



Full wwPDB EM Validation Report ⓘ

Dec 12, 2022 – 03:06 am GMT

PDB ID : 6TML
EMDB ID : EMD-10525
Title : Cryo-EM structure of Toxoplasma gondii mitochondrial ATP synthase hexamer, composite model
Authors : Muhleip, A.; Kock Flygaard, R.; Amunts, A.
Deposited on : 2019-12-04
Resolution : 4.80 Å(reported)

This is a 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

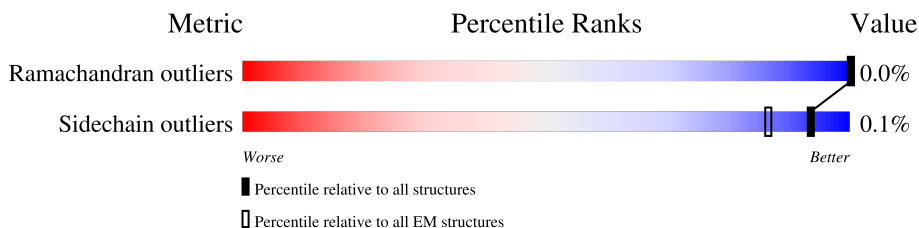
EMDB validation analysis : **FAILED**
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 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 4.80 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	Q7	134	99% .
1	Q8	134	99% .
1	Q9	134	99% .
1	q7	134	99% .
1	q8	134	99% .
1	q9	134	99% .
2	I7	236	38% 62%
2	I8	236	38% 62%
2	I9	236	38% 62%
2	i7	236	38% 62%

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Mol	Chain	Length	Quality of chain	
2	i8	236	38%	62%
2	i9	236	38%	62%
3	T7	133	69%	31%
3	T8	133	69%	31%
3	T9	133	69%	31%
3	t7	133	69%	31%
3	t8	133	69%	31%
3	t9	133	69%	31%
4	G7	252	44%	56%
4	G8	252	44%	56%
4	G9	252	44%	56%
4	g7	252	44%	56%
4	g8	252	44%	56%
4	g9	252	44%	56%
5	O7	157	95%	5%
5	O8	157	95%	5%
5	O9	157	95%	5%
5	o7	157	95%	5%
5	o8	157	95%	5%
5	o9	157	95%	5%
6	K7	224	52%	48%
6	K8	224	52%	48%
6	K9	224	52%	48%
6	k7	224	52%	48%
6	k8	224	52%	48%

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Mol	Chain	Length	Quality of chain	
6	k9	224	52%	48%
7	J7	229	76%	23%
7	J8	229	76%	23%
7	J9	229	76%	23%
7	j7	229	76%	23%
7	j8	229	76%	23%
7	j9	229	76%	23%
8	S7	128	74%	26%
8	S8	128	74%	26%
8	S9	128	74%	26%
8	s7	128	74%	26%
8	s8	128	74%	26%
8	s9	128	74%	26%
9	U7	126	75%	25%
9	U8	126	75%	25%
9	U9	126	75%	25%
9	u7	126	75%	25%
9	u8	126	75%	25%
9	u9	126	75%	25%
10	H7	239	94%	5%
10	H8	239	94%	5%
10	H9	239	94%	5%
10	h7	239	94%	5%
10	h8	239	94%	5%
10	h9	239	94%	5%

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Mol	Chain	Length	Quality of chain	
11	E7	325	43%	57%
11	E8	325	43%	57%
11	E9	325	43%	57%
11	e7	325	43%	57%
11	e8	325	43%	57%
11	e9	325	43%	57%
12	X7	83	99%	.
12	X8	83	99%	.
12	X9	83	99%	.
12	x7	83	99%	.
12	x8	83	99%	.
12	x9	83	99%	.
13	B7	571	84%	15%
13	B8	571	85%	15%
13	B9	571	84%	15%
13	b7	571	85%	15%
13	b8	571	85%	15%
13	b9	571	85%	15%
14	R7	134	99%	..
14	R8	134	98%	..
14	R9	134	99%	..
14	r7	134	98%	..
14	r8	134	99%	..
14	r9	134	99%	..
15	P7	138	78%	22%

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Mol	Chain	Length	Quality of chain	
15	P8	138	78%	22%
15	P9	138	78%	22%
15	p7	138	78%	22%
15	p8	138	78%	22%
15	p9	138	78%	22%
16	V7	111	99%	.
16	V8	111	99%	.
16	V9	111	99%	.
16	v7	111	99%	.
16	v8	111	99%	.
16	v9	111	99%	.
17	L7	208	100%	
17	L8	208	100%	
17	L9	208	100%	
17	l7	208	100%	
17	l8	208	100%	
17	l9	208	100%	
18	C7	398	31%	69%
18	C8	398	31%	69%
18	C9	398	31%	69%
18	c7	398	31%	69%
18	c8	398	31%	69%
18	c9	398	31%	69%
19	D7	310	82%	18%
19	D8	310	82%	18%

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Mol	Chain	Length	Quality of chain	
19	D9	310	82%	18%
19	d7	310	82%	18%
19	d8	310	82%	18%
19	d9	310	82%	18%
20	M7	205	47%	53%
20	M8	205	47%	53%
20	M9	205	47%	53%
20	m7	205	47%	53%
20	m8	205	47%	53%
20	m9	205	47%	53%
21	N7	166	96%	..
21	N8	166	96%	..
21	N9	166	96%	..
21	n7	166	96%	..
21	n8	166	96%	..
21	n9	166	96%	..
22	F7	267	70%	30%
22	F8	267	70%	30%
22	F9	267	70%	30%
22	f7	267	70%	30%
22	f8	267	70%	30%
22	f9	267	70%	30%
23	W7	106	91%	9%
23	W8	106	91%	9%
23	W9	106	91%	9%

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Mol	Chain	Length	Quality of chain	
23	w7	106	91%	9%
23	w8	106	91%	9%
23	w9	106	91%	9%
24	A7	536	87%	13%
24	A8	536	87%	13%
24	A9	536	87%	13%
24	a7	536	87%	13%
24	a8	536	87%	13%
24	a9	536	87%	13%
25	G1	252	69%	29%
25	G2	252	69%	29%
25	G3	252	70%	29%
25	G4	252	70%	29%
25	G5	252	69%	29%
25	G6	252	69%	29%
26	i1	145	28%	72%
26	i2	145	28%	72%
26	i3	145	28%	72%
26	i4	145	28%	72%
26	i5	145	28%	72%
26	i6	145	28%	72%
27	A1	565	91%	9%
27	A2	565	91%	9%
27	A3	565	91%	9%
27	A4	565	91%	9%

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Mol	Chain	Length	Quality of chain	
27	A5	565	91%	9%
27	A6	565	91%	9%
27	C1	565	90%	10%
27	C2	565	90%	10%
27	C3	565	90%	10%
27	C4	565	90%	10%
27	C5	565	90%	10%
27	C6	565	90%	10%
27	E1	565	90%	10%
27	E2	565	90%	10%
27	E3	565	90%	10%
27	E4	565	90%	10%
27	E5	565	90%	10%
27	E6	565	90%	10%
28	B1	560	85%	14%
28	B2	560	85%	14%
28	B3	560	85%	14%
28	B4	560	85%	14%
28	B5	560	85%	14%
28	B6	560	85%	14%
28	D1	560	85%	15%
28	D2	560	85%	15%
28	D3	560	85%	15%
28	D4	560	85%	15%
28	D5	560	85%	15%

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Mol	Chain	Length	Quality of chain	
28	D6	560	85%	15%
28	F1	560	85%	15%
28	F2	560	85%	15%
28	F3	560	85%	15%
28	F4	560	85%	15%
28	F5	560	85%	15%
28	F6	560	85%	15%
29	g1	314	87%	13%
29	g2	314	87%	13%
29	g3	314	87%	13%
29	g4	314	87%	13%
29	g5	314	87%	13%
29	g6	314	87%	13%
30	d1	183	78%	22%
30	d2	183	78%	22%
30	d3	183	78%	22%
30	d4	183	78%	22%
30	d5	183	78%	22%
30	d6	183	78%	22%
31	e1	73	89%	11%
31	e2	73	89%	11%
31	e3	73	89%	11%
31	e4	73	89%	11%
31	e5	73	89%	11%
31	e6	73	89%	11%



















































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Mol	Chain	Length	Quality of chain	
32	H1	166	43%	57%
32	H2	166	43%	57%
32	H3	166	43%	57%
32	H4	166	43%	57%
32	H5	166	43%	57%
32	H6	166	43%	57%
32	I1	166	42%	57%
32	I2	166	42%	57%
32	I3	166	42%	57%
32	I4	166	42%	57%
32	I5	166	42%	57%
32	I6	166	42%	57%
32	J1	166	43%	57%
32	J2	166	43%	57%
32	J3	166	43%	57%
32	J4	166	43%	57%
32	J5	166	43%	57%
32	J6	166	43%	57%
32	K1	166	43%	57%
32	K2	166	43%	57%
32	K3	166	43%	57%
32	K4	166	43%	57%
32	K5	166	43%	57%
32	K6	166	43%	57%
32	L1	166	43%	57%


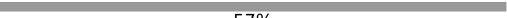


















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Mol	Chain	Length	Quality of chain	
32	L2	166	 43%	 57%
32	L3	166	 43%	 57%
32	L4	166	 43%	 57%
32	L5	166	 43%	 57%
32	L6	166	 43%	 57%
32	M1	166	 43%	 57%
32	M2	166	 43%	 57%
32	M3	166	 43%	 57%
32	M4	166	 43%	 57%
32	M5	166	 43%	 57%
32	M6	166	 43%	 57%
32	N1	166	 43%	 57%
32	N2	166	 43%	 57%
32	N3	166	 43%	 57%
32	N4	166	 43%	 57%
32	N5	166	 43%	 57%
32	N6	166	 43%	 57%
32	O1	166	 43%	 57%
32	O2	166	 43%	 57%
32	O3	166	 43%	 57%
32	O4	166	 43%	 57%
32	O5	166	 43%	 57%
32	O6	166	 43%	 57%
32	P1	166	 43%	 57%
32	P2	166	 43%	 57%

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Mol	Chain	Length	Quality of chain	
32	P3	166	 43%	 57%
32	P4	166	 43%	 57%
32	P5	166	 43%	 57%
32	P6	166	 43%	 57%
32	Q1	166	 43%	 57%
32	Q2	166	 43%	 57%
32	Q3	166	 43%	 57%
32	Q4	166	 43%	 57%
32	Q5	166	 43%	 57%
32	Q6	166	 43%	 57%

2 Entry composition [i](#)

There are 32 unique types of molecules in this entry. The entry contains 776906 atoms, of which 388256 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.

- Molecule 1 is a protein called ATPTG11.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	q7	133	2119	674	1044	194	202	5	0	0
1	Q7	133	2120	674	1045	194	202	5	0	0
1	q8	133	2120	674	1045	194	202	5	0	0
1	Q8	133	2119	674	1044	194	202	5	0	0
1	q9	133	2119	674	1044	194	202	5	0	0
1	Q9	133	2120	674	1045	194	202	5	0	0

- Molecule 2 is a protein called ATPTG7.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	i7	90	1386	433	678	136	129	10	0	0
2	I7	90	1386	433	678	136	129	10	0	0
2	i8	90	1386	433	678	136	129	10	0	0
2	I8	90	1386	433	678	136	129	10	0	0
2	i9	90	1386	433	678	136	129	10	0	0
2	I9	90	1386	433	678	136	129	10	0	0

- Molecule 3 is a protein called ATPTG14.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
3	t7	92	1439	463	716	127	129	4	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
3	T7	92	Total	C	H	N	O	S	0	0
			1439	463	716	127	129	4		
3	t8	92	Total	C	H	N	O	S	0	0
			1439	463	716	127	129	4		
3	T8	92	Total	C	H	N	O	S	0	0
			1439	463	716	127	129	4		
3	t9	92	Total	C	H	N	O	S	0	0
			1439	463	716	127	129	4		
3	T9	92	Total	C	H	N	O	S	0	0
			1439	463	716	127	129	4		

- Molecule 4 is a protein called ATPTG5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
4	g7	112	Total	C	H	N	O	S	0	0
			1732	548	856	152	168	8		
4	G7	112	Total	C	H	N	O	S	0	0
			1731	548	855	152	168	8		
4	g8	112	Total	C	H	N	O	S	0	0
			1731	548	855	152	168	8		
4	G8	112	Total	C	H	N	O	S	0	0
			1732	548	856	152	168	8		
4	g9	112	Total	C	H	N	O	S	0	0
			1732	548	856	152	168	8		
4	G9	112	Total	C	H	N	O	S	0	0
			1731	548	855	152	168	8		

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g7	51	VAL	PHE	conflict	UNP S7WD71
g7	73	CYS	SER	conflict	UNP S7WD71
g7	110	LYS	GLU	conflict	UNP S7WD71
g7	233	THR	MET	conflict	UNP S7WD71
G7	51	VAL	PHE	conflict	UNP S7WD71
G7	73	CYS	SER	conflict	UNP S7WD71
G7	110	LYS	GLU	conflict	UNP S7WD71
G7	233	THR	MET	conflict	UNP S7WD71
g8	51	VAL	PHE	conflict	UNP S7WD71
g8	73	CYS	SER	conflict	UNP S7WD71
g8	110	LYS	GLU	conflict	UNP S7WD71
g8	233	THR	MET	conflict	UNP S7WD71

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Chain	Residue	Modelled	Actual	Comment	Reference
G8	51	VAL	PHE	conflict	UNP S7WD71
G8	73	CYS	SER	conflict	UNP S7WD71
G8	110	LYS	GLU	conflict	UNP S7WD71
G8	233	THR	MET	conflict	UNP S7WD71
g9	51	VAL	PHE	conflict	UNP S7WD71
g9	73	CYS	SER	conflict	UNP S7WD71
g9	110	LYS	GLU	conflict	UNP S7WD71
g9	233	THR	MET	conflict	UNP S7WD71
G9	51	VAL	PHE	conflict	UNP S7WD71
G9	73	CYS	SER	conflict	UNP S7WD71
G9	110	LYS	GLU	conflict	UNP S7WD71
G9	233	THR	MET	conflict	UNP S7WD71

- Molecule 5 is a protein called subunit k.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
5	o7	149	2416	786	1196	210	219	5	0	0
5	O7	149	2416	786	1196	210	219	5	0	0
5	o8	149	2416	786	1196	210	219	5	0	0
5	O8	149	2416	786	1196	210	219	5	0	0
5	o9	149	2416	786	1196	210	219	5	0	0
5	O9	149	2416	786	1196	210	219	5	0	0

- Molecule 6 is a protein called subunit a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
6	k7	117	1904	645	952	145	155	7	0	0
6	K7	117	1904	645	952	145	155	7	0	0
6	k8	117	1904	645	952	145	155	7	0	0
6	K8	117	1904	645	952	145	155	7	0	0
6	k9	117	1904	645	952	145	155	7	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
6	K9	117	Total	C	H	N	O	S	0	0
			1904	645	952	145	155	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace	
7	j7	176	Total	C	H	N	O	S	0	0
			2981	1003	1469	261	244	4		
7	J7	176	Total	C	H	N	O	S	0	0
			2981	1003	1469	261	244	4		
7	j8	176	Total	C	H	N	O	S	0	0
			2981	1003	1469	261	244	4		
7	J8	176	Total	C	H	N	O	S	0	0
			2981	1003	1469	261	244	4		
7	j9	176	Total	C	H	N	O	S	0	0
			2981	1003	1469	261	244	4		
7	J9	176	Total	C	H	N	O	S	0	0
			2981	1003	1469	261	244	4		

- Molecule 8 is a protein called ATPTG13.

Mol	Chain	Residues	Atoms					AltConf	Trace	
8	s7	95	Total	C	H	N	O	S	0	0
			1570	526	770	130	142	2		
8	S7	95	Total	C	H	N	O	S	0	0
			1570	526	770	130	142	2		
8	s8	95	Total	C	H	N	O	S	0	0
			1570	526	770	130	142	2		
8	S8	95	Total	C	H	N	O	S	0	0
			1570	526	770	130	142	2		
8	s9	95	Total	C	H	N	O	S	0	0
			1570	526	770	130	142	2		
8	S9	95	Total	C	H	N	O	S	0	0
			1570	526	770	130	142	2		

- Molecule 9 is a protein called ATPTG15.

Mol	Chain	Residues	Atoms					AltConf	Trace	
9	u7	94	Total	C	H	N	O	S	0	0
			1492	482	741	132	133	4		
9	U7	94	Total	C	H	N	O	S	0	0
			1492	482	741	132	133	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
9	u8	94	Total	C	H	N	O	S	0	0
			1492	482	741	132	133	4		
9	U8	94	Total	C	H	N	O	S	0	0
			1492	482	741	132	133	4		
9	u9	94	Total	C	H	N	O	S	0	0
			1492	482	741	132	133	4		
9	U9	94	Total	C	H	N	O	S	0	0
			1492	482	741	132	133	4		

- Molecule 10 is a protein called ATPTG6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
10	h7	226	Total	C	H	N	O	S	0	0
			3589	1157	1741	334	348	9		
10	H7	226	Total	C	H	N	O	S	0	0
			3589	1157	1741	334	348	9		
10	h8	226	Total	C	H	N	O	S	0	0
			3589	1157	1741	334	348	9		
10	H8	226	Total	C	H	N	O	S	0	0
			3589	1157	1741	334	348	9		
10	h9	226	Total	C	H	N	O	S	0	0
			3589	1157	1741	334	348	9		
10	H9	226	Total	C	H	N	O	S	0	0
			3589	1157	1741	334	348	9		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
h7	89	ASN	HIS	conflict	UNP A0A125YL08
H7	89	ASN	HIS	conflict	UNP A0A125YL08
h8	89	ASN	HIS	conflict	UNP A0A125YL08
H8	89	ASN	HIS	conflict	UNP A0A125YL08
h9	89	ASN	HIS	conflict	UNP A0A125YL08
H9	89	ASN	HIS	conflict	UNP A0A125YL08

- Molecule 11 is a protein called ATPTG3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
11	e7	140	Total	C	H	N	O	S	0	0
			2179	719	1064	187	204	5		
11	E7	140	Total	C	H	N	O	S	0	0
			2179	719	1064	187	204	5		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
11	e8	140	Total	C	H	N	O	S	0	0
			2179	719	1064	187	204	5		
11	E8	140	Total	C	H	N	O	S	0	0
			2179	719	1064	187	204	5		
11	e9	140	Total	C	H	N	O	S	0	0
			2179	719	1064	187	204	5		
11	E9	140	Total	C	H	N	O	S	0	0
			2179	719	1064	187	204	5		

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
e7	?	-	LYS	deletion	UNP A0A125YLR0
e7	63	PRO	SER	conflict	UNP A0A125YLR0
e7	99	LEU	PRO	conflict	UNP A0A125YLR0
e7	312	ALA	THR	conflict	UNP A0A125YLR0
E7	?	-	LYS	deletion	UNP A0A125YLR0
E7	63	PRO	SER	conflict	UNP A0A125YLR0
E7	99	LEU	PRO	conflict	UNP A0A125YLR0
E7	312	ALA	THR	conflict	UNP A0A125YLR0
e8	?	-	LYS	deletion	UNP A0A125YLR0
e8	63	PRO	SER	conflict	UNP A0A125YLR0
e8	99	LEU	PRO	conflict	UNP A0A125YLR0
e8	312	ALA	THR	conflict	UNP A0A125YLR0
E8	?	-	LYS	deletion	UNP A0A125YLR0
E8	63	PRO	SER	conflict	UNP A0A125YLR0
E8	99	LEU	PRO	conflict	UNP A0A125YLR0
E8	312	ALA	THR	conflict	UNP A0A125YLR0
e9	?	-	LYS	deletion	UNP A0A125YLR0
e9	63	PRO	SER	conflict	UNP A0A125YLR0
e9	99	LEU	PRO	conflict	UNP A0A125YLR0
e9	312	ALA	THR	conflict	UNP A0A125YLR0
E9	?	-	LYS	deletion	UNP A0A125YLR0
E9	63	PRO	SER	conflict	UNP A0A125YLR0
E9	99	LEU	PRO	conflict	UNP A0A125YLR0
E9	312	ALA	THR	conflict	UNP A0A125YLR0

- Molecule 12 is a protein called ATPTG17,ATPTG17,ATPTG17.

