



wwPDB EM Validation Summary Report ⓘ

Nov 19, 2022 – 01:27 pm GMT

PDB ID : 4V93
EMDB ID : EMD-2627
Title : Fitted coordinates for Lumbricus terrestris hemoglobin cryo-EM complex (EMD-2627)
Authors : Chen, W.T.; Chen, Y.C.; Liou, H.H.; Chao, C.Y.
Deposited on : 2014-04-16
Resolution : 8.10 Å (reported)
Based on initial model : 2GTL

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/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:

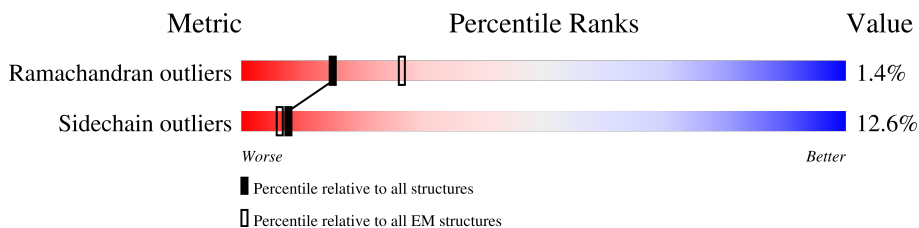
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

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 8.10 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A0	149	
1	A5	149	
1	AC	149	
1	AH	149	
1	AM	149	
1	AR	149	
1	AW	149	
1	Ab	149	
1	Ag	149	

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Mol	Chain	Length	Quality of chain
1	Al	149	34% 93% 7%
1	Aq	149	34% 93% 7%
1	Av	149	34% 93% 7%
2	A1	140	24% 89% 11%
2	A6	140	24% 89% 11%
2	AD	140	24% 89% 11%
2	AI	140	24% 89% 11%
2	AN	140	24% 89% 11%
2	AS	140	24% 89% 11%
2	AX	140	24% 89% 11%
2	Ac	140	24% 89% 11%
2	Ah	140	24% 89% 11%
2	Am	140	24% 89% 11%
2	Ar	140	24% 89% 11%
2	Aw	140	24% 89% 11%
3	A2	147	31% 86% 12%
3	A3	147	20% 88% 10%
3	A7	147	31% 86% 12%
3	AA	147	20% 88% 10%
3	AE	147	31% 86% 12%
3	AF	147	20% 88% 10%
3	AJ	147	31% 86% 12%
3	AK	147	20% 88% 10%
3	AO	147	31% 86% 12%
3	AP	147	20% 88% 10%

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Mol	Chain	Length	Quality of chain
3	AT	147	31% 86% 12%
3	AU	147	20% 88% 10%
3	AY	147	31% 86% 12%
3	AZ	147	20% 88% 10%
3	Ad	147	31% 86% 12%
3	Ae	147	20% 88% 10%
3	Ai	147	31% 86% 12%
3	Aj	147	20% 88% 10%
3	An	147	31% 86% 12%
3	Ao	147	20% 88% 10%
3	As	147	31% 86% 12%
3	At	147	20% 88% 10%
3	Ax	147	31% 86% 12%
3	Ay	147	20% 88% 10%
4	A4	145	23% 90% 10%
4	AB	145	24% 90% 10%
4	AG	145	24% 90% 10%
4	AL	145	23% 90% 10%
4	AQ	145	24% 90% 10%
4	AV	145	24% 90% 10%
4	Aa	145	23% 90% 10%
4	Af	145	24% 90% 10%
4	Ak	145	24% 90% 10%
4	Ap	145	23% 90% 10%
4	Au	145	24% 90% 10%

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Mol	Chain	Length	Quality of chain
4	Az	145	24% 90% 10% .
4	B2	145	36% 91% 8% .
4	B3	145	41% 90% 8% ..
4	B7	145	36% 91% 8% .
4	BA	145	41% 90% 8% ..
4	BE	145	36% 91% 8% .
4	BF	145	41% 90% 8% ..
4	BJ	145	36% 91% 8% .
4	BK	145	41% 90% 8% ..
4	BO	145	36% 91% 8% .
4	BP	145	41% 90% 8% ..
4	BT	145	36% 91% 8% .
4	BU	145	41% 90% 8% ..
4	BY	145	36% 91% 8% .
4	BZ	145	41% 90% 8% ..
4	Bd	145	36% 91% 8% .
4	Be	145	41% 90% 8% ..
4	Bi	145	36% 91% 8% .
4	Bj	145	41% 90% 8% ..
4	Bn	145	36% 91% 8% .
4	Bo	145	41% 90% 8% ..
4	Bs	145	36% 91% 8% .
4	Bt	145	41% 90% 8% ..
4	Bx	145	36% 91% 8% .
4	By	145	41% 90% 8% ..

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Mol	Chain	Length	Quality of chain
5	B0	158	14% 80% 8% • 11%
5	B5	158	13% 80% 8% • 11%
5	BC	158	14% 80% 8% • 11%
5	BH	158	14% 80% 8% • 11%
5	BM	158	13% 80% 8% • 11%
5	BR	158	14% 80% 8% • 11%
5	BW	158	14% 80% 8% • 11%
5	Bb	158	13% 80% 8% • 11%
5	Bg	158	14% 80% 8% • 11%
5	Bl	158	14% 80% 8% • 11%
5	Bq	158	13% 80% 8% • 11%
5	Bv	158	14% 80% 8% • 11%
5	C4	158	20% 82% 7% 11%
5	CB	158	20% 82% 7% 11%
5	CG	158	20% 82% 7% 11%
5	CL	158	20% 82% 7% 11%
5	CQ	158	20% 82% 7% 11%
5	CV	158	20% 82% 7% 11%
5	Ca	158	20% 82% 7% 11%
5	Cf	158	20% 82% 7% 11%
5	Ck	158	20% 82% 7% 11%
5	Cp	158	20% 82% 7% 11%
5	Cu	158	20% 82% 7% 11%
5	Cz	158	20% 82% 7% 11%
6	B1	151	39% 85% 10% • •

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Mol	Chain	Length	Quality of chain	
6	B6	151	38%	85% 10% . .
6	BD	151	38%	85% 10% . .
6	BI	151	39%	85% 10% . .
6	BN	151	38%	85% 10% . .
6	BS	151	38%	85% 10% . .
6	BX	151	39%	85% 10% . .
6	Bc	151	38%	85% 10% . .
6	Bh	151	38%	85% 10% . .
6	Bm	151	39%	85% 10% . .
6	Br	151	38%	85% 10% . .
6	Bw	151	38%	85% 10% . .
7	B4	170	20%	81% 6% . 12%
7	BB	170	20%	81% 6% . 12%
7	BG	170	21%	81% 6% . 12%
7	BL	170	20%	81% 6% . 12%
7	BQ	170	20%	81% 6% . 12%
7	BV	170	21%	81% 6% . 12%
7	Ba	170	20%	81% 6% . 12%
7	Bf	170	20%	81% 6% . 12%
7	Bk	170	21%	81% 6% . 12%
7	Bp	170	20%	81% 6% . 12%
7	Bu	170	20%	81% 6% . 12%
7	Bz	170	21%	81% 6% . 12%
7	C3	170	26%	81% 5% . 12%
7	CA	170	26%	81% 5% . 12%

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Mol	Chain	Length	Quality of chain
7	CF	170	26% 81% 5% • 12%
7	CK	170	26% 81% 5% • 12%
7	CP	170	26% 81% 5% • 12%
7	CU	170	26% 81% 5% • 12%
7	CZ	170	26% 81% 5% • 12%
7	Ce	170	26% 81% 5% • 12%
7	Cj	170	26% 81% 5% • 12%
7	Co	170	26% 81% 5% • 12%
7	Ct	170	26% 81% 5% • 12%
7	Cy	170	26% 81% 5% • 12%
8	C0	240	45% 64% 19% 6% • 10%
8	C5	240	45% 64% 19% 6% • 10%
8	CC	240	45% 64% 19% 6% • 10%
8	CH	240	45% 64% 19% 6% • 10%
8	CM	240	45% 64% 19% 6% • 10%
8	CR	240	45% 64% 19% 6% • 10%
8	CW	240	45% 64% 19% 6% • 10%
8	Cb	240	45% 64% 19% 6% • 10%
8	Cg	240	45% 64% 19% 6% • 10%
8	Cl	240	45% 64% 19% 6% • 10%
8	Cq	240	45% 64% 19% 6% • 10%
8	Cv	240	45% 64% 19% 6% • 10%
9	C1	288	41% 59% 15% •• 24%
9	C6	288	40% 59% 15% •• 24%
9	CD	288	41% 59% 15% •• 24%

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Mol	Chain	Length	Quality of chain
9	CI	288	41% 59% 15% .. 24%
9	CN	288	40% 59% 15% .. 24%
9	CS	288	41% 59% 15% .. 24%
9	CX	288	41% 59% 15% .. 24%
9	Cc	288	40% 59% 15% .. 24%
9	Ch	288	41% 59% 15% .. 24%
9	Cm	288	41% 59% 15% .. 24%
9	Cr	288	40% 59% 15% .. 24%
9	Cw	288	41% 59% 15% .. 24%
10	C2	240	32% 69% 16% . 10%
10	C7	240	32% 70% 16% . 10%
10	CE	240	32% 70% 16% . 10%
10	CJ	240	32% 69% 16% . 10%
10	CO	240	32% 70% 16% . 10%
10	CT	240	32% 70% 16% . 10%
10	CY	240	32% 69% 16% . 10%
10	Cd	240	32% 70% 16% . 10%
10	Ci	240	32% 70% 16% . 10%
10	Cn	240	32% 69% 16% . 10%
10	Cs	240	32% 70% 16% . 10%
10	Cx	240	32% 70% 16% . 10%

2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 231000 atoms, of which 0 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 EXTRACELLULAR GLOBIN-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A0	149	1191	758	212	218	3	0	0
1	A5	149	1191	758	212	218	3	0	0
1	AC	149	1191	758	212	218	3	0	0
1	AH	149	1191	758	212	218	3	0	0
1	AM	149	1191	758	212	218	3	0	0
1	AR	149	1191	758	212	218	3	0	0
1	AW	149	1191	758	212	218	3	0	0
1	Ab	149	1191	758	212	218	3	0	0
1	Ag	149	1191	758	212	218	3	0	0
1	Al	149	1191	758	212	218	3	0	0
1	Aq	149	1191	758	212	218	3	0	0
1	Av	149	1191	758	212	218	3	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A0	49	GLU	ASP	conflict	UNP P11069
A5	49	GLU	ASP	conflict	UNP P11069
AC	49	GLU	ASP	conflict	UNP P11069
AH	49	GLU	ASP	conflict	UNP P11069
AM	49	GLU	ASP	conflict	UNP P11069
AR	49	GLU	ASP	conflict	UNP P11069

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Chain	Residue	Modelled	Actual	Comment	Reference
AW	49	GLU	ASP	conflict	UNP P11069
Ab	49	GLU	ASP	conflict	UNP P11069
Ag	49	GLU	ASP	conflict	UNP P11069
Al	49	GLU	ASP	conflict	UNP P11069
Aq	49	GLU	ASP	conflict	UNP P11069
Av	49	GLU	ASP	conflict	UNP P11069

- Molecule 2 is a protein called HEMOGLOBIN CHAIN D1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A1	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	A6	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	AD	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	AI	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	AN	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	AS	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	AX	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	Ac	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	Ah	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	Am	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	Ar	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
2	Aw	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		

- Molecule 3 is a protein called EXTRACELLULAR GLOBIN-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	A2	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	A3	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	A7	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AA	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AE	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AF	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AJ	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AK	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AO	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AP	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AT	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AU	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AY	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	AZ	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	Ad	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	Ae	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	Ai	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	Aj	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	An	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	Ao	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	As	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	At	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
3	Ax	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	Ay	147	1209	769	222	214	4	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A2	78	LYS	ASP	conflict	UNP P13579
A3	78	LYS	ASP	conflict	UNP P13579
A7	78	LYS	ASP	conflict	UNP P13579
AA	78	LYS	ASP	conflict	UNP P13579
AE	78	LYS	ASP	conflict	UNP P13579
AF	78	LYS	ASP	conflict	UNP P13579
AJ	78	LYS	ASP	conflict	UNP P13579
AK	78	LYS	ASP	conflict	UNP P13579
AO	78	LYS	ASP	conflict	UNP P13579
AP	78	LYS	ASP	conflict	UNP P13579
AT	78	LYS	ASP	conflict	UNP P13579
AU	78	LYS	ASP	conflict	UNP P13579
AY	78	LYS	ASP	conflict	UNP P13579
AZ	78	LYS	ASP	conflict	UNP P13579
Ad	78	LYS	ASP	conflict	UNP P13579
Ae	78	LYS	ASP	conflict	UNP P13579
Ai	78	LYS	ASP	conflict	UNP P13579
Aj	78	LYS	ASP	conflict	UNP P13579
An	78	LYS	ASP	conflict	UNP P13579
Ao	78	LYS	ASP	conflict	UNP P13579
As	78	LYS	ASP	conflict	UNP P13579
At	78	LYS	ASP	conflict	UNP P13579
Ax	78	LYS	ASP	conflict	UNP P13579
Ay	78	LYS	ASP	conflict	UNP P13579

- Molecule 4 is a protein called EXTRACELLULAR GLOBIN-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	A4	145	1148	720	212	213	3	0	0
4	AB	145	1148	720	212	213	3	0	0
4	AG	145	1148	720	212	213	3	0	0
4	AL	145	1148	720	212	213	3	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AQ	145	1148	720	212	213	3	0	0
4	AV	145	1148	720	212	213	3	0	0
4	Aa	145	1148	720	212	213	3	0	0
4	Af	145	1148	720	212	213	3	0	0
4	Ak	145	1148	720	212	213	3	0	0
4	Ap	145	1148	720	212	213	3	0	0
4	Au	145	1148	720	212	213	3	0	0
4	Az	145	1148	720	212	213	3	0	0
4	B2	145	1148	720	212	213	3	0	0
4	B3	145	1148	720	212	213	3	0	0
4	B7	145	1148	720	212	213	3	0	0
4	BA	145	1148	720	212	213	3	0	0
4	BE	145	1148	720	212	213	3	0	0
4	BF	145	1148	720	212	213	3	0	0
4	BJ	145	1148	720	212	213	3	0	0
4	BK	145	1148	720	212	213	3	0	0
4	BO	145	1148	720	212	213	3	0	0
4	BP	145	1148	720	212	213	3	0	0
4	BT	145	1148	720	212	213	3	0	0
4	BU	145	1148	720	212	213	3	0	0
4	BY	145	1148	720	212	213	3	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	BZ	145	1148	720	212	213	3	0	0
4	Bd	145	1148	720	212	213	3	0	0
4	Be	145	1148	720	212	213	3	0	0
4	Bi	145	1148	720	212	213	3	0	0
4	Bj	145	1148	720	212	213	3	0	0
4	Bn	145	1148	720	212	213	3	0	0
4	Bo	145	1148	720	212	213	3	0	0
4	Bs	145	1148	720	212	213	3	0	0
4	Bt	145	1148	720	212	213	3	0	0
4	Bx	145	1148	720	212	213	3	0	0
4	By	145	1148	720	212	213	3	0	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A4	66	ASP	GLU	conflict	UNP P02218
AB	66	ASP	GLU	conflict	UNP P02218
AG	66	ASP	GLU	conflict	UNP P02218
AL	66	ASP	GLU	conflict	UNP P02218
AQ	66	ASP	GLU	conflict	UNP P02218
AV	66	ASP	GLU	conflict	UNP P02218
Aa	66	ASP	GLU	conflict	UNP P02218
Af	66	ASP	GLU	conflict	UNP P02218
Ak	66	ASP	GLU	conflict	UNP P02218
Ap	66	ASP	GLU	conflict	UNP P02218
Au	66	ASP	GLU	conflict	UNP P02218
Az	66	ASP	GLU	conflict	UNP P02218
B2	66	ASP	GLU	conflict	UNP P02218
B3	66	ASP	GLU	conflict	UNP P02218
B7	66	ASP	GLU	conflict	UNP P02218
BA	66	ASP	GLU	conflict	UNP P02218
BE	66	ASP	GLU	conflict	UNP P02218

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Chain	Residue	Modelled	Actual	Comment	Reference
BF	66	ASP	GLU	conflict	UNP P02218
BJ	66	ASP	GLU	conflict	UNP P02218
BK	66	ASP	GLU	conflict	UNP P02218
BO	66	ASP	GLU	conflict	UNP P02218
BP	66	ASP	GLU	conflict	UNP P02218
BT	66	ASP	GLU	conflict	UNP P02218
BU	66	ASP	GLU	conflict	UNP P02218
BY	66	ASP	GLU	conflict	UNP P02218
BZ	66	ASP	GLU	conflict	UNP P02218
Bd	66	ASP	GLU	conflict	UNP P02218
Be	66	ASP	GLU	conflict	UNP P02218
Bi	66	ASP	GLU	conflict	UNP P02218
Bj	66	ASP	GLU	conflict	UNP P02218
Bn	66	ASP	GLU	conflict	UNP P02218
Bo	66	ASP	GLU	conflict	UNP P02218
Bs	66	ASP	GLU	conflict	UNP P02218
Bt	66	ASP	GLU	conflict	UNP P02218
Bx	66	ASP	GLU	conflict	UNP P02218
By	66	ASP	GLU	conflict	UNP P02218

- Molecule 5 is a protein called HEMOGLOBIN CHAIN D1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	B0	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	B5	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	BC	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	BH	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	BM	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	BR	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	BW	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Bb	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Bg	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Bl	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace
5	Bq	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Bv	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	C4	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	CB	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	CG	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	CL	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	CQ	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	CV	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Ca	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Cf	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Ck	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Cp	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Cu	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		
5	Cz	140	Total	C	N	O	S	0	0
			1129	725	198	202	4		

- Molecule 6 is a protein called EXTRACELLULAR GLOBIN-4.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	B1	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	B6	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	BD	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	BI	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	BN	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace
6	BS	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	BX	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	Bc	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	Bh	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	Bm	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	Br	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		
6	Bw	147	Total	C	N	O	S	0	0
			1209	769	222	214	4		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B1	78	LYS	ASP	conflict	UNP P13579
B6	78	LYS	ASP	conflict	UNP P13579
BD	78	LYS	ASP	conflict	UNP P13579
BI	78	LYS	ASP	conflict	UNP P13579
BN	78	LYS	ASP	conflict	UNP P13579
BS	78	LYS	ASP	conflict	UNP P13579
BX	78	LYS	ASP	conflict	UNP P13579
Bc	78	LYS	ASP	conflict	UNP P13579
Bh	78	LYS	ASP	conflict	UNP P13579
Bm	78	LYS	ASP	conflict	UNP P13579
Br	78	LYS	ASP	conflict	UNP P13579
Bw	78	LYS	ASP	conflict	UNP P13579

- Molecule 7 is a protein called EXTRACELLULAR GLOBIN-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	B4	149	Total	C	N	O	S	0	0
			1190	758	212	217	3		
7	BB	149	Total	C	N	O	S	0	0
			1190	758	212	217	3		
7	BG	149	Total	C	N	O	S	0	0
			1190	758	212	217	3		
7	BL	149	Total	C	N	O	S	0	0
			1190	758	212	217	3		

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	BQ	149	1190	758	212	217	3	0	0
7	BV	149	1190	758	212	217	3	0	0
7	Ba	149	1190	758	212	217	3	0	0
7	Bf	149	1190	758	212	217	3	0	0
7	Bk	149	1190	758	212	217	3	0	0
7	Bp	149	1190	758	212	217	3	0	0
7	Bu	149	1190	758	212	217	3	0	0
7	Bz	149	1190	758	212	217	3	0	0
7	C3	149	1190	758	212	217	3	0	0
7	CA	149	1190	758	212	217	3	0	0
7	CF	149	1190	758	212	217	3	0	0
7	CK	149	1190	758	212	217	3	0	0
7	CP	149	1190	758	212	217	3	0	0
7	CU	149	1190	758	212	217	3	0	0
7	CZ	149	1190	758	212	217	3	0	0
7	Ce	149	1190	758	212	217	3	0	0
7	Cj	149	1190	758	212	217	3	0	0
7	Co	149	1190	758	212	217	3	0	0
7	Ct	149	1190	758	212	217	3	0	0
7	Cy	149	1190	758	212	217	3	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B4	49	GLU	ASP	conflict	UNP P11069
BB	49	GLU	ASP	conflict	UNP P11069
BG	49	GLU	ASP	conflict	UNP P11069
BL	49	GLU	ASP	conflict	UNP P11069
BQ	49	GLU	ASP	conflict	UNP P11069
BV	49	GLU	ASP	conflict	UNP P11069
Ba	49	GLU	ASP	conflict	UNP P11069
Bf	49	GLU	ASP	conflict	UNP P11069
Bk	49	GLU	ASP	conflict	UNP P11069
Bp	49	GLU	ASP	conflict	UNP P11069
Bu	49	GLU	ASP	conflict	UNP P11069
Bz	49	GLU	ASP	conflict	UNP P11069
C3	49	GLU	ASP	conflict	UNP P11069
CA	49	GLU	ASP	conflict	UNP P11069
CF	49	GLU	ASP	conflict	UNP P11069
CK	49	GLU	ASP	conflict	UNP P11069
CP	49	GLU	ASP	conflict	UNP P11069
CU	49	GLU	ASP	conflict	UNP P11069
CZ	49	GLU	ASP	conflict	UNP P11069
Ce	49	GLU	ASP	conflict	UNP P11069
Cj	49	GLU	ASP	conflict	UNP P11069
Co	49	GLU	ASP	conflict	UNP P11069
Ct	49	GLU	ASP	conflict	UNP P11069
Cy	49	GLU	ASP	conflict	UNP P11069

- Molecule 8 is a protein called HEMOGLOBIN LINKER CHAIN L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	C0	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	C5	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	CC	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	CH	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	CM	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	CR	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	CW	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	Cb	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		

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Mol	Chain	Residues	Atoms					AltConf	Trace
8	Cg	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	Cl	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	Cq	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		
8	Cv	217	Total	C	N	O	S	0	0
			1751	1089	308	344	10		

- Molecule 9 is a protein called EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	C1	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	C6	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	CD	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	CI	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	CN	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	CS	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	CX	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	Cc	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	Ch	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	Cm	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	Cr	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		
9	Cw	220	Total	C	N	O	S	0	0
			1755	1080	324	341	10		

- Molecule 10 is a protein called EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	C2	215	Total	C	N	O	S	0	0
			1715	1055	299	350	11		

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Mol	Chain	Residues	Atoms					AltConf	Trace
10	C7	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	CE	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	CJ	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	CO	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	CT	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	CY	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	Cd	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	Ci	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
10	Cn	215	Total 1715	C 1055	N 299	O 350	S 11	0	0
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10	Cx	215	Total 1715	C 1055	N 299	O 350	S 11	0	0

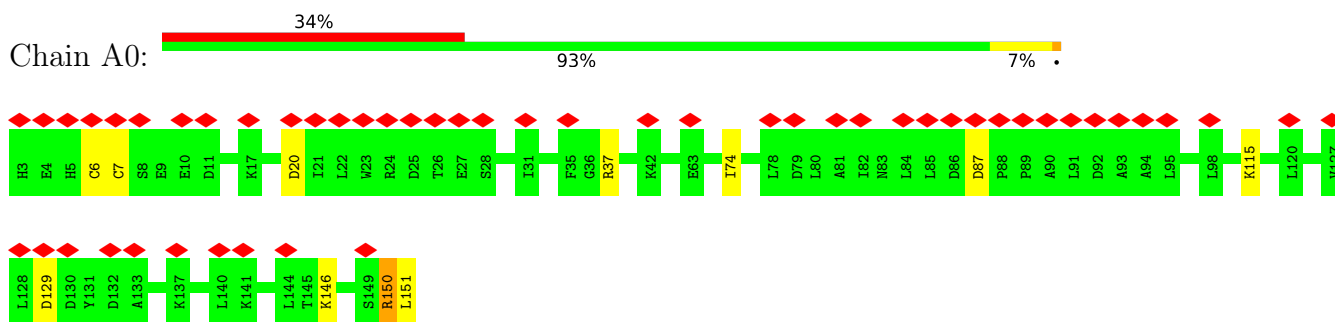
There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C2	113	CYS	VAL	conflict	UNP Q2I742
C7	113	CYS	VAL	conflict	UNP Q2I742
CE	113	CYS	VAL	conflict	UNP Q2I742
CJ	113	CYS	VAL	conflict	UNP Q2I742
CO	113	CYS	VAL	conflict	UNP Q2I742
CT	113	CYS	VAL	conflict	UNP Q2I742
CY	113	CYS	VAL	conflict	UNP Q2I742
Cd	113	CYS	VAL	conflict	UNP Q2I742
Ci	113	CYS	VAL	conflict	UNP Q2I742
Cn	113	CYS	VAL	conflict	UNP Q2I742
Cs	113	CYS	VAL	conflict	UNP Q2I742
Cx	113	CYS	VAL	conflict	UNP Q2I742

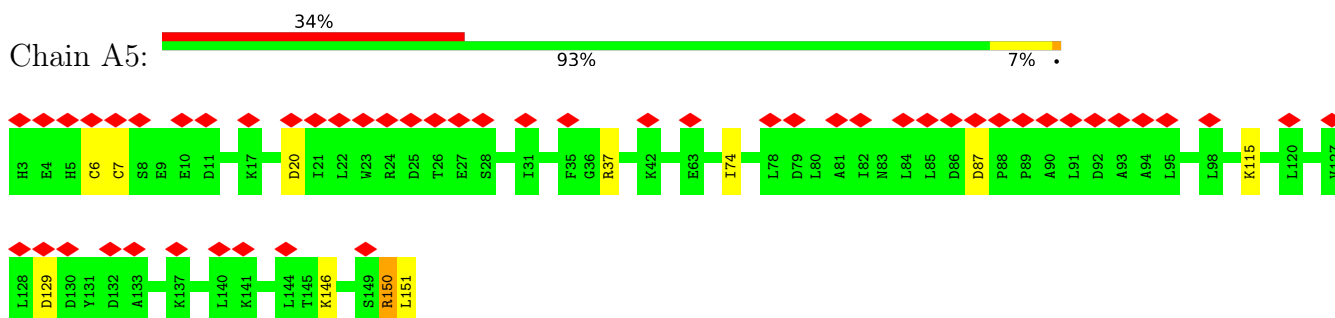
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

