8068
O2	0.7787
Р	0.9444
P1	0.8008
P2	0.7887
Q	0.8813
Q1	0.7867
Q2	0.7827
R	0.8224
S	0.9242
Т	0.9237
U	0.8829
V	0.9486
W	0.9518
X	0.9424
a	0.8357
b	0.7519
С	0.8336
d	0.9328
dl	0.6059
d2	0.6999
e	0.9320
el	0.7471
e2	0.7605
İ	0.9196
g	0.9380
g1	0.7295
g2	
n :	0.0024
1	0.7204
	0.7205
12	0.0251
J	0.9051

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Chain	Atom inclusion
k	0.8930
l	0.9439
m	0.9601
n	0.9067
0	0.8925
р	0.9456
q	0.8622
r	0.8300
S	0.9229
t	0.9181
u	0.8853
V	0.9467
W	0.9558
X	0.9409

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