Mol	Chain	Residues	Atoms					AltConf	Trace	
12	x7	82	Total	C	H	N	O	S	0	0
			1298	420	639	116	120	3		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
12	X7	82	1298	420	639	116	120	3	0	0
12	x8	82	1298	420	639	116	120	3	0	0
12	X8	82	1298	420	639	116	120	3	0	0
12	x9	82	1298	420	639	116	120	3	0	0
12	X9	82	1298	420	639	116	120	3	0	0

- Molecule 13 is a protein called subunit b.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
13	b7	484	7840	2525	3908	652	740	15	0	0
13	B7	484	7839	2525	3907	652	740	15	0	0
13	b8	484	7838	2525	3906	652	740	15	0	0
13	B8	484	7840	2525	3908	652	740	15	0	0
13	b9	484	7840	2525	3908	652	740	15	0	0
13	B9	484	7839	2525	3907	652	740	15	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b7	50	LEU	SER	conflict	UNP S7V2T0
b7	474	THR	ALA	conflict	UNP S7V2T0
B7	50	LEU	SER	conflict	UNP S7V2T0
B7	474	THR	ALA	conflict	UNP S7V2T0
b8	50	LEU	SER	conflict	UNP S7V2T0
b8	474	THR	ALA	conflict	UNP S7V2T0
B8	50	LEU	SER	conflict	UNP S7V2T0
B8	474	THR	ALA	conflict	UNP S7V2T0
b9	50	LEU	SER	conflict	UNP S7V2T0
b9	474	THR	ALA	conflict	UNP S7V2T0
B9	50	LEU	SER	conflict	UNP S7V2T0
B9	474	THR	ALA	conflict	UNP S7V2T0

- Molecule 14 is a protein called ATPTG12.

Mol	Chain	Residues	Atoms					AltConf	Trace	
14	r7	133	Total	C	H	N	O	S	0	0
			2142	681	1071	182	202	6		
14	R7	133	Total	C	H	N	O	S	0	0
			2144	681	1073	182	202	6		
14	r8	133	Total	C	H	N	O	S	0	0
			2143	681	1072	182	202	6		
14	R8	133	Total	C	H	N	O	S	0	0
			2142	681	1071	182	202	6		
14	r9	133	Total	C	H	N	O	S	0	0
			2143	681	1072	182	202	6		
14	R9	133	Total	C	H	N	O	S	0	0
			2143	681	1072	182	202	6		

- Molecule 15 is a protein called ATPTG10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
15	p7	108	Total	C	H	N	O	S	0	0
			1711	553	847	148	157	6		
15	P7	108	Total	C	H	N	O	S	0	0
			1711	553	847	148	157	6		
15	p8	108	Total	C	H	N	O	S	0	0
			1711	553	847	148	157	6		
15	P8	108	Total	C	H	N	O	S	0	0
			1711	553	847	148	157	6		
15	p9	108	Total	C	H	N	O	S	0	0
			1711	553	847	148	157	6		
15	P9	108	Total	C	H	N	O	S	0	0
			1711	553	847	148	157	6		

- Molecule 16 is a protein called subunit f.

Mol	Chain	Residues	Atoms					AltConf	Trace	
16	v7	110	Total	C	H	N	O	S	0	0
			1801	590	888	170	148	5		
16	V7	110	Total	C	H	N	O	S	0	0
			1801	590	888	170	148	5		
16	v8	110	Total	C	H	N	O	S	0	0
			1801	590	888	170	148	5		
16	V8	110	Total	C	H	N	O	S	0	0
			1801	590	888	170	148	5		
16	v9	110	Total	C	H	N	O	S	0	0
			1801	590	888	170	148	5		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
16	V9	110	1801	590	888	170	148	5	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
v7	54	ALA	VAL	conflict	UNP S7UQT7
V7	54	ALA	VAL	conflict	UNP S7UQT7
v8	54	ALA	VAL	conflict	UNP S7UQT7
V8	54	ALA	VAL	conflict	UNP S7UQT7
v9	54	ALA	VAL	conflict	UNP S7UQT7
V9	54	ALA	VAL	conflict	UNP S7UQT7

- Molecule 17 is a protein called ATPTG8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
17	17	207	3273	1013	1647	298	305	10	0	0
17	L7	207	3273	1013	1647	298	305	10	0	0
17	18	207	3273	1013	1647	298	305	10	0	0
17	L8	207	3273	1013	1647	298	305	10	0	0
17	19	207	3273	1013	1647	298	305	10	0	0
17	L9	207	3273	1013	1647	298	305	10	0	0

- Molecule 18 is a protein called ATPTG1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
18	c7	122	2029	656	999	189	184	1	0	0
18	C7	122	2029	656	999	189	184	1	0	0
18	c8	122	2029	656	999	189	184	1	0	0
18	C8	122	2029	656	999	189	184	1	0	0
18	c9	122	2029	656	999	189	184	1	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
18	C9	122	Total	C	H	N	O	S	0	0
			2029	656	999	189	184	1		

- Molecule 19 is a protein called ATPTG2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
19	d7	254	Total	C	H	N	O	S	0	0
			4046	1323	1970	365	380	8		
19	D7	254	Total	C	H	N	O	S	0	0
			4046	1323	1970	365	380	8		
19	d8	254	Total	C	H	N	O	S	0	0
			4046	1323	1970	365	380	8		
19	D8	254	Total	C	H	N	O	S	0	0
			4046	1323	1970	365	380	8		
19	d9	254	Total	C	H	N	O	S	0	0
			4046	1323	1970	365	380	8		
19	D9	254	Total	C	H	N	O	S	0	0
			4046	1323	1970	365	380	8		

- Molecule 20 is a protein called subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
20	m7	96	Total	C	H	N	O	S	0	0
			1509	501	744	126	131	7		
20	M7	96	Total	C	H	N	O	S	0	0
			1509	501	744	126	131	7		
20	m8	96	Total	C	H	N	O	S	0	0
			1509	501	744	126	131	7		
20	M8	96	Total	C	H	N	O	S	0	0
			1509	501	744	126	131	7		
20	m9	96	Total	C	H	N	O	S	0	0
			1509	501	744	126	131	7		
20	M9	96	Total	C	H	N	O	S	0	0
			1509	501	744	126	131	7		

- Molecule 21 is a protein called ATPTG9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
21	n7	160	Total	C	H	N	O	S	0	0
			2449	774	1202	227	235	11		
21	N7	160	Total	C	H	N	O	S	0	0
			2449	774	1202	227	235	11		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
21	n8	160	Total	C	H	N	O	S	0	0
			2449	774	1202	227	235	11		
21	N8	160	Total	C	H	N	O	S	0	0
			2449	774	1202	227	235	11		
21	n9	160	Total	C	H	N	O	S	0	0
			2449	774	1202	227	235	11		
21	N9	160	Total	C	H	N	O	S	0	0
			2449	774	1202	227	235	11		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
n7	140	SER	ALA	conflict	UNP A0A125YUZ2
N7	140	SER	ALA	conflict	UNP A0A125YUZ2
n8	140	SER	ALA	conflict	UNP A0A125YUZ2
N8	140	SER	ALA	conflict	UNP A0A125YUZ2
n9	140	SER	ALA	conflict	UNP A0A125YUZ2
N9	140	SER	ALA	conflict	UNP A0A125YUZ2

- Molecule 22 is a protein called ATPTG4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
22	f7	188	Total	C	H	N	O	S	0	0
			2867	919	1425	245	274	4		
22	F7	188	Total	C	H	N	O	S	0	0
			2867	919	1425	245	274	4		
22	f8	188	Total	C	H	N	O	S	0	0
			2867	919	1425	245	274	4		
22	F8	188	Total	C	H	N	O	S	0	0
			2867	919	1425	245	274	4		
22	f9	188	Total	C	H	N	O	S	0	0
			2867	919	1425	245	274	4		
22	F9	188	Total	C	H	N	O	S	0	0
			2867	919	1425	245	274	4		

- Molecule 23 is a protein called ATPTG16.

Mol	Chain	Residues	Atoms					AltConf	Trace	
23	w7	96	Total	C	H	N	O	S	0	0
			1509	494	755	127	129	4		
23	W7	96	Total	C	H	N	O	S	0	0
			1509	494	755	127	129	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
23	w8	96	Total	C	H	N	O	S	0	0
			1509	494	755	127	129	4		
23	W8	96	Total	C	H	N	O	S	0	0
			1509	494	755	127	129	4		
23	w9	96	Total	C	H	N	O	S	0	0
			1509	494	755	127	129	4		
23	W9	96	Total	C	H	N	O	S	0	0
			1509	494	755	127	129	4		

- Molecule 24 is a protein called subunit d.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
24	a7	467	Total	C	H	N	O	S	0	0
			7391	2405	3611	656	698	21		
24	A7	467	Total	C	H	N	O	S	0	0
			7392	2405	3612	656	698	21		
24	a8	467	Total	C	H	N	O	S	0	0
			7392	2405	3612	656	698	21		
24	A8	467	Total	C	H	N	O	S	0	0
			7390	2405	3610	656	698	21		
24	a9	467	Total	C	H	N	O	S	0	0
			7391	2405	3611	656	698	21		
24	A9	467	Total	C	H	N	O	S	0	0
			7393	2405	3613	656	698	21		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a7	351	THR	ALA	conflict	UNP S7V493
A7	351	THR	ALA	conflict	UNP S7V493
a8	351	THR	ALA	conflict	UNP S7V493
A8	351	THR	ALA	conflict	UNP S7V493
a9	351	THR	ALA	conflict	UNP S7V493
A9	351	THR	ALA	conflict	UNP S7V493

- Molecule 25 is a protein called Oligomycin sensitivity conferring protein (OSCP).

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
25	G1	180	Total	C	H	N	O	S	0	0
			2895	895	1480	255	261	4		
25	G2	180	Total	C	H	N	O	S	0	0
			2894	895	1479	255	261	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
25	G3	180	Total	C	H	N	O	S	0	0
			2894	895	1479	255	261	4		
25	G4	180	Total	C	H	N	O	S	0	0
			2894	895	1479	255	261	4		
25	G5	180	Total	C	H	N	O	S	0	0
			2897	895	1482	255	261	4		
25	G6	180	Total	C	H	N	O	S	0	0
			2895	895	1480	255	261	4		

- Molecule 26 is a protein called Inhibitor of F1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
26	i1	40	Total	C	H	N	O	S	0	0
			660	213	324	56	66	1		
26	i2	40	Total	C	H	N	O	S	0	0
			660	213	324	56	66	1		
26	i3	40	Total	C	H	N	O	S	0	0
			659	213	323	56	66	1		
26	i4	40	Total	C	H	N	O	S	0	0
			660	213	324	56	66	1		
26	i5	40	Total	C	H	N	O	S	0	0
			660	213	324	56	66	1		
26	i6	40	Total	C	H	N	O	S	0	0
			660	213	324	56	66	1		

- Molecule 27 is a protein called ATP synthase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace	
27	A1	512	Total	C	H	N	O	S	0	0
			7925	2464	4003	688	751	19		
27	E1	507	Total	C	H	N	O	S	0	0
			7848	2441	3962	682	744	19		
27	C1	507	Total	C	H	N	O	S	0	0
			7849	2442	3967	682	739	19		
27	A2	512	Total	C	H	N	O	S	0	0
			7925	2464	4003	688	751	19		
27	E2	507	Total	C	H	N	O	S	0	0
			7848	2441	3962	682	744	19		
27	C2	507	Total	C	H	N	O	S	0	0
			7849	2442	3967	682	739	19		
27	A3	512	Total	C	H	N	O	S	0	0
			7925	2464	4003	688	751	19		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
27	E3	507	Total 7848	C 2441	H 3962	N 682	O 744	S 19	0	0
27	C3	507	Total 7849	C 2442	H 3967	N 682	O 739	S 19	0	0
27	A4	512	Total 7925	C 2464	H 4003	N 688	O 751	S 19	0	0
27	E4	507	Total 7848	C 2441	H 3962	N 682	O 744	S 19	0	0
27	C4	507	Total 7849	C 2442	H 3967	N 682	O 739	S 19	0	0
27	A5	512	Total 7925	C 2464	H 4003	N 688	O 751	S 19	0	0
27	E5	507	Total 7848	C 2441	H 3962	N 682	O 744	S 19	0	0
27	C5	507	Total 7849	C 2442	H 3967	N 682	O 739	S 19	0	0
27	A6	512	Total 7925	C 2464	H 4003	N 688	O 751	S 19	0	0
27	E6	507	Total 7848	C 2441	H 3962	N 682	O 744	S 19	0	0
27	C6	507	Total 7849	C 2442	H 3967	N 682	O 739	S 19	0	0

- Molecule 28 is a protein called ATP synthase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
28	B1	479	Total 7314	C 2293	H 3676	N 628	O 703	S 14	0	0
28	F1	475	Total 7265	C 2278	H 3653	N 624	O 696	S 14	0	0
28	D1	475	Total 7265	C 2278	H 3653	N 624	O 696	S 14	0	0
28	B2	479	Total 7314	C 2293	H 3676	N 628	O 703	S 14	0	0
28	F2	475	Total 7265	C 2278	H 3653	N 624	O 696	S 14	0	0
28	D2	475	Total 7265	C 2278	H 3653	N 624	O 696	S 14	0	0
28	B3	479	Total 7314	C 2293	H 3676	N 628	O 703	S 14	0	0
28	F3	475	Total 7265	C 2278	H 3653	N 624	O 696	S 14	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
28	D3	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		
28	B4	479	Total	C	H	N	O	S	0	0
			7314	2293	3676	628	703	14		
28	F4	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		
28	D4	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		
28	B5	479	Total	C	H	N	O	S	0	0
			7314	2293	3676	628	703	14		
28	F5	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		
28	D5	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		
28	B6	479	Total	C	H	N	O	S	0	0
			7314	2293	3676	628	703	14		
28	F6	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		
28	D6	475	Total	C	H	N	O	S	0	0
			7265	2278	3653	624	696	14		

- Molecule 29 is a protein called ATP synthase subunit gamma.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
29	g1	272	Total	C	H	N	O	S	0	0
			4289	1330	2173	376	394	16		
29	g2	272	Total	C	H	N	O	S	0	0
			4289	1330	2173	376	394	16		
29	g3	272	Total	C	H	N	O	S	0	0
			4289	1330	2173	376	394	16		
29	g4	272	Total	C	H	N	O	S	0	0
			4289	1330	2173	376	394	16		
29	g5	272	Total	C	H	N	O	S	0	0
			4289	1330	2173	376	394	16		
29	g6	272	Total	C	H	N	O	S	0	0
			4289	1330	2173	376	394	16		

- Molecule 30 is a protein called ATP synthase subunit delta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
30	d1	143	Total	C	H	N	O	S	0	0
			2145	667	1076	181	216	5		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
30	d2	143	Total	C	H	N	O	S	0	0
			2145	667	1076	181	216	5		
30	d3	143	Total	C	H	N	O	S	0	0
			2145	667	1076	181	216	5		
30	d4	143	Total	C	H	N	O	S	0	0
			2145	667	1076	181	216	5		
30	d5	143	Total	C	H	N	O	S	0	0
			2145	667	1076	181	216	5		
30	d6	143	Total	C	H	N	O	S	0	0
			2145	667	1076	181	216	5		

- Molecule 31 is a protein called ATP synthase subunit epsilon.

Mol	Chain	Residues	Atoms					AltConf	Trace	
31	e1	65	Total	C	H	N	O	S	0	0
			1077	337	539	99	98	4		
31	e2	65	Total	C	H	N	O	S	0	0
			1077	337	539	99	98	4		
31	e3	65	Total	C	H	N	O	S	0	0
			1077	337	539	99	98	4		
31	e4	65	Total	C	H	N	O	S	0	0
			1077	337	539	99	98	4		
31	e5	65	Total	C	H	N	O	S	0	0
			1077	337	539	99	98	4		
31	e6	65	Total	C	H	N	O	S	0	0
			1077	337	539	99	98	4		

- Molecule 32 is a protein called subunit c.