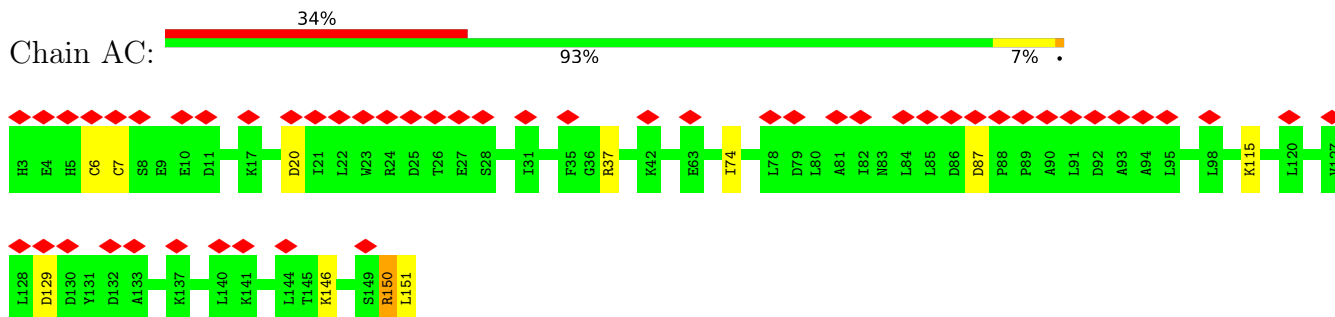
- Molecule 1: EXTRACELLULAR GLOBIN-3



- Molecule 1: EXTRACELLULAR GLOBIN-3

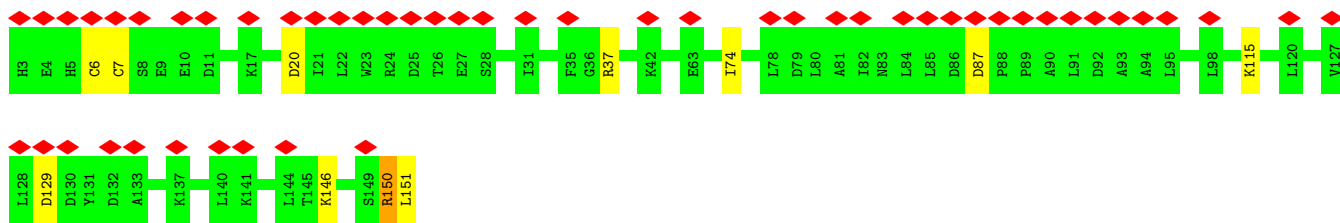


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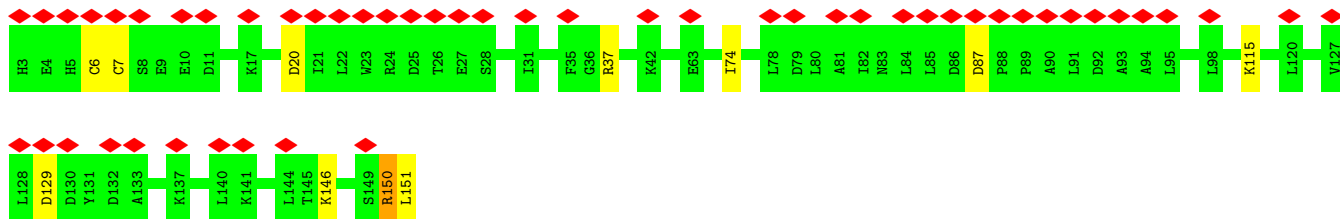


- Molecule 1: EXTRACELLULAR GLOBIN-3

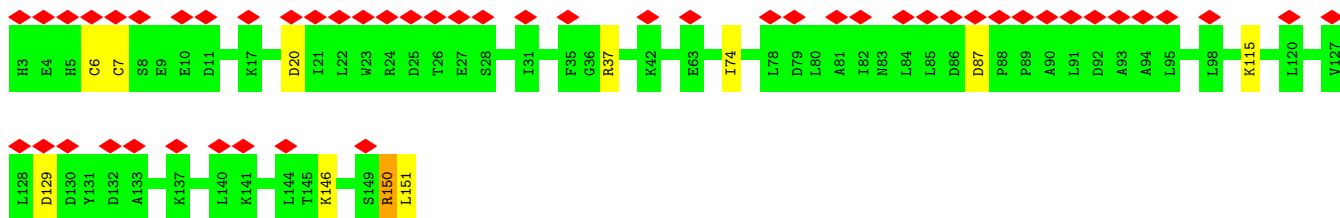
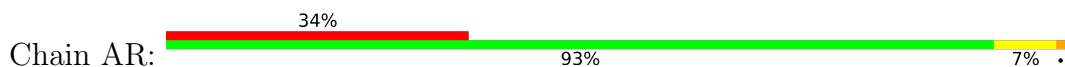




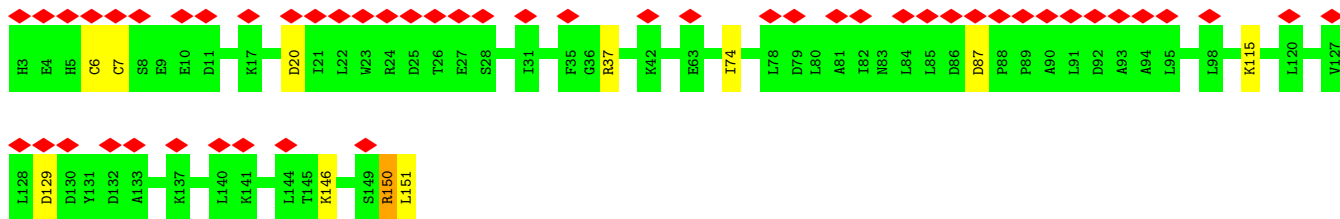
• Molecule 1: EXTRACELLULAR GLOBIN-3



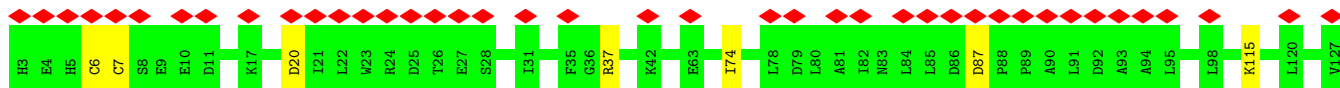
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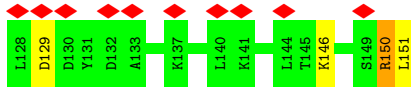


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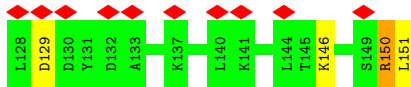
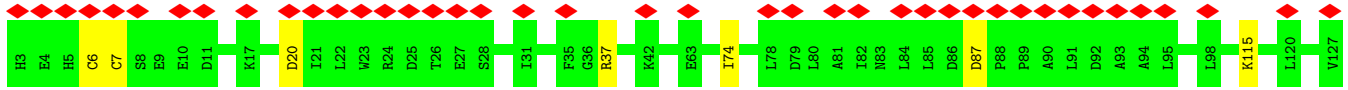
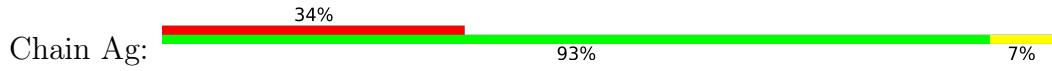


• Molecule 1: EXTRACELLULAR GLOBIN-3

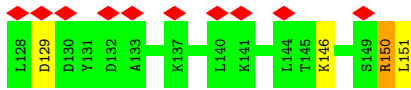
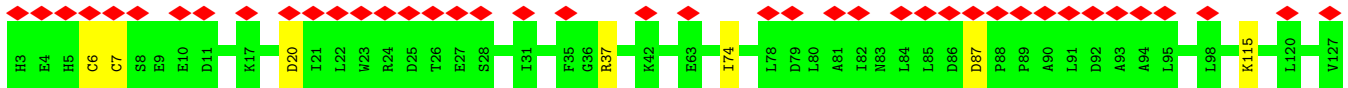




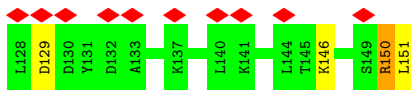
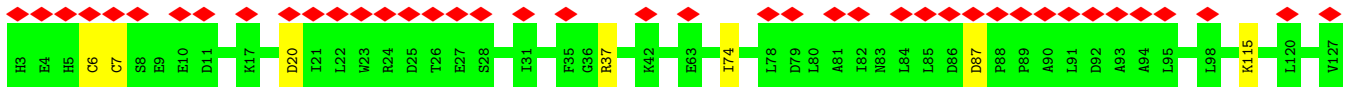
- Molecule 1: EXTRACELLULAR GLOBIN-3



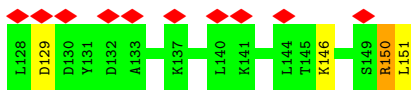
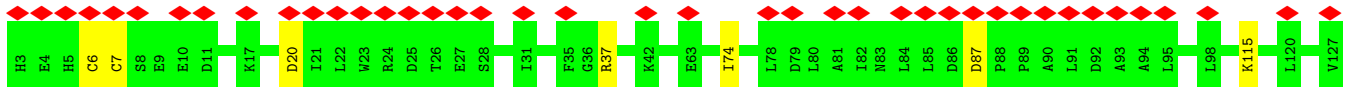
- Molecule 1: EXTRACELLULAR GLOBIN-3



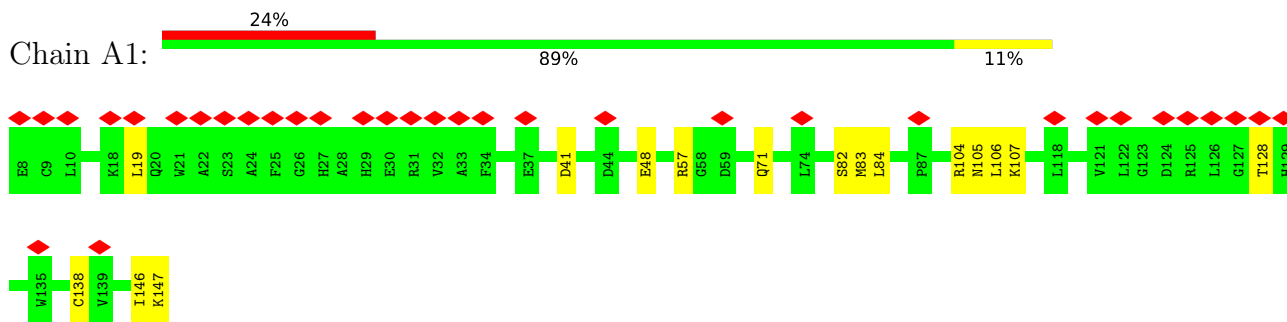
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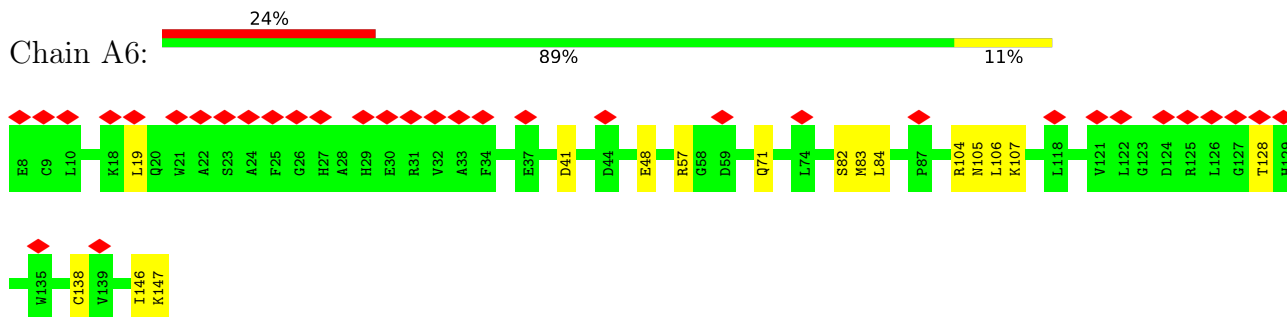
- Molecule 1: EXTRACELLULAR GLOBIN-3



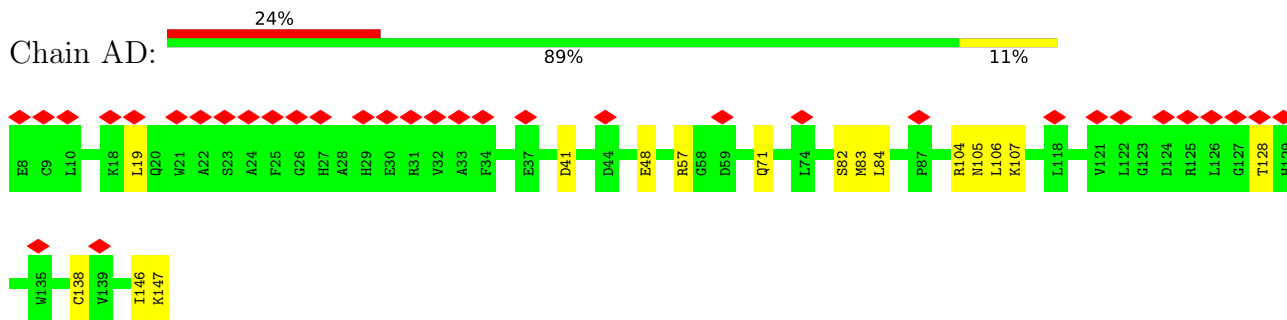
- Molecule 2: HEMOGLOBIN CHAIN D1



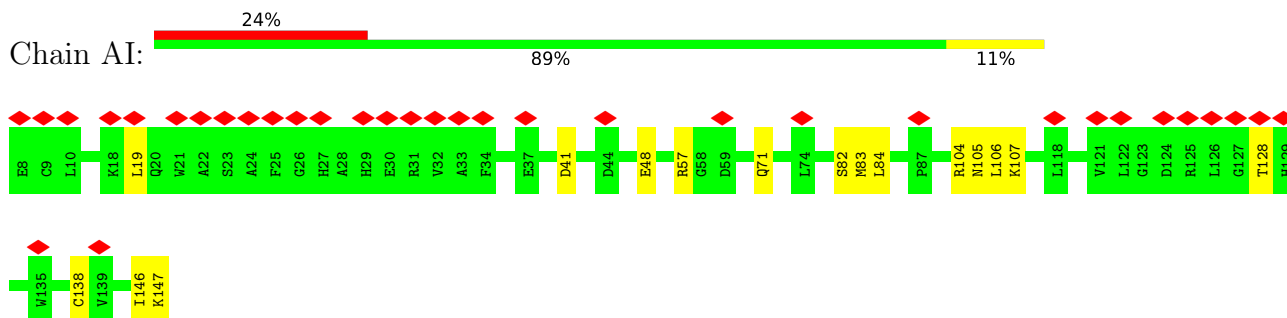
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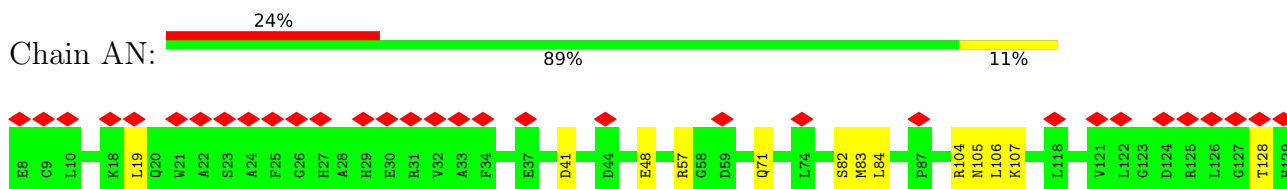
• Molecule 2: HEMOGLOBIN CHAIN D1

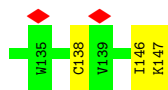


• Molecule 2: HEMOGLOBIN CHAIN D1

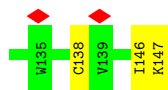
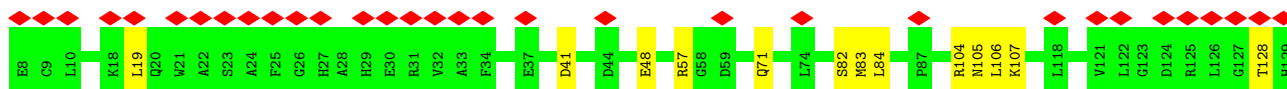
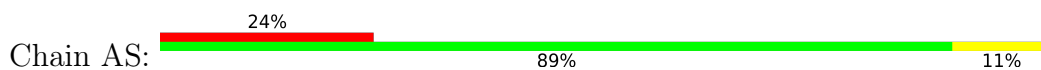


• Molecule 2: HEMOGLOBIN CHAIN D1

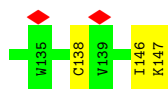
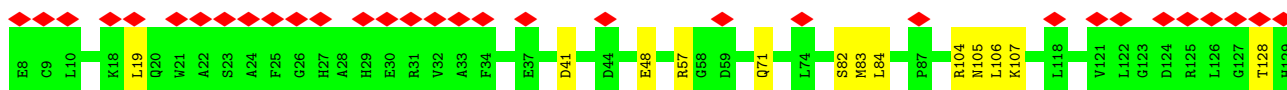
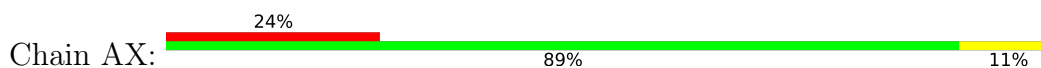




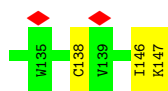
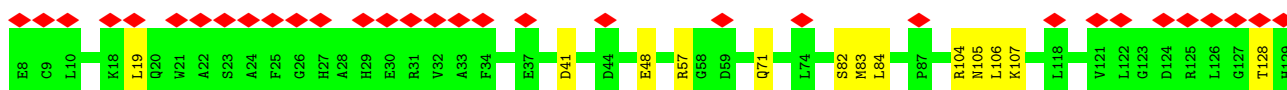
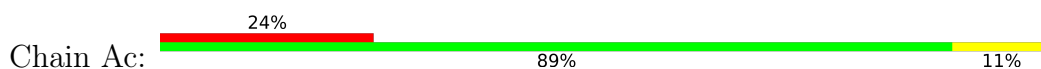
• Molecule 2: HEMOGLOBIN CHAIN D1



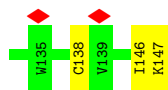
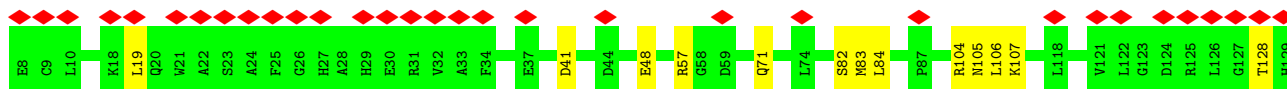
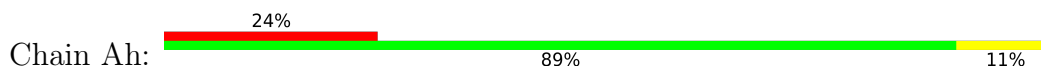
• Molecule 2: HEMOGLOBIN CHAIN D1



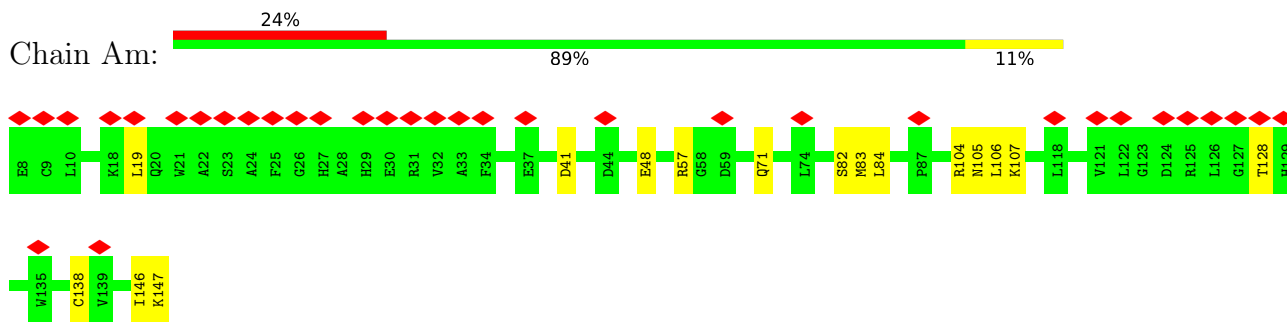
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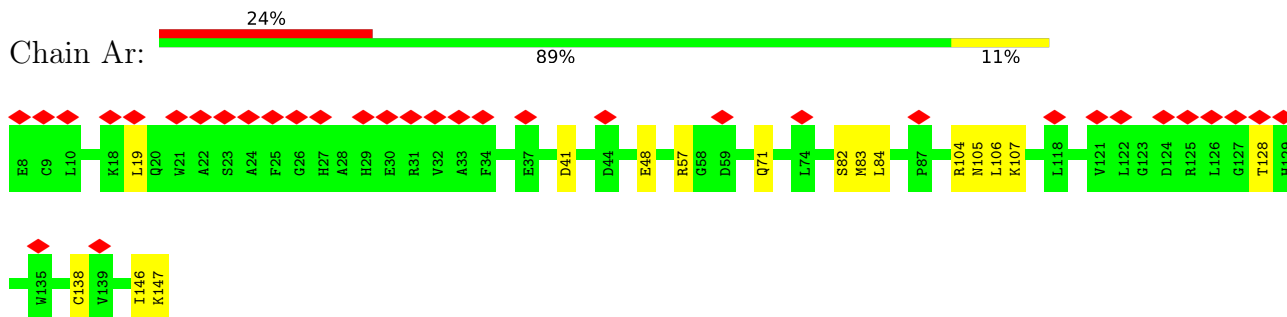
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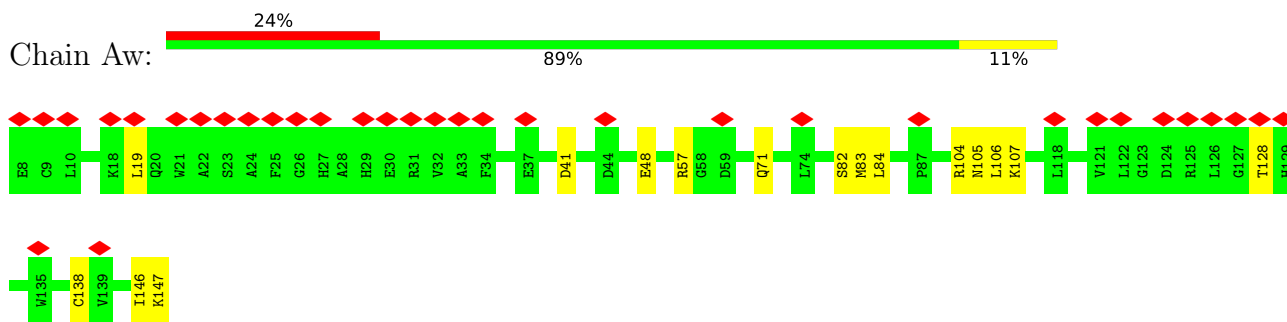
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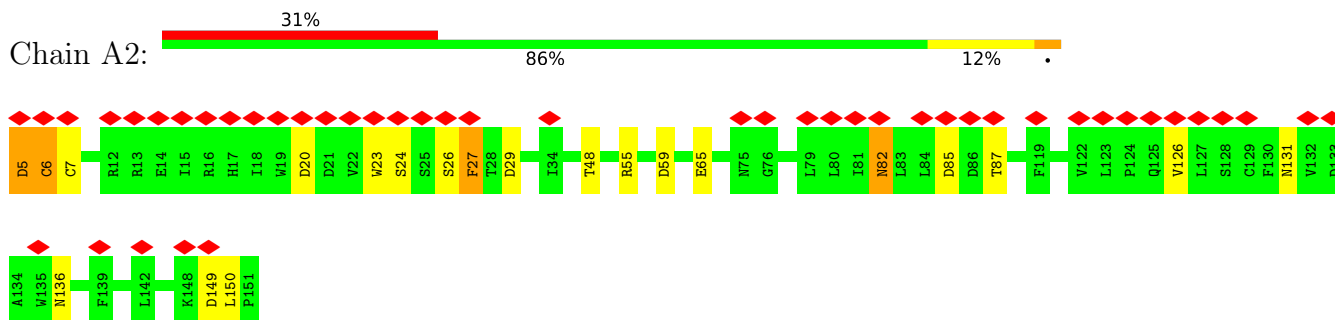
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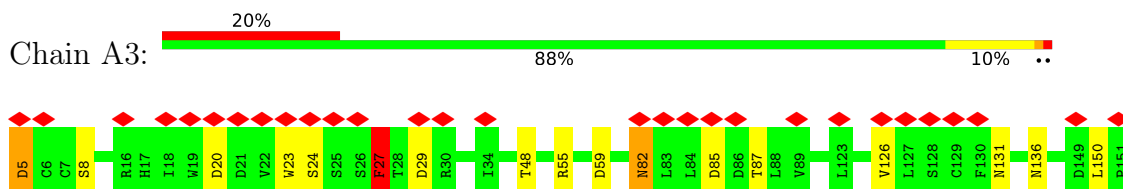
• Molecule 2: HEMOGLOBIN CHAIN D1



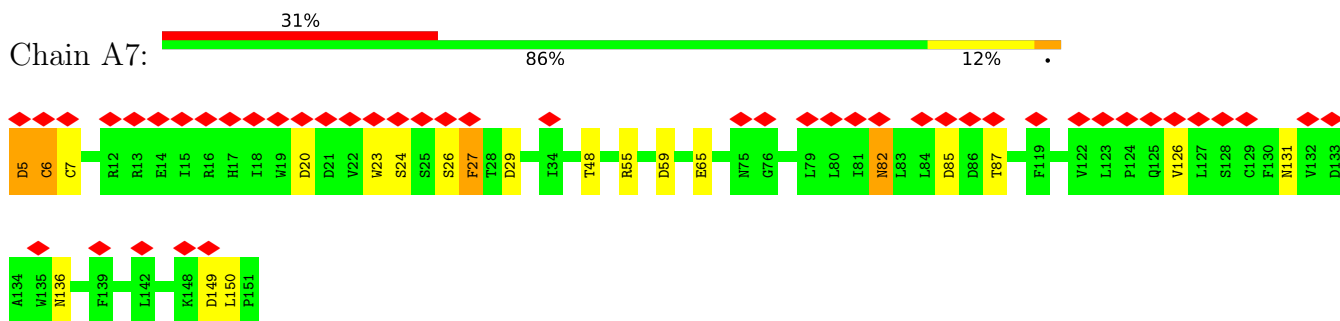
• Molecule 3: EXTRACELLULAR GLOBIN-4



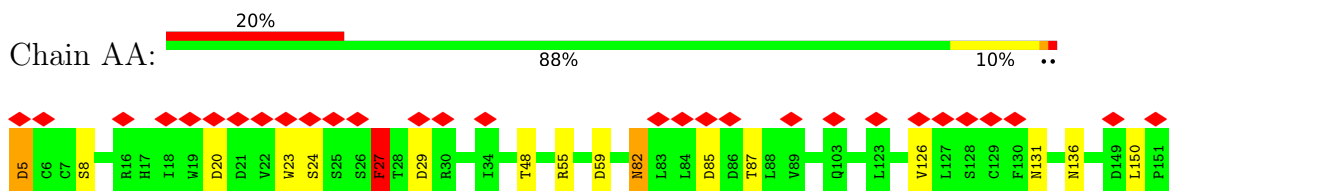
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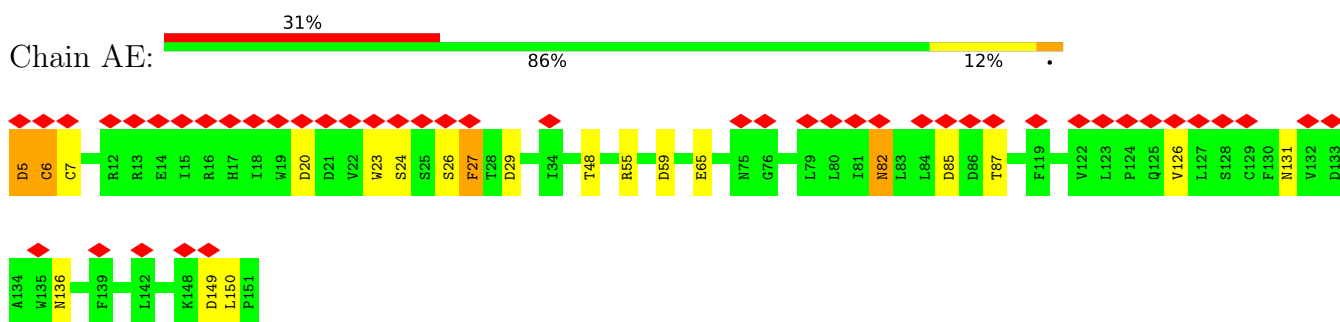
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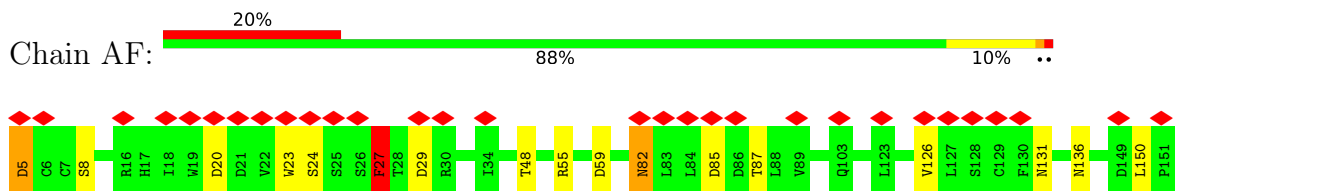
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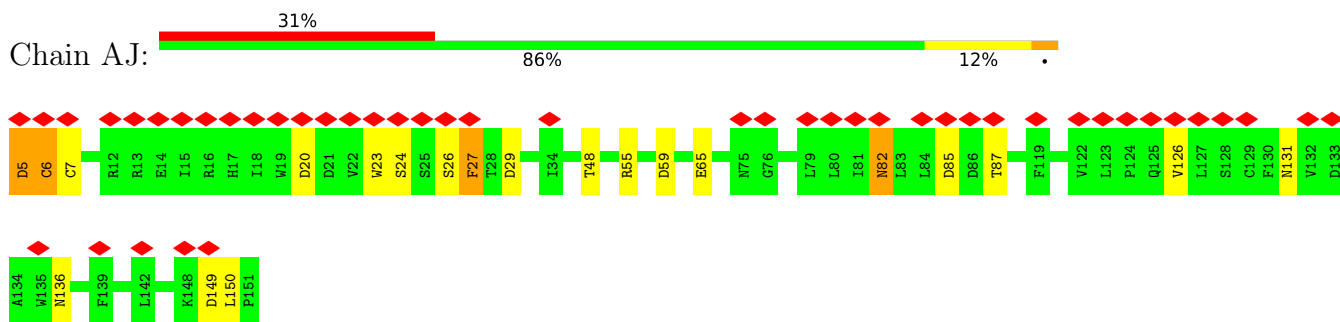
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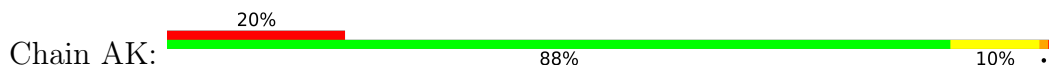
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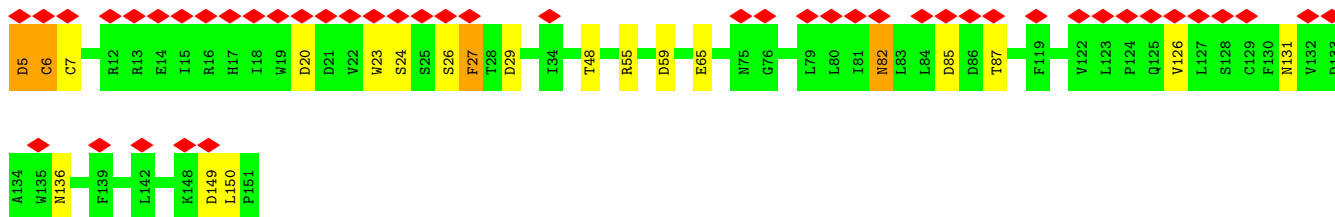
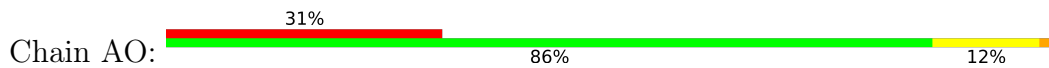
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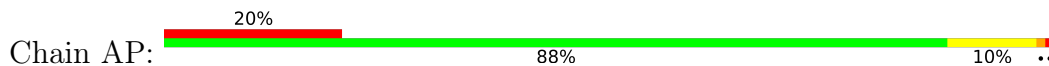
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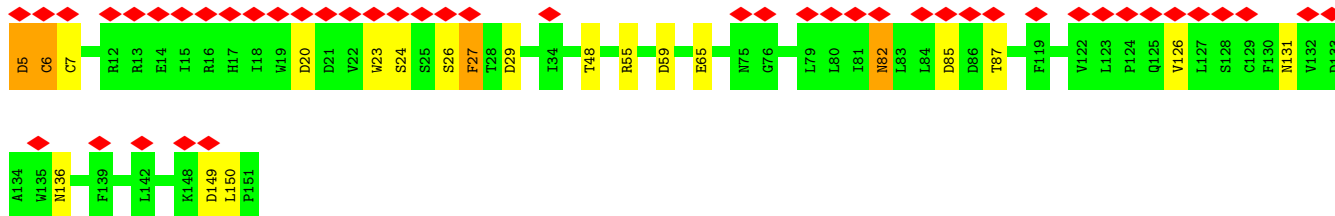
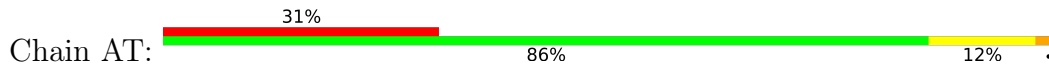
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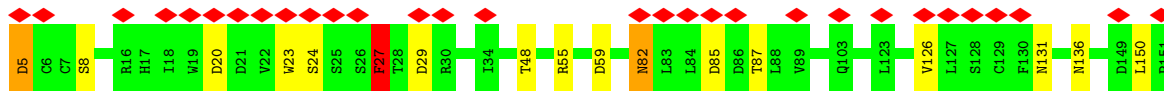
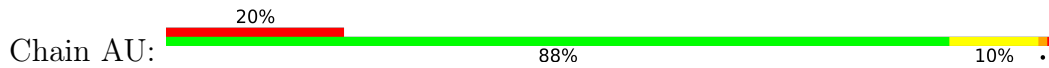
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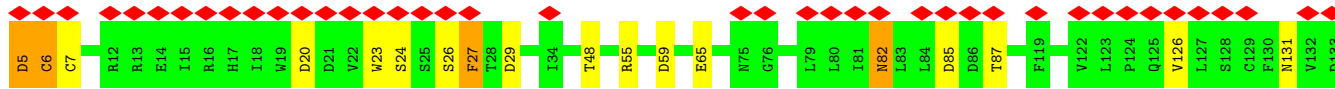
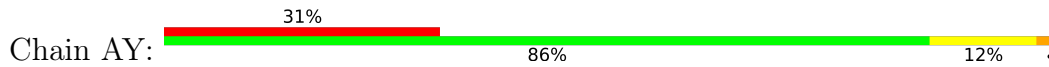
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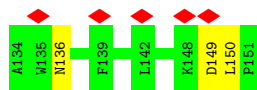


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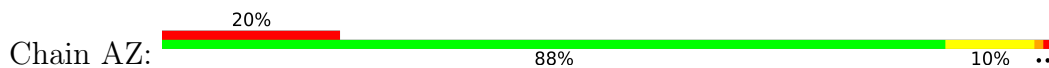


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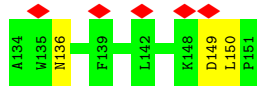
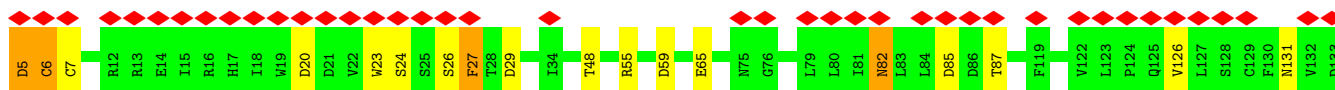
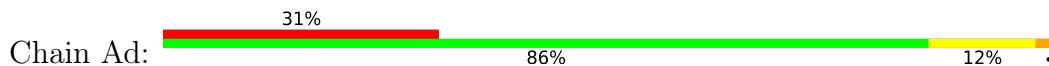




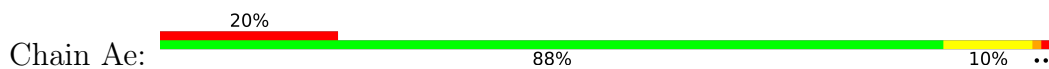
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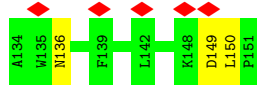
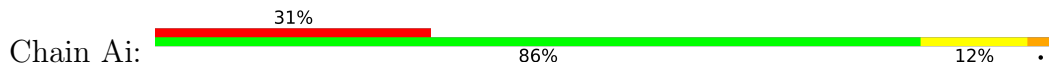
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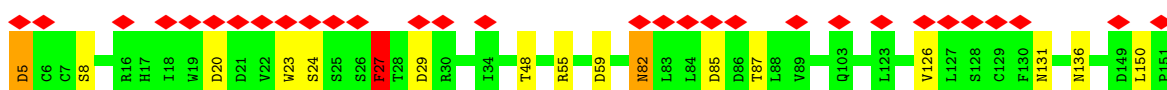
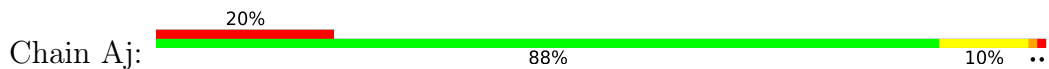
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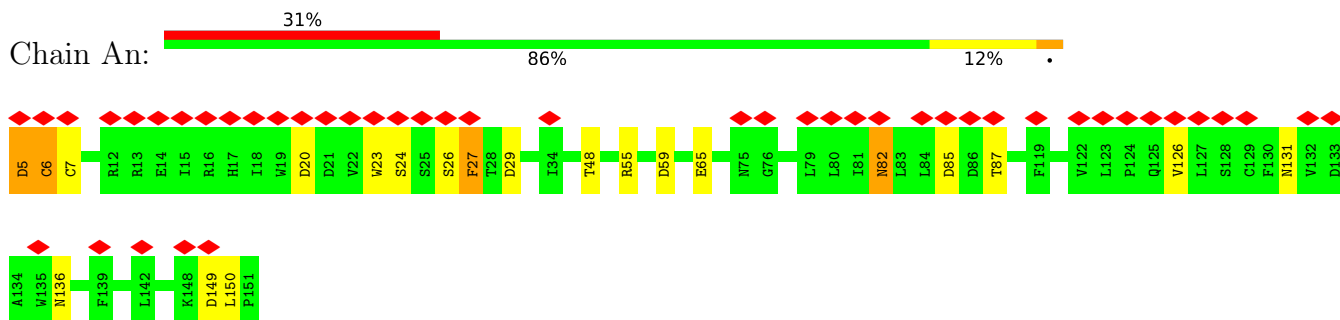
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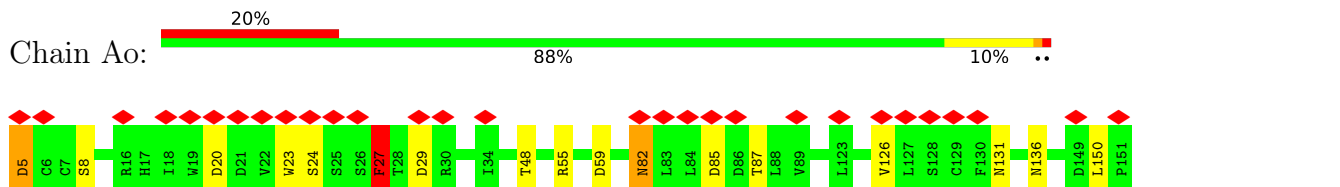
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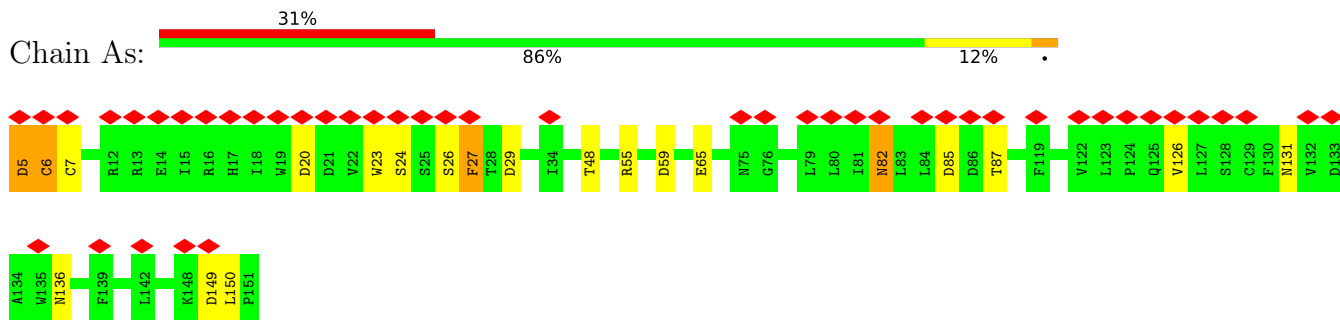
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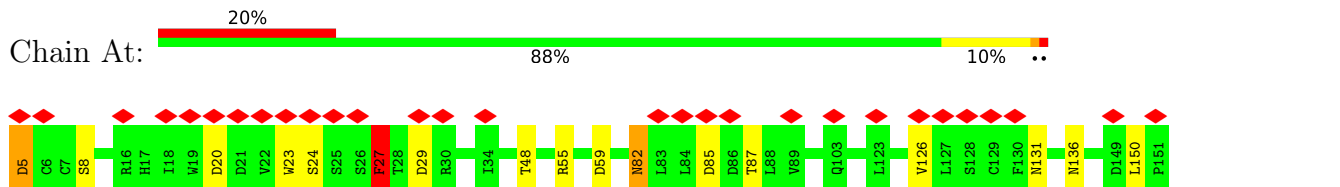
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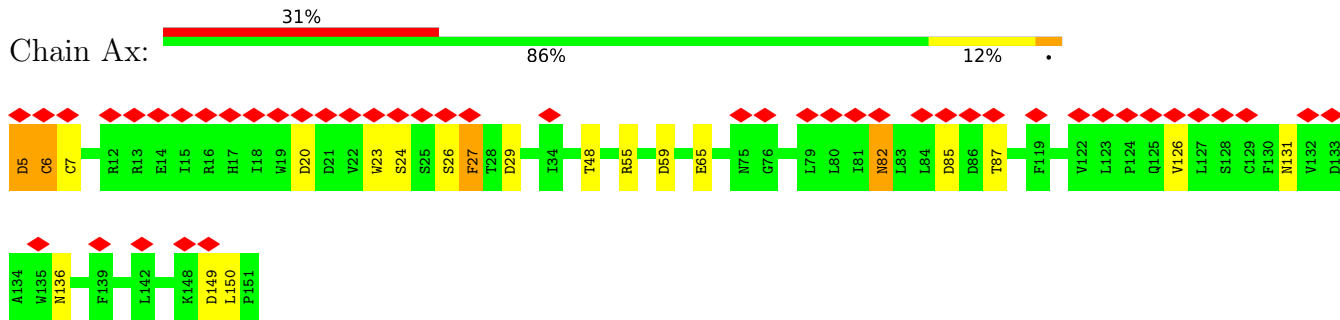
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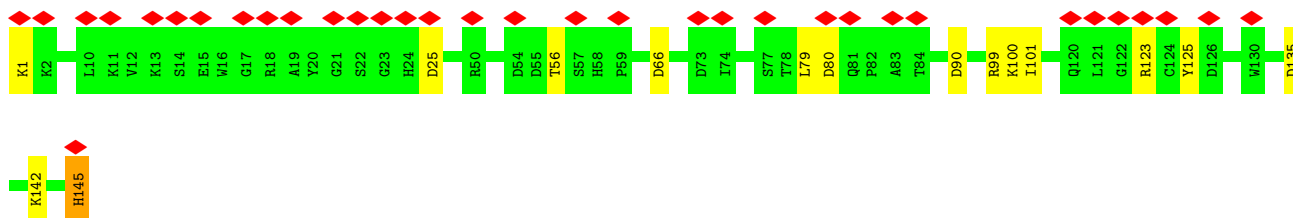
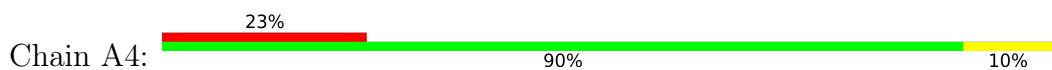


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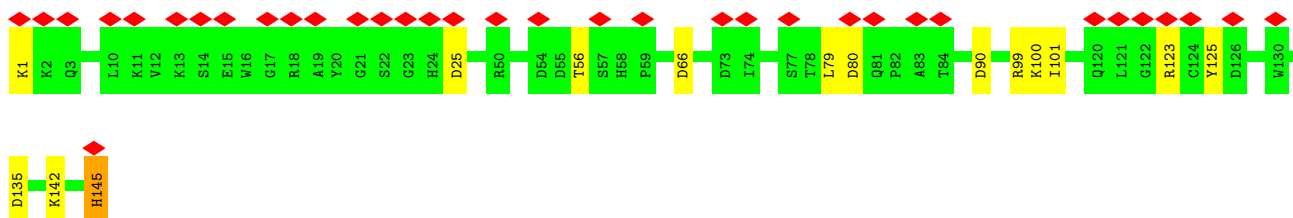
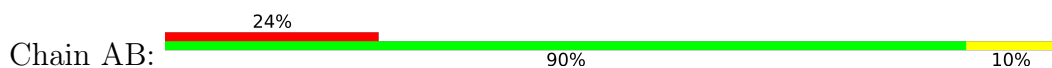




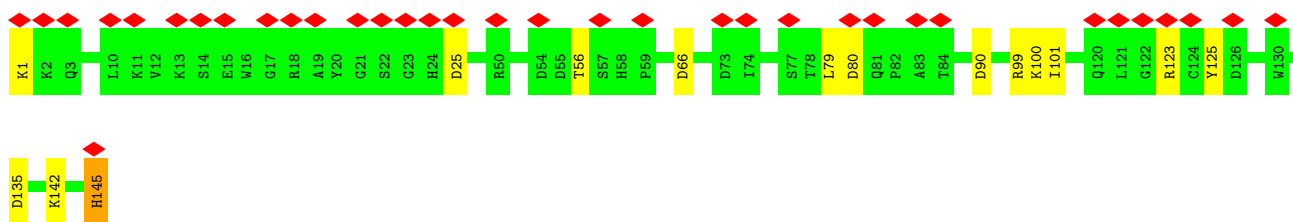
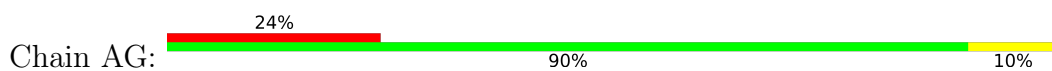
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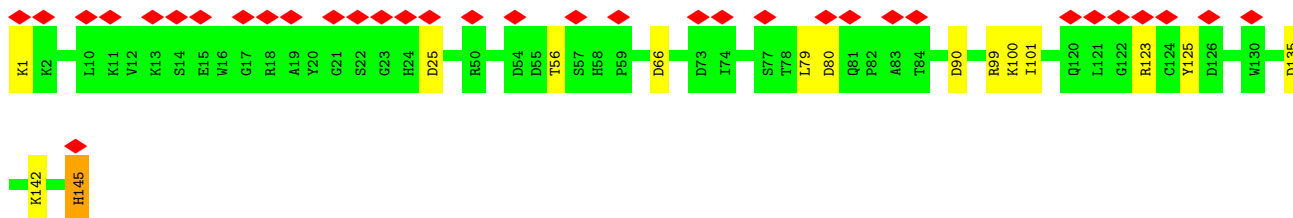
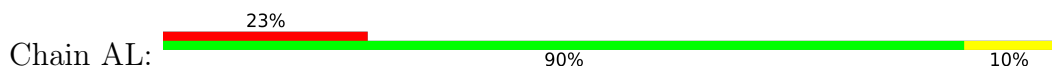
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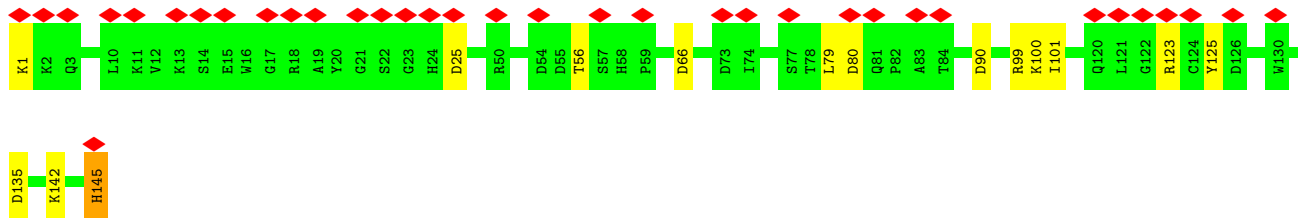
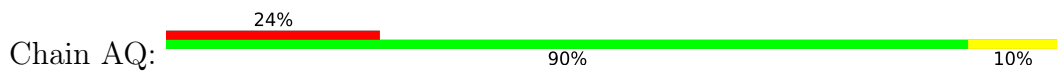
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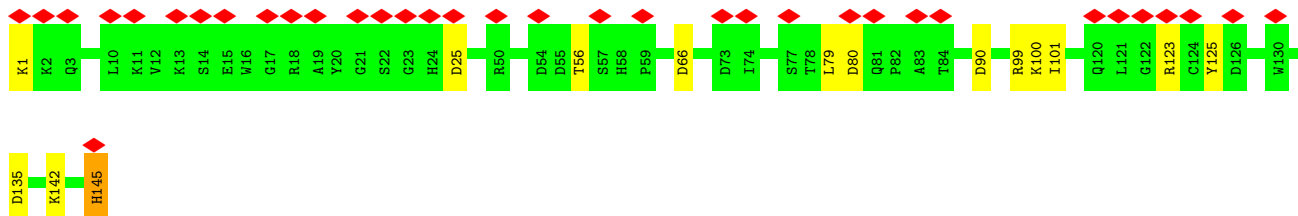
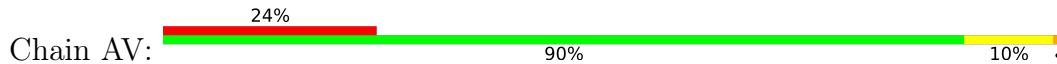
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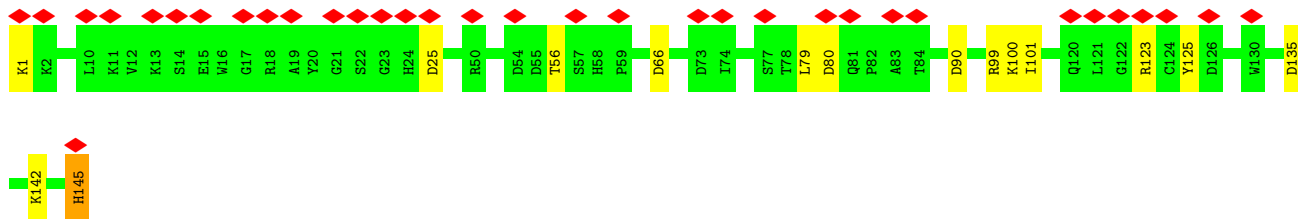
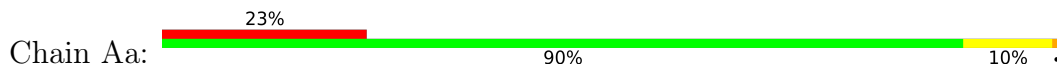
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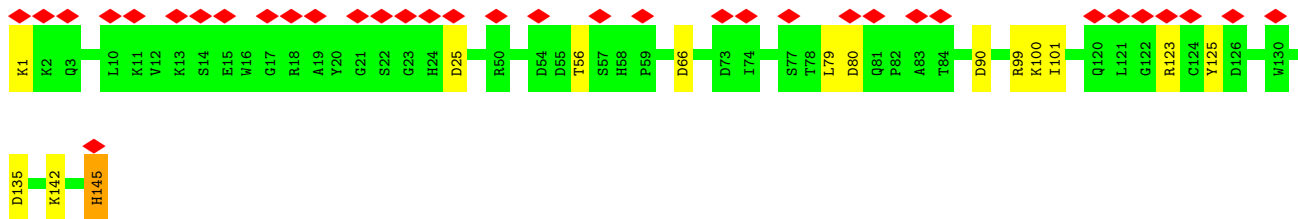
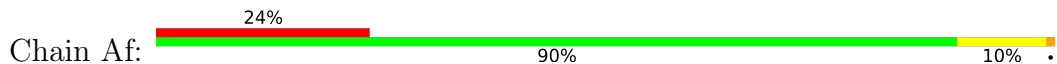
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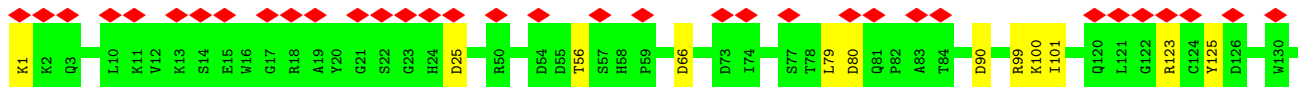
• Molecule 4: EXTRACELLULAR GLOBIN-2



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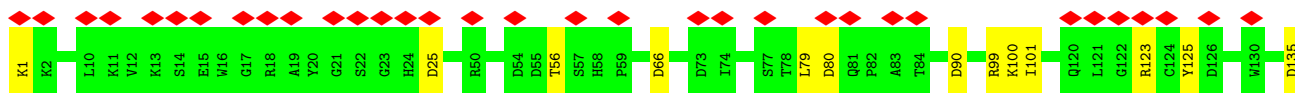
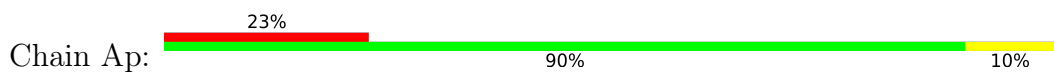


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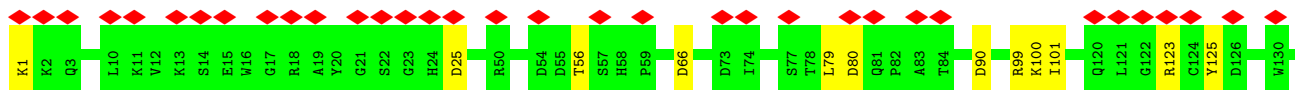
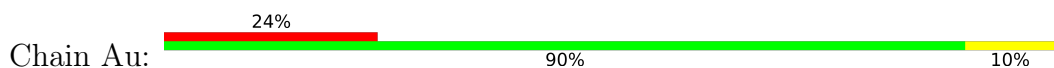