Mol	Chain	Residues	Atoms					AltConf	Trace	
32	H1	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	I1	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	J1	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	K1	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	L1	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	M1	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		

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Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
32	N1	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	O1	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	P1	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	Q1	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	H2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	I2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	J2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	K2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	L2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	M2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	N2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	O2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	P2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	Q2	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	H3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	I3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	J3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	K3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	L3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	M3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0
32	N3	71	Total 1028	C 328	H 527	N 77	O 92	S 4	0	0

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Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
32	O3	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	P3	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	Q3	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	H4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	I4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	J4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	K4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	L4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	M4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	N4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	O4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	P4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	Q4	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	H5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	I5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	J5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	K5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	L5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	M5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	N5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	O5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
32	P5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	Q5	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	H6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	I6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	J6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	K6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	L6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	M6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	N6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	O6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	P6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		
32	Q6	71	Total	C	H	N	O	S	0	0
			1028	328	527	77	92	4		

3 Residue-property plots

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

Chain q7:  99%



- Molecule 1: ATPTG11

Chain Q7:  99%



- Molecule 1: ATPTG11

Chain q8:  99%



- Molecule 1: ATPTG11

Chain Q8:  99%



- Molecule 1: ATPTG11

Chain q9:  99%



- Molecule 1: ATPTG11

Chain Q9:  99%



• Molecule 2: ATPTG7

Chain i7: 38% 62%

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

HIS VAL ARG ARG GLY LYS SER GLY PRO ALA GLY ARG LYS ASN ARG ARG MET PHE ARG PHE GLY VAL ARG GLU ARG SER PRO GLU THR ARG LYS ARG PRO ALA ASP LYS LYS ASN ARG GLY THR THR LYS GLY ASP GLU LYS ALA ALA THR CYS LEU LEU PHE PRO PHE LEU LEU HIS ILE GLU PRO GLY ASP ARG ALA ASN VAL LEU SER ARG ILE ARG ARG PRO THR THR CYS PHE PRO SER

ARG HIS SER LEU LEU ARG ASN HIS TYR GLY SER LEU SER MET ALA PHE ARG LYS VAL SER GLU ARG PRO PRO THR ARG LYS ARG ALA PRO H146 P235 LEU

• Molecule 2: ATPTG7

Chain I7: 38% 62%

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

HIS VAL ARG ARG GLY LYS SER GLY PRO ALA GLY ARG LYS ASN ARG ARG MET PHE ARG PHE GLY VAL ARG GLU ARG SER PRO GLU THR ARG LYS ARG PRO ALA ASP LYS LYS ASN ARG GLY THR THR LYS GLY ASP GLU LYS ALA ALA THR CYS LEU LEU PHE PRO PHE LEU LEU HIS ILE GLU PRO GLY ASP ARG ALA ASN VAL LEU SER ARG ILE ARG ARG PRO THR THR CYS PHE PRO SER

ARG HIS SER LEU LEU ARG ASN HIS TYR GLY SER LEU SER MET ALA PHE ARG LYS VAL SER GLU ARG PRO PRO THR ARG LYS ARG ALA PRO H146 P235 LEU

• Molecule 2: ATPTG7

Chain i8: 38% 62%

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

HIS VAL ARG ARG GLY LYS SER GLY PRO ALA GLY ARG LYS ASN ARG ARG MET PHE ARG PHE GLY VAL ARG GLU ARG SER PRO GLU THR ARG LYS ARG PRO ALA ASP LYS LYS ASN ARG GLY THR THR LYS GLY ASP GLU LYS ALA ALA THR CYS LEU LEU PHE PRO PHE LEU LEU HIS ILE GLU PRO GLY ASP ARG ALA ASN VAL LEU SER ARG ILE ARG ARG PRO THR THR CYS PHE PRO SER

ARG HIS SER LEU LEU ARG ASN HIS TYR GLY SER LEU SER MET ALA PHE ARG LYS VAL SER GLU ARG PRO PRO THR ARG LYS ARG ALA PRO H146 P235 LEU

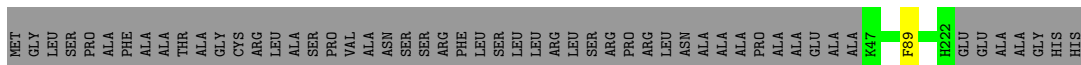
• Molecule 2: ATPTG7

Chain I8: 38% 62%

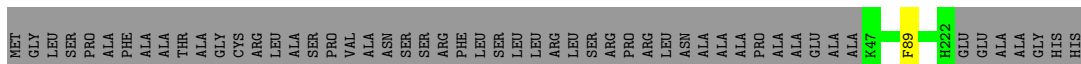
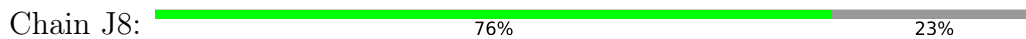
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HIS VAL ARG ARG GLY LYS SER GLY PRO ALA GLY ARG LYS ASN ARG ARG MET PHE ARG PHE GLY VAL ARG GLU ARG SER PRO GLU THR ARG LYS ARG PRO ALA ASP LYS LYS ASN ARG GLY THR THR LYS GLY ASP GLU LYS ALA ALA THR CYS LEU LEU PHE PRO PHE LEU LEU HIS ILE GLU PRO GLY ASP ARG ALA ASN VAL LEU SER ARG ILE ARG ARG PRO THR THR CYS PHE PRO SER

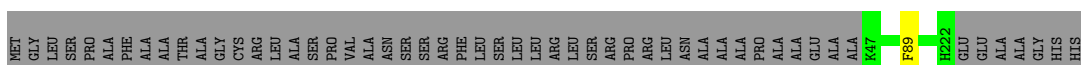
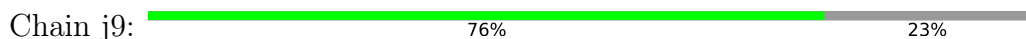
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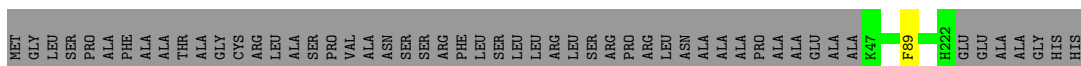
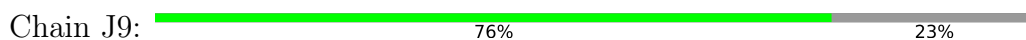
• Molecule 7: subunit i/j



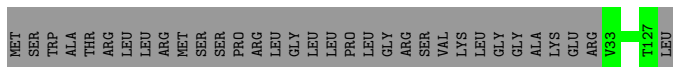
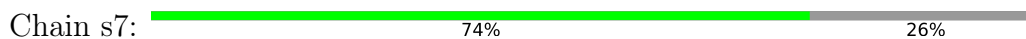
• Molecule 7: subunit i/j



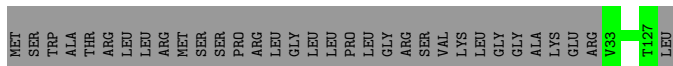
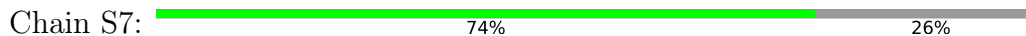
• Molecule 7: subunit i/j



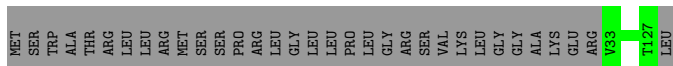
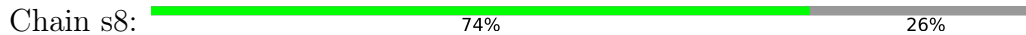
• Molecule 8: ATPTG13



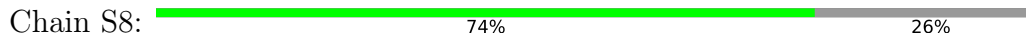
• Molecule 8: ATPTG13

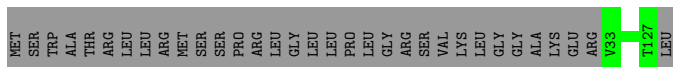


• Molecule 8: ATPTG13

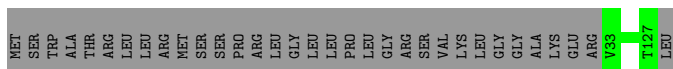


• Molecule 8: ATPTG13

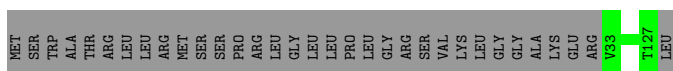
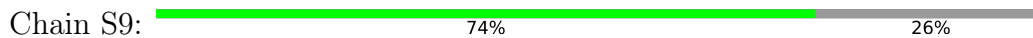




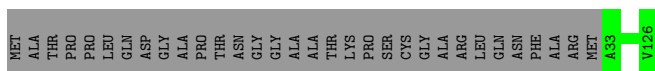
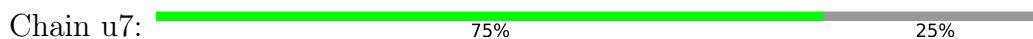
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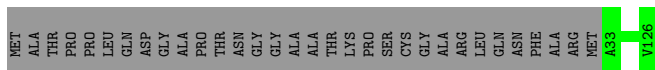
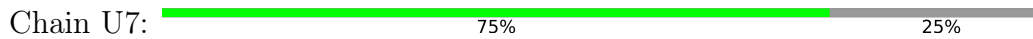
● Molecule 8: ATPTG13



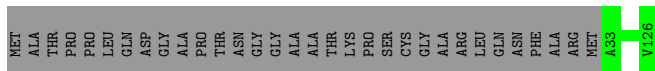
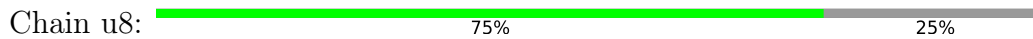
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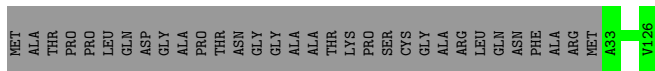
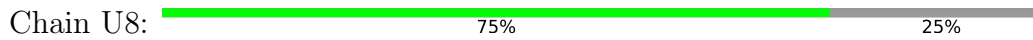
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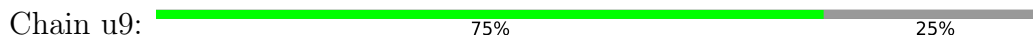
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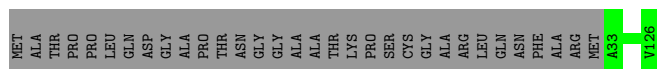


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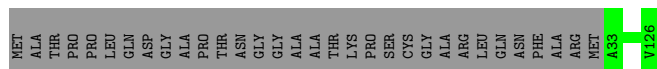
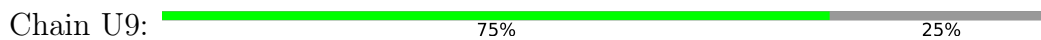


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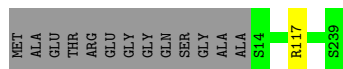




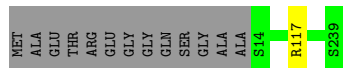
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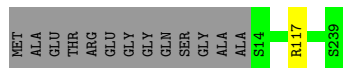
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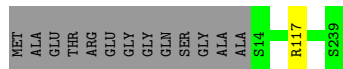
• Molecule 10: ATPTG6



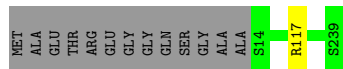
• Molecule 10: ATPTG6



• Molecule 10: ATPTG6



• Molecule 10: ATPTG6



• Molecule 10: ATPTG6





- Molecule 12: ATPTG17,ATPTG17,ATPTG17



- Molecule 12: ATPTG17,ATPTG17,ATPTG17



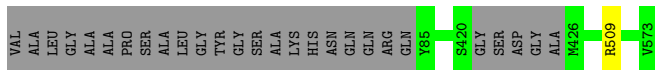
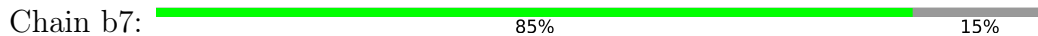
- Molecule 12: ATPTG17,ATPTG17,ATPTG17



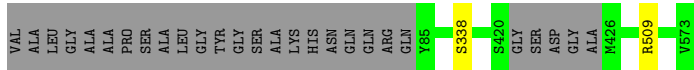
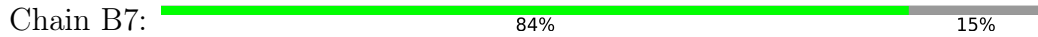
- Molecule 12: ATPTG17,ATPTG17,ATPTG17



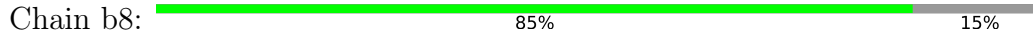
- Molecule 13: subunit b



- Molecule 13: subunit b



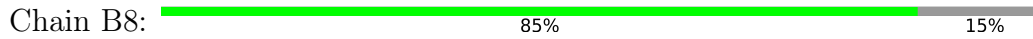
• Molecule 13: subunit b



MET ASN PHE SER SER SER ALA TRP VAL ALA VAL ARG GLN SER GLN THR LEU LEU GLY HIS THR THR ARG ALA THR VAL VAL ALA ALA GLY ASP ALA ALA ARG ARG VAL VAL LEU ALA HIS HIS PRO PRO ALA ALA THR THR PHE THR SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

VAL ALA LEU LEU ALA ALA PRO SER SER ALA ALA TYR VAL ARG GLY SER ALA ALA LYS HIS ASN LEU LEU GLN GLN Y85 S420 GLY SER ASP ALA ALA M426 ARG VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

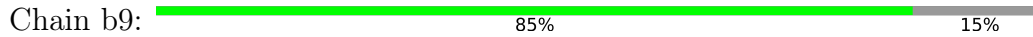
• Molecule 13: subunit b



MET ASN PHE SER SER SER ALA TRP VAL ALA VAL ARG GLN SER GLN THR LEU LEU GLY HIS THR THR ARG ALA THR VAL VAL ALA ALA GLY ASP ALA ALA ARG ARG VAL VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

VAL ALA LEU LEU ALA ALA PRO SER SER ALA ALA TYR VAL ARG GLY SER ALA ALA LYS HIS ASN LEU LEU GLN GLN Y85 S420 GLY SER ASP ALA ALA M426 ARG VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

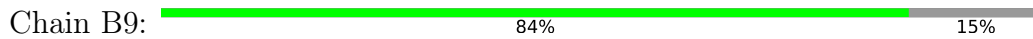
• Molecule 13: subunit b



MET ASN PHE SER SER SER ALA TRP VAL ALA VAL ARG GLN SER GLN THR LEU LEU GLY HIS THR THR ARG ALA THR VAL VAL ALA ALA GLY ASP ALA ALA ARG ARG VAL VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

VAL ALA LEU LEU ALA ALA PRO SER SER ALA ALA TYR VAL ARG GLY SER ALA ALA LYS HIS ASN LEU LEU GLN GLN Y85 S420 GLY SER ASP ALA ALA M426 ARG VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

• Molecule 13: subunit b



MET ASN PHE SER SER SER ALA TRP VAL ALA VAL ARG GLN SER GLN THR LEU LEU GLY HIS THR THR ARG ALA THR VAL VAL ALA ALA GLY ASP ALA ALA ARG ARG VAL VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

VAL ALA LEU LEU ALA ALA PRO SER SER ALA ALA TYR VAL ARG GLY SER ALA ALA LYS HIS ASN LEU LEU GLN GLN Y85 S338 S420 GLY SER ASP ALA ALA M426 ARG VAL LEU ALA HIS HIS SER SER PRO PRO ALA ALA THR THR PHE THR SER SER PHE PHE GLN SER SER LEU LEU HIS HIS ILE GLY GLY ASP ASP VAL VAL CYS LYS LEU LEU PRO PRO ALA

• Molecule 14: ATPTG12



H1 A86 K87 I133 LYS

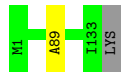
• Molecule 14: ATPTG12



H1 S91 I133 LYS

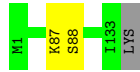
• Molecule 14: ATPTG12

Chain r8:  99%



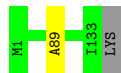
• Molecule 14: ATPTG12

Chain R8:  98%



• Molecule 14: ATPTG12

Chain r9:  99%




• Molecule 14: ATPTG12

Chain R9:  99%




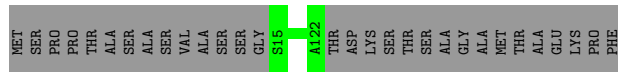
• Molecule 15: ATPTG10

Chain p7:  78%




• Molecule 15: ATPTG10

Chain P7:  78%




• Molecule 15: ATPTG10

Chain p8:  78%




• Molecule 15: ATPTG10

Chain P8:  78% 22%




• Molecule 15: ATPTG10

Chain p9:  78% 22%



• Molecule 15: ATPTG10

Chain P9:  78% 22%



• Molecule 16: subunit f

Chain v7:  99%



• Molecule 16: subunit f

Chain V7:  99%



• Molecule 16: subunit f

Chain v8:  99%



• Molecule 16: subunit f

Chain V8:  99%



• Molecule 16: subunit f

Chain v9:  99%



- Molecule 16: subunit f

Chain V9:  99%



- Molecule 17: ATPTG8

Chain I7:  100%



- Molecule 17: ATPTG8

Chain L7:  100%



- Molecule 17: ATPTG8

Chain I8:  100%



- Molecule 17: ATPTG8

Chain L8:  100%



- Molecule 17: ATPTG8

Chain I9:  100%

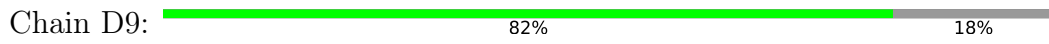


- Molecule 17: ATPTG8

Chain L9:  100%

K310

Molecule 19: ATPTG2



MET	SER	PRO	VAL	GLY	ARG	LEU	PHE	LEU	LEU	GLY	SER	LYS	LEU	PRO	ALA	GLN	THR	TRP	GLN	SER	PHE	ARG	LEU	GLN	PRO	ALA	ALA	LEU	GLY	PRO	GLN	PHE	GLY	ALA	GLN	LYS	ARG	PHE	ALA	PHE	ALA	ALA	PHE	SER	GLY	GLY	ALA	ALA	K42	C213	THR	SER	ASP	GLY	CYS	GLY	GLU	HIS	GLY	ALA	CYS	GLY	HIS	SER	GLY	Q229
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K310

Molecule 20: subunit 8



MET	ASN	THR	PHE	LEU	THR	PRO	ALA	ALA	LYS	LYS	GLU	GLN	SER	THR	ARG	VAL	VAL	GLY	ARG	PHE	PHE	GLY	ALA	ARG	ARG	ALA	SER	ALA	VAL	GLY	GLY	THR	GLY	GLY	ARG	ARG	GLY	PHE	ALA	ALA	ARG	ALA	SER	ALA	VAL	VAL	GLY	GLY	ALA	ALA	LEU	VAL	ARG	LEU	ALA	ALA	LEU	ARG	LEU	PRO	PHE	ASP	Q191	ALA	ALA	PRO	PRO	GLN	ARG	PRO	ALA	GLU	GLY	THR	SER	SER	ALA	ASN	LEU	ALA	LYS	LYS	SER	GLN	THR	THR	LEU	ARG	SER	VAL
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LYS	ALA	HIS	GLY	ARG	GLN	SER	GLY	LYS	LYS	GLU	GLN	SER	THR	ARG	GLU	VAL	GLY	GLY	ARG	ARG	GLY	PHE	ALA	ARG	ARG	ALA	SER	ALA	VAL	VAL	GLY	GLY	ALA	ALA	LEU	VAL	ARG	LEU	ALA	ALA	LEU	ARG	PRO	PHE	ASP	Q191	ALA	ALA	PRO	PRO	GLN	ARG	PRO	LYS	THR	GLY	THR	SER	SER	ALA	ASN	LEU	ALA	LYS	LYS	SER	GLN	THR	THR	LEU	ARG	SER	VAL
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Molecule 20: subunit 8