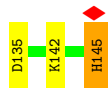
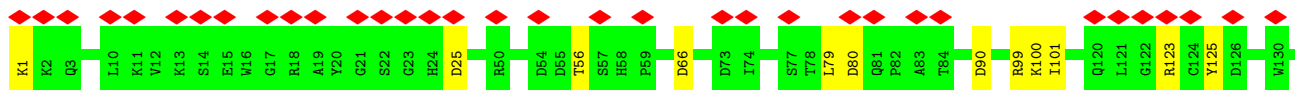
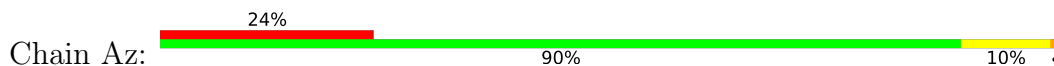
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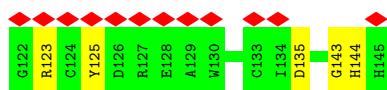
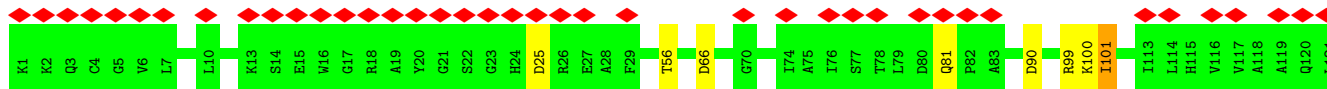
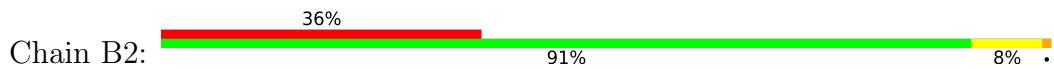
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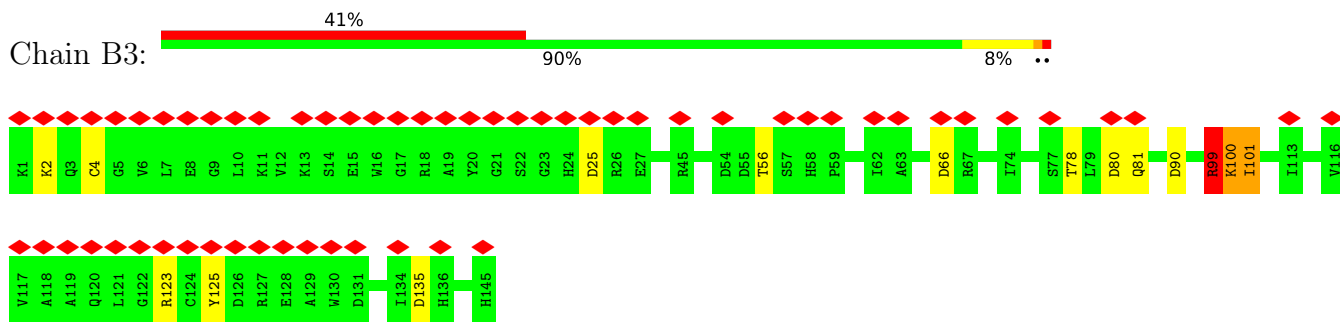
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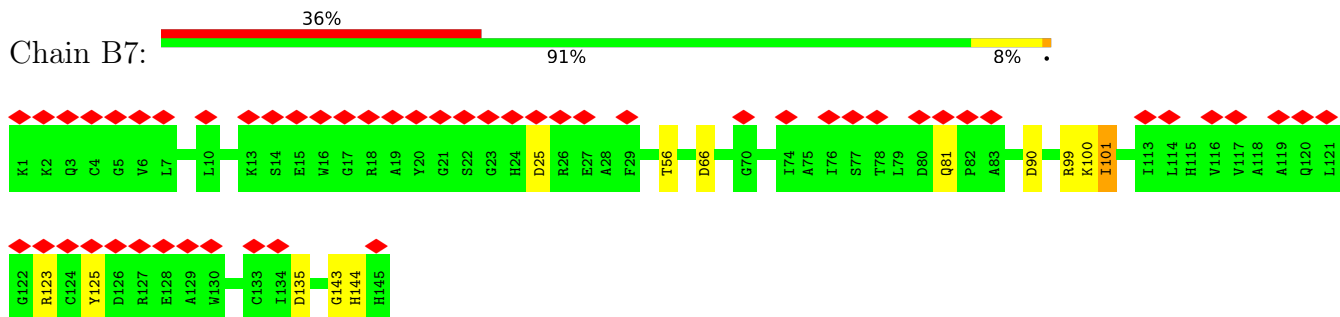
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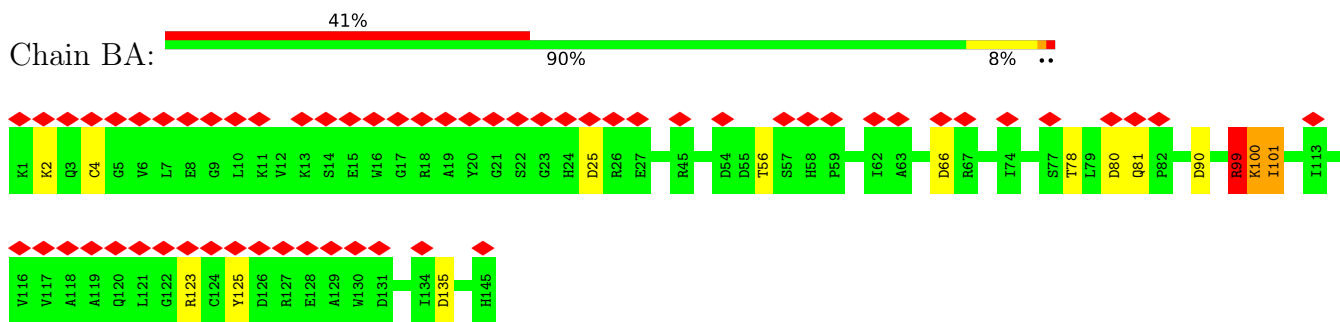
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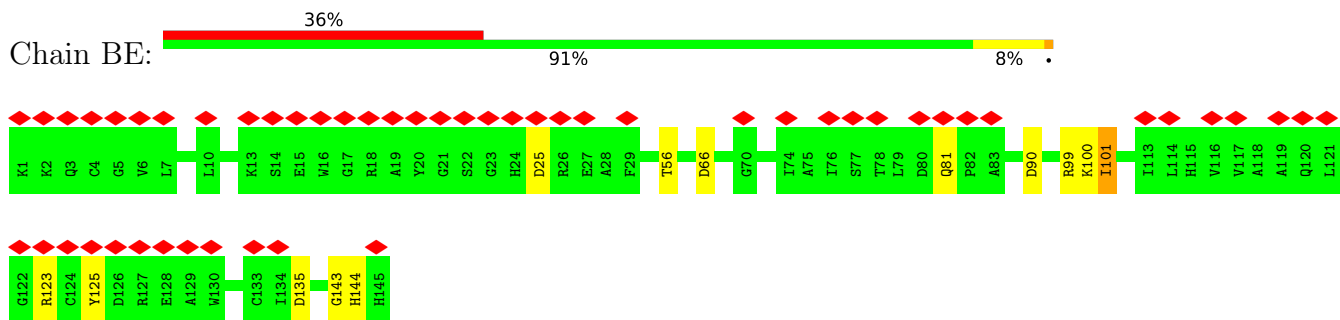
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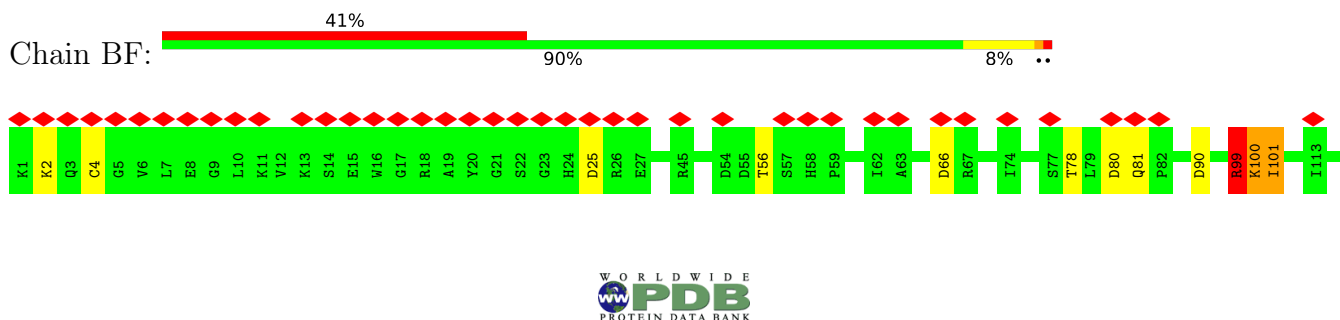
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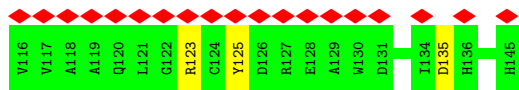


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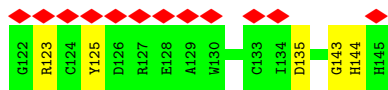
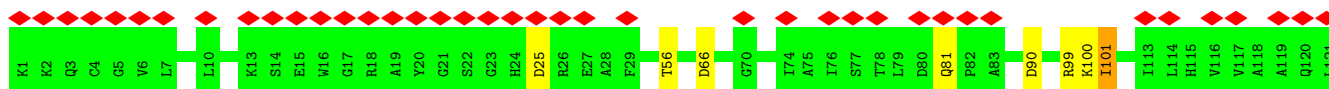
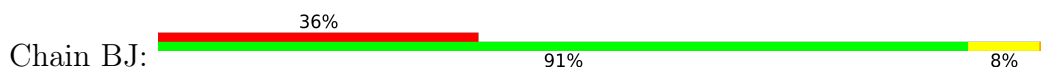


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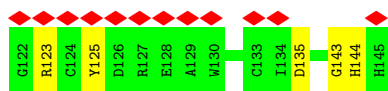
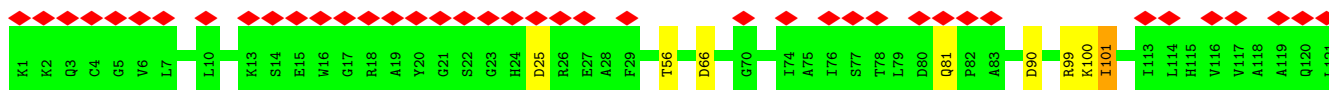
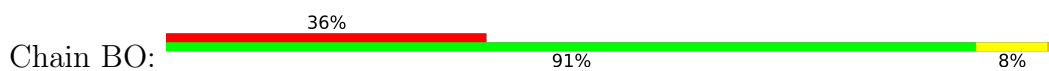
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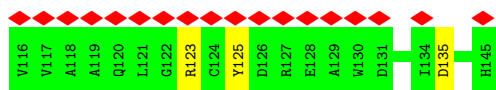
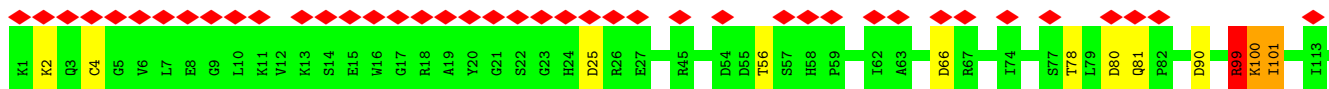
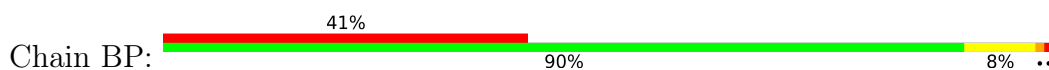
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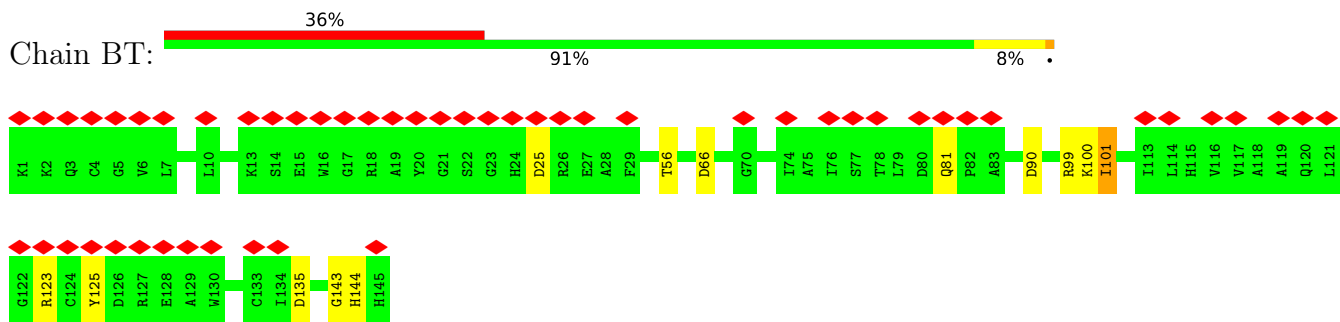
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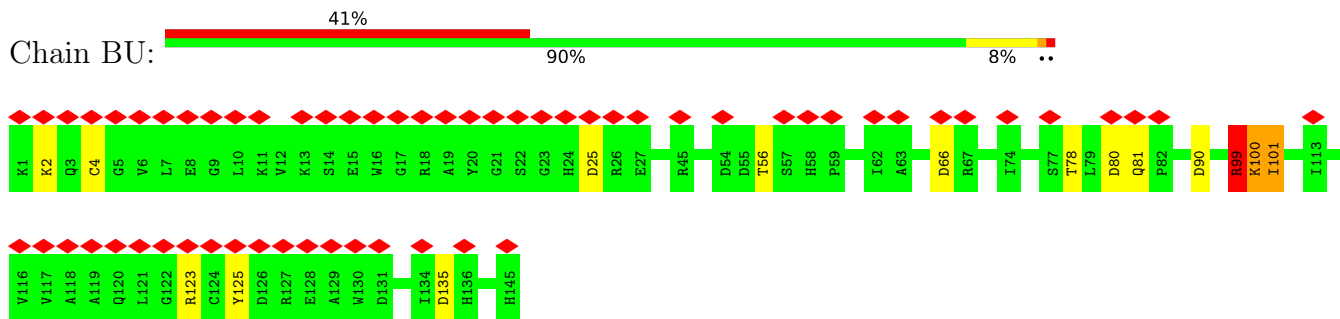
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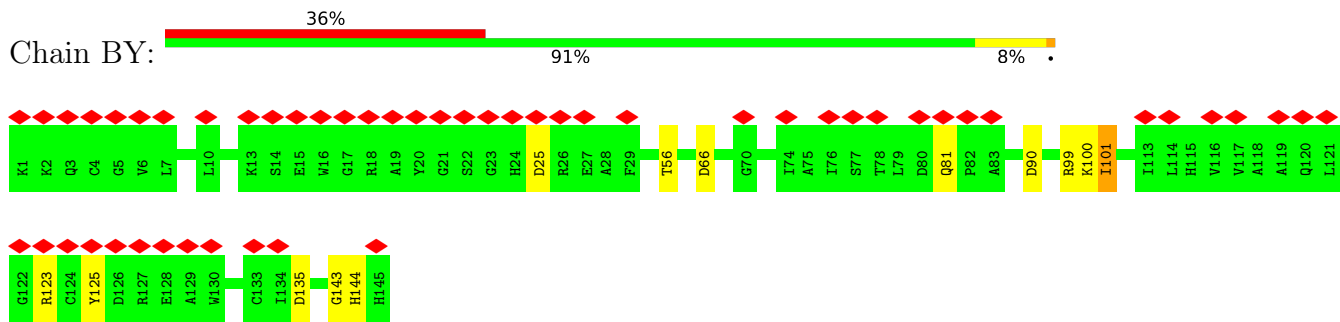
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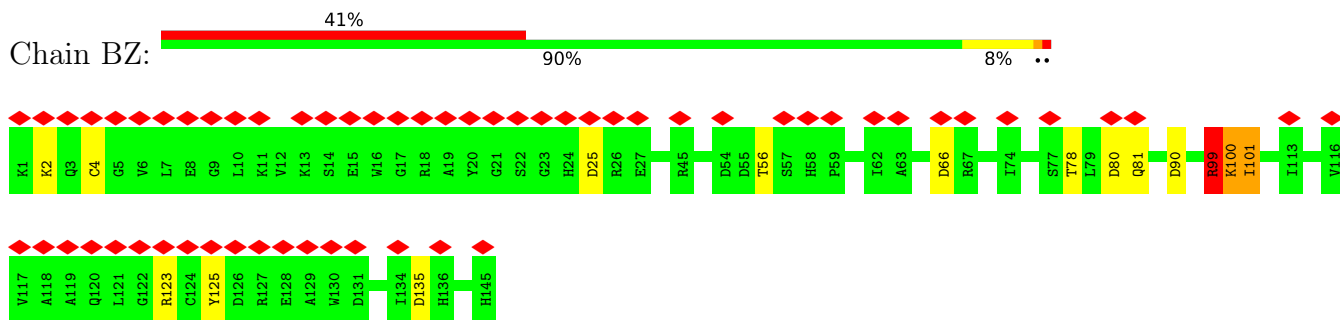
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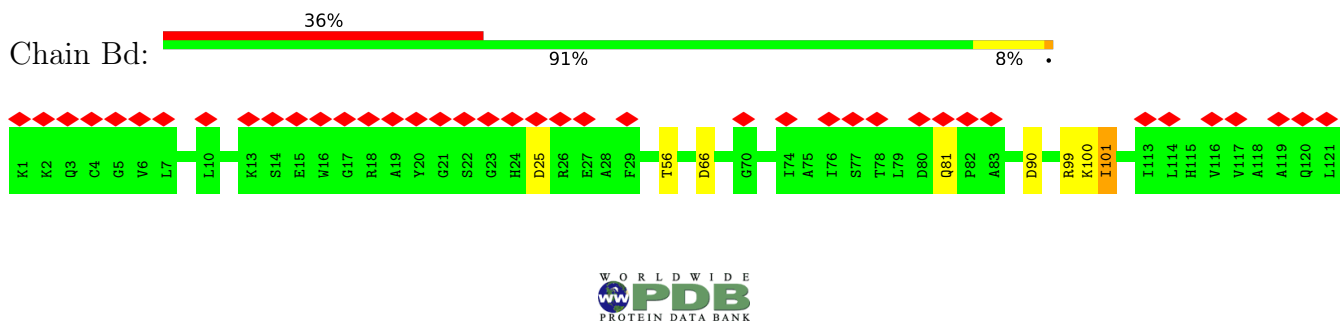
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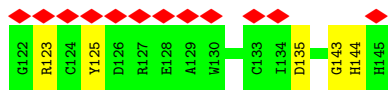


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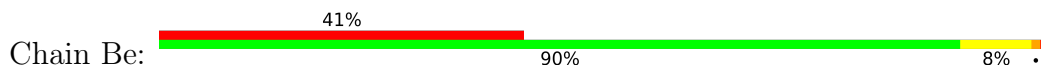


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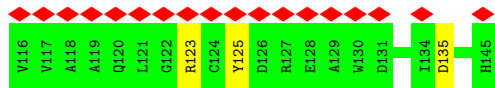




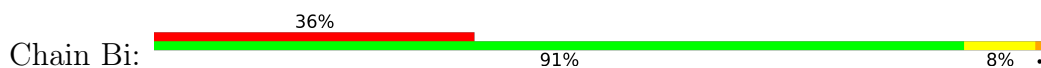
• Molecule 4: EXTRACELLULAR GLOBIN-2



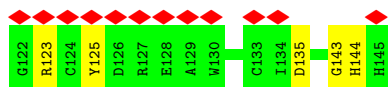
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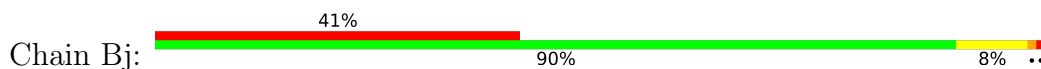
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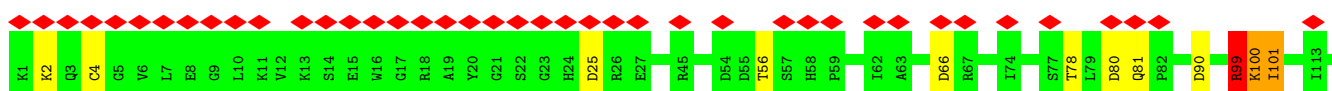
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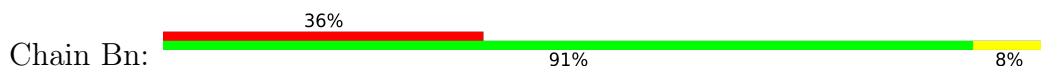
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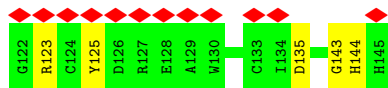
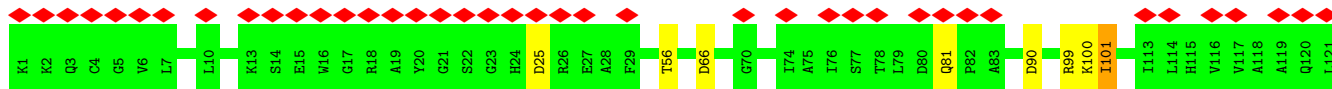
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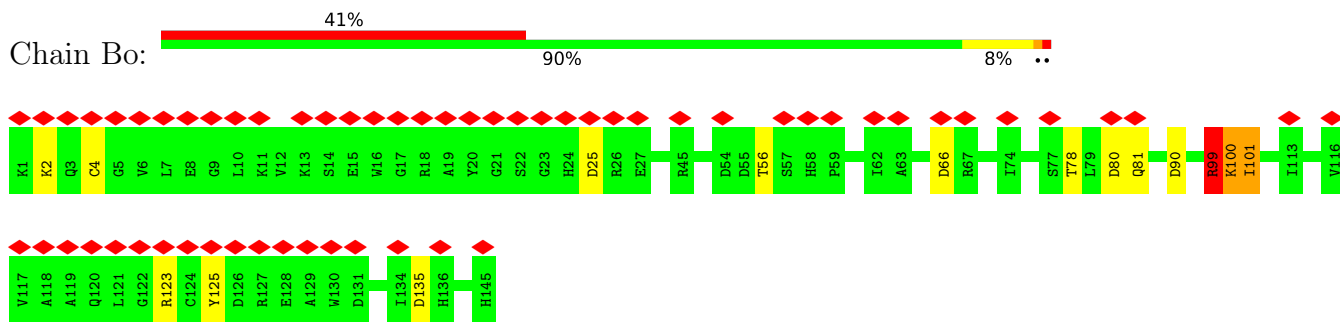
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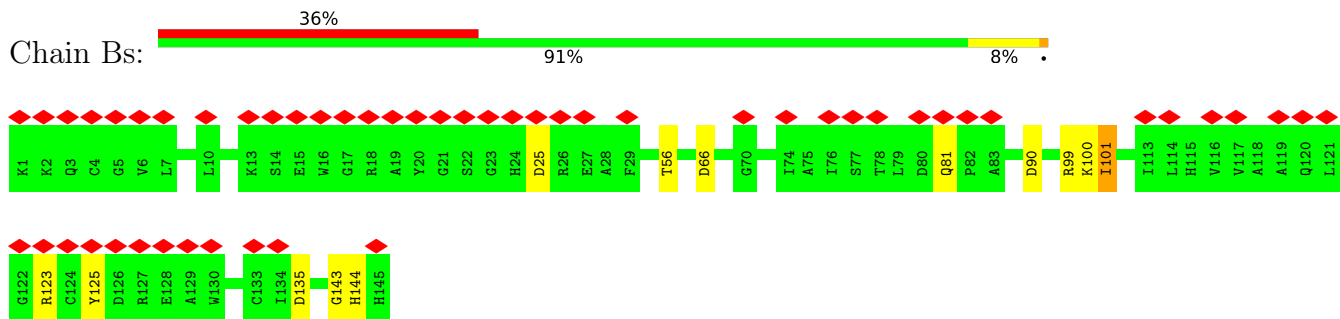
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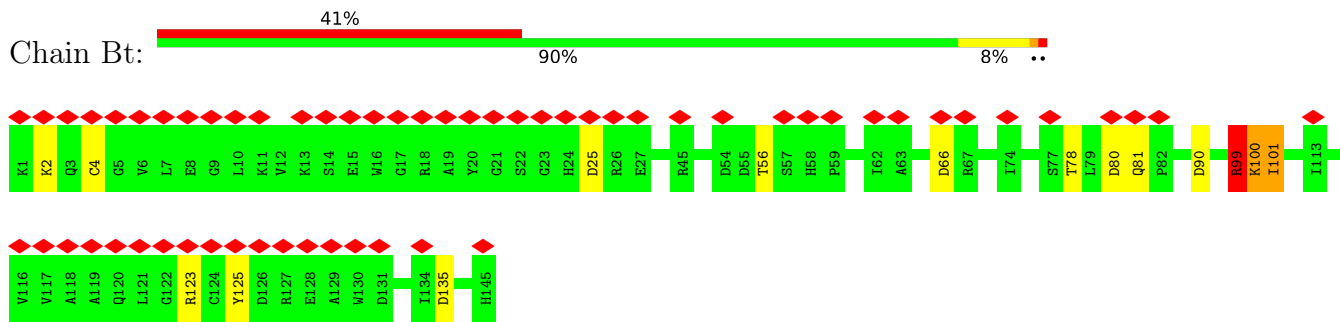
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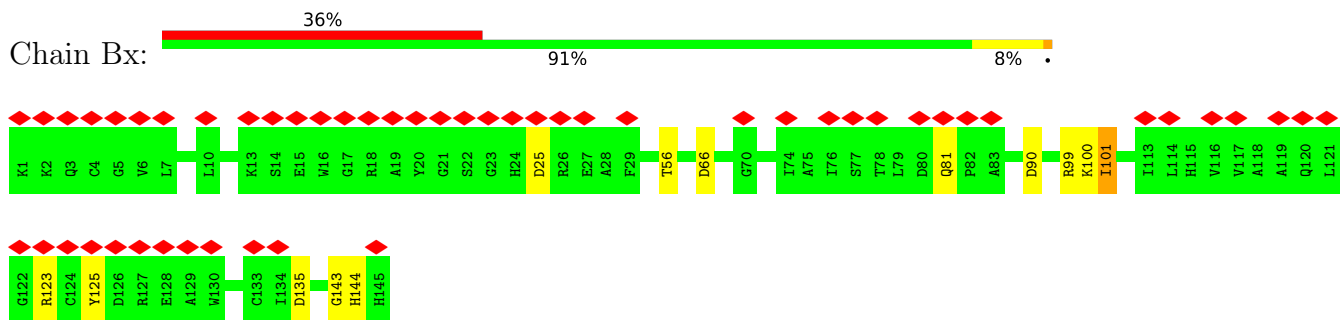
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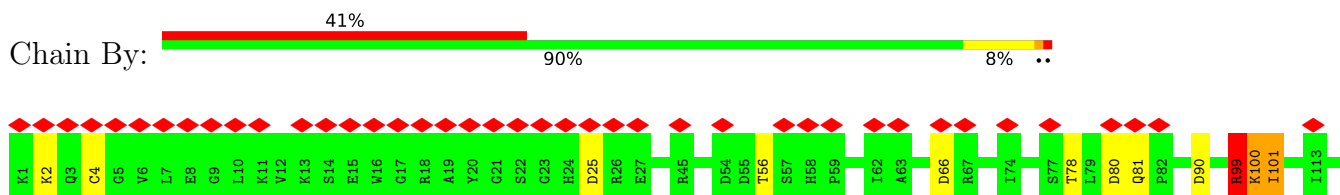
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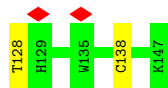
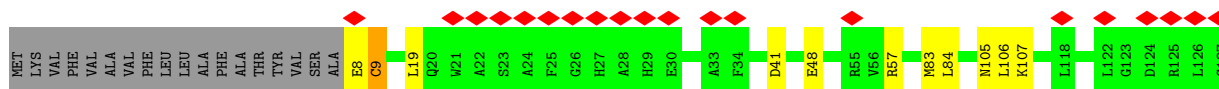
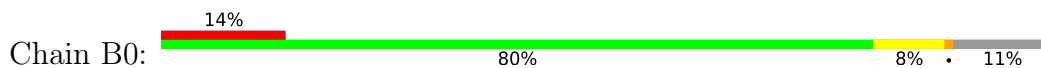


• Molecule 4: EXTRACELLULAR GLOBIN-2

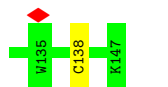
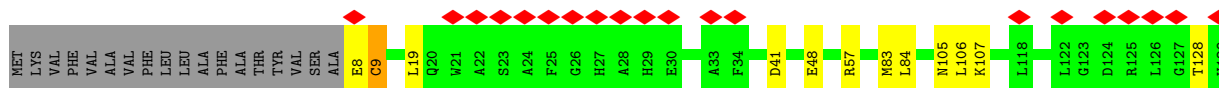
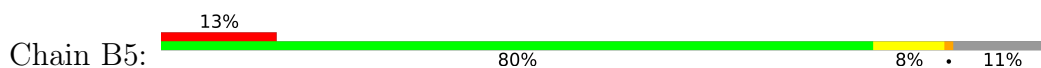




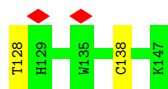
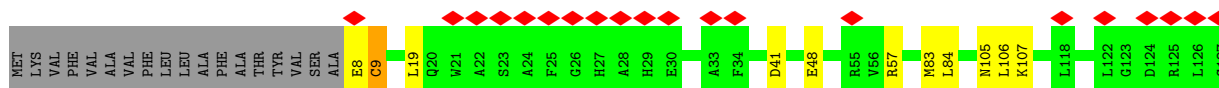
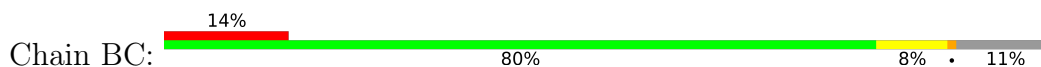
• Molecule 5: HEMOGLOBIN CHAIN D1



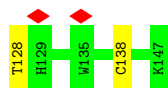
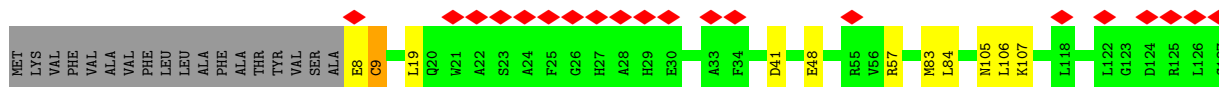
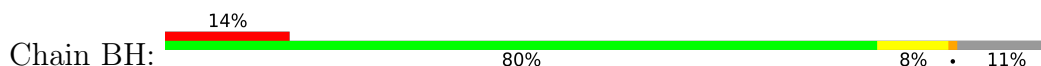
• Molecule 5: HEMOGLOBIN CHAIN D1



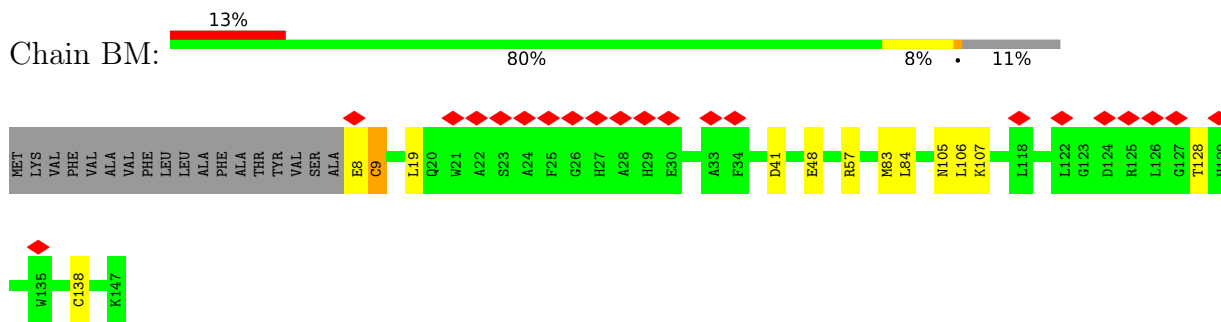
• Molecule 5: HEMOGLOBIN CHAIN D1



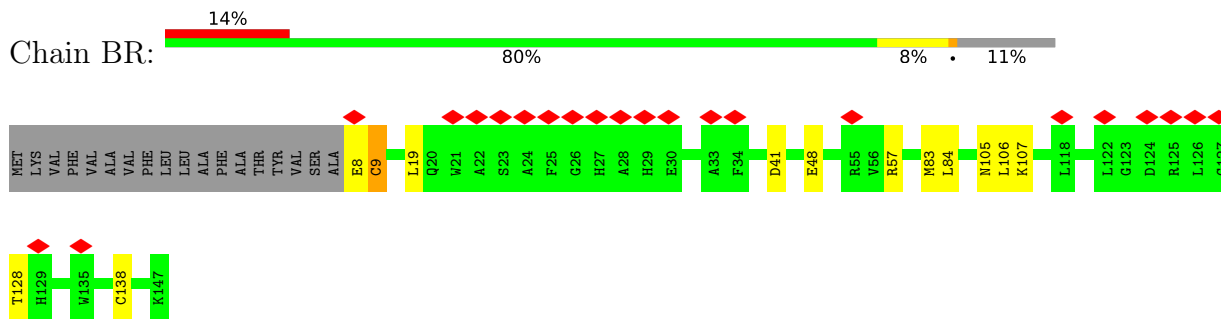
• Molecule 5: HEMOGLOBIN CHAIN D1



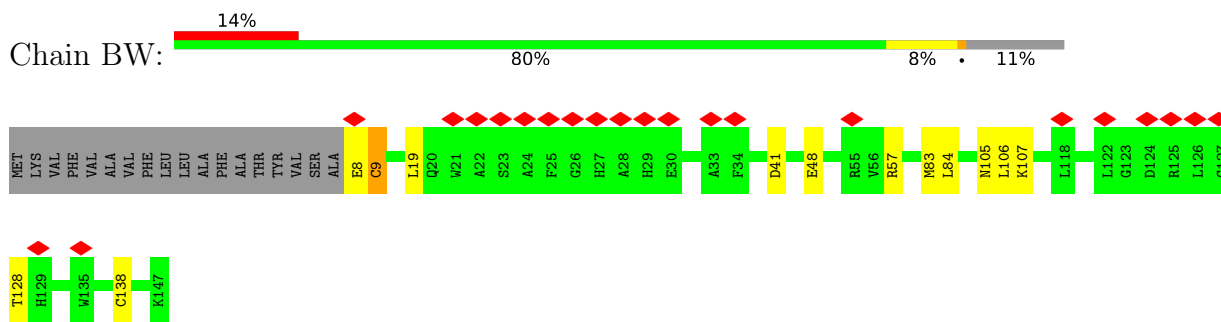
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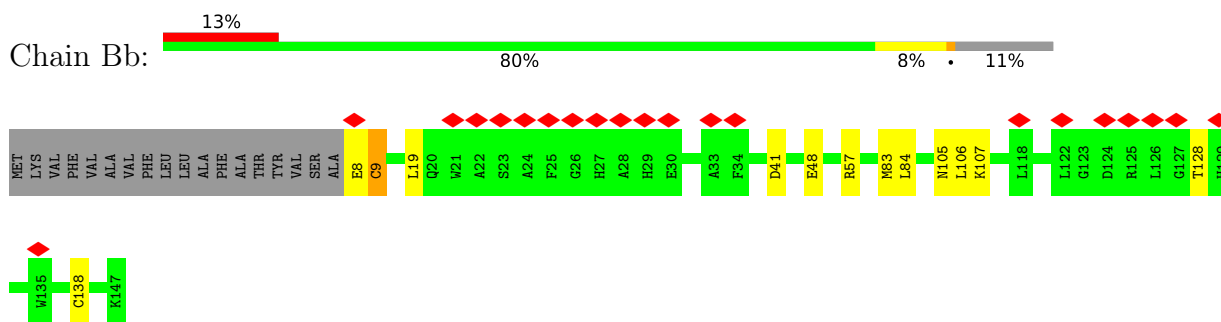
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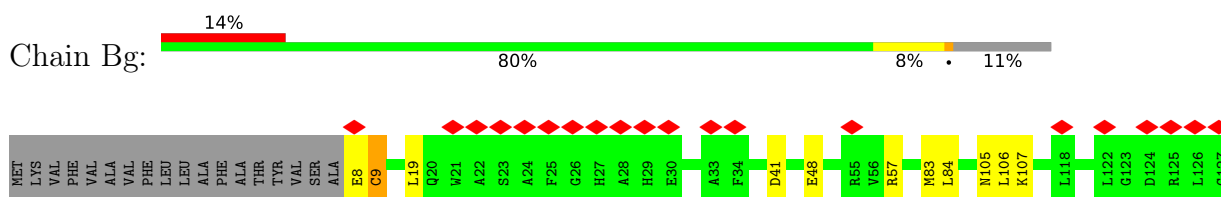
• Molecule 5: HEMOGLOBIN CHAIN D1

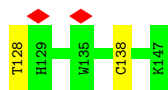


• Molecule 5: HEMOGLOBIN CHAIN D1

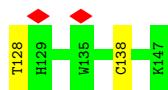
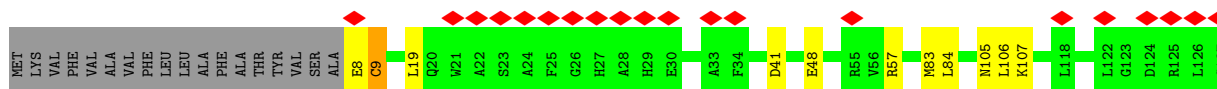
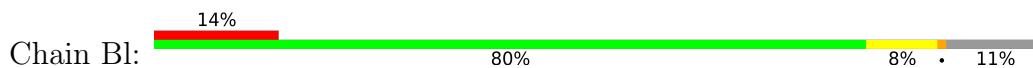


• Molecule 5: HEMOGLOBIN CHAIN D1

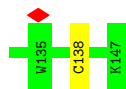
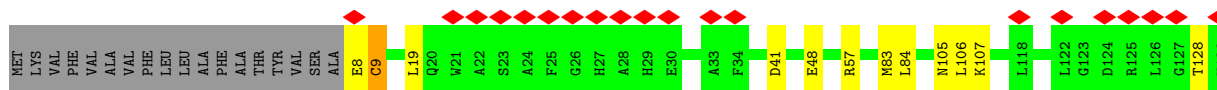
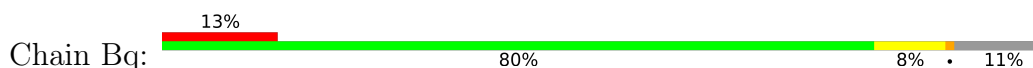




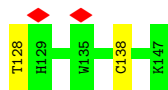
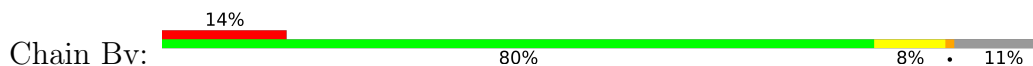
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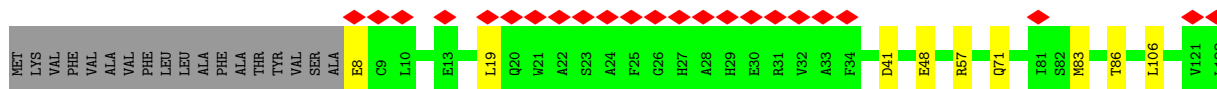
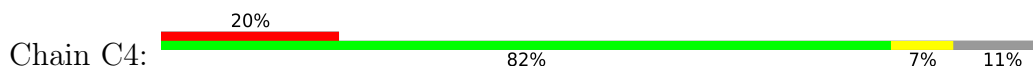
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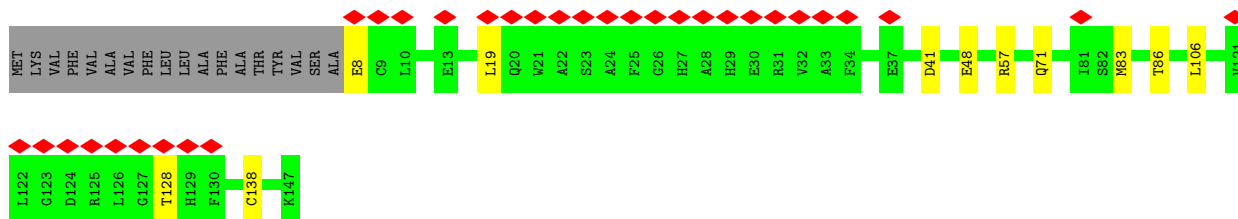
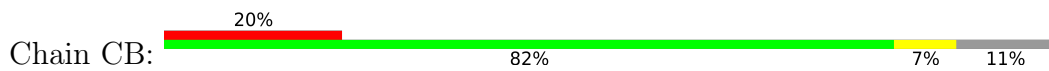
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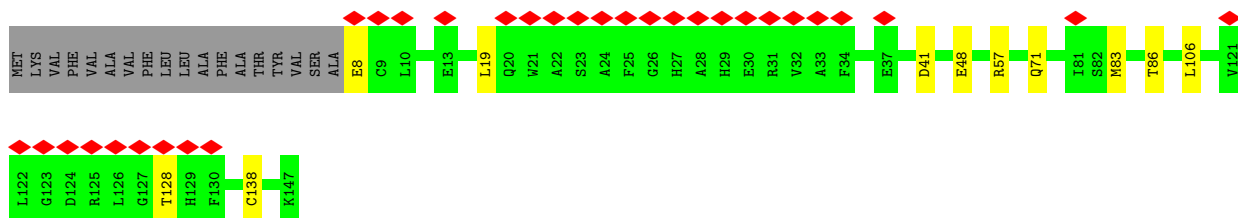
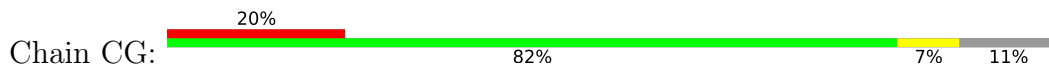
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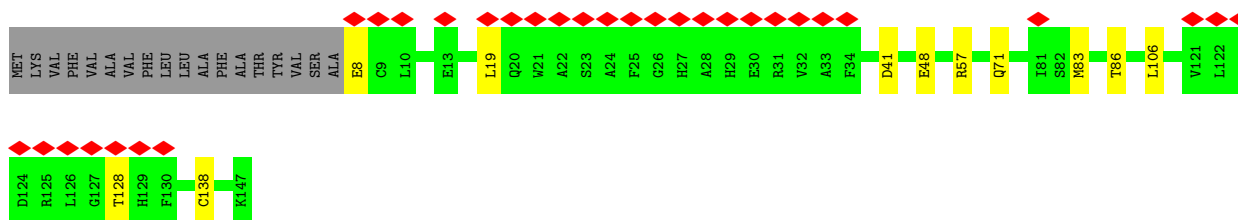
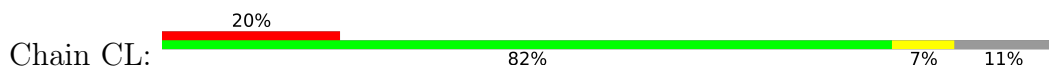
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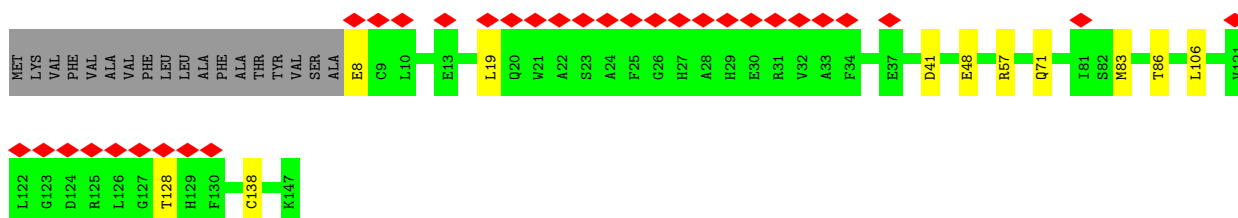
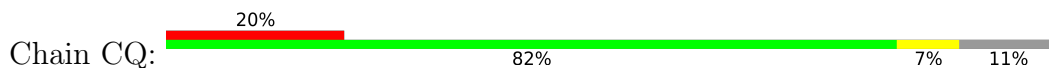
● Molecule 5: HEMOGLOBIN CHAIN D1



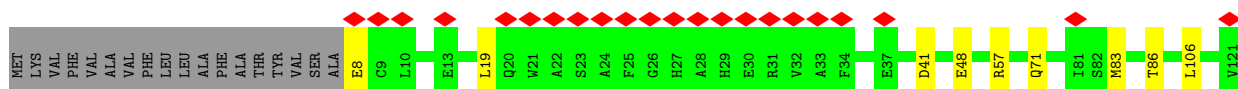
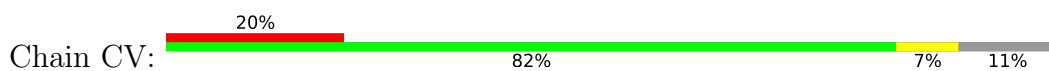
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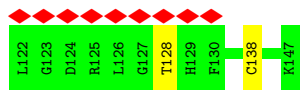


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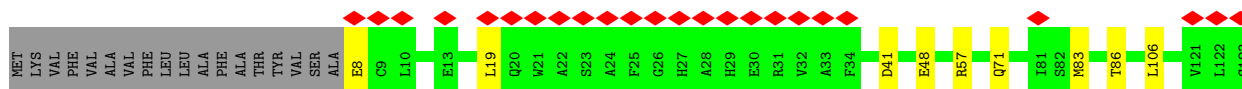
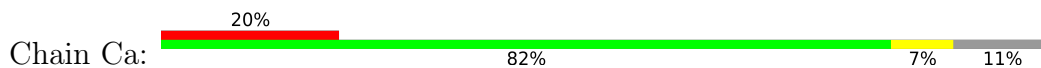


● Molecule 5: HEMOGLOBIN CHAIN D1

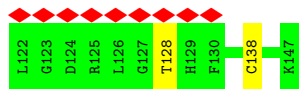
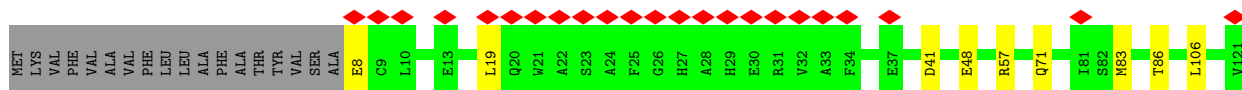
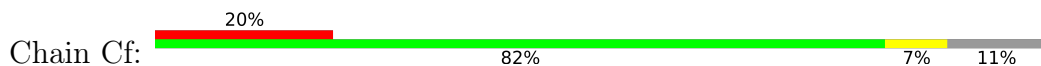




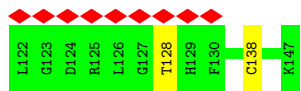
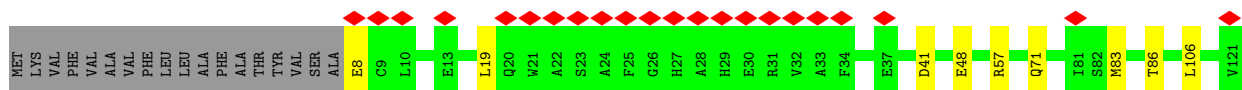
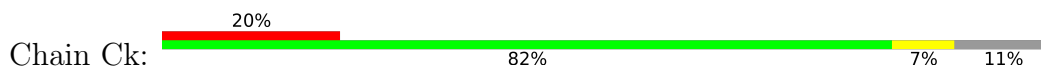
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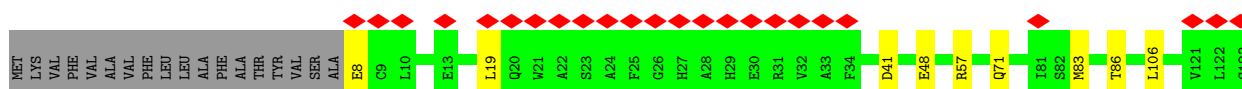
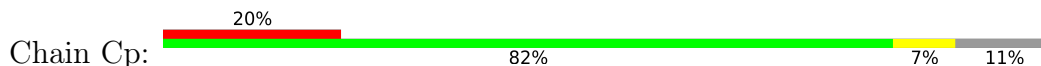
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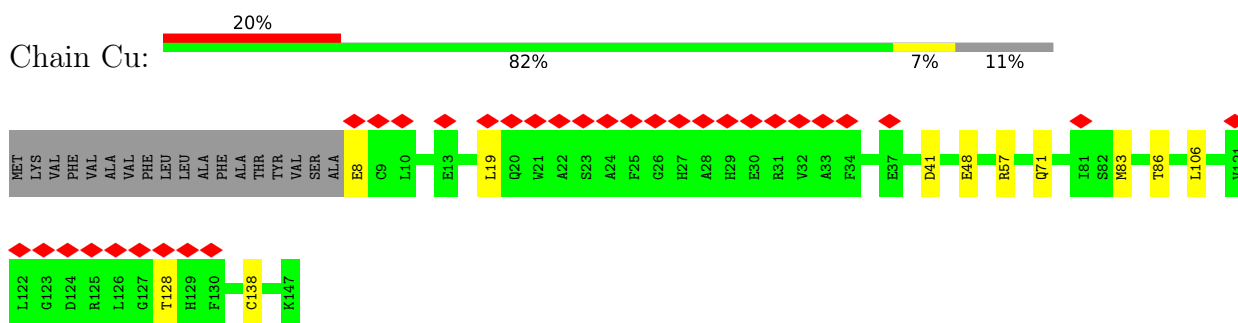
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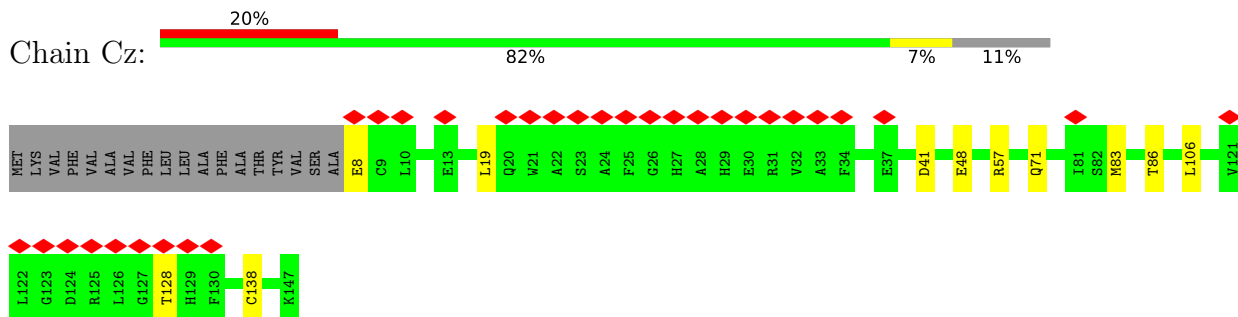
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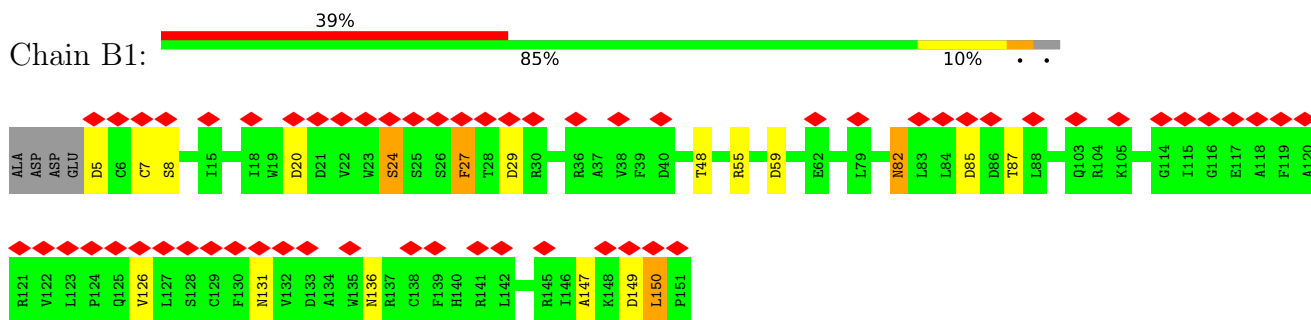
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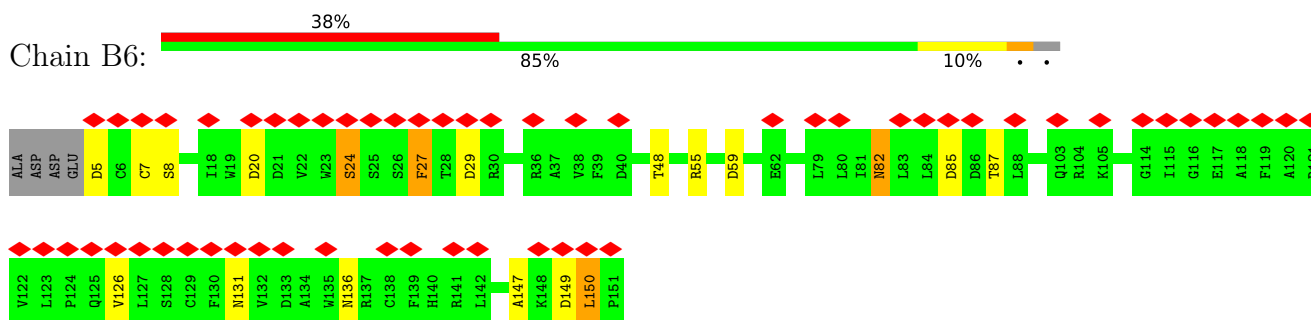
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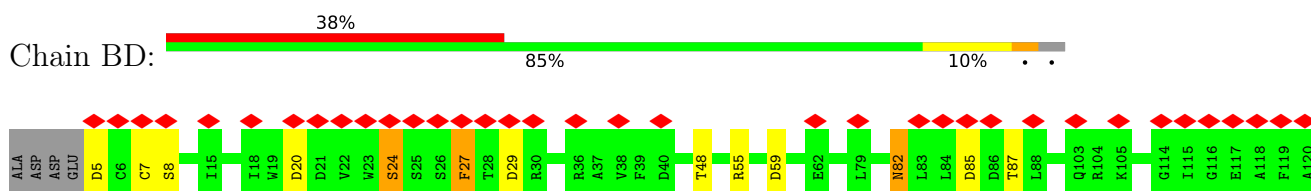
• Molecule 6: EXTRACELLULAR GLOBIN-4



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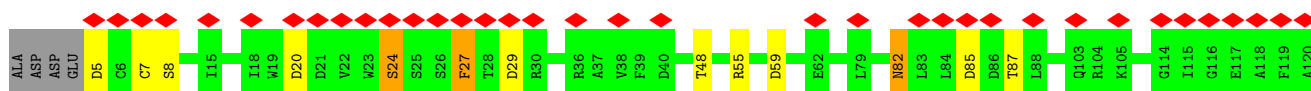
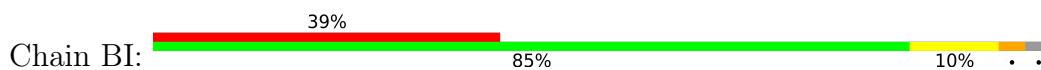