MET	ASN	THR	PHE	LEU	THR	PRO	ALA	ALA	LYS	LYS	GLU	GLN	SER	THR	ARG	VAL	VAL	GLY	ARG	PHE	PHE	GLY	ALA	ARG	ARG	ALA	SER	ALA	VAL	VAL	GLY	GLY	ALA	ALA	LEU	VAL	ARG	LEU	ALA	ALA	LEU	ARG	PRO	PHE	ASP	Q191	ALA	ALA	PRO	PRO	GLN	ARG	PRO	LYS	THR	GLY	THR	SER	SER	ALA	ASN	LEU	ALA	LYS	LYS	SER	GLN	THR	THR	LEU	ARG	SER	VAL
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LYS	ALA	HIS	GLY	ARG	GLN	SER	GLY	LYS	LYS	GLU	GLN	SER	THR	ARG	GLU	VAL	GLY	GLY	ARG	ARG	GLY	PHE	ALA	ARG	ARG	ALA	SER	ALA	VAL	VAL	GLY	GLY	ALA	ALA	LEU	VAL	ARG	LEU	ALA	ALA	LEU	ARG	PRO	PHE	ASP	Q191	ALA	ALA	PRO	PRO	GLN	ARG	PRO	LYS	THR	GLY	THR	SER	SER	ALA	ASN	LEU	ALA	LYS	LYS	SER	GLN	THR	THR	LEU	ARG	SER	VAL
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Molecule 20: subunit 8



MET	ASN	THR	PHE	LEU	THR	PRO	ALA	ALA	LYS	LYS	GLU	GLN	SER	THR	ARG	VAL	VAL	GLY	ARG	PHE	PHE	GLY	ALA	ARG	ARG	ALA	SER	ALA	VAL	VAL	GLY	GLY	ALA	ALA	LEU	VAL	ARG	LEU	ALA	ALA	LEU	ARG	PRO	PHE	ASP	Q191	ALA	ALA	PRO	PRO	GLN	ARG	PRO	LYS	THR	GLY	THR	SER	SER	ALA	ASN	LEU	ALA	LYS	LYS	SER	GLN	THR	THR	LEU	ARG	SER	VAL
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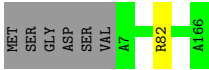
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Molecule 20: subunit 8

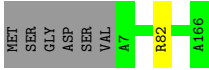


MET	ASN	THR	PHE	LEU	THR	PRO	ALA	ALA	LYS	LYS	GLU	GLN	SER	THR	ARG	VAL	VAL	GLY	ARG	PHE	PHE	GLY	ALA	ARG	ARG	ALA	SER	ALA	VAL	VAL	GLY	GLY	ALA	ALA	LEU	VAL	ARG	LEU	ALA	ALA	LEU	ARG	PRO	PHE	ASP	Q191	ALA	ALA	PRO	PRO	GLN	ARG	PRO	LYS	THR	GLY	THR	SER	SER	ALA	ASN	LEU	ALA	LYS	LYS	SER	GLN	THR	THR	LEU	ARG	SER	VAL
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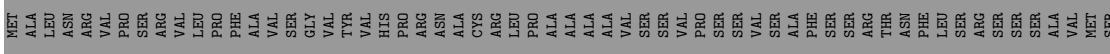
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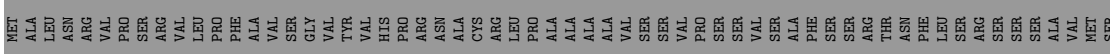
• Molecule 21: ATPTG9



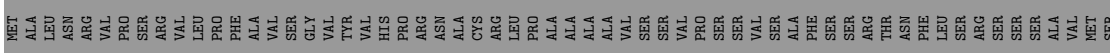
• Molecule 22: ATPTG4



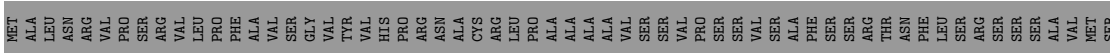
• Molecule 22: ATPTG4



• Molecule 22: ATPTG4



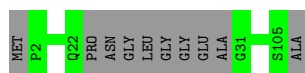
• Molecule 22: ATPTG4




• Molecule 22: ATPTG4

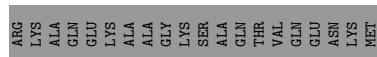
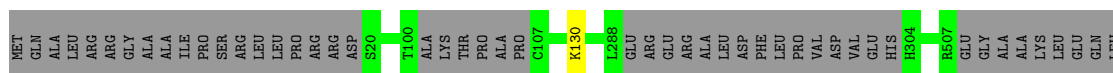


Chain W9:  91% 9%




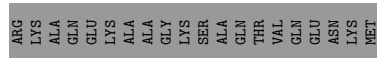
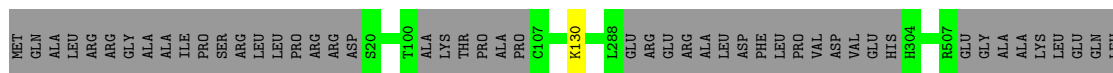
• Molecule 24: subunit d

Chain a7:  87% 13%




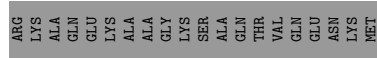
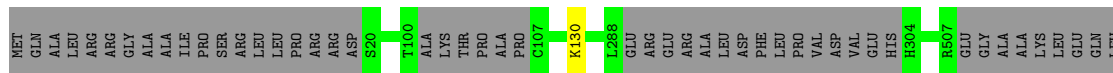
• Molecule 24: subunit d

Chain A7:  87% 13%




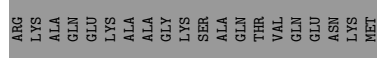
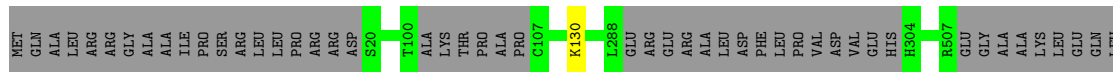
• Molecule 24: subunit d

Chain a8:  87% 13%




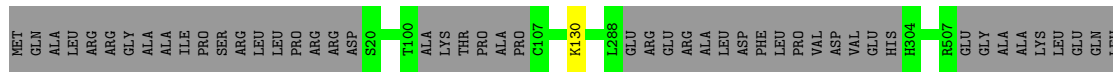
• Molecule 24: subunit d

Chain A8:  87% 13%



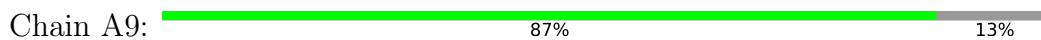
• Molecule 24: subunit d

Chain a9:  87% 13%



ARG
LYS
ALA
ALA
GLN
GLU
LYS
LYS
ALA
ALA
GLY
LYS
SER
SER
GLN
THR
VAL
GLN
VAL
ASN
GLU
LYS
MET

• Molecule 24: subunit d



MET
GLN
LEU
LEU
ARG
ARG
GLY
ALA
ALA
ILE
PRO
SER
SER
ALA
LEU
LEU
PRO
PRO
ARG
ARG
ASP
S29
T100
ALA
LYS
THR
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ALA
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C197
K130
L288
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ASN
LYS
MET

• Molecule 25: Oligomycin sensitivity conferring protein (OSCP)



MET
ALA
LEU
LEU
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SER
ARG
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SER
SER
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VAL
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GLU
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Q73
Y97
M170
Y171
R172
Q207
L252

• Molecule 25: Oligomycin sensitivity conferring protein (OSCP)



MET
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ARG
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VAL
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PHE
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THR
ALA
ALA
ALA
GLU
ASP
GLY
ALA
SER
Q73
A169
M170
Y171
R172
Q207
L252

• Molecule 25: Oligomycin sensitivity conferring protein (OSCP)



MET
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LEU
LEU
ALA
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PHE
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ALA
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ALA
SER
Q73
M170
Y171
R172
Q207
L252

• Molecule 25: Oligomycin sensitivity conferring protein (OSCP)

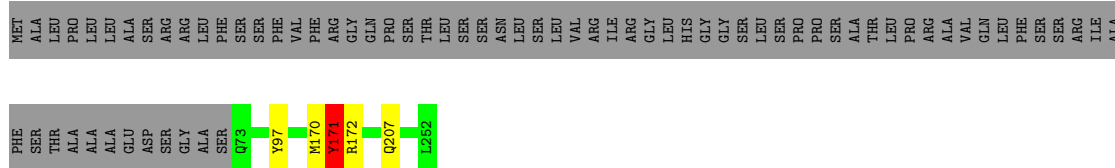


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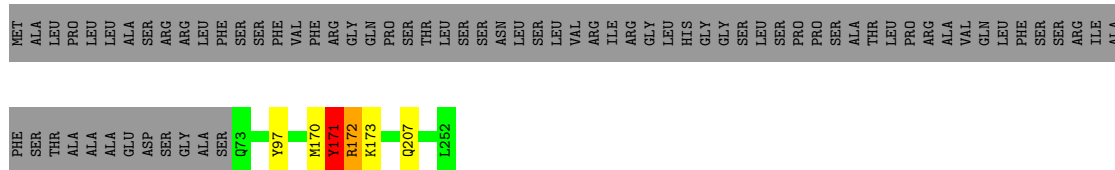
• Molecule 25: Oligomycin sensitivity conferring protein (OSCP)

Chain G5:  69% 29%



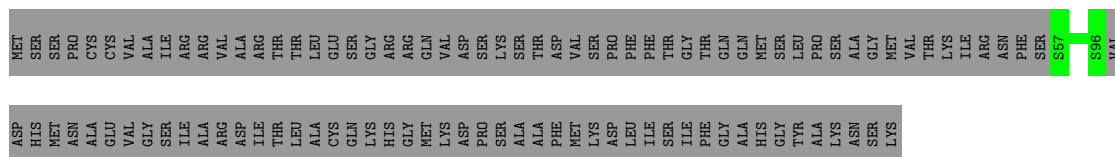
• Molecule 25: Oligomycin sensitivity conferring protein (OSCP)

Chain G6:  69% 29%



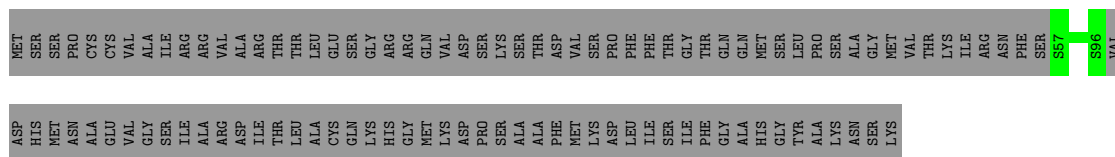
• Molecule 26: Inhibitor of F1

Chain i1:  28% 72%



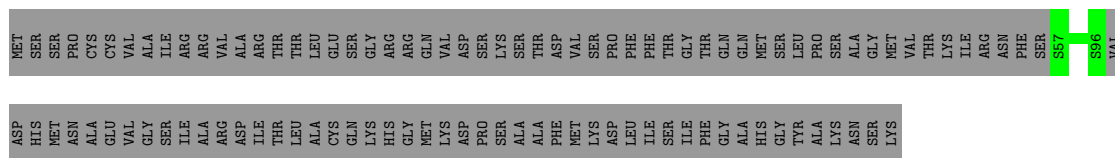
• Molecule 26: Inhibitor of F1

Chain i2:  28% 72%



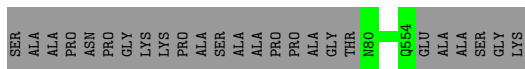
• Molecule 26: Inhibitor of F1

Chain i3:  28% 72%

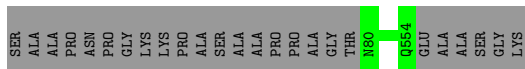
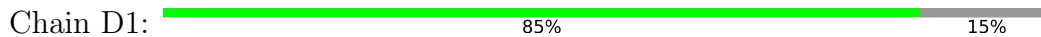


• Molecule 26: Inhibitor of F1

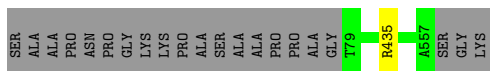
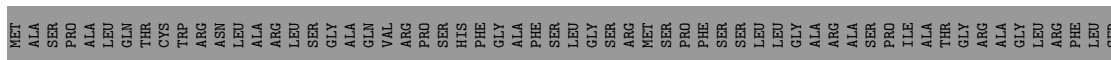
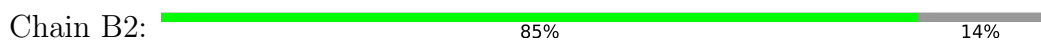
Chain i4:  28% 72%



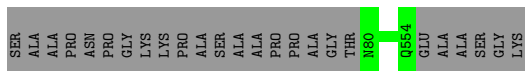
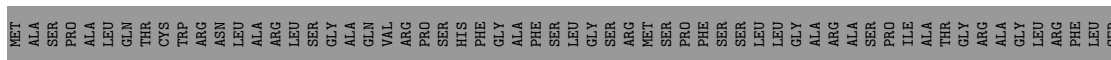
• Molecule 28: ATP synthase subunit beta



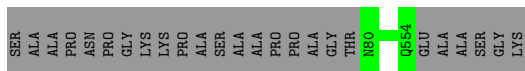
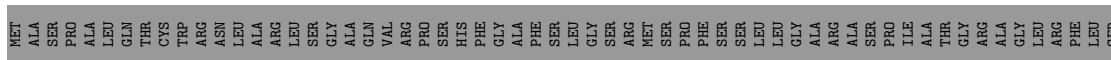
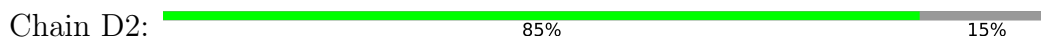
• Molecule 28: ATP synthase subunit beta



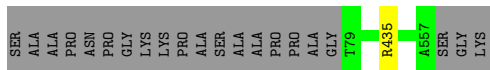
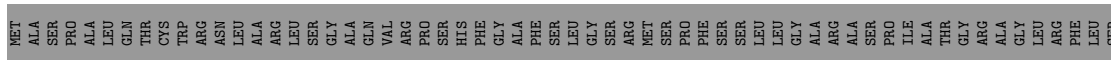
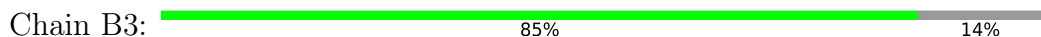
• Molecule 28: ATP synthase subunit beta




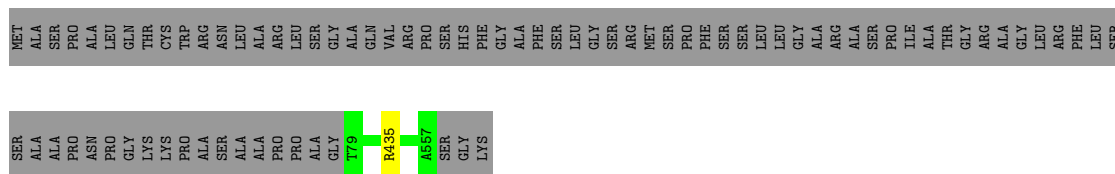
• Molecule 28: ATP synthase subunit beta




• Molecule 28: ATP synthase subunit beta

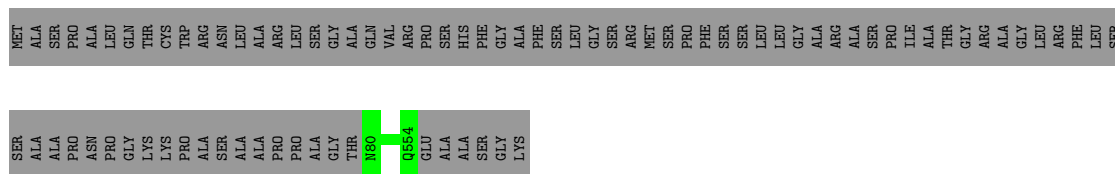


Chain B5:  85% 14%




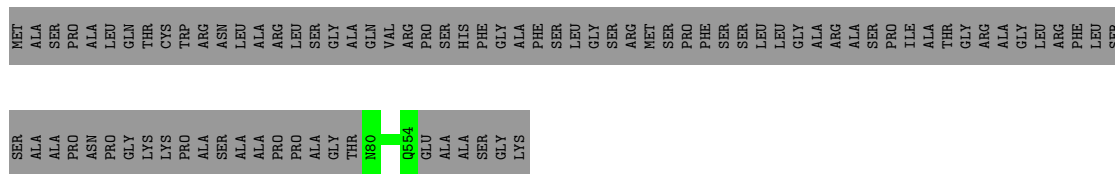
• Molecule 28: ATP synthase subunit beta

Chain F5:  85% 15%




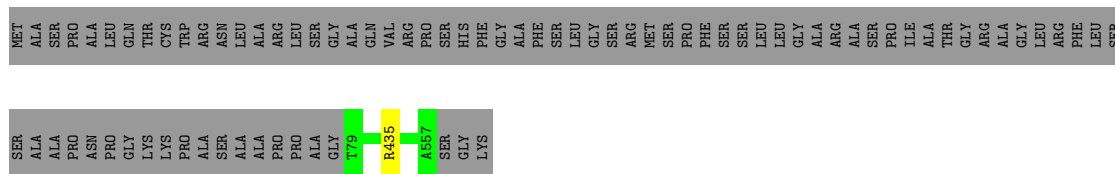
• Molecule 28: ATP synthase subunit beta

Chain D5:  85% 15%




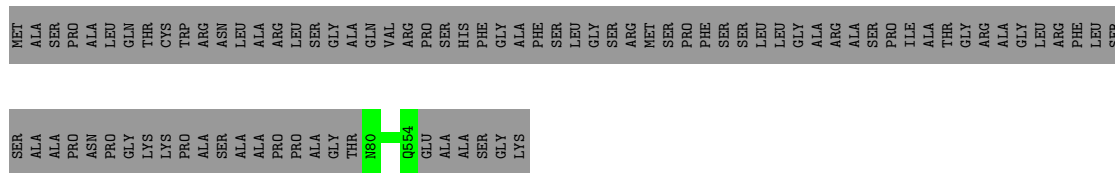
• Molecule 28: ATP synthase subunit beta

Chain B6:  85% 14%





• Molecule 28: ATP synthase subunit beta

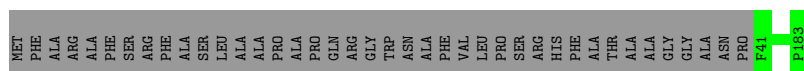
Chain F6:  85% 15%




• Molecule 28: ATP synthase subunit beta

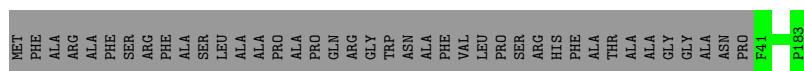
Chain D6:  85% 15%

Chain d1:  78% 22%




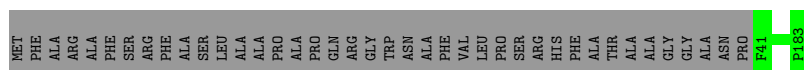
- Molecule 30: ATP synthase subunit delta

Chain d2:  78% 22%




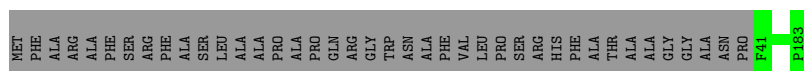
- Molecule 30: ATP synthase subunit delta

Chain d3:  78% 22%




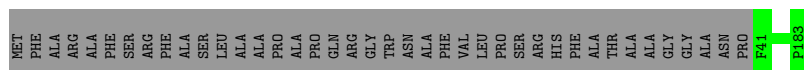
- Molecule 30: ATP synthase subunit delta

Chain d4:  78% 22%




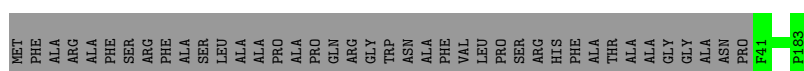
- Molecule 30: ATP synthase subunit delta

Chain d5:  78% 22%




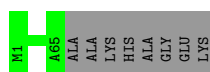
- Molecule 30: ATP synthase subunit delta

Chain d6:  78% 22%

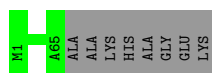
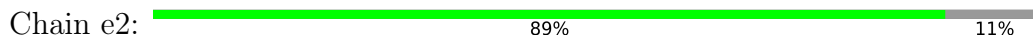


- Molecule 31: ATP synthase subunit epsilon

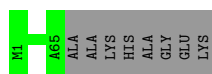
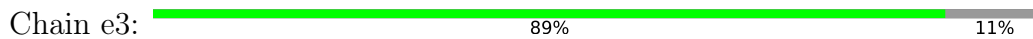
Chain e1:  89% 11%



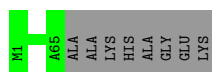
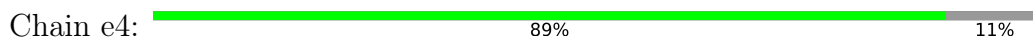
- Molecule 31: ATP synthase subunit epsilon



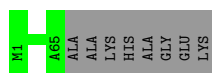
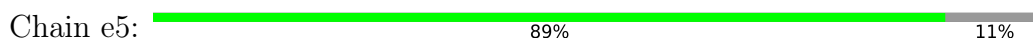
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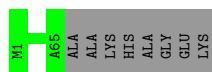
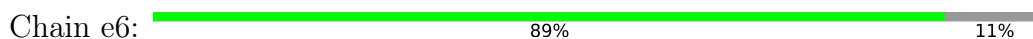
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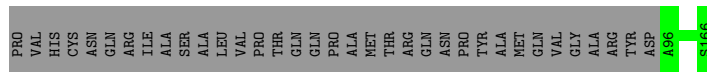
- Molecule 31: ATP synthase subunit epsilon



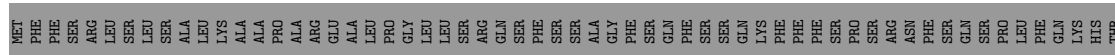
- Molecule 31: ATP synthase subunit epsilon

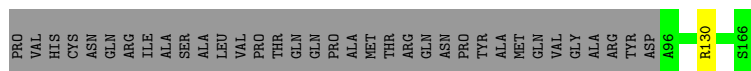


- Molecule 32: subunit c

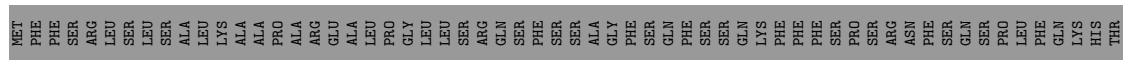


- Molecule 32: subunit c

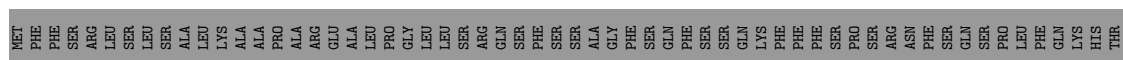




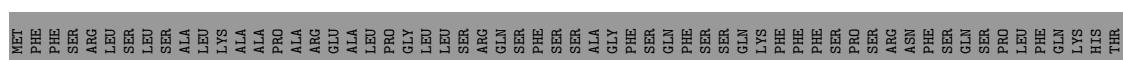
• Molecule 32: subunit c



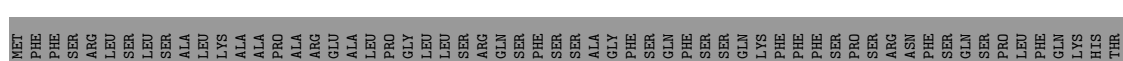
• Molecule 32: subunit c



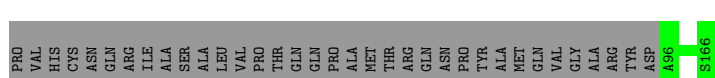
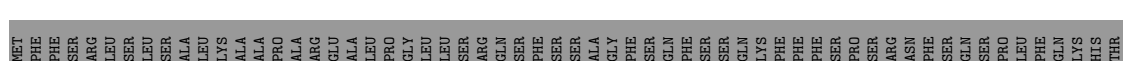
• Molecule 32: subunit c



• Molecule 32: subunit c



• Molecule 32: subunit c



PRO VAL HIS CYS ASN GLN ARG SER ILE ALA SER ALA LEU VAL PRO THR GLN PRO GLN ALA MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER LEU ALA LYS ALA VAL PRO THR GLN ARG GLU ALA LEU PRO THR ARG GLN ASN PRO TYR ARG GLN PHE SER GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER LEU ALA LYS ALA VAL PRO THR GLN ARG GLU ALA LEU PRO THR ARG GLN PHE SER GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER LEU ALA LYS ALA VAL PRO THR GLN ARG GLU ALA LEU PRO THR ARG GLN PHE SER GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



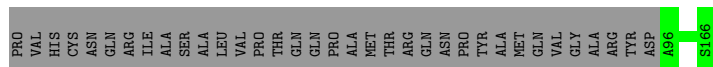
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• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER LEU ALA LYS ALA VAL PRO THR GLN ARG GLU ALA LEU PRO THR ARG GLN PHE SER GLY ALA ARG TYR ASP A96 S166

PRO VAL HIS CYS ASN GLN ARG SER ILE ALA SER ALA LEU VAL PRO THR GLN PRO GLN ALA MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166



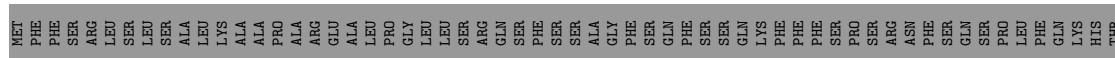
• Molecule 32: subunit c



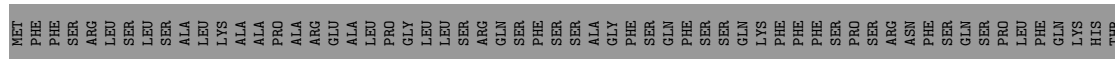
• Molecule 32: subunit c



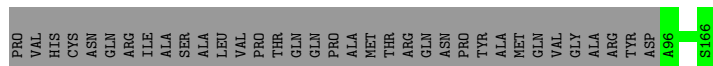
• Molecule 32: subunit c



• Molecule 32: subunit c



• Molecule 32: subunit c



PRO VAL HIS CYS ASN GLN ARG SER ALA SER LEU VAL PRO THR THR GLN GLN PRO PRO MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER SER ALA LEU LYS ALA VAL PRO THR THR GLN GLN ARG GLU ALA LEU PRO THR THR ARG GLY LEU LEU LEU SER ARG GLN PHE SER ALA GLY PHE SER GLN PHE SER SER LYS PHE PHE PHE SER PRO PRO ARG ASN PHE SER SER SER PHE LEU LEU PHE GLN LYS HIS THR

PRO VAL HIS CYS ASN GLN ARG SER ALA SER LEU VAL PRO THR THR GLN GLN PRO PRO MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER SER ALA LEU LYS ALA VAL PRO THR THR GLN GLN ARG GLU ALA LEU PRO THR THR ARG GLY LEU LEU LEU SER ARG GLN PHE SER ALA GLY PHE SER GLN PHE SER SER LYS PHE PHE PHE SER PRO PRO ARG ASN PHE SER SER SER PHE LEU LEU PHE GLN LYS HIS THR

PRO VAL HIS CYS ASN GLN ARG SER ALA SER LEU VAL PRO THR THR GLN GLN PRO PRO MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 R130 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER SER ALA LEU LYS ALA VAL PRO THR THR GLN GLN ARG GLU ALA LEU PRO THR THR ARG GLY LEU LEU LEU SER ARG GLN PHE SER ALA GLY PHE SER GLN PHE SER SER LYS PHE PHE PHE SER PRO PRO ARG ASN PHE SER SER SER PHE LEU LEU PHE GLN LYS HIS THR

PRO VAL HIS CYS ASN GLN ARG SER ALA SER LEU VAL PRO THR THR GLN GLN PRO PRO MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER SER ALA LEU LYS ALA VAL PRO THR THR GLN GLN ARG GLU ALA LEU PRO THR THR ARG GLY LEU LEU LEU SER ARG GLN PHE SER ALA GLY PHE SER GLN PHE SER SER LYS PHE PHE PHE SER PRO PRO ARG ASN PHE SER SER SER PHE LEU LEU PHE GLN LYS HIS THR

PRO VAL HIS CYS ASN GLN ARG SER ALA SER LEU VAL PRO THR THR GLN GLN PRO PRO MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c



MET PHE PHE SER ARG LEU SER SER ALA LEU LYS ALA VAL PRO THR THR GLN GLN ARG GLU ALA LEU PRO THR THR ARG GLY LEU LEU LEU SER ARG GLN PHE SER ALA GLY PHE SER GLN PHE SER SER LYS PHE PHE PHE SER PRO PRO ARG ASN PHE SER SER SER PHE LEU LEU PHE GLN LYS HIS THR

PRO VAL HIS CYS ASN GLN ARG SER ALA SER LEU VAL PRO THR THR GLN GLN PRO PRO MET THR ARG GLN ASN PRO TYR ALA MET GLN VAL GLY ALA ARG TYR ASP A96 S166

• Molecule 32: subunit c

Chain M6: 43% 57%

MET	PHE	PHE	PHE	ARG	LEU	SER	LEU	SER	SER	ALA	LEU	LYS	ALA	PRO	PRO	ARG	GLU	ALA	LEU	PRO	THR	GLY	LEU	LEU	LEU	ASN	PRO	ARG	GLN	PHE	PHE	SER	GLY	ALA	GLY	PHE	SER	ASP	GLN	PHE	SER	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR	
PRO	VAL	HIS	CYS	ASN	GLN	ARG	ILE	ALA	SER	ALA	LEU	LEU	VAL	PRO	THR	GLN	GLN	PRO	ALA	LEU	MET	THR	GLY	ARG	GLN	LEU	ASN	PRO	TYR	ALA	GLN	PHE	GLN	VAL	SER	GLY	ALA	ARG	TYR	ASP	A96	S168	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR

• Molecule 32: subunit c

Chain N6: 43% 57%

MET	PHE	PHE	SER	ARG	LEU	SER	LEU	SER	SER	ALA	LEU	LYS	ALA	PRO	PRO	ARG	GLU	ALA	LEU	PRO	THR	GLY	ARG	GLN	LEU	LEU	ASN	PRO	ARG	GLN	PHE	PHE	SER	GLY	ALA	GLY	PHE	SER	ASP	GLN	PHE	SER	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR
PRO	VAL	HIS	CYS	ASN	GLN	ARG	ILE	ALA	SER	ALA	LEU	LEU	VAL	PRO	THR	GLN	GLN	PRO	ALA	LEU	MET	THR	GLY	ARG	GLN	LEU	ASN	PRO	TYR	ALA	GLN	PHE	GLN	VAL	SER	GLY	ALA	ARG	TYR	ASP	A96	S168	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR

• Molecule 32: subunit c

Chain O6: 43% 57%

MET	PHE	PHE	SER	ARG	LEU	SER	LEU	SER	SER	ALA	LEU	LYS	ALA	PRO	PRO	ARG	GLU	ALA	LEU	PRO	THR	GLY	ARG	GLN	LEU	LEU	ASN	PRO	ARG	GLN	PHE	PHE	SER	GLY	ALA	GLY	PHE	SER	ASP	GLN	PHE	SER	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR
PRO	VAL	HIS	CYS	ASN	GLN	ARG	ILE	ALA	SER	ALA	LEU	LEU	VAL	PRO	THR	GLN	GLN	PRO	ALA	LEU	MET	THR	GLY	ARG	GLN	LEU	ASN	PRO	TYR	ALA	GLN	PHE	GLN	VAL	SER	GLY	ALA	ARG	TYR	ASP	A96	S168	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR

• Molecule 32: subunit c

Chain P6: 43% 57%

MET	PHE	PHE	SER	ARG	LEU	SER	LEU	SER	SER	ALA	LEU	LYS	ALA	PRO	PRO	ARG	GLU	ALA	LEU	PRO	THR	GLY	ARG	GLN	LEU	LEU	ASN	PRO	ARG	GLN	PHE	PHE	SER	GLY	ALA	GLY	PHE	SER	ASP	GLN	PHE	SER	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR
PRO	VAL	HIS	CYS	ASN	GLN	ARG	ILE	ALA	SER	ALA	LEU	LEU	VAL	PRO	THR	GLN	GLN	PRO	ALA	LEU	MET	THR	GLY	ARG	GLN	LEU	ASN	PRO	TYR	ALA	GLN	PHE	GLN	VAL	SER	GLY	ALA	ARG	TYR	ASP	A96	S168	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR

• Molecule 32: subunit c

Chain Q6: 43% 57%

MET	PHE	PHE	SER	ARG	LEU	SER	LEU	SER	SER	ALA	LEU	LYS	ALA	PRO	PRO	ARG	GLU	ALA	LEU	PRO	THR	GLY	ARG	GLN	LEU	LEU	ASN	PRO	ARG	GLN	PHE	PHE	SER	GLY	ALA	GLY	PHE	SER	ASP	GLN	PHE	SER	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR
PRO	VAL	HIS	CYS	ASN	GLN	ARG	ILE	ALA	SER	ALA	LEU	LEU	VAL	PRO	THR	GLN	GLN	PRO	ALA	LEU	MET	THR	GLY	ARG	GLN	LEU	ASN	PRO	TYR	ALA	GLN	PHE	GLN	VAL	SER	GLY	ALA	ARG	TYR	ASP	A96	S168	SER	SER	GLN	LYS	PHE	PHE	PHE	SER	PRO	PRO	ARG	ASN	PHE	SER	SER	GLN	PHE	LEU	PHE	GLN	LYS	HIS	THR

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	4532	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	32	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	130000	Depositor
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	Q7	0.27	0/1103	0.42	0/1496
1	Q8	0.28	0/1103	0.44	0/1496
1	Q9	0.27	0/1103	0.41	0/1496
1	q7	0.29	0/1103	0.44	0/1496
1	q8	0.27	0/1103	0.42	0/1496
1	q9	0.28	0/1103	0.44	0/1496
2	I7	0.26	0/719	0.40	0/962
2	I8	0.27	0/719	0.40	0/962
2	I9	0.26	0/719	0.40	0/962
2	i7	0.27	0/719	0.40	0/962
2	i8	0.26	0/719	0.40	0/962
2	i9	0.27	0/719	0.40	0/962
3	T7	0.25	0/741	0.42	0/1007
3	T8	0.24	0/741	0.42	0/1007
3	T9	0.25	0/741	0.42	0/1007
3	t7	0.24	0/741	0.42	0/1007
3	t8	0.25	0/741	0.42	0/1007
3	t9	0.24	0/741	0.42	0/1007
4	G7	0.28	0/896	0.45	0/1216
4	G8	0.26	0/896	0.42	0/1216
4	G9	0.28	0/896	0.45	0/1216
4	g7	0.26	0/896	0.43	0/1216
4	g8	0.28	0/896	0.45	0/1216
4	g9	0.26	0/896	0.41	0/1216
5	O7	0.29	0/1250	0.44	0/1682
5	O8	0.26	0/1250	0.42	0/1682
5	O9	0.28	0/1250	0.43	0/1682
5	o7	0.26	0/1250	0.42	0/1682
5	o8	0.29	0/1250	0.45	0/1682
5	o9	0.26	0/1250	0.42	0/1682
6	K7	0.30	0/981	0.40	0/1321
6	K8	0.30	0/981	0.42	0/1321
6	K9	0.30	0/981	0.40	0/1321
6	k7	0.30	0/981	0.42	0/1321

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
6	k8	0.30	0/981	0.41	0/1321
6	k9	0.30	0/981	0.42	0/1321
7	J7	0.36	0/1573	0.45	0/2137
7	J8	0.32	0/1573	0.44	0/2137
7	J9	0.36	0/1573	0.44	0/2137
7	j7	0.32	0/1573	0.44	0/2137
7	j8	0.37	0/1573	0.45	0/2137
7	j9	0.31	0/1573	0.44	0/2137
8	S7	0.29	0/826	0.41	0/1119
8	S8	0.27	0/826	0.39	0/1119
8	S9	0.29	0/826	0.40	0/1119
8	s7	0.26	0/826	0.39	0/1119
8	s8	0.29	0/826	0.40	0/1119
8	s9	0.26	0/826	0.39	0/1119
9	U7	0.34	0/770	0.43	0/1040
9	U8	0.28	0/770	0.40	0/1040
9	U9	0.34	0/770	0.43	0/1040
9	u7	0.28	0/770	0.40	0/1040
9	u8	0.34	0/770	0.43	0/1040
9	u9	0.28	0/770	0.39	0/1040
10	H7	0.33	0/1902	0.45	0/2575
10	H8	0.29	0/1902	0.44	0/2575
10	H9	0.32	0/1902	0.44	0/2575
10	h7	0.29	0/1902	0.44	0/2575
10	h8	0.33	0/1902	0.45	0/2575
10	h9	0.28	0/1902	0.43	0/2575
11	E7	0.33	0/1154	0.45	0/1572
11	E8	0.29	0/1154	0.44	0/1572
11	E9	0.33	0/1154	0.45	0/1572
11	e7	0.29	0/1154	0.44	0/1572
11	e8	0.33	0/1154	0.46	0/1572
11	e9	0.29	0/1154	0.43	0/1572
12	X7	0.27	0/678	0.41	0/923
12	X8	0.25	0/678	0.40	0/923
12	X9	0.26	0/678	0.40	0/923
12	x7	0.25	0/678	0.40	0/923
12	x8	0.27	0/678	0.41	0/923
12	x9	0.25	0/678	0.40	0/923
13	B7	0.27	0/4016	0.42	0/5422
13	B8	0.26	0/4016	0.42	0/5422
13	B9	0.26	0/4016	0.42	0/5422
13	b7	0.26	0/4016	0.42	0/5422
13	b8	0.27	0/4016	0.42	0/5422