• Molecule 6: EXTRACELLULAR GLOBIN-4

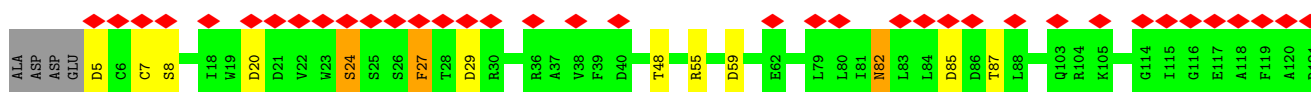
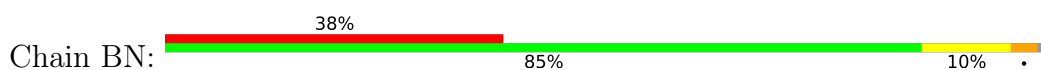




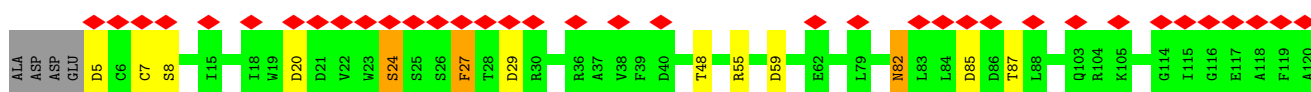
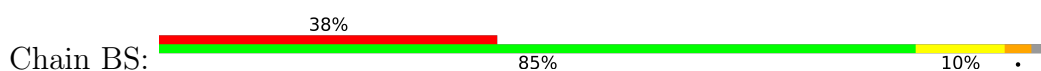
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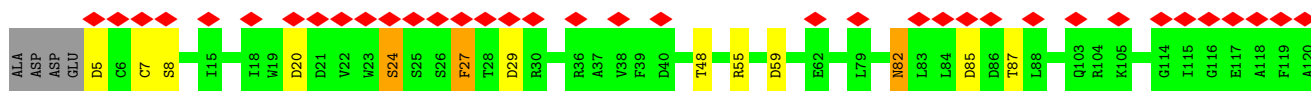
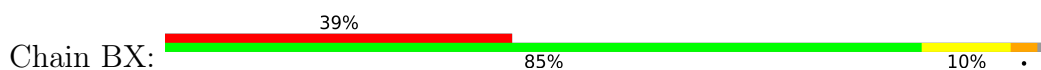
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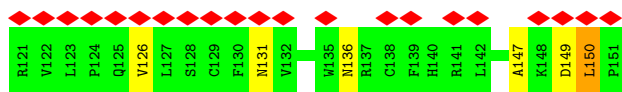
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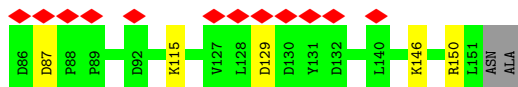
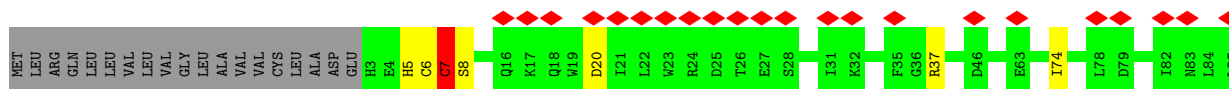
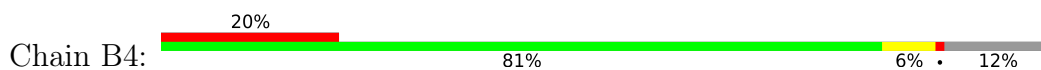
• Molecule 6: EXTRACELLULAR GLOBIN-4



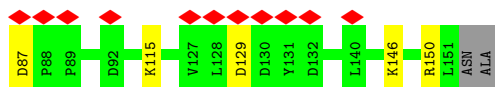
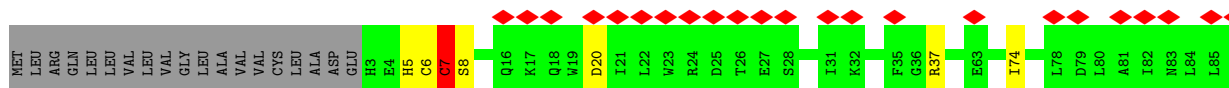
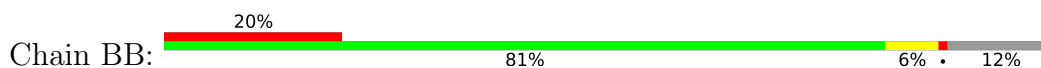
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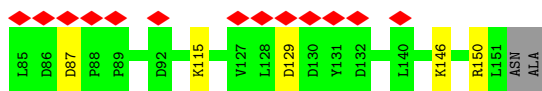
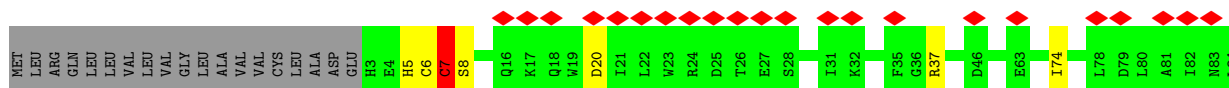
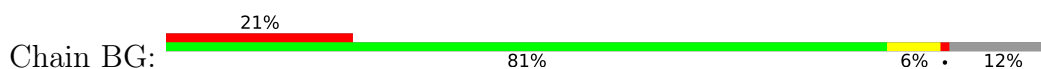
- Molecule 7: EXTRACELLULAR GLOBIN-3



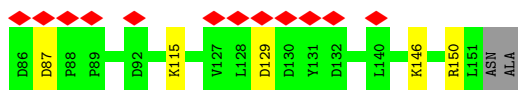
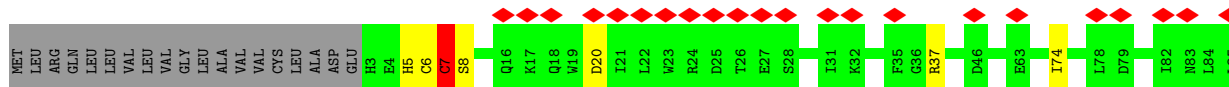
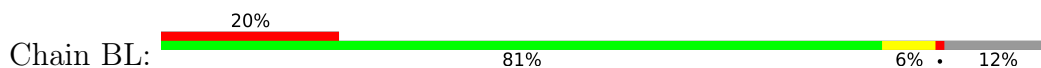
- Molecule 7: EXTRACELLULAR GLOBIN-3



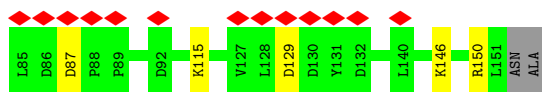
- Molecule 7: EXTRACELLULAR GLOBIN-3



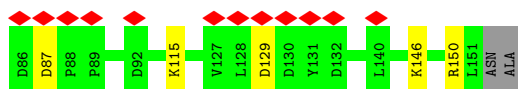
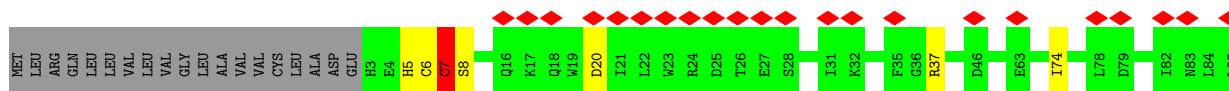
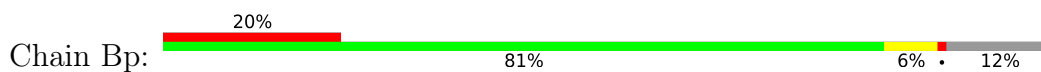
- Molecule 7: EXTRACELLULAR GLOBIN-3



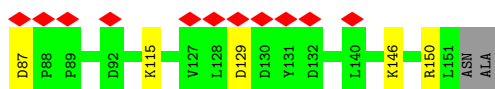
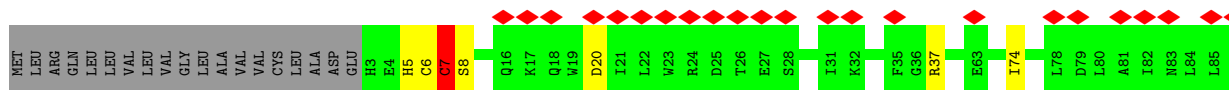
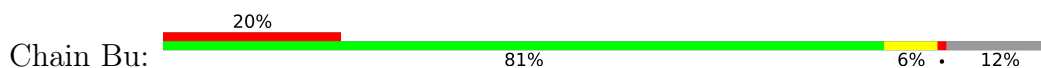
- Molecule 7: EXTRACELLULAR GLOBIN-3



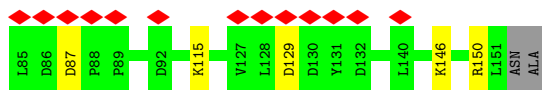
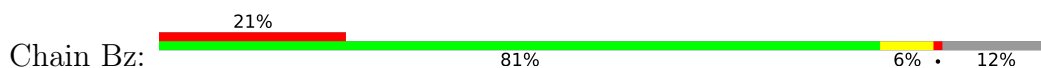
- Molecule 7: EXTRACELLULAR GLOBIN-3



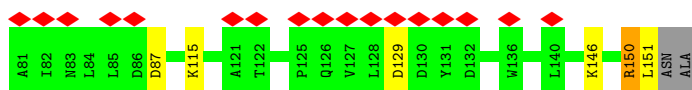
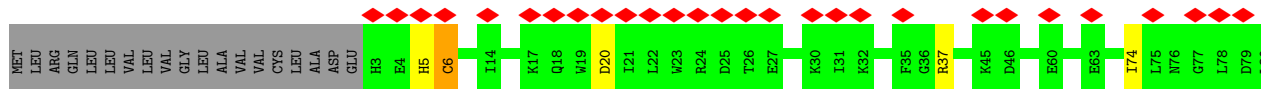
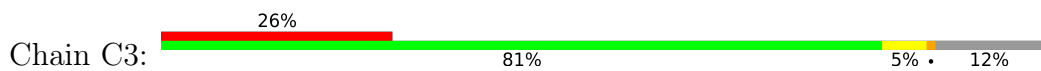
- Molecule 7: EXTRACELLULAR GLOBIN-3



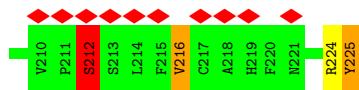
- Molecule 7: EXTRACELLULAR GLOBIN-3



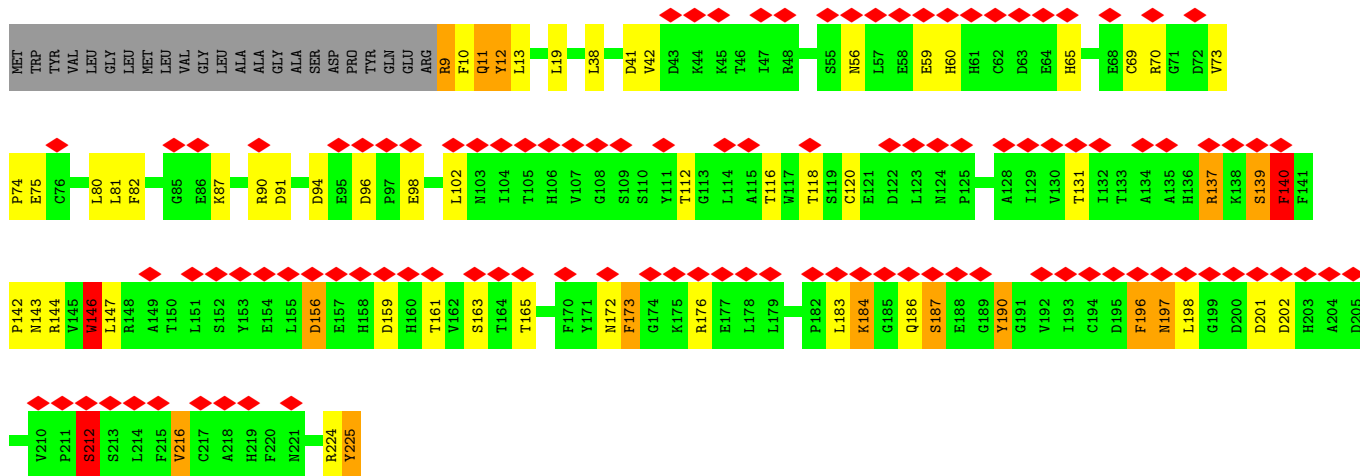
- Molecule 7: EXTRACELLULAR GLOBIN-3



- Molecule 7: EXTRACELLULAR GLOBIN-3



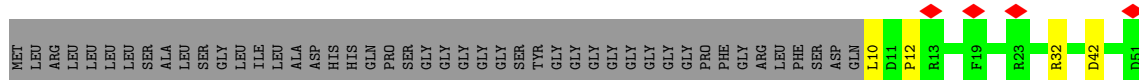
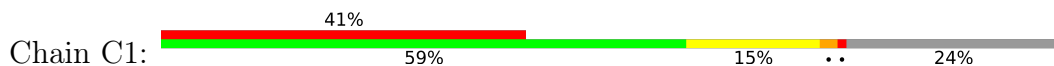
• Molecule 8: HEMOGLOBIN LINKER CHAIN L1



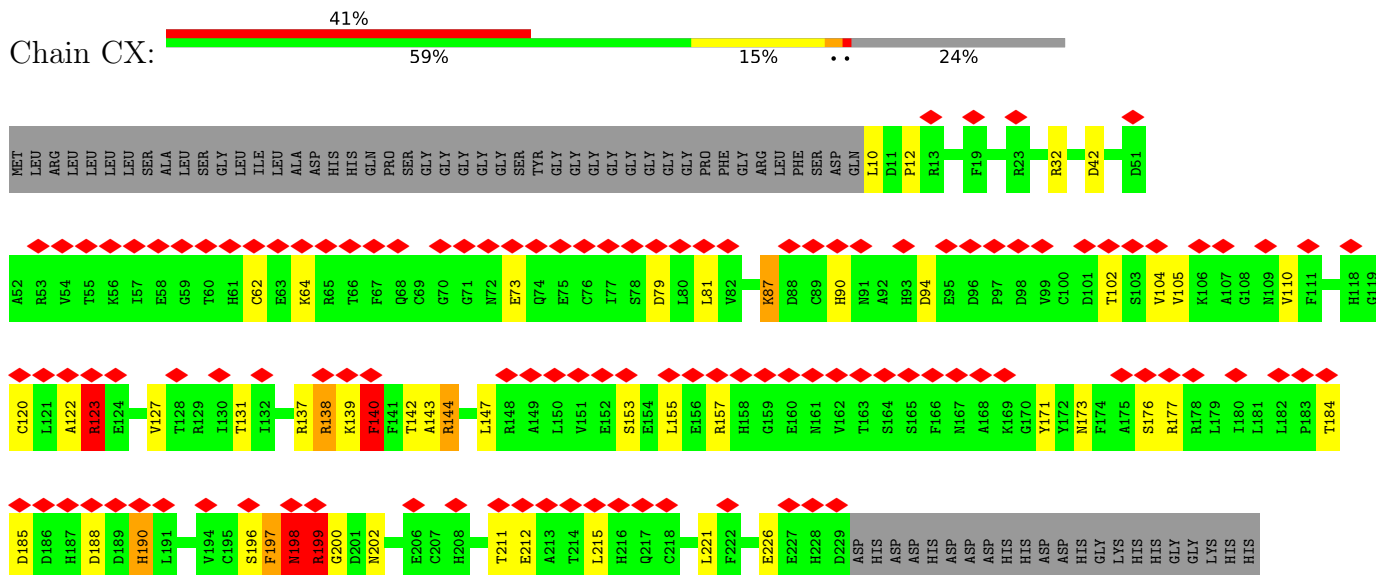
• Molecule 8: HEMOGLOBIN LINKER CHAIN L1



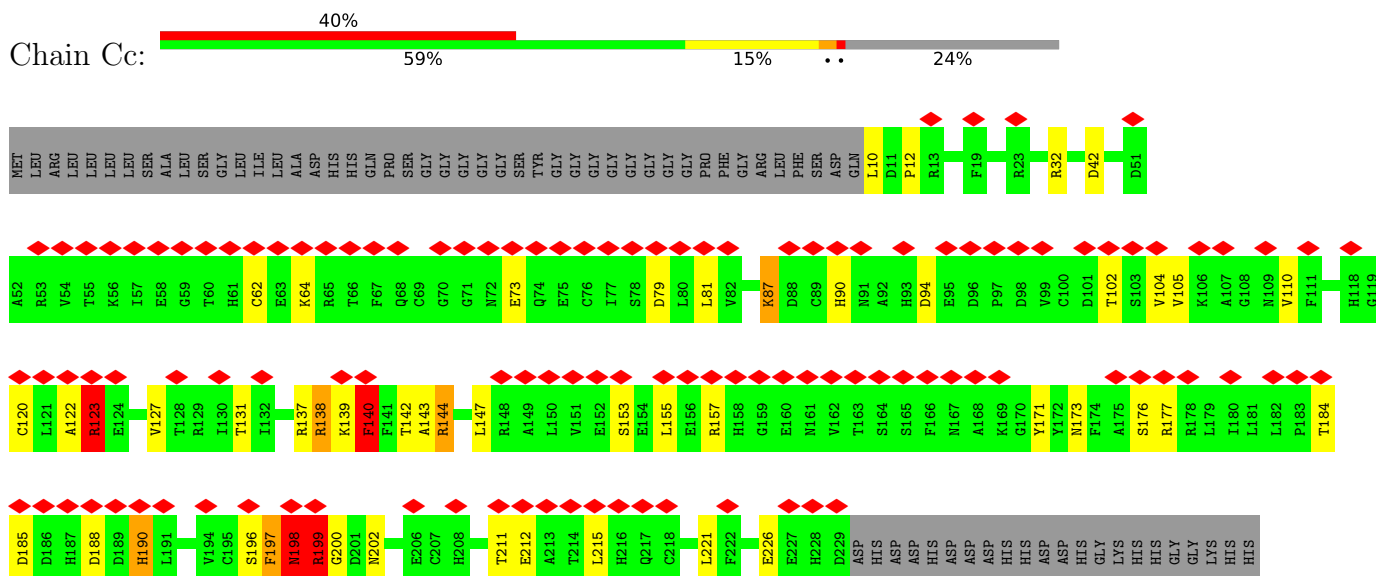
• Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT



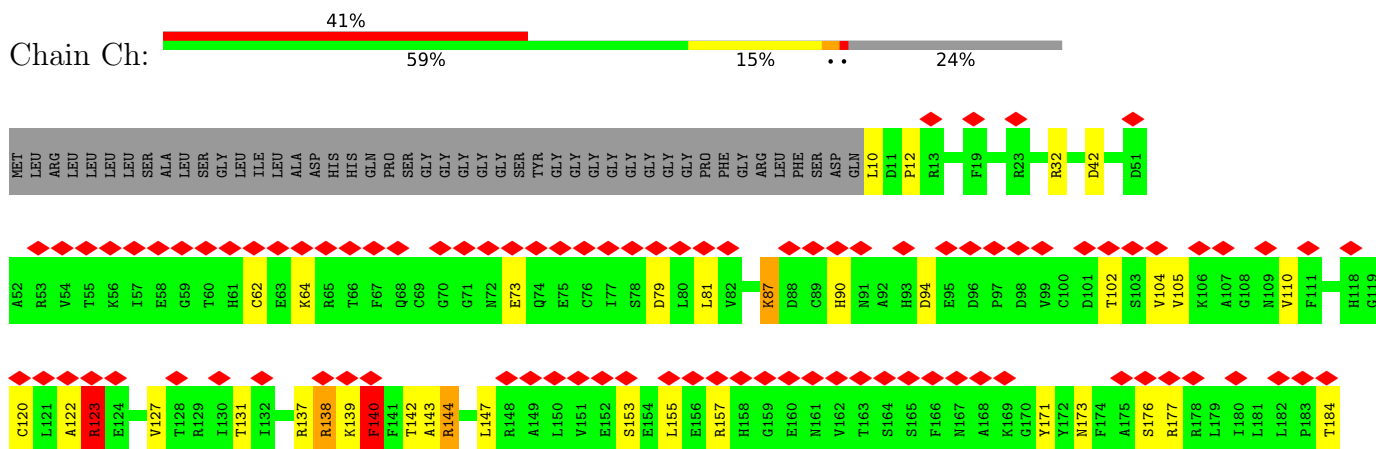
● Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT

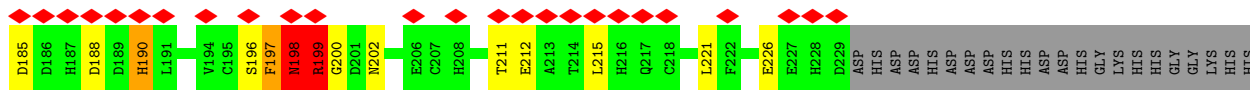


● Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT

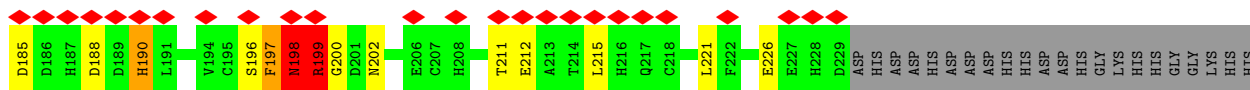
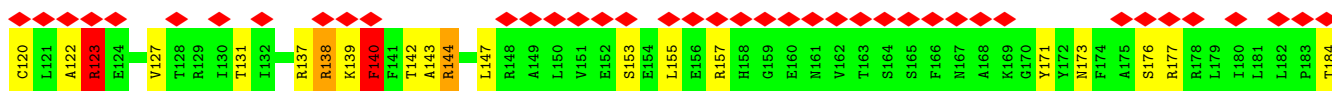
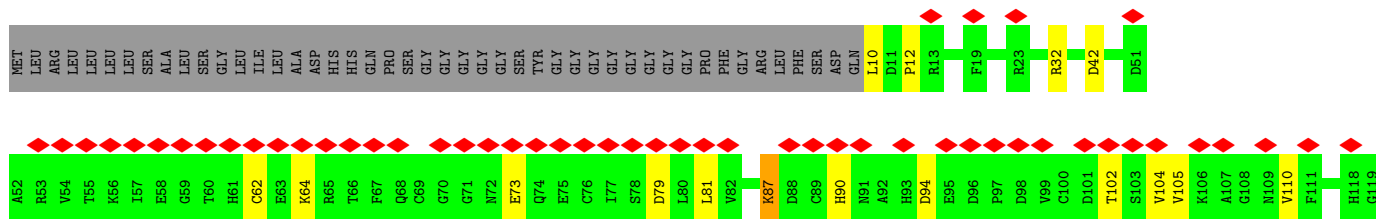
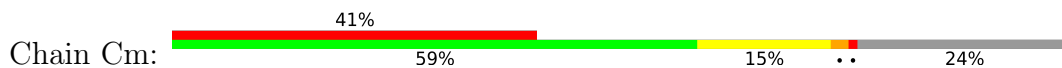


● Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT

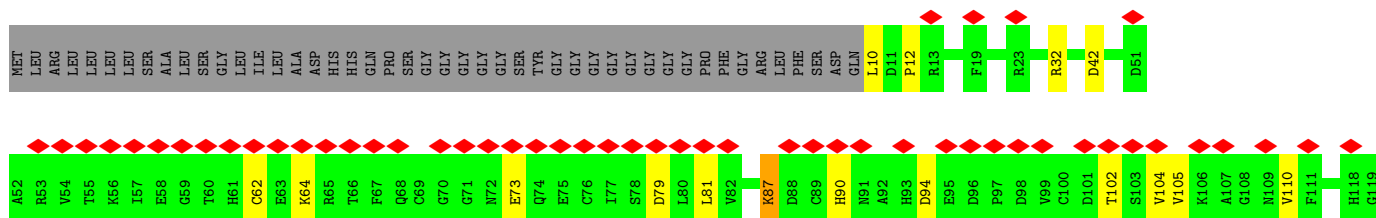
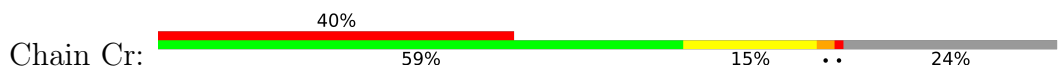




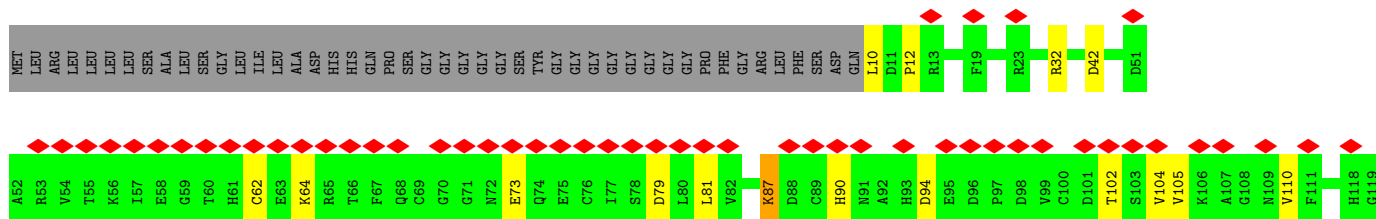
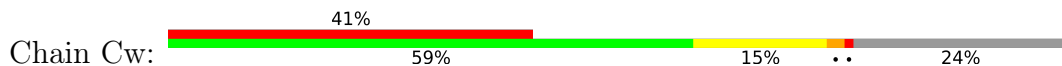
• Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT

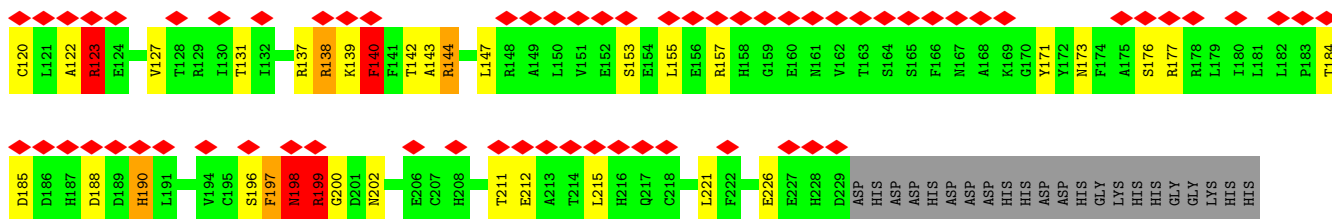


• Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT

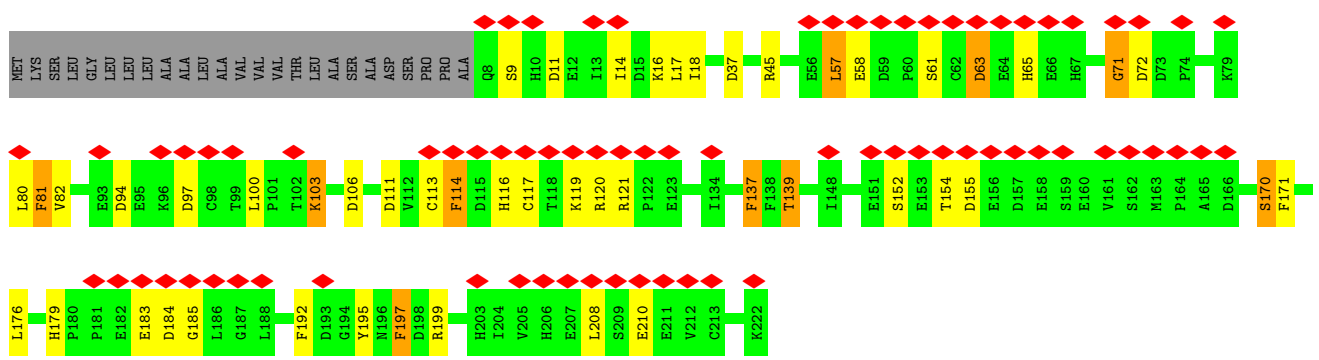
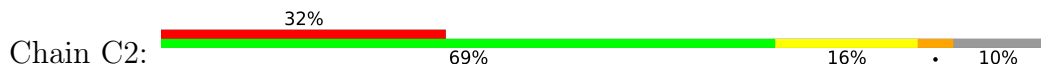