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
13	b9	0.26	0/4016	0.42	0/5422
14	R7	0.25	0/1092	0.41	0/1470
14	R8	0.25	0/1092	0.40	0/1470
14	R9	0.25	0/1092	0.41	0/1470
14	r7	0.25	0/1092	0.42	0/1470
14	r8	0.25	0/1092	0.41	0/1470
14	r9	0.25	0/1092	0.40	0/1470
15	P7	0.26	0/888	0.37	0/1202
15	P8	0.27	0/888	0.38	0/1202
15	P9	0.27	0/888	0.37	0/1202
15	p7	0.27	0/888	0.39	0/1202
15	p8	0.27	0/888	0.38	0/1202
15	p9	0.27	0/888	0.38	0/1202
16	V7	0.31	0/944	0.44	0/1280
16	V8	0.28	0/944	0.44	0/1280
16	V9	0.31	0/944	0.44	0/1280
16	v7	0.28	0/944	0.44	0/1280
16	v8	0.31	0/944	0.44	0/1280
16	v9	0.28	0/944	0.44	0/1280
17	L7	0.29	0/1651	0.43	0/2227
17	L8	0.26	0/1651	0.40	0/2227
17	L9	0.28	0/1651	0.43	0/2227
17	l7	0.26	0/1651	0.40	0/2227
17	l8	0.28	0/1651	0.43	0/2227
17	l9	0.26	0/1651	0.40	0/2227
18	C7	0.28	0/1057	0.42	0/1428
18	C8	0.27	0/1057	0.42	0/1428
18	C9	0.27	0/1057	0.42	0/1428
18	c7	0.27	0/1057	0.43	0/1428
18	c8	0.28	0/1057	0.43	0/1428
18	c9	0.27	0/1057	0.42	0/1428
19	D7	0.33	0/2138	0.44	0/2905
19	D8	0.28	0/2138	0.44	0/2905
19	D9	0.32	0/2138	0.44	0/2905
19	d7	0.28	0/2138	0.44	0/2905
19	d8	0.33	0/2138	0.44	0/2905
19	d9	0.28	0/2138	0.43	0/2905
20	M7	0.28	0/789	0.42	0/1065
20	M8	0.27	0/789	0.43	0/1065
20	M9	0.28	0/789	0.42	0/1065
20	m7	0.27	0/789	0.43	0/1065
20	m8	0.28	0/789	0.42	0/1065
20	m9	0.27	0/789	0.43	0/1065

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
21	N7	0.28	0/1280	0.42	0/1734
21	N8	0.26	0/1280	0.40	0/1734
21	N9	0.28	0/1280	0.42	0/1734
21	n7	0.26	0/1280	0.40	0/1734
21	n8	0.28	0/1280	0.42	0/1734
21	n9	0.25	0/1280	0.40	0/1734
22	F7	0.26	0/1475	0.42	0/2009
22	F8	0.25	0/1475	0.41	0/2009
22	F9	0.25	0/1475	0.42	0/2009
22	f7	0.25	0/1475	0.42	0/2009
22	f8	0.26	0/1475	0.42	0/2009
22	f9	0.25	0/1475	0.42	0/2009
23	W7	0.33	0/778	0.47	0/1057
23	W8	0.29	0/778	0.44	0/1057
23	W9	0.32	0/778	0.47	0/1057
23	w7	0.29	0/778	0.44	0/1057
23	w8	0.33	0/778	0.48	0/1057
23	w9	0.28	0/778	0.43	0/1057
24	A7	0.25	0/3883	0.39	0/5262
24	A8	0.25	0/3883	0.39	0/5262
24	A9	0.25	0/3883	0.39	0/5262
24	a7	0.25	0/3883	0.39	0/5262
24	a8	0.25	0/3883	0.39	0/5262
24	a9	0.25	0/3883	0.39	0/5262
25	G1	0.30	0/1431	0.67	5/1929 (0.3%)
25	G2	0.33	0/1431	0.70	6/1929 (0.3%)
25	G3	0.27	0/1431	0.56	1/1929 (0.1%)
25	G4	0.30	0/1431	0.64	3/1929 (0.2%)
25	G5	0.30	0/1431	0.65	4/1929 (0.2%)
25	G6	0.31	0/1431	0.71	7/1929 (0.4%)
26	i1	0.25	0/343	0.39	0/459
26	i2	0.25	0/343	0.38	0/459
26	i3	0.25	0/343	0.38	0/459
26	i4	0.26	0/343	0.38	0/459
26	i5	0.25	0/343	0.39	0/459
26	i6	0.25	0/343	0.38	0/459
27	A1	0.24	0/3979	0.43	0/5372
27	A2	0.24	0/3979	0.43	0/5372
27	A3	0.24	0/3979	0.43	0/5372
27	A4	0.24	0/3979	0.43	0/5372
27	A5	0.24	0/3979	0.43	0/5372
27	A6	0.24	0/3979	0.43	0/5372
27	C1	0.24	0/3938	0.43	0/5314

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
27	C2	0.24	0/3938	0.43	0/5314
27	C3	0.24	0/3938	0.43	0/5314
27	C4	0.24	0/3938	0.43	0/5314
27	C5	0.24	0/3938	0.43	0/5314
27	C6	0.24	0/3938	0.43	0/5314
27	E1	0.24	0/3942	0.43	0/5322
27	E2	0.24	0/3942	0.42	0/5322
27	E3	0.24	0/3942	0.43	0/5322
27	E4	0.24	0/3942	0.43	0/5322
27	E5	0.24	0/3942	0.43	0/5322
27	E6	0.24	0/3942	0.43	0/5322
28	B1	0.25	0/3698	0.43	0/5016
28	B2	0.25	0/3698	0.43	0/5016
28	B3	0.25	0/3698	0.43	0/5016
28	B4	0.25	0/3698	0.43	0/5016
28	B5	0.25	0/3698	0.43	0/5016
28	B6	0.25	0/3698	0.43	0/5016
28	D1	0.25	0/3672	0.43	0/4980
28	D2	0.25	0/3672	0.43	0/4980
28	D3	0.25	0/3672	0.43	0/4980
28	D4	0.25	0/3672	0.43	0/4980
28	D5	0.25	0/3672	0.43	0/4980
28	D6	0.25	0/3672	0.43	0/4980
28	F1	0.25	0/3672	0.44	0/4980
28	F2	0.25	0/3672	0.44	0/4980
28	F3	0.25	0/3672	0.44	0/4980
28	F4	0.25	0/3672	0.44	0/4980
28	F5	0.25	0/3672	0.44	0/4980
28	F6	0.25	0/3672	0.44	0/4980
29	g1	0.24	0/2145	0.39	0/2890
29	g2	0.25	0/2145	0.39	0/2890
29	g3	0.24	0/2145	0.39	0/2890
29	g4	0.25	0/2145	0.39	0/2890
29	g5	0.24	0/2145	0.39	0/2890
29	g6	0.25	0/2145	0.39	0/2890
30	d1	0.24	0/1083	0.42	0/1466
30	d2	0.25	0/1083	0.42	0/1466
30	d3	0.24	0/1083	0.43	0/1466
30	d4	0.25	0/1083	0.42	0/1466
30	d5	0.24	0/1083	0.43	0/1466
30	d6	0.25	0/1083	0.42	0/1466
31	e1	0.26	0/547	0.43	0/733
31	e2	0.26	0/547	0.43	0/733

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	e3	0.26	0/547	0.43	0/733
31	e4	0.26	0/547	0.43	0/733
31	e5	0.26	0/547	0.43	0/733
31	e6	0.26	0/547	0.43	0/733
32	H1	0.26	0/507	0.38	0/686
32	H2	0.26	0/507	0.39	0/686
32	H3	0.26	0/507	0.39	0/686
32	H4	0.26	0/507	0.39	0/686
32	H5	0.26	0/507	0.38	0/686
32	H6	0.26	0/507	0.39	0/686
32	I1	0.25	0/507	0.38	0/686
32	I2	0.25	0/507	0.38	0/686
32	I3	0.25	0/507	0.38	0/686
32	I4	0.25	0/507	0.38	0/686
32	I5	0.25	0/507	0.38	0/686
32	I6	0.26	0/507	0.38	0/686
32	J1	0.26	0/507	0.39	0/686
32	J2	0.26	0/507	0.39	0/686
32	J3	0.26	0/507	0.39	0/686
32	J4	0.26	0/507	0.39	0/686
32	J5	0.26	0/507	0.39	0/686
32	J6	0.26	0/507	0.39	0/686
32	K1	0.25	0/507	0.38	0/686
32	K2	0.25	0/507	0.39	0/686
32	K3	0.25	0/507	0.39	0/686
32	K4	0.25	0/507	0.39	0/686
32	K5	0.25	0/507	0.39	0/686
32	K6	0.25	0/507	0.39	0/686
32	L1	0.25	0/507	0.41	0/686
32	L2	0.26	0/507	0.41	0/686
32	L3	0.25	0/507	0.41	0/686
32	L4	0.26	0/507	0.41	0/686
32	L5	0.25	0/507	0.41	0/686
32	L6	0.26	0/507	0.41	0/686
32	M1	0.25	0/507	0.37	0/686
32	M2	0.25	0/507	0.37	0/686
32	M3	0.25	0/507	0.37	0/686
32	M4	0.25	0/507	0.37	0/686
32	M5	0.25	0/507	0.37	0/686
32	M6	0.25	0/507	0.37	0/686
32	N1	0.24	0/507	0.38	0/686
32	N2	0.25	0/507	0.38	0/686
32	N3	0.24	0/507	0.37	0/686

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	N4	0.25	0/507	0.37	0/686
32	N5	0.24	0/507	0.37	0/686
32	N6	0.25	0/507	0.37	0/686
32	O1	0.26	0/507	0.38	0/686
32	O2	0.25	0/507	0.38	0/686
32	O3	0.26	0/507	0.38	0/686
32	O4	0.26	0/507	0.38	0/686
32	O5	0.26	0/507	0.39	0/686
32	O6	0.26	0/507	0.38	0/686
32	P1	0.26	0/507	0.42	0/686
32	P2	0.27	0/507	0.41	0/686
32	P3	0.26	0/507	0.42	0/686
32	P4	0.27	0/507	0.41	0/686
32	P5	0.26	0/507	0.42	0/686
32	P6	0.27	0/507	0.41	0/686
32	Q1	0.27	0/507	0.42	0/686
32	Q2	0.27	0/507	0.43	0/686
32	Q3	0.27	0/507	0.42	0/686
32	Q4	0.27	0/507	0.43	0/686
32	Q5	0.27	0/507	0.42	0/686
32	Q6	0.27	0/507	0.43	0/686
All	All	0.26	0/396624	0.43	26/536592 (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	J7	0	1
7	J8	0	1
7	J9	0	1
7	j7	0	1
7	j8	0	1
7	j9	0	1
14	R8	0	1
25	G1	0	2
25	G2	0	2
25	G3	0	3
25	G4	0	2
25	G5	0	2
25	G6	0	2
All	All	0	20

There are no bond length outliers.

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
25	G1	171	TYR	CA-CB-CG	11.14	134.57	113.40
25	G6	173	LYS	CD-CE-NZ	11.06	137.14	111.70
25	G5	171	TYR	CA-CB-CG	10.85	134.01	113.40
25	G6	171	TYR	CA-CB-CG	10.33	133.03	113.40
25	G4	171	TYR	CA-CB-CG	10.14	132.67	113.40
25	G1	171	TYR	N-CA-CB	8.60	126.07	110.60
25	G2	171	TYR	CA-CB-CG	8.43	129.41	113.40
25	G2	170	MET	CG-SD-CE	8.09	113.14	100.20
25	G2	170	MET	N-CA-CB	7.78	124.61	110.60
25	G1	97	TYR	CA-CB-CG	7.67	127.97	113.40
25	G2	171	TYR	N-CA-CB	7.52	124.14	110.60
25	G1	170	MET	C-N-CA	7.48	140.39	121.70
25	G5	97	TYR	CA-CB-CG	7.26	127.19	113.40
25	G2	170	MET	C-N-CA	7.05	139.34	121.70
25	G6	170	MET	C-N-CA	6.97	139.13	121.70
25	G4	170	MET	C-N-CA	6.84	138.81	121.70
25	G6	171	TYR	CB-CG-CD1	-6.59	117.04	121.00
25	G5	170	MET	C-N-CA	6.54	138.05	121.70
25	G3	170	MET	C-N-CA	6.41	137.71	121.70
25	G5	171	TYR	N-CA-CB	6.20	121.76	110.60
25	G6	97	TYR	CA-CB-CG	5.98	124.76	113.40
25	G4	171	TYR	N-CA-CB	5.64	120.75	110.60
25	G2	169	ALA	C-N-CA	-5.59	107.72	121.70
25	G6	171	TYR	N-CA-CB	5.47	120.45	110.60
25	G6	171	TYR	CB-CG-CD2	5.46	124.28	121.00
25	G1	171	TYR	CB-CG-CD1	-5.07	117.96	121.00

There are no chirality outliers.

All (20) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
25	G1	171	TYR	Peptide
25	G1	172	ARG	Peptide
25	G2	171	TYR	Peptide
25	G2	172	ARG	Peptide
25	G3	171	TYR	Peptide,Sidechain
25	G3	172	ARG	Peptide
25	G4	171	TYR	Peptide
25	G4	172	ARG	Peptide
25	G5	171	TYR	Peptide

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Mol	Chain	Res	Type	Group
25	G5	172	ARG	Peptide
25	G6	171	TYR	Peptide
25	G6	172	ARG	Peptide
7	J7	89	PHE	Peptide
7	J8	89	PHE	Peptide
7	J9	89	PHE	Peptide
14	R8	87	LYS	Peptide
7	j7	89	PHE	Peptide
7	j8	89	PHE	Peptide
7	j9	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	Percentiles	
1	Q7	131/134 (98%)	125 (95%)	6 (5%)	0	100	100
1	Q8	131/134 (98%)	125 (95%)	6 (5%)	0	100	100
1	Q9	131/134 (98%)	125 (95%)	6 (5%)	0	100	100
1	q7	131/134 (98%)	125 (95%)	6 (5%)	0	100	100
1	q8	131/134 (98%)	125 (95%)	6 (5%)	0	100	100
1	q9	131/134 (98%)	125 (95%)	6 (5%)	0	100	100
2	I7	88/236 (37%)	85 (97%)	3 (3%)	0	100	100
2	I8	88/236 (37%)	85 (97%)	3 (3%)	0	100	100
2	I9	88/236 (37%)	85 (97%)	3 (3%)	0	100	100
2	i7	88/236 (37%)	85 (97%)	3 (3%)	0	100	100
2	i8	88/236 (37%)	85 (97%)	3 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	i9	88/236 (37%)	85 (97%)	3 (3%)	0	100	100
3	T7	90/133 (68%)	87 (97%)	3 (3%)	0	100	100
3	T8	90/133 (68%)	87 (97%)	3 (3%)	0	100	100
3	T9	90/133 (68%)	87 (97%)	3 (3%)	0	100	100
3	t7	90/133 (68%)	87 (97%)	3 (3%)	0	100	100
3	t8	90/133 (68%)	87 (97%)	3 (3%)	0	100	100
3	t9	90/133 (68%)	87 (97%)	3 (3%)	0	100	100
4	G7	110/252 (44%)	102 (93%)	8 (7%)	0	100	100
4	G8	110/252 (44%)	102 (93%)	8 (7%)	0	100	100
4	G9	110/252 (44%)	102 (93%)	8 (7%)	0	100	100
4	g7	110/252 (44%)	102 (93%)	8 (7%)	0	100	100
4	g8	110/252 (44%)	102 (93%)	8 (7%)	0	100	100
4	g9	110/252 (44%)	102 (93%)	8 (7%)	0	100	100
5	O7	147/157 (94%)	140 (95%)	7 (5%)	0	100	100
5	O8	147/157 (94%)	141 (96%)	6 (4%)	0	100	100
5	O9	147/157 (94%)	140 (95%)	7 (5%)	0	100	100
5	o7	147/157 (94%)	141 (96%)	6 (4%)	0	100	100
5	o8	147/157 (94%)	140 (95%)	7 (5%)	0	100	100
5	o9	147/157 (94%)	140 (95%)	7 (5%)	0	100	100
6	K7	115/224 (51%)	111 (96%)	4 (4%)	0	100	100
6	K8	115/224 (51%)	111 (96%)	4 (4%)	0	100	100
6	K9	115/224 (51%)	111 (96%)	4 (4%)	0	100	100
6	k7	115/224 (51%)	111 (96%)	4 (4%)	0	100	100
6	k8	115/224 (51%)	110 (96%)	5 (4%)	0	100	100
6	k9	115/224 (51%)	111 (96%)	4 (4%)	0	100	100
7	J7	174/229 (76%)	165 (95%)	9 (5%)	0	100	100
7	J8	174/229 (76%)	165 (95%)	9 (5%)	0	100	100
7	J9	174/229 (76%)	165 (95%)	9 (5%)	0	100	100
7	j7	174/229 (76%)	165 (95%)	9 (5%)	0	100	100
7	j8	174/229 (76%)	165 (95%)	9 (5%)	0	100	100
7	j9	174/229 (76%)	165 (95%)	9 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	S7	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
8	S8	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
8	S9	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
8	s7	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
8	s8	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
8	s9	93/128 (73%)	92 (99%)	1 (1%)	0	100	100
9	U7	92/126 (73%)	90 (98%)	2 (2%)	0	100	100
9	U8	92/126 (73%)	90 (98%)	2 (2%)	0	100	100
9	U9	92/126 (73%)	90 (98%)	2 (2%)	0	100	100
9	u7	92/126 (73%)	90 (98%)	2 (2%)	0	100	100
9	u8	92/126 (73%)	90 (98%)	2 (2%)	0	100	100
9	u9	92/126 (73%)	90 (98%)	2 (2%)	0	100	100
10	H7	224/239 (94%)	215 (96%)	9 (4%)	0	100	100
10	H8	224/239 (94%)	215 (96%)	9 (4%)	0	100	100
10	H9	224/239 (94%)	214 (96%)	10 (4%)	0	100	100
10	h7	224/239 (94%)	215 (96%)	9 (4%)	0	100	100
10	h8	224/239 (94%)	215 (96%)	9 (4%)	0	100	100
10	h9	224/239 (94%)	215 (96%)	9 (4%)	0	100	100
11	E7	138/325 (42%)	134 (97%)	4 (3%)	0	100	100
11	E8	138/325 (42%)	134 (97%)	4 (3%)	0	100	100
11	E9	138/325 (42%)	134 (97%)	4 (3%)	0	100	100
11	e7	138/325 (42%)	134 (97%)	4 (3%)	0	100	100
11	e8	138/325 (42%)	134 (97%)	4 (3%)	0	100	100
11	e9	138/325 (42%)	134 (97%)	4 (3%)	0	100	100
12	X7	80/83 (96%)	76 (95%)	4 (5%)	0	100	100
12	X8	80/83 (96%)	76 (95%)	4 (5%)	0	100	100
12	X9	80/83 (96%)	76 (95%)	4 (5%)	0	100	100
12	x7	80/83 (96%)	76 (95%)	4 (5%)	0	100	100
12	x8	80/83 (96%)	76 (95%)	4 (5%)	0	100	100
12	x9	80/83 (96%)	76 (95%)	4 (5%)	0	100	100
13	B7	480/571 (84%)	462 (96%)	17 (4%)	1 (0%)	47	81

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	B8	480/571 (84%)	463 (96%)	17 (4%)	0	100	100
13	B9	480/571 (84%)	461 (96%)	18 (4%)	1 (0%)	47	81
13	b7	480/571 (84%)	463 (96%)	17 (4%)	0	100	100
13	b8	480/571 (84%)	461 (96%)	19 (4%)	0	100	100
13	b9	480/571 (84%)	463 (96%)	17 (4%)	0	100	100
14	R7	131/134 (98%)	121 (92%)	9 (7%)	1 (1%)	19	59
14	R8	131/134 (98%)	118 (90%)	12 (9%)	1 (1%)	19	59
14	R9	131/134 (98%)	119 (91%)	11 (8%)	1 (1%)	19	59
14	r7	131/134 (98%)	117 (89%)	12 (9%)	2 (2%)	10	46
14	r8	131/134 (98%)	119 (91%)	11 (8%)	1 (1%)	19	59
14	r9	131/134 (98%)	120 (92%)	10 (8%)	1 (1%)	19	59
15	P7	106/138 (77%)	104 (98%)	2 (2%)	0	100	100
15	P8	106/138 (77%)	104 (98%)	2 (2%)	0	100	100
15	P9	106/138 (77%)	104 (98%)	2 (2%)	0	100	100
15	p7	106/138 (77%)	104 (98%)	2 (2%)	0	100	100
15	p8	106/138 (77%)	104 (98%)	2 (2%)	0	100	100
15	p9	106/138 (77%)	104 (98%)	2 (2%)	0	100	100
16	V7	108/111 (97%)	108 (100%)	0	0	100	100
16	V8	108/111 (97%)	108 (100%)	0	0	100	100
16	V9	108/111 (97%)	108 (100%)	0	0	100	100
16	v7	108/111 (97%)	108 (100%)	0	0	100	100
16	v8	108/111 (97%)	108 (100%)	0	0	100	100
16	v9	108/111 (97%)	108 (100%)	0	0	100	100
17	L7	205/208 (99%)	201 (98%)	4 (2%)	0	100	100
17	L8	205/208 (99%)	201 (98%)	4 (2%)	0	100	100
17	L9	205/208 (99%)	201 (98%)	4 (2%)	0	100	100
17	l7	205/208 (99%)	201 (98%)	4 (2%)	0	100	100
17	l8	205/208 (99%)	201 (98%)	4 (2%)	0	100	100
17	l9	205/208 (99%)	201 (98%)	4 (2%)	0	100	100
18	C7	120/398 (30%)	115 (96%)	5 (4%)	0	100	100
18	C8	120/398 (30%)	115 (96%)	5 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	C9	120/398 (30%)	115 (96%)	5 (4%)	0	100	100
18	c7	120/398 (30%)	115 (96%)	5 (4%)	0	100	100
18	c8	120/398 (30%)	115 (96%)	5 (4%)	0	100	100
18	c9	120/398 (30%)	115 (96%)	5 (4%)	0	100	100
19	D7	250/310 (81%)	245 (98%)	5 (2%)	0	100	100
19	D8	250/310 (81%)	245 (98%)	5 (2%)	0	100	100
19	D9	250/310 (81%)	246 (98%)	4 (2%)	0	100	100
19	d7	250/310 (81%)	245 (98%)	5 (2%)	0	100	100
19	d8	250/310 (81%)	246 (98%)	4 (2%)	0	100	100
19	d9	250/310 (81%)	245 (98%)	5 (2%)	0	100	100
20	M7	94/205 (46%)	91 (97%)	3 (3%)	0	100	100
20	M8	94/205 (46%)	91 (97%)	3 (3%)	0	100	100
20	M9	94/205 (46%)	91 (97%)	3 (3%)	0	100	100
20	m7	94/205 (46%)	91 (97%)	3 (3%)	0	100	100
20	m8	94/205 (46%)	91 (97%)	3 (3%)	0	100	100
20	m9	94/205 (46%)	91 (97%)	3 (3%)	0	100	100
21	N7	158/166 (95%)	156 (99%)	2 (1%)	0	100	100
21	N8	158/166 (95%)	156 (99%)	2 (1%)	0	100	100
21	N9	158/166 (95%)	156 (99%)	2 (1%)	0	100	100
21	n7	158/166 (95%)	156 (99%)	2 (1%)	0	100	100
21	n8	158/166 (95%)	156 (99%)	2 (1%)	0	100	100
21	n9	158/166 (95%)	156 (99%)	2 (1%)	0	100	100
22	F7	184/267 (69%)	172 (94%)	12 (6%)	0	100	100
22	F8	184/267 (69%)	172 (94%)	12 (6%)	0	100	100
22	F9	184/267 (69%)	172 (94%)	12 (6%)	0	100	100
22	f7	184/267 (69%)	172 (94%)	12 (6%)	0	100	100
22	f8	184/267 (69%)	172 (94%)	12 (6%)	0	100	100
22	f9	184/267 (69%)	172 (94%)	12 (6%)	0	100	100
23	W7	92/106 (87%)	87 (95%)	5 (5%)	0	100	100
23	W8	92/106 (87%)	87 (95%)	5 (5%)	0	100	100
23	W9	92/106 (87%)	87 (95%)	5 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
23	w7	92/106 (87%)	87 (95%)	5 (5%)	0	100	100
23	w8	92/106 (87%)	87 (95%)	5 (5%)	0	100	100
23	w9	92/106 (87%)	87 (95%)	5 (5%)	0	100	100
24	A7	461/536 (86%)	444 (96%)	17 (4%)	0	100	100
24	A8	461/536 (86%)	443 (96%)	18 (4%)	0	100	100
24	A9	461/536 (86%)	443 (96%)	18 (4%)	0	100	100
24	a7	461/536 (86%)	444 (96%)	17 (4%)	0	100	100
24	a8	461/536 (86%)	443 (96%)	18 (4%)	0	100	100
24	a9	461/536 (86%)	443 (96%)	18 (4%)	0	100	100
25	G1	178/252 (71%)	156 (88%)	21 (12%)	1 (1%)	25	65
25	G2	178/252 (71%)	154 (86%)	22 (12%)	2 (1%)	14	51
25	G3	178/252 (71%)	156 (88%)	21 (12%)	1 (1%)	25	65
25	G4	178/252 (71%)	154 (86%)	22 (12%)	2 (1%)	14	51
25	G5	178/252 (71%)	157 (88%)	20 (11%)	1 (1%)	25	65
25	G6	178/252 (71%)	154 (86%)	22 (12%)	2 (1%)	14	51
26	i1	38/145 (26%)	37 (97%)	1 (3%)	0	100	100
26	i2	38/145 (26%)	37 (97%)	1 (3%)	0	100	100
26	i3	38/145 (26%)	37 (97%)	1 (3%)	0	100	100
26	i4	38/145 (26%)	37 (97%)	1 (3%)	0	100	100
26	i5	38/145 (26%)	37 (97%)	1 (3%)	0	100	100
26	i6	38/145 (26%)	37 (97%)	1 (3%)	0	100	100
27	A1	510/565 (90%)	484 (95%)	26 (5%)	0	100	100
27	A2	510/565 (90%)	485 (95%)	25 (5%)	0	100	100
27	A3	510/565 (90%)	484 (95%)	26 (5%)	0	100	100
27	A4	510/565 (90%)	483 (95%)	27 (5%)	0	100	100
27	A5	510/565 (90%)	482 (94%)	28 (6%)	0	100	100
27	A6	510/565 (90%)	484 (95%)	26 (5%)	0	100	100
27	C1	503/565 (89%)	482 (96%)	21 (4%)	0	100	100
27	C2	503/565 (89%)	482 (96%)	21 (4%)	0	100	100
27	C3	503/565 (89%)	483 (96%)	20 (4%)	0	100	100
27	C4	503/565 (89%)	482 (96%)	21 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
27	C5	503/565 (89%)	483 (96%)	20 (4%)	0	100	100
27	C6	503/565 (89%)	482 (96%)	21 (4%)	0	100	100
27	E1	505/565 (89%)	473 (94%)	32 (6%)	0	100	100
27	E2	505/565 (89%)	473 (94%)	32 (6%)	0	100	100
27	E3	505/565 (89%)	473 (94%)	32 (6%)	0	100	100
27	E4	505/565 (89%)	473 (94%)	32 (6%)	0	100	100
27	E5	505/565 (89%)	472 (94%)	33 (6%)	0	100	100
27	E6	505/565 (89%)	473 (94%)	32 (6%)	0	100	100
28	B1	477/560 (85%)	448 (94%)	29 (6%)	0	100	100
28	B2	477/560 (85%)	448 (94%)	29 (6%)	0	100	100
28	B3	477/560 (85%)	448 (94%)	29 (6%)	0	100	100
28	B4	477/560 (85%)	448 (94%)	29 (6%)	0	100	100
28	B5	477/560 (85%)	448 (94%)	29 (6%)	0	100	100
28	B6	477/560 (85%)	448 (94%)	29 (6%)	0	100	100
28	D1	473/560 (84%)	450 (95%)	23 (5%)	0	100	100
28	D2	473/560 (84%)	450 (95%)	23 (5%)	0	100	100
28	D3	473/560 (84%)	450 (95%)	23 (5%)	0	100	100
28	D4	473/560 (84%)	450 (95%)	23 (5%)	0	100	100
28	D5	473/560 (84%)	450 (95%)	23 (5%)	0	100	100
28	D6	473/560 (84%)	451 (95%)	22 (5%)	0	100	100
28	F1	473/560 (84%)	447 (94%)	26 (6%)	0	100	100
28	F2	473/560 (84%)	448 (95%)	25 (5%)	0	100	100
28	F3	473/560 (84%)	447 (94%)	26 (6%)	0	100	100
28	F4	473/560 (84%)	446 (94%)	27 (6%)	0	100	100
28	F5	473/560 (84%)	447 (94%)	26 (6%)	0	100	100
28	F6	473/560 (84%)	447 (94%)	26 (6%)	0	100	100
29	g1	270/314 (86%)	259 (96%)	11 (4%)	0	100	100
29	g2	270/314 (86%)	259 (96%)	11 (4%)	0	100	100
29	g3	270/314 (86%)	259 (96%)	11 (4%)	0	100	100
29	g4	270/314 (86%)	259 (96%)	11 (4%)	0	100	100
29	g5	270/314 (86%)	259 (96%)	11 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	g6	270/314 (86%)	259 (96%)	11 (4%)	0	100	100
30	d1	141/183 (77%)	135 (96%)	6 (4%)	0	100	100
30	d2	141/183 (77%)	134 (95%)	7 (5%)	0	100	100
30	d3	141/183 (77%)	135 (96%)	6 (4%)	0	100	100
30	d4	141/183 (77%)	135 (96%)	6 (4%)	0	100	100
30	d5	141/183 (77%)	135 (96%)	6 (4%)	0	100	100
30	d6	141/183 (77%)	135 (96%)	6 (4%)	0	100	100
31	e1	63/73 (86%)	59 (94%)	4 (6%)	0	100	100
31	e2	63/73 (86%)	59 (94%)	4 (6%)	0	100	100
31	e3	63/73 (86%)	59 (94%)	4 (6%)	0	100	100
31	e4	63/73 (86%)	59 (94%)	4 (6%)	0	100	100
31	e5	63/73 (86%)	59 (94%)	4 (6%)	0	100	100
31	e6	63/73 (86%)	59 (94%)	4 (6%)	0	100	100
32	H1	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	H2	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	H3	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	H4	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	H5	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	H6	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	I1	69/166 (42%)	69 (100%)	0	0	100	100
32	I2	69/166 (42%)	69 (100%)	0	0	100	100
32	I3	69/166 (42%)	69 (100%)	0	0	100	100
32	I4	69/166 (42%)	69 (100%)	0	0	100	100
32	I5	69/166 (42%)	69 (100%)	0	0	100	100
32	I6	69/166 (42%)	69 (100%)	0	0	100	100
32	J1	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	J2	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	J3	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	J4	69/166 (42%)	65 (94%)	4 (6%)	0	100	100
32	J5	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	J6	69/166 (42%)	64 (93%)	5 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
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	K3	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	K4	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	K5	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	K6	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	L3	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	L4	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	L5	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	L6	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	M1	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	M2	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	M3	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	M4	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	M5	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	M6	69/166 (42%)	64 (93%)	5 (7%)	0	100	100
32	N1	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	N2	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	N3	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	N4	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	N5	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	N6	69/166 (42%)	67 (97%)	2 (3%)	0	100	100
32	O1	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	O2	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	O3	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	O4	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	O5	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	O6	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	P1	69/166 (42%)	66 (96%)	3 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
32	P2	69/166 (42%)	66 (96%)	3 (4%)	0	100	100
32	P3	69/166 (42%)	66 (96%)	3 (4%)	0	100	100
32	P4	69/166 (42%)	66 (96%)	3 (4%)	0	100	100
32	P5	69/166 (42%)	66 (96%)	3 (4%)	0	100	100
32	P6	69/166 (42%)	66 (96%)	3 (4%)	0	100	100
32	Q1	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	Q2	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	Q3	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	Q4	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	Q5	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
32	Q6	69/166 (42%)	68 (99%)	1 (1%)	0	100	100
All	All	49152/68508 (72%)	46938 (96%)	2196 (4%)	18 (0%)	100	100

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
14	r7	87	LYS
14	R7	91	SER
25	G1	171	TYR
25	G2	171	TYR
14	r8	89	ALA
14	R8	88	SER
25	G3	171	TYR
25	G4	171	TYR
14	R9	89	ALA
25	G5	171	TYR
25	G6	171	TYR
13	B7	338	SER
25	G4	172	ARG
14	r9	89	ALA
13	B9	338	SER
25	G2	172	ARG
25	G6	172	ARG
14	r7	86	ALA