• Molecule 9: EXTRACELLULAR HEMOGLOBIN LINKER L2 SUBUNIT

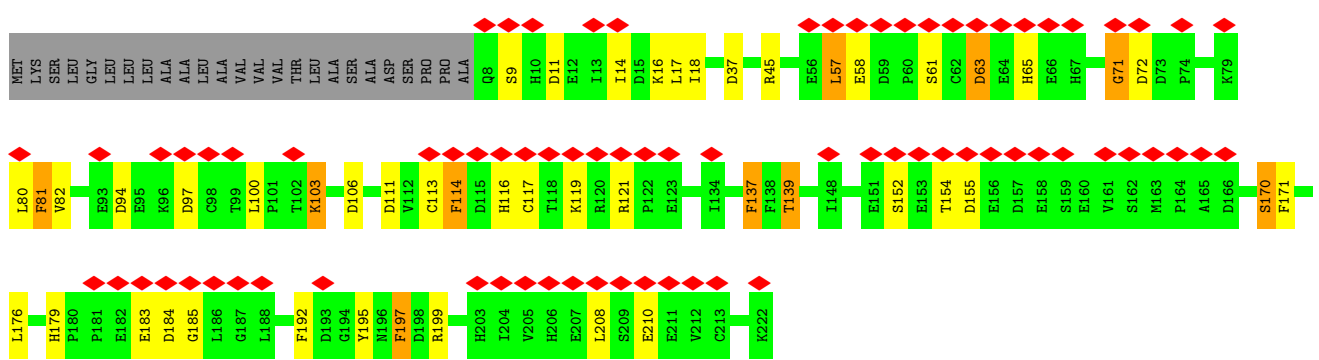
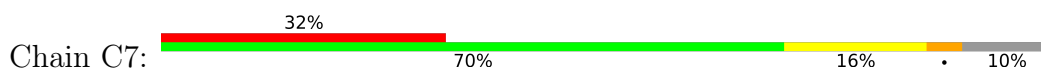




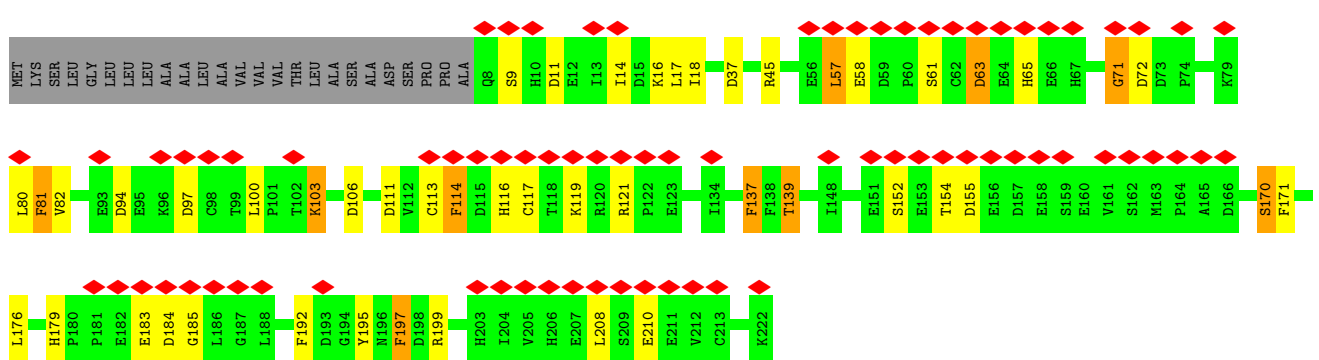
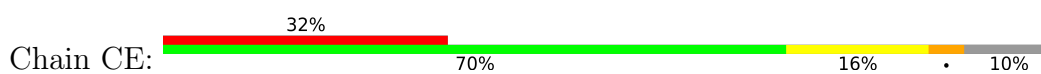
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



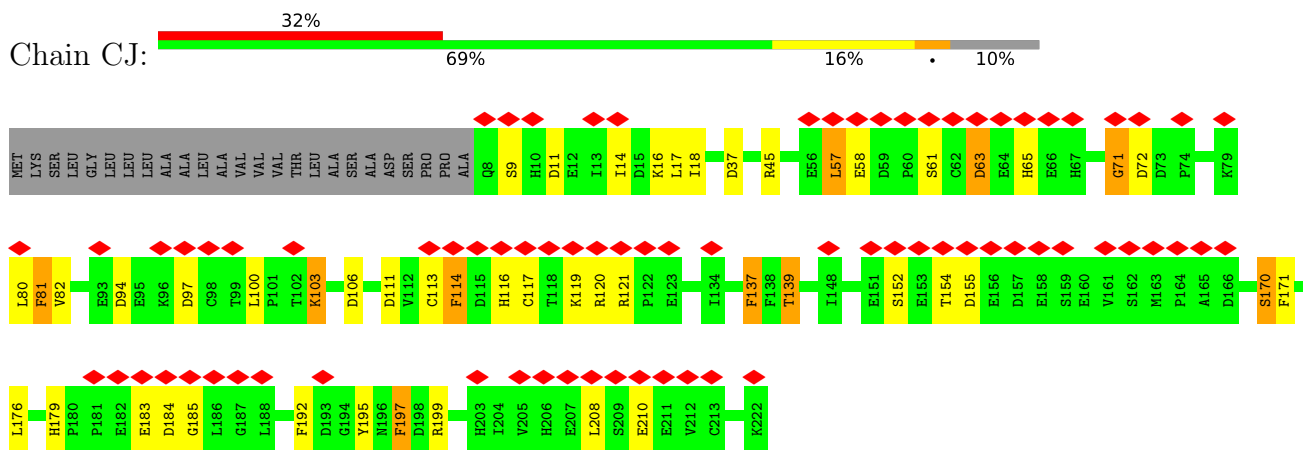
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



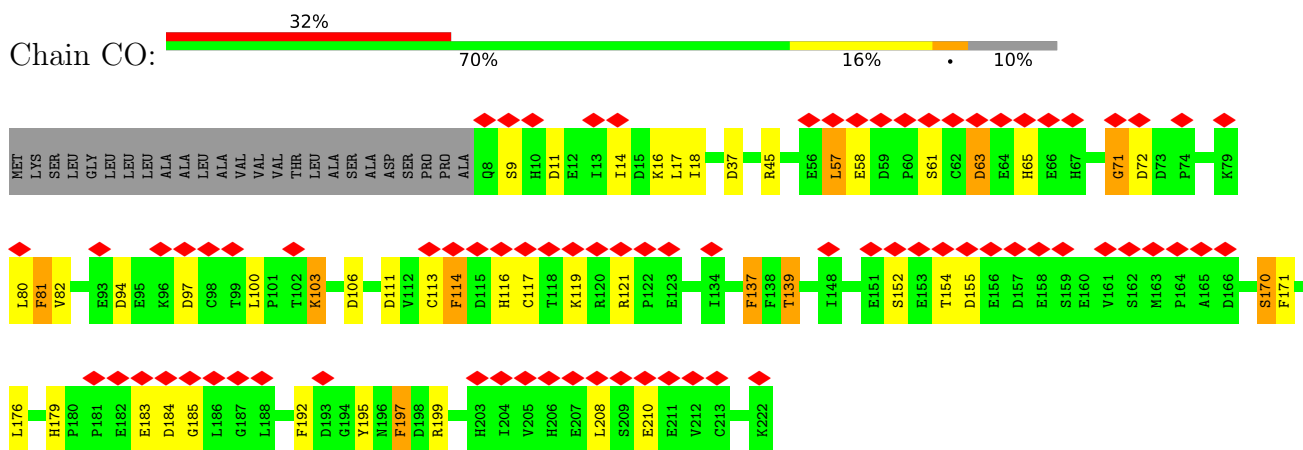
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



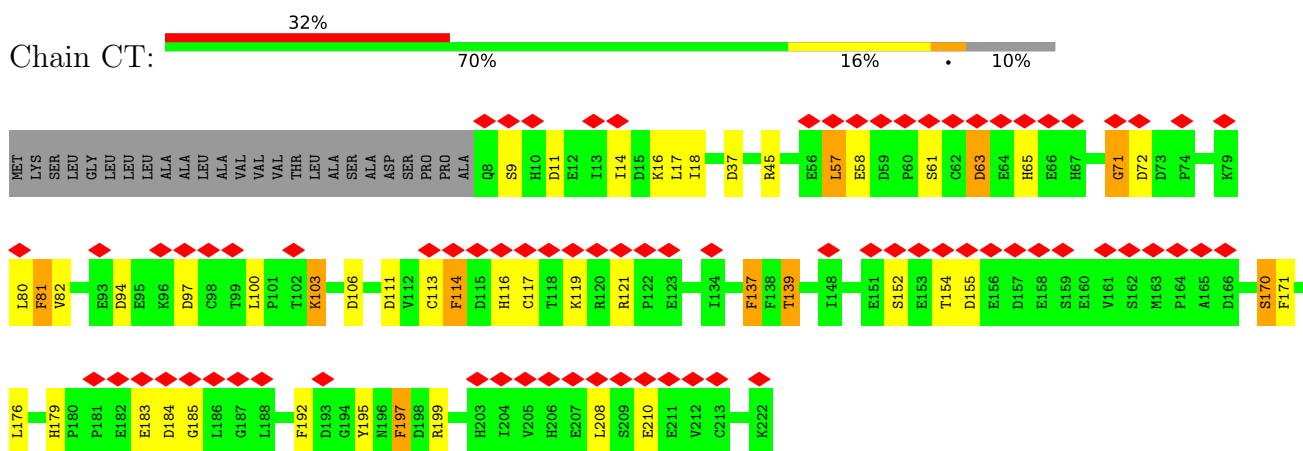
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



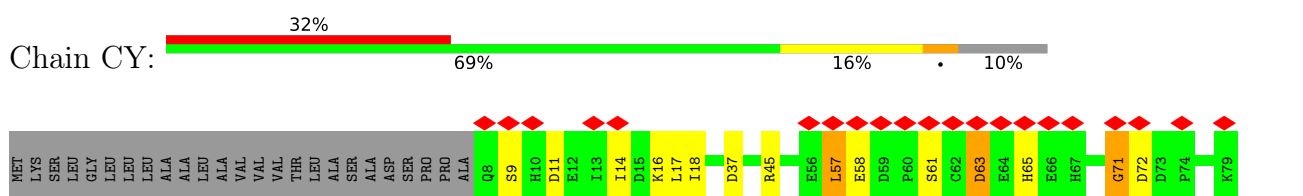
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT

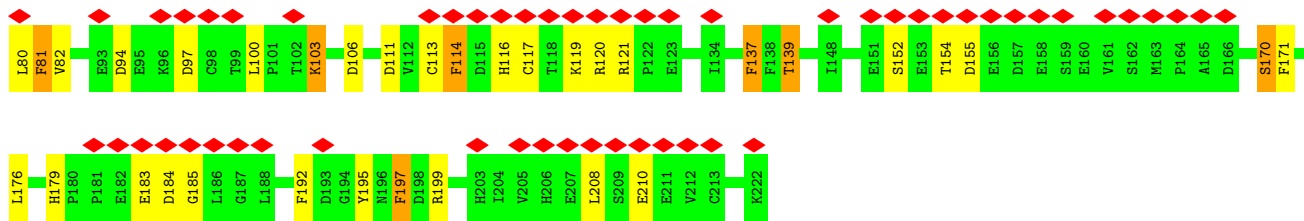


• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT

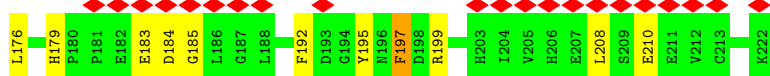
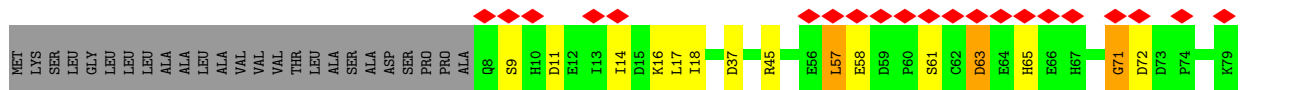


• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT

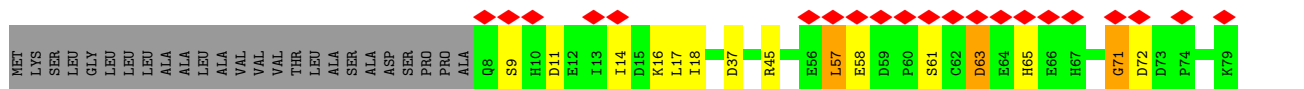




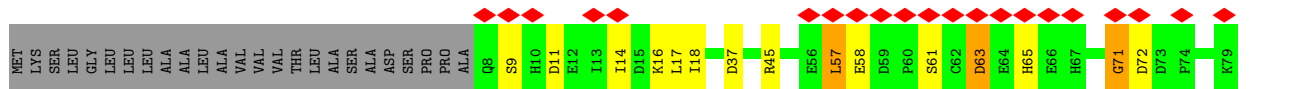
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



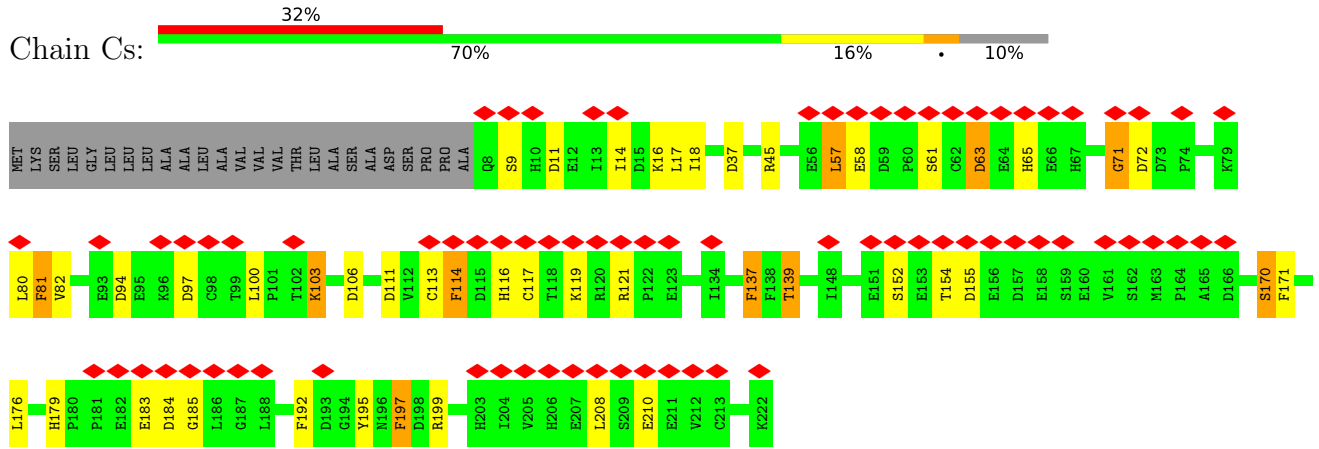
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



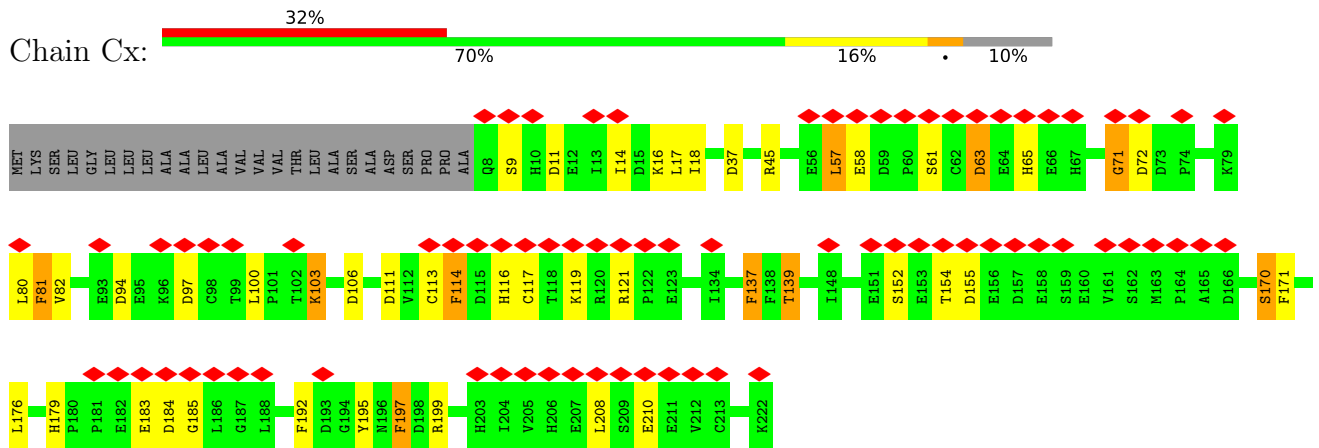
• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



• Molecule 10: EXTRACELLULAR HEMOGLOBIN LINKER L3 SUBUNIT



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, D6	Depositor
Number of particles used	4500	Depositor
Resolution determination method	Not provided	
CTF correction method	Not provided	
Microscope	FEI TECNAI F20	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	Not provided	
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	80000	Depositor
Image detector	GATAN ULTRASCAN 4000 (4k x 4k)	Depositor
Maximum map value	0.143	Depositor
Minimum map value	-0.130	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.014	Depositor
Recommended contour level	0.042	Depositor
Map size (\AA)	520.0, 520.0, 520.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.3, 1.3, 1.3	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	A0	0.48	0/1216	0.70	1/1641 (0.1%)
1	A5	0.48	0/1216	0.70	1/1641 (0.1%)
1	AC	0.48	0/1216	0.70	1/1641 (0.1%)
1	AH	0.48	0/1216	0.70	1/1641 (0.1%)
1	AM	0.48	0/1216	0.70	1/1641 (0.1%)
1	AR	0.48	0/1216	0.70	1/1641 (0.1%)
1	AW	0.48	0/1216	0.70	1/1641 (0.1%)
1	Ab	0.48	0/1216	0.70	1/1641 (0.1%)
1	Ag	0.48	0/1216	0.70	1/1641 (0.1%)
1	Al	0.48	0/1216	0.70	1/1641 (0.1%)
1	Aq	0.48	0/1216	0.70	1/1641 (0.1%)
1	Av	0.48	0/1216	0.70	1/1641 (0.1%)
2	A1	0.55	0/1159	0.70	1/1568 (0.1%)
2	A6	0.55	0/1159	0.70	1/1568 (0.1%)
2	AD	0.55	0/1159	0.70	1/1568 (0.1%)
2	AI	0.55	0/1159	0.70	1/1568 (0.1%)
2	AN	0.55	0/1159	0.70	1/1568 (0.1%)
2	AS	0.55	0/1159	0.70	1/1568 (0.1%)
2	AX	0.55	0/1159	0.70	1/1568 (0.1%)
2	Ac	0.55	0/1159	0.70	1/1568 (0.1%)
2	Ah	0.55	0/1159	0.70	1/1568 (0.1%)
2	Am	0.55	0/1159	0.70	1/1568 (0.1%)
2	Ar	0.55	0/1159	0.70	1/1568 (0.1%)
2	Aw	0.55	0/1159	0.70	1/1568 (0.1%)
3	A2	0.51	0/1237	0.85	5/1670 (0.3%)
3	A3	0.56	0/1237	0.91	4/1670 (0.2%)
3	A7	0.51	0/1237	0.85	5/1670 (0.3%)
3	AA	0.56	0/1237	0.91	4/1670 (0.2%)
3	AE	0.51	0/1237	0.85	5/1670 (0.3%)
3	AF	0.56	0/1237	0.91	4/1670 (0.2%)
3	AJ	0.51	0/1237	0.85	5/1670 (0.3%)
3	AK	0.56	0/1237	0.91	4/1670 (0.2%)
3	AO	0.51	0/1237	0.85	5/1670 (0.3%)
3	AP	0.56	0/1237	0.91	4/1670 (0.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
3	AT	0.51	0/1237	0.85	5/1670 (0.3%)
3	AU	0.56	0/1237	0.91	4/1670 (0.2%)
3	AY	0.51	0/1237	0.85	5/1670 (0.3%)
3	AZ	0.56	0/1237	0.91	4/1670 (0.2%)
3	Ad	0.51	0/1237	0.85	5/1670 (0.3%)
3	Ae	0.56	0/1237	0.91	4/1670 (0.2%)
3	Ai	0.51	0/1237	0.85	5/1670 (0.3%)
3	Aj	0.56	0/1237	0.91	4/1670 (0.2%)
3	An	0.51	0/1237	0.85	5/1670 (0.3%)
3	Ao	0.56	0/1237	0.91	4/1670 (0.2%)
3	As	0.51	0/1237	0.85	5/1670 (0.3%)
3	At	0.56	0/1237	0.91	4/1670 (0.2%)
3	Ax	0.51	0/1237	0.85	5/1670 (0.3%)
3	Ay	0.56	0/1237	0.91	4/1670 (0.2%)
4	A4	0.60	0/1176	0.75	2/1587 (0.1%)
4	AB	0.59	0/1176	0.75	2/1587 (0.1%)
4	AG	0.60	0/1176	0.74	2/1587 (0.1%)
4	AL	0.60	0/1176	0.75	2/1587 (0.1%)
4	AQ	0.59	0/1176	0.75	2/1587 (0.1%)
4	AV	0.60	0/1176	0.74	2/1587 (0.1%)
4	Aa	0.60	0/1176	0.75	2/1587 (0.1%)
4	Af	0.59	0/1176	0.75	2/1587 (0.1%)
4	Ak	0.60	0/1176	0.74	2/1587 (0.1%)
4	Ap	0.60	0/1176	0.75	2/1587 (0.1%)
4	Au	0.59	0/1176	0.75	2/1587 (0.1%)
4	Az	0.60	0/1176	0.74	2/1587 (0.1%)
4	B2	0.56	0/1176	0.80	2/1587 (0.1%)
4	B3	0.60	0/1176	0.81	5/1587 (0.3%)
4	B7	0.56	0/1176	0.80	2/1587 (0.1%)
4	BA	0.60	0/1176	0.81	5/1587 (0.3%)
4	BE	0.56	0/1176	0.80	2/1587 (0.1%)
4	BF	0.60	0/1176	0.81	5/1587 (0.3%)
4	BJ	0.56	0/1176	0.80	2/1587 (0.1%)
4	BK	0.60	0/1176	0.81	5/1587 (0.3%)
4	BO	0.56	0/1176	0.80	2/1587 (0.1%)
4	BP	0.60	0/1176	0.81	5/1587 (0.3%)
4	BT	0.56	0/1176	0.80	2/1587 (0.1%)
4	BU	0.60	0/1176	0.81	5/1587 (0.3%)
4	BY	0.56	0/1176	0.80	2/1587 (0.1%)
4	BZ	0.60	0/1176	0.81	5/1587 (0.3%)
4	Bd	0.56	0/1176	0.80	2/1587 (0.1%)
4	Be	0.60	0/1176	0.81	5/1587 (0.3%)
4	Bi	0.56	0/1176	0.80	2/1587 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
4	Bj	0.60	0/1176	0.81	5/1587 (0.3%)
4	Bn	0.56	0/1176	0.80	2/1587 (0.1%)
4	Bo	0.60	0/1176	0.81	5/1587 (0.3%)
4	Bs	0.56	0/1176	0.80	2/1587 (0.1%)
4	Bt	0.60	0/1176	0.81	5/1587 (0.3%)
4	Bx	0.56	0/1176	0.80	2/1587 (0.1%)
4	By	0.60	0/1176	0.81	5/1587 (0.3%)
5	B0	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	B5	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	BC	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	BH	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	BM	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	BR	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	BW	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	Bb	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	Bg	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	Bl	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	Bq	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	Bv	0.58	1/1159 (0.1%)	0.74	1/1568 (0.1%)
5	C4	0.55	0/1159	0.73	0/1568
5	CB	0.55	0/1159	0.73	0/1568
5	CG	0.55	0/1159	0.73	0/1568
5	CL	0.55	0/1159	0.73	0/1568
5	CQ	0.55	0/1159	0.73	0/1568
5	CV	0.55	0/1159	0.73	0/1568
5	Ca	0.55	0/1159	0.73	0/1568
5	Cf	0.55	0/1159	0.73	0/1568
5	Ck	0.55	0/1159	0.73	0/1568
5	Cp	0.55	0/1159	0.73	0/1568
5	Cu	0.55	0/1159	0.73	0/1568
5	Cz	0.55	0/1159	0.73	0/1568
6	B1	0.53	0/1237	0.81	6/1670 (0.4%)
6	B6	0.53	0/1237	0.81	6/1670 (0.4%)
6	BD	0.53	0/1237	0.81	6/1670 (0.4%)
6	BI	0.53	0/1237	0.81	6/1670 (0.4%)
6	BN	0.53	0/1237	0.81	6/1670 (0.4%)
6	BS	0.53	0/1237	0.81	6/1670 (0.4%)
6	BX	0.53	0/1237	0.81	6/1670 (0.4%)
6	Bc	0.53	0/1237	0.81	6/1670 (0.4%)
6	Bh	0.53	0/1237	0.81	6/1670 (0.4%)
6	Bm	0.53	0/1237	0.81	6/1670 (0.4%)
6	Br	0.53	0/1237	0.81	6/1670 (0.4%)
6	Bw	0.53	0/1237	0.81	6/1670 (0.4%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
7	B4	0.46	0/1215	0.67	1/1641 (0.1%)
7	BB	0.46	0/1215	0.67	1/1641 (0.1%)
7	BG	0.46	0/1215	0.67	1/1641 (0.1%)
7	BL	0.46	0/1215	0.67	1/1641 (0.1%)
7	BQ	0.46	0/1215	0.67	1/1641 (0.1%)
7	BV	0.46	0/1215	0.67	1/1641 (0.1%)
7	Ba	0.46	0/1215	0.67	1/1641 (0.1%)
7	Bf	0.46	0/1215	0.67	1/1641 (0.1%)
7	Bk	0.46	0/1215	0.67	1/1641 (0.1%)
7	Bp	0.46	0/1215	0.67	1/1641 (0.1%)
7	Bu	0.46	0/1215	0.67	1/1641 (0.1%)
7	Bz	0.46	0/1215	0.67	1/1641 (0.1%)
7	C3	0.46	0/1215	0.66	1/1641 (0.1%)
7	CA	0.46	0/1215	0.66	1/1641 (0.1%)
7	CF	0.46	0/1215	0.66	1/1641 (0.1%)
7	CK	0.46	0/1215	0.66	1/1641 (0.1%)
7	CP	0.46	0/1215	0.66	1/1641 (0.1%)
7	CU	0.46	0/1215	0.66	1/1641 (0.1%)
7	CZ	0.46	0/1215	0.66	1/1641 (0.1%)
7	Ce	0.46	0/1215	0.66	1/1641 (0.1%)
7	Cj	0.46	0/1215	0.66	1/1641 (0.1%)
7	Co	0.46	0/1215	0.66	1/1641 (0.1%)
7	Ct	0.46	0/1215	0.66	1/1641 (0.1%)
7	Cy	0.46	0/1215	0.66	1/1641 (0.1%)
8	C0	0.91	0/1789	1.51	30/2418 (1.2%)
8	C5	0.91	0/1789	1.51	30/2418 (1.2%)
8	CC	0.91	0/1789	1.51	30/2418 (1.2%)
8	CH	0.91	0/1789	1.51	30/2418 (1.2%)
8	CM	0.91	0/1789	1.51	30/2418 (1.2%)
8	CR	0.91	0/1789	1.51	30/2418 (1.2%)
8	CW	0.91	0/1789	1.51	30/2418 (1.2%)
8	Cb	0.91	0/1789	1.51	30/2418 (1.2%)
8	Cg	0.91	0/1789	1.51	30/2418 (1.2%)
8	Cl	0.91	0/1789	1.51	30/2418 (1.2%)
8	Cq	0.91	0/1789	1.51	30/2418 (1.2%)
8	Cv	0.91	0/1789	1.51	30/2418 (1.2%)
9	C1	0.84	0/1786	1.26	17/2412 (0.7%)
9	C6	0.84	0/1786	1.26	17/2412 (0.7%)
9	CD	0.84	0/1786	1.26	17/2412 (0.7%)
9	CI	0.84	0/1786	1.26	17/2412 (0.7%)
9	CN	0.84	0/1786	1.26	17/2412 (0.7%)
9	CS	0.84	0/1786	1.26	17/2412 (0.7%)
9	CX	0.84	0/1786	1.26	17/2412 (0.7%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
9	Cc	0.84	0/1786	1.26	17/2412 (0.7%)
9	Ch	0.84	0/1786	1.26	17/2412 (0.7%)
9	Cm	0.84	0/1786	1.26	17/2412 (0.7%)
9	Cr	0.84	0/1786	1.26	17/2412 (0.7%)
9	Cw	0.84	0/1786	1.26	17/2412 (0.7%)
10	C2	0.88	1/1752 (0.1%)	1.77	16/2362 (0.7%)
10	C7	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	CE	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	CJ	0.88	1/1752 (0.1%)	1.77	16/2362 (0.7%)
10	CO	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	CT	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	CY	0.88	1/1752 (0.1%)	1.77	16/2362 (0.7%)
10	Cd	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	Ci	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	Cn	0.88	1/1752 (0.1%)	1.77	16/2362 (0.7%)
10	Cs	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
10	Cx	0.88	1/1752 (0.1%)	1.77	15/2362 (0.6%)
All	All	0.65	24/236268 (0.0%)	1.03	1096/319080 (0.3%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A0	0	1
1	A5	0	1
1	AC	0	1
1	AH	0	1
1	AM	0	1
1	AR	0	1
1	AW	0	1
1	Ab	0	1
1	Ag	0	1
1	Al	0	1
1	Aq	0	1
1	Av	0	1
3	A2	0	1
3	A3	0	2
3	A7	0	1
3	AA	0	2
3	AE	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
3	AF	0	2
3	AJ	0	1
3	AK	0	2
3	AO	0	1
3	AP	0	2
3	AT	0	1
3	AU	0	2
3	AY	0	1
3	AZ	0	2
3	Ad	0	1
3	Ae	0	2
3	Ai	0	1
3	Aj	0	2
3	An	0	1
3	Ao	0	2
3	As	0	1
3	At	0	2
3	Ax	0	1
3	Ay	0	2
4	A4	0	1
4	AB	0	1
4	AG	0	1
4	AL	0	1
4	AQ	0	1
4	AV	0	1
4	Aa	0	1
4	Af	0	1
4	Ak	0	1
4	Ap	0	1
4	Au	0	1
4	Az	0	1
4	B2	0	2
4	B3	0	2
4	B7	0	2
4	BA	0	2
4	BE	0	2
4	BF	0	2
4	BJ	0	2
4	BK	0	2
4	BO	0	2
4	BP	0	2
4	BT	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
4	BU	0	2
4	BY	0	2
4	BZ	0	2
4	Bd	0	2
4	Be	0	2
4	Bi	0	2
4	Bj	0	2
4	Bn	0	2
4	Bo	0	2
4	Bs	0	2
4	Bt	0	2
4	Bx	0	2
4	By	0	2
5	B0	0	2
5	B5	0	2
5	BC	0	2
5	BH	0	2
5	BM	0	2
5	BR	0	2
5	BW	0	2
5	Bb	0	2
5	Bg	0	2
5	Bl	0	2
5	Bq	0	2
5	Bv	0	2
5	C4	0	1
5	CB	0	1
5	CG	0	1
5	CL	0	1
5	CQ	0	1
5	CV	0	1
5	Ca	0	1
5	Cf	0	1
5	Ck	0	1
5	Cp	0	1
5	Cu	0	1
5	Cz	0	1
6	B1	0	1
6	B6	0	1
6	BD	0	1
6	BI	0	1
6	BN	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
6	BS	0	1
6	BX	0	1
6	Bc	0	1
6	Bh	0	1
6	Bm	0	1
6	Br	0	1
6	Bw	0	1
7	B4	0	3
7	BB	0	3
7	BG	0	3
7	BL	0	3
7	BQ	0	3
7	BV	0	3
7	Ba	0	3
7	Bf	0	3
7	Bk	0	3
7	Bp	0	3
7	Bu	0	3
7	Bz	0	3
7	C3	0	2
7	CA	0	2
7	CF	0	2
7	CK	0	2
7	CP	0	2
7	CU	0	2
7	CZ	0	2
7	Ce	0	2
7	Cj	0	2
7	Co	0	2
7	Ct	0	2
7	Cy	0	2
8	C0	0	12
8	C5	0	12
8	CC	0	12
8	CH	0	12
8	CM	0	12
8	CR	0	12
8	CW	0	12
8	Cb	0	12
8	Cg	0	12
8	Cl	0	12
8	Cq	0	12