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	Percentiles	
1	Q7	119/120 (99%)	119 (100%)	0	100	100
1	Q8	119/120 (99%)	119 (100%)	0	100	100
1	Q9	119/120 (99%)	119 (100%)	0	100	100
1	q7	119/120 (99%)	119 (100%)	0	100	100
1	q8	119/120 (99%)	119 (100%)	0	100	100
1	q9	119/120 (99%)	119 (100%)	0	100	100
2	I7	71/197 (36%)	71 (100%)	0	100	100
2	I8	71/197 (36%)	71 (100%)	0	100	100
2	I9	71/197 (36%)	71 (100%)	0	100	100
2	i7	71/197 (36%)	71 (100%)	0	100	100
2	i8	71/197 (36%)	71 (100%)	0	100	100
2	i9	71/197 (36%)	71 (100%)	0	100	100
3	T7	77/106 (73%)	77 (100%)	0	100	100
3	T8	77/106 (73%)	77 (100%)	0	100	100
3	T9	77/106 (73%)	77 (100%)	0	100	100
3	t7	77/106 (73%)	77 (100%)	0	100	100
3	t8	77/106 (73%)	77 (100%)	0	100	100
3	t9	77/106 (73%)	77 (100%)	0	100	100
4	G7	93/214 (44%)	93 (100%)	0	100	100
4	G8	93/214 (44%)	93 (100%)	0	100	100
4	G9	93/214 (44%)	93 (100%)	0	100	100
4	g7	93/214 (44%)	93 (100%)	0	100	100
4	g8	93/214 (44%)	93 (100%)	0	100	100
4	g9	93/214 (44%)	93 (100%)	0	100	100
5	O7	127/129 (98%)	127 (100%)	0	100	100
5	O8	127/129 (98%)	127 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	O9	127/129 (98%)	127 (100%)	0	100	100
5	o7	127/129 (98%)	127 (100%)	0	100	100
5	o8	127/129 (98%)	127 (100%)	0	100	100
5	o9	127/129 (98%)	127 (100%)	0	100	100
6	K7	100/175 (57%)	100 (100%)	0	100	100
6	K8	100/175 (57%)	100 (100%)	0	100	100
6	K9	100/175 (57%)	100 (100%)	0	100	100
6	k7	100/175 (57%)	100 (100%)	0	100	100
6	k8	100/175 (57%)	100 (100%)	0	100	100
6	k9	100/175 (57%)	100 (100%)	0	100	100
7	J7	160/195 (82%)	160 (100%)	0	100	100
7	J8	160/195 (82%)	160 (100%)	0	100	100
7	J9	160/195 (82%)	160 (100%)	0	100	100
7	j7	160/195 (82%)	160 (100%)	0	100	100
7	j8	160/195 (82%)	160 (100%)	0	100	100
7	j9	160/195 (82%)	160 (100%)	0	100	100
8	S7	86/113 (76%)	86 (100%)	0	100	100
8	S8	86/113 (76%)	86 (100%)	0	100	100
8	S9	86/113 (76%)	86 (100%)	0	100	100
8	s7	86/113 (76%)	86 (100%)	0	100	100
8	s8	86/113 (76%)	86 (100%)	0	100	100
8	s9	86/113 (76%)	86 (100%)	0	100	100
9	U7	76/98 (78%)	76 (100%)	0	100	100
9	U8	76/98 (78%)	76 (100%)	0	100	100
9	U9	76/98 (78%)	76 (100%)	0	100	100
9	u7	76/98 (78%)	76 (100%)	0	100	100
9	u8	76/98 (78%)	76 (100%)	0	100	100
9	u9	76/98 (78%)	76 (100%)	0	100	100
10	H7	197/204 (97%)	196 (100%)	1 (0%)	88	93
10	H8	197/204 (97%)	196 (100%)	1 (0%)	88	93
10	H9	197/204 (97%)	196 (100%)	1 (0%)	88	93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	h7	197/204 (97%)	196 (100%)	1 (0%)	88	93
10	h8	197/204 (97%)	196 (100%)	1 (0%)	88	93
10	h9	197/204 (97%)	196 (100%)	1 (0%)	88	93
11	E7	118/258 (46%)	118 (100%)	0	100	100
11	E8	118/258 (46%)	118 (100%)	0	100	100
11	E9	118/258 (46%)	118 (100%)	0	100	100
11	e7	118/258 (46%)	118 (100%)	0	100	100
11	e8	118/258 (46%)	118 (100%)	0	100	100
11	e9	118/258 (46%)	118 (100%)	0	100	100
12	X7	70/71 (99%)	70 (100%)	0	100	100
12	X8	70/71 (99%)	70 (100%)	0	100	100
12	X9	70/71 (99%)	70 (100%)	0	100	100
12	x7	70/71 (99%)	70 (100%)	0	100	100
12	x8	70/71 (99%)	70 (100%)	0	100	100
12	x9	70/71 (99%)	70 (100%)	0	100	100
13	B7	428/491 (87%)	427 (100%)	1 (0%)	93	96
13	B8	428/491 (87%)	427 (100%)	1 (0%)	93	96
13	B9	428/491 (87%)	427 (100%)	1 (0%)	93	96
13	b7	428/491 (87%)	427 (100%)	1 (0%)	93	96
13	b8	428/491 (87%)	427 (100%)	1 (0%)	93	96
13	b9	428/491 (87%)	427 (100%)	1 (0%)	93	96
14	R7	116/117 (99%)	116 (100%)	0	100	100
14	R8	116/117 (99%)	116 (100%)	0	100	100
14	R9	116/117 (99%)	116 (100%)	0	100	100
14	r7	116/117 (99%)	116 (100%)	0	100	100
14	r8	116/117 (99%)	116 (100%)	0	100	100
14	r9	116/117 (99%)	116 (100%)	0	100	100
15	P7	91/113 (80%)	91 (100%)	0	100	100
15	P8	91/113 (80%)	91 (100%)	0	100	100
15	P9	91/113 (80%)	91 (100%)	0	100	100
15	p7	91/113 (80%)	91 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	p8	91/113 (80%)	91 (100%)	0	100	100
15	p9	91/113 (80%)	91 (100%)	0	100	100
16	V7	86/87 (99%)	86 (100%)	0	100	100
16	V8	86/87 (99%)	86 (100%)	0	100	100
16	V9	86/87 (99%)	86 (100%)	0	100	100
16	v7	86/87 (99%)	86 (100%)	0	100	100
16	v8	86/87 (99%)	86 (100%)	0	100	100
16	v9	86/87 (99%)	86 (100%)	0	100	100
17	L7	177/178 (99%)	177 (100%)	0	100	100
17	L8	177/178 (99%)	177 (100%)	0	100	100
17	L9	177/178 (99%)	177 (100%)	0	100	100
17	l7	177/178 (99%)	177 (100%)	0	100	100
17	l8	177/178 (99%)	177 (100%)	0	100	100
17	l9	177/178 (99%)	177 (100%)	0	100	100
18	C7	107/338 (32%)	107 (100%)	0	100	100
18	C8	107/338 (32%)	107 (100%)	0	100	100
18	C9	107/338 (32%)	107 (100%)	0	100	100
18	c7	107/338 (32%)	107 (100%)	0	100	100
18	c8	107/338 (32%)	107 (100%)	0	100	100
18	c9	107/338 (32%)	107 (100%)	0	100	100
19	D7	218/259 (84%)	218 (100%)	0	100	100
19	D8	218/259 (84%)	218 (100%)	0	100	100
19	D9	218/259 (84%)	218 (100%)	0	100	100
19	d7	218/259 (84%)	218 (100%)	0	100	100
19	d8	218/259 (84%)	218 (100%)	0	100	100
19	d9	218/259 (84%)	218 (100%)	0	100	100
20	M7	77/156 (49%)	77 (100%)	0	100	100
20	M8	77/156 (49%)	77 (100%)	0	100	100
20	M9	77/156 (49%)	77 (100%)	0	100	100
20	m7	77/156 (49%)	77 (100%)	0	100	100
20	m8	77/156 (49%)	77 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
20	m9	77/156 (49%)	77 (100%)	0	100	100
21	N7	138/144 (96%)	137 (99%)	1 (1%)	84	90
21	N8	138/144 (96%)	137 (99%)	1 (1%)	84	90
21	N9	138/144 (96%)	137 (99%)	1 (1%)	84	90
21	n7	138/144 (96%)	137 (99%)	1 (1%)	84	90
21	n8	138/144 (96%)	137 (99%)	1 (1%)	84	90
21	n9	138/144 (96%)	137 (99%)	1 (1%)	84	90
22	F7	155/218 (71%)	155 (100%)	0	100	100
22	F8	155/218 (71%)	155 (100%)	0	100	100
22	F9	155/218 (71%)	155 (100%)	0	100	100
22	f7	155/218 (71%)	155 (100%)	0	100	100
22	f8	155/218 (71%)	155 (100%)	0	100	100
22	f9	155/218 (71%)	155 (100%)	0	100	100
23	W7	84/89 (94%)	84 (100%)	0	100	100
23	W8	84/89 (94%)	84 (100%)	0	100	100
23	W9	84/89 (94%)	84 (100%)	0	100	100
23	w7	84/89 (94%)	84 (100%)	0	100	100
23	w8	84/89 (94%)	84 (100%)	0	100	100
23	w9	84/89 (94%)	84 (100%)	0	100	100
24	A7	392/447 (88%)	391 (100%)	1 (0%)	92	95
24	A8	392/447 (88%)	391 (100%)	1 (0%)	92	95
24	A9	392/447 (88%)	391 (100%)	1 (0%)	92	95
24	a7	392/447 (88%)	391 (100%)	1 (0%)	92	95
24	a8	392/447 (88%)	391 (100%)	1 (0%)	92	95
24	a9	392/447 (88%)	391 (100%)	1 (0%)	92	95
25	G1	154/212 (73%)	152 (99%)	2 (1%)	69	82
25	G2	154/212 (73%)	152 (99%)	2 (1%)	69	82
25	G3	154/212 (73%)	153 (99%)	1 (1%)	86	92
25	G4	154/212 (73%)	152 (99%)	2 (1%)	69	82
25	G5	154/212 (73%)	152 (99%)	2 (1%)	69	82
25	G6	154/212 (73%)	152 (99%)	2 (1%)	69	82

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
26	i1	37/125 (30%)	37 (100%)	0	100	100
26	i2	37/125 (30%)	37 (100%)	0	100	100
26	i3	37/125 (30%)	37 (100%)	0	100	100
26	i4	37/125 (30%)	37 (100%)	0	100	100
26	i5	37/125 (30%)	37 (100%)	0	100	100
26	i6	37/125 (30%)	37 (100%)	0	100	100
27	A1	421/454 (93%)	421 (100%)	0	100	100
27	A2	421/454 (93%)	421 (100%)	0	100	100
27	A3	421/454 (93%)	421 (100%)	0	100	100
27	A4	421/454 (93%)	421 (100%)	0	100	100
27	A5	421/454 (93%)	421 (100%)	0	100	100
27	A6	421/454 (93%)	421 (100%)	0	100	100
27	C1	415/454 (91%)	415 (100%)	0	100	100
27	C2	415/454 (91%)	415 (100%)	0	100	100
27	C3	415/454 (91%)	415 (100%)	0	100	100
27	C4	415/454 (91%)	415 (100%)	0	100	100
27	C5	415/454 (91%)	415 (100%)	0	100	100
27	C6	415/454 (91%)	415 (100%)	0	100	100
27	E1	416/454 (92%)	416 (100%)	0	100	100
27	E2	416/454 (92%)	416 (100%)	0	100	100
27	E3	416/454 (92%)	416 (100%)	0	100	100
27	E4	416/454 (92%)	416 (100%)	0	100	100
27	E5	416/454 (92%)	416 (100%)	0	100	100
27	E6	416/454 (92%)	416 (100%)	0	100	100
28	B1	390/447 (87%)	389 (100%)	1 (0%)	92	95
28	B2	390/447 (87%)	389 (100%)	1 (0%)	92	95
28	B3	390/447 (87%)	389 (100%)	1 (0%)	92	95
28	B4	390/447 (87%)	389 (100%)	1 (0%)	92	95
28	B5	390/447 (87%)	389 (100%)	1 (0%)	92	95
28	B6	390/447 (87%)	389 (100%)	1 (0%)	92	95
28	D1	388/447 (87%)	388 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
28	D2	388/447 (87%)	388 (100%)	0	100	100
28	D3	388/447 (87%)	388 (100%)	0	100	100
28	D4	388/447 (87%)	388 (100%)	0	100	100
28	D5	388/447 (87%)	388 (100%)	0	100	100
28	D6	388/447 (87%)	388 (100%)	0	100	100
28	F1	388/447 (87%)	388 (100%)	0	100	100
28	F2	388/447 (87%)	388 (100%)	0	100	100
28	F3	388/447 (87%)	388 (100%)	0	100	100
28	F4	388/447 (87%)	388 (100%)	0	100	100
28	F5	388/447 (87%)	388 (100%)	0	100	100
28	F6	388/447 (87%)	388 (100%)	0	100	100
29	g1	228/257 (89%)	228 (100%)	0	100	100
29	g2	228/257 (89%)	228 (100%)	0	100	100
29	g3	228/257 (89%)	228 (100%)	0	100	100
29	g4	228/257 (89%)	228 (100%)	0	100	100
29	g5	228/257 (89%)	228 (100%)	0	100	100
29	g6	228/257 (89%)	228 (100%)	0	100	100
30	d1	118/144 (82%)	118 (100%)	0	100	100
30	d2	118/144 (82%)	118 (100%)	0	100	100
30	d3	118/144 (82%)	118 (100%)	0	100	100
30	d4	118/144 (82%)	118 (100%)	0	100	100
30	d5	118/144 (82%)	118 (100%)	0	100	100
30	d6	118/144 (82%)	118 (100%)	0	100	100
31	e1	57/61 (93%)	57 (100%)	0	100	100
31	e2	57/61 (93%)	57 (100%)	0	100	100
31	e3	57/61 (93%)	57 (100%)	0	100	100
31	e4	57/61 (93%)	57 (100%)	0	100	100
31	e5	57/61 (93%)	57 (100%)	0	100	100
31	e6	57/61 (93%)	57 (100%)	0	100	100
32	H1	52/133 (39%)	52 (100%)	0	100	100
32	H2	52/133 (39%)	52 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	H3	52/133 (39%)	52 (100%)	0	100	100
32	H4	52/133 (39%)	52 (100%)	0	100	100
32	H5	52/133 (39%)	52 (100%)	0	100	100
32	H6	52/133 (39%)	52 (100%)	0	100	100
32	I1	52/133 (39%)	51 (98%)	1 (2%)	57	75
32	I2	52/133 (39%)	51 (98%)	1 (2%)	57	75
32	I3	52/133 (39%)	51 (98%)	1 (2%)	57	75
32	I4	52/133 (39%)	51 (98%)	1 (2%)	57	75
32	I5	52/133 (39%)	51 (98%)	1 (2%)	57	75
32	I6	52/133 (39%)	51 (98%)	1 (2%)	57	75
32	J1	52/133 (39%)	52 (100%)	0	100	100
32	J2	52/133 (39%)	52 (100%)	0	100	100
32	J3	52/133 (39%)	52 (100%)	0	100	100
32	J4	52/133 (39%)	52 (100%)	0	100	100
32	J5	52/133 (39%)	52 (100%)	0	100	100
32	J6	52/133 (39%)	52 (100%)	0	100	100
32	K1	52/133 (39%)	52 (100%)	0	100	100
32	K2	52/133 (39%)	52 (100%)	0	100	100
32	K3	52/133 (39%)	52 (100%)	0	100	100
32	K4	52/133 (39%)	52 (100%)	0	100	100
32	K5	52/133 (39%)	52 (100%)	0	100	100
32	K6	52/133 (39%)	52 (100%)	0	100	100
32	L1	52/133 (39%)	52 (100%)	0	100	100
32	L2	52/133 (39%)	52 (100%)	0	100	100
32	L3	52/133 (39%)	52 (100%)	0	100	100
32	L4	52/133 (39%)	52 (100%)	0	100	100
32	L5	52/133 (39%)	52 (100%)	0	100	100
32	L6	52/133 (39%)	52 (100%)	0	100	100
32	M1	52/133 (39%)	52 (100%)	0	100	100
32	M2	52/133 (39%)	52 (100%)	0	100	100
32	M3	52/133 (39%)	52 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	M4	52/133 (39%)	52 (100%)	0	100	100
32	M5	52/133 (39%)	52 (100%)	0	100	100
32	M6	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	N3	52/133 (39%)	52 (100%)	0	100	100
32	N4	52/133 (39%)	52 (100%)	0	100	100
32	N5	52/133 (39%)	52 (100%)	0	100	100
32	N6	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	O3	52/133 (39%)	52 (100%)	0	100	100
32	O4	52/133 (39%)	52 (100%)	0	100	100
32	O5	52/133 (39%)	52 (100%)	0	100	100
32	O6	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	P3	52/133 (39%)	52 (100%)	0	100	100
32	P4	52/133 (39%)	52 (100%)	0	100	100
32	P5	52/133 (39%)	52 (100%)	0	100	100
32	P6	52/133 (39%)	52 (100%)	0	100	100
32	Q1	52/133 (39%)	52 (100%)	0	100	100
32	Q2	52/133 (39%)	52 (100%)	0	100	100
32	Q3	52/133 (39%)	52 (100%)	0	100	100
32	Q4	52/133 (39%)	52 (100%)	0	100	100
32	Q5	52/133 (39%)	52 (100%)	0	100	100
32	Q6	52/133 (39%)	52 (100%)	0	100	100
All	All	41370/56094 (74%)	41323 (100%)	47 (0%)	93	96

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
10	h7	117	ARG

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Mol	Chain	Res	Type
13	b7	509	ARG
21	n7	82	ARG
24	a7	130	LYS
10	H7	117	ARG
13	B7	509	ARG
21	N7	82	ARG
24	A7	130	LYS
25	G1	171	TYR
25	G1	207	GLN
25	G2	171	TYR
25	G2	207	GLN
28	B1	435	ARG
32	I1	130	ARG
28	B2	435	ARG
32	I2	130	ARG
10	h8	117	ARG
13	b8	509	ARG
21	n8	82	ARG
24	a8	130	LYS
10	H8	117	ARG
13	B8	509	ARG
21	N8	82	ARG
24	A8	130	LYS
25	G3	207	GLN
25	G4	171	TYR
25	G4	207	GLN
28	B3	435	ARG
32	I3	130	ARG
28	B4	435	ARG
32	I4	130	ARG
10	h9	117	ARG
13	b9	509	ARG
21	n9	82	ARG
24	a9	130	LYS
10	H9	117	ARG
13	B9	509	ARG
21	N9	82	ARG
24	A9	130	LYS
25	G5	171	TYR
25	G5	207	GLN
25	G6	171	TYR
25	G6	207	GLN

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Mol	Chain	Res	Type
28	B5	435	ARG
32	I5	130	ARG
28	B6	435	ARG
32	I6	130	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (106) such sidechains are listed below:

Mol	Chain	Res	Type
2	i7	202	GLN
7	j7	210	HIS
10	h7	209	GLN
13	b7	163	ASN
13	b7	185	ASN
13	b7	347	GLN
14	r7	22	GLN
15	p7	67	ASN
18	c7	55	GLN
18	c7	59	GLN
4	G7	175	GLN
10	H7	209	GLN
11	E7	243	HIS
13	B7	185	ASN
13	B7	347	GLN
13	B7	570	HIS
14	R7	22	GLN
15	P7	67	ASN
18	C7	59	GLN
25	G1	201	GLN
27	E1	527	ASN
28	B1	80	ASN
28	B1	197	GLN
28	F1	372	GLN
28	D1	154	GLN
28	D1	269	HIS
28	D1	342	GLN
28	D1	361	GLN
27	E2	527	ASN
28	F2	370	GLN
28	F2	372	GLN
28	D2	154	GLN
28	D2	269	HIS
28	D2	342	GLN

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Mol	Chain	Res	Type
28	D2	361	GLN
29	g2	246	GLN
2	i8	202	GLN
4	g8	169	GLN
4	g8	175	GLN
10	h8	209	GLN
11	e8	243	HIS
13	b8	163	ASN
13	b8	185	ASN
13	b8	347	GLN
13	b8	570	HIS
14	r8	22	GLN
15	p8	67	ASN
18	c8	59	GLN
7	J8	210	HIS
10	H8	209	GLN
13	B8	163	ASN
13	B8	185	ASN
13	B8	347	GLN
14	R8	22	GLN
18	C8	55	GLN
18	C8	59	GLN
25	G3	201	GLN
25	G4	201	GLN
27	E3	527	ASN
28	B3	80	ASN
28	B3	197	GLN
28	F3	372	GLN
28	D3	154	GLN
28	D3	269	HIS
28	D3	342	GLN
28	D3	361	GLN
27	E4	527	ASN
28	F4	372	GLN
28	D4	154	GLN
28	D4	269	HIS
28	D4	342	GLN
28	D4	361	GLN
7	j9	210	HIS
10	h9	209	GLN
13	b9	163	ASN
13	b9	185	ASN

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Mol	Chain	Res	Type
13	b9	347	GLN
14	r9	22	GLN
15	p9	67	ASN
18	c9	55	GLN
18	c9	59	GLN
4	G9	175	GLN
10	H9	209	GLN
11	E9	243	HIS
13	B9	185	ASN
13	B9	347	GLN
13	B9	570	HIS
14	R9	22	GLN
15	P9	67	ASN
18	C9	59	GLN
21	N9	48	ASN
25	G6	201	GLN
27	E5	527	ASN
28	B5	80	ASN
28	B5	197	GLN
28	F5	372	GLN
28	D5	269	HIS
28	D5	342	GLN
28	D5	361	GLN
27	E6	527	ASN
28	F6	372	GLN
28	D6	154	GLN
28	D6	269	HIS
28	D6	342	GLN
28	D6	361	GLN
29	g6	246	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](#)

There are no ligands in this entry.

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.