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Mol	Chain	#Chirality outliers	#Planarity outliers
8	Cv	0	12
9	C1	0	10
9	C6	0	10
9	CD	0	10
9	CI	0	10
9	CN	0	10
9	CS	0	10
9	CX	0	10
9	Cc	0	10
9	Ch	0	10
9	Cm	0	10
9	Cr	0	10
9	Cw	0	10
10	C2	0	8
10	C7	0	8
10	CE	0	8
10	CJ	0	8
10	CO	0	8
10	CT	0	8
10	CY	0	8
10	Cd	0	8
10	Ci	0	8
10	Cn	0	8
10	Cs	0	8
10	Cx	0	8
All	All	0	576

The worst 5 of 24 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	C7	57	LEU	C-N	12.30	1.62	1.34
10	CO	57	LEU	C-N	12.30	1.62	1.34
10	Cd	57	LEU	C-N	12.30	1.62	1.34
10	Cs	57	LEU	C-N	12.30	1.62	1.34
10	C2	57	LEU	C-N	12.29	1.62	1.34

The worst 5 of 1096 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	CE	57	LEU	O-C-N	-59.80	27.02	122.70
10	CT	57	LEU	O-C-N	-59.80	27.02	122.70
10	Ci	57	LEU	O-C-N	-59.80	27.02	122.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	Cx	57	LEU	O-C-N	-59.80	27.02	122.70
10	C7	57	LEU	O-C-N	-59.79	27.03	122.70

There are no chirality outliers.

5 of 576 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A0	150	ARG	Sidechain
3	A2	23	TRP	Peptide
3	A3	23	TRP	Peptide
3	A3	27	PHE	Peptide
4	A4	142	LYS	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	A0	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	A5	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	AC	147/149 (99%)	125 (85%)	21 (14%)	1 (1%)	22	63
1	AH	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	AM	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	AR	147/149 (99%)	125 (85%)	21 (14%)	1 (1%)	22	63
1	AW	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	Ab	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	Ag	147/149 (99%)	125 (85%)	21 (14%)	1 (1%)	22	63

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Al	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	Aq	147/149 (99%)	124 (84%)	22 (15%)	1 (1%)	22	63
1	Av	147/149 (99%)	125 (85%)	21 (14%)	1 (1%)	22	63
2	A1	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	A6	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	AD	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	AI	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	AN	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	AS	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	AX	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	Ac	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	Ah	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	Am	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	Ar	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
2	Aw	138/140 (99%)	118 (86%)	19 (14%)	1 (1%)	22	63
3	A2	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	A3	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	A7	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AA	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AE	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AF	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AJ	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AK	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AO	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AP	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AT	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AU	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AY	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	AZ	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	Ad	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	Ae	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	Ai	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	Aj	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	An	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	Ao	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	As	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	At	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	Ax	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
3	Ay	145/147 (99%)	123 (85%)	18 (12%)	4 (3%)	5	30
4	A4	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	AB	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	AG	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	AL	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	AQ	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	AV	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Aa	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	Af	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	Ak	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Ap	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	Au	143/145 (99%)	124 (87%)	19 (13%)	0	100	100
4	Az	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	B2	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	B3	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	B7	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	BA	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	BE	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	BF	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	BJ	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	BK	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	BO	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	BP	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	BT	143/145 (99%)	128 (90%)	15 (10%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	BU	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	BY	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	BZ	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Bd	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	Be	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Bi	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	Bj	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Bn	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	Bo	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Bs	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	Bt	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
4	Bx	143/145 (99%)	128 (90%)	15 (10%)	0	100	100
4	By	143/145 (99%)	125 (87%)	18 (13%)	0	100	100
5	B0	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	B5	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	BC	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	BH	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	BM	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	BR	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	BW	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Bb	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Bg	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Bl	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Bq	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Bv	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	C4	138/158 (87%)	119 (86%)	18 (13%)	1 (1%)	22	63
5	CB	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	CG	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	CL	138/158 (87%)	119 (86%)	18 (13%)	1 (1%)	22	63
5	CQ	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	CV	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	Ca	138/158 (87%)	119 (86%)	18 (13%)	1 (1%)	22	63
5	Cf	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Ck	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Cp	138/158 (87%)	119 (86%)	18 (13%)	1 (1%)	22	63
5	Cu	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
5	Cz	138/158 (87%)	118 (86%)	19 (14%)	1 (1%)	22	63
6	B1	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	B6	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	BD	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	BI	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	BN	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	BS	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	BX	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	Bc	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	Bh	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	Bm	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	Br	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
6	Bw	145/151 (96%)	119 (82%)	21 (14%)	5 (3%)	3	26
7	B4	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	BB	147/170 (86%)	125 (85%)	20 (14%)	2 (1%)	11	46
7	BG	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	BL	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	BQ	147/170 (86%)	125 (85%)	20 (14%)	2 (1%)	11	46
7	BV	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	Ba	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	Bf	147/170 (86%)	125 (85%)	20 (14%)	2 (1%)	11	46
7	Bk	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	Bp	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	Bu	147/170 (86%)	125 (85%)	20 (14%)	2 (1%)	11	46
7	Bz	147/170 (86%)	124 (84%)	21 (14%)	2 (1%)	11	46
7	C3	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	CA	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	CF	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	CK	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	CP	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	CU	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	CZ	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	Ce	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	Cj	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	Co	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	Ct	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
7	Cy	147/170 (86%)	125 (85%)	21 (14%)	1 (1%)	22	63
8	C0	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	C5	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	CC	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	CH	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	CM	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	CR	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	CW	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	Cb	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	Cg	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	Cl	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	Cq	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
8	Cv	211/240 (88%)	190 (90%)	17 (8%)	4 (2%)	8	38
9	C1	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	C6	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	CD	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	CI	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	CN	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	CS	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	CX	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	Cc	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	Ch	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	Cm	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	Cr	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
9	Cw	216/288 (75%)	201 (93%)	13 (6%)	2 (1%)	17	57
10	C2	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	C7	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	CE	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	CJ	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	CO	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	CT	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	CY	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	Cd	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	Ci	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	Cn	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	Cs	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
10	Cx	213/240 (89%)	184 (86%)	23 (11%)	6 (3%)	5	30
All	All	28308/31116 (91%)	24544 (87%)	3380 (12%)	384 (1%)	15	46

5 of 384 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A2	29	ASP
3	A2	87	THR
3	A3	87	THR
3	A7	29	ASP
3	A7	87	THR

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	A0	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	A5	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	AC	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	AH	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	AM	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	AR	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	AW	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	Ab	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	Ag	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	Al	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	Aq	128/128 (100%)	119 (93%)	9 (7%)	15	40
1	Av	128/128 (100%)	119 (93%)	9 (7%)	15	40
2	A1	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	A6	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	AD	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	AI	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	AN	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	AS	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	AX	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	Ac	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	Ah	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	Am	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	Ar	121/121 (100%)	107 (88%)	14 (12%)	5	21
2	Aw	121/121 (100%)	107 (88%)	14 (12%)	5	21
3	A2	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	A3	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	A7	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	AA	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	AE	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	AF	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	AJ	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	AK	131/131 (100%)	118 (90%)	13 (10%)	8	26

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	AO	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	AP	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	AT	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	AU	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	AY	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	AZ	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	Ad	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	Ae	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	Ai	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	Aj	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	An	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	Ao	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	As	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	At	131/131 (100%)	118 (90%)	13 (10%)	8	26
3	Ax	131/131 (100%)	114 (87%)	17 (13%)	4	18
3	Ay	131/131 (100%)	118 (90%)	13 (10%)	8	26
4	A4	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	AB	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	AG	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	AL	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	AQ	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	AV	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Aa	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Af	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Ak	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Ap	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Au	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Az	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	B2	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	B3	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	B7	117/117 (100%)	107 (92%)	10 (8%)	10	33

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	BA	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	BE	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	BF	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	BJ	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	BK	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	BO	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	BP	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	BT	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	BU	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	BY	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	BZ	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Bd	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	Be	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Bi	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	Bj	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Bn	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	Bo	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Bs	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	Bt	117/117 (100%)	104 (89%)	13 (11%)	6	22
4	Bx	117/117 (100%)	107 (92%)	10 (8%)	10	33
4	By	117/117 (100%)	104 (89%)	13 (11%)	6	22
5	B0	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	B5	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	BC	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	BH	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	BM	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	BR	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	BW	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	Bb	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	Bg	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	Bl	121/135 (90%)	111 (92%)	10 (8%)	11	34

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	Bq	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	Bv	121/135 (90%)	111 (92%)	10 (8%)	11	34
5	C4	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	CB	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	CG	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	CL	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	CQ	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	CV	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	Ca	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	Cf	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	Ck	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	Cp	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	Cu	121/135 (90%)	112 (93%)	9 (7%)	13	38
5	Cz	121/135 (90%)	112 (93%)	9 (7%)	13	38
6	B1	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	B6	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	BD	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	BI	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	BN	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	BS	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	BX	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	Bc	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	Bh	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	Bm	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	Br	131/134 (98%)	117 (89%)	14 (11%)	6	23
6	Bw	131/134 (98%)	117 (89%)	14 (11%)	6	23
7	B4	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	BB	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	BG	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	BL	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	BQ	128/145 (88%)	120 (94%)	8 (6%)	18	43

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
7	BV	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	Ba	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	Bf	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	Bk	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	Bp	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	Bu	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	Bz	128/145 (88%)	120 (94%)	8 (6%)	18	43
7	C3	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	CA	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	CF	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	CK	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	CP	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	CU	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	CZ	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	Ce	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	Cj	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	Co	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	Ct	128/145 (88%)	119 (93%)	9 (7%)	15	40
7	Cy	128/145 (88%)	119 (93%)	9 (7%)	15	40
8	C0	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	C5	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	CC	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	CH	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	CM	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	CR	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	CW	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	Cb	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	Cg	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	Cl	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	Cq	195/212 (92%)	147 (75%)	48 (25%)	0	3
8	Cv	195/212 (92%)	147 (75%)	48 (25%)	0	3

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
9	C1	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	C6	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	CD	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	CI	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	CN	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	CS	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	CX	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	Cc	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	Ch	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	Cm	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	Cr	193/241 (80%)	154 (80%)	39 (20%)	1	7
9	Cw	193/241 (80%)	154 (80%)	39 (20%)	1	7
10	C2	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	C7	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	CE	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	CJ	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	CO	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	CT	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	CY	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	Cd	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	Ci	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	Cn	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	Cs	193/211 (92%)	158 (82%)	35 (18%)	1	10
10	Cx	193/211 (92%)	158 (82%)	35 (18%)	1	10
All	All	24864/26640 (93%)	21732 (87%)	3132 (13%)	8	19

5 of 3132 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
10	CE	199	ARG
8	CW	9	ARG
8	CH	159	ASP
10	CE	184	ASP
9	CN	140	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 662 such sidechains are listed below:

Mol	Chain	Res	Type
10	CJ	10	HIS
8	Cg	186	GLN
8	CM	11	GLN
9	CI	217	GLN
5	CV	96	HIS

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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
8	C0	2
8	C5	2
8	CC	2
8	CH	2
8	CM	2

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Mol	Chain	Number of breaks
8	CR	2
8	CW	2
8	Cb	2
8	Cg	2
8	Cl	2
8	Cq	2
8	Cv	2
9	C1	1
9	C6	1
9	CD	1
9	CI	1
9	CN	1
9	CS	1
9	CX	1
9	Cc	1
9	Ch	1
9	Cm	1
9	Cr	1
9	Cw	1
10	C2	1
10	C7	1
10	CE	1
10	CJ	1
10	CO	1
10	CT	1
10	CY	1
10	Cd	1
10	Ci	1
10	Cn	1
10	Cs	1
10	Cx	1

The worst 5 of 48 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	C0	57:LEU	C	58:GLU	N	4.76
1	C5	57:LEU	C	58:GLU	N	4.76
1	CC	57:LEU	C	58:GLU	N	4.76
1	CH	57:LEU	C	58:GLU	N	4.76
1	CM	57:LEU	C	58:GLU	N	4.76

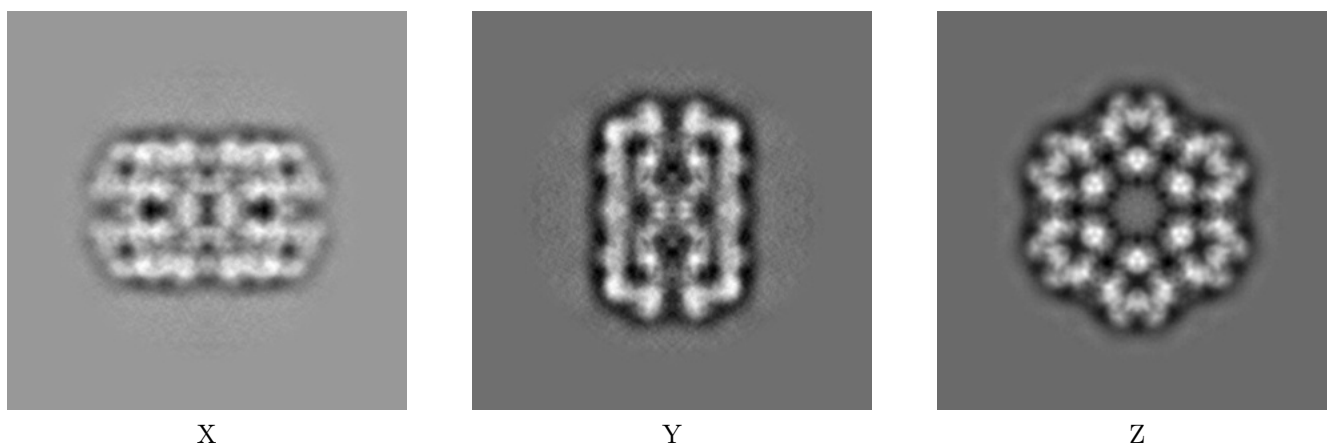
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-2627. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

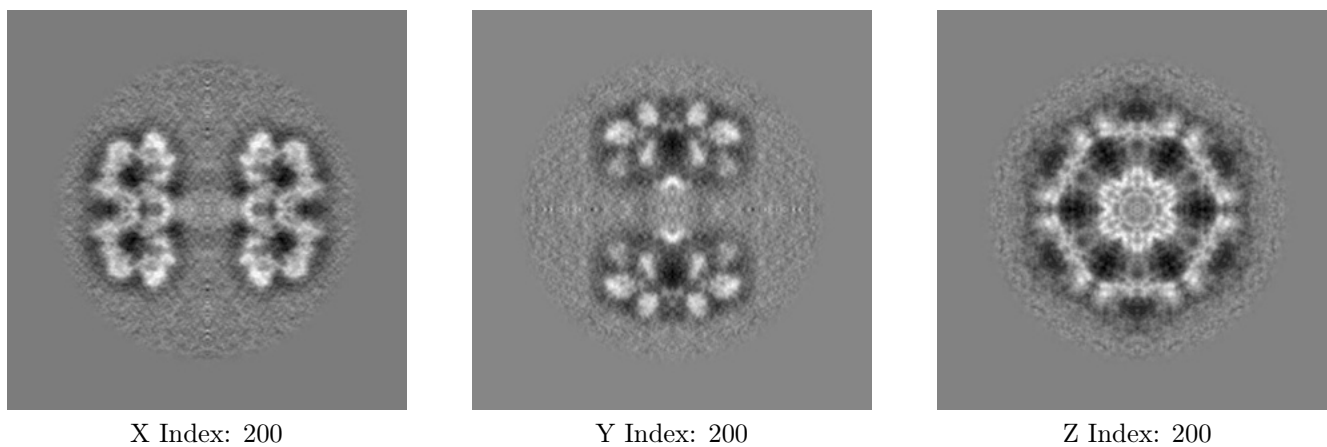
6.1.1 Primary map



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

6.2 Central slices [i](#)

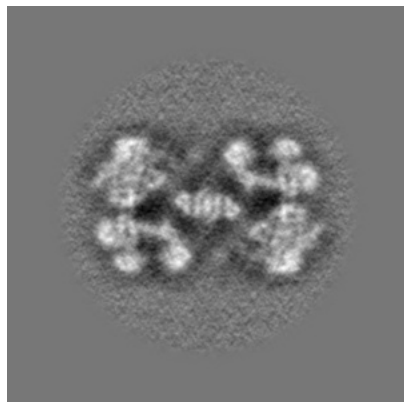
6.2.1 Primary map



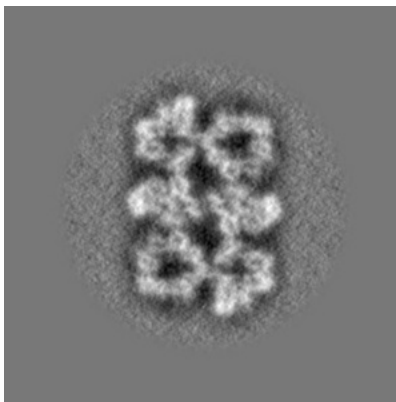
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

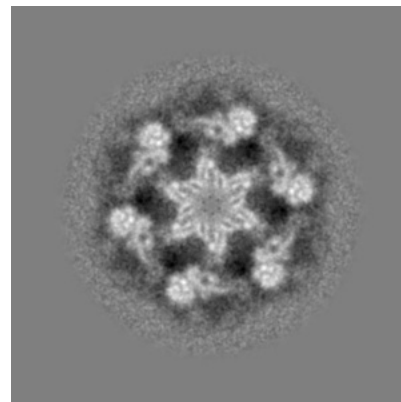
6.3.1 Primary map



X Index: 173



Y Index: 151



Z Index: 205

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

6.4 Orthogonal surface views [i](#)

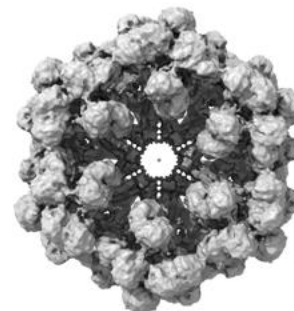
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.042. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

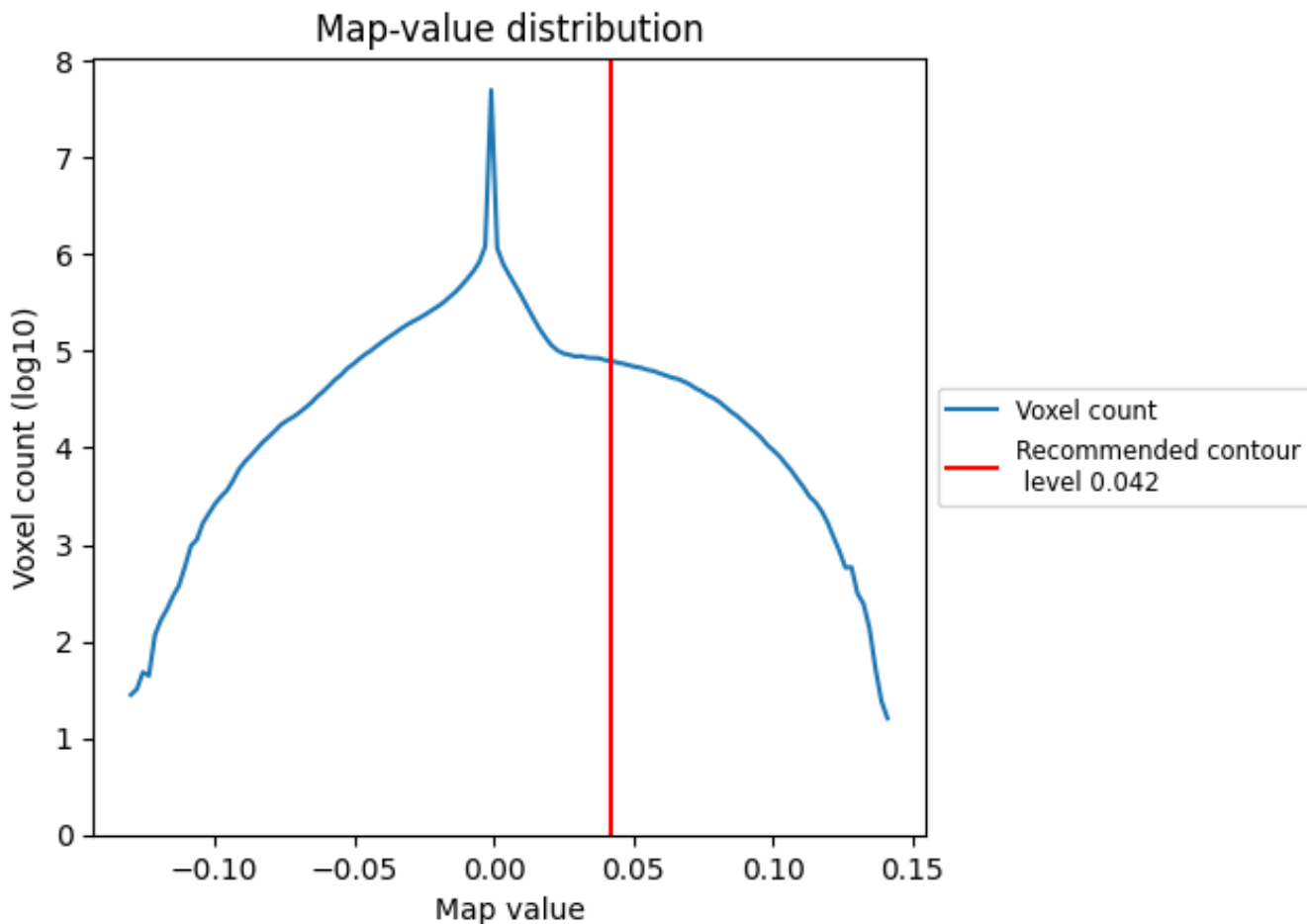
6.5 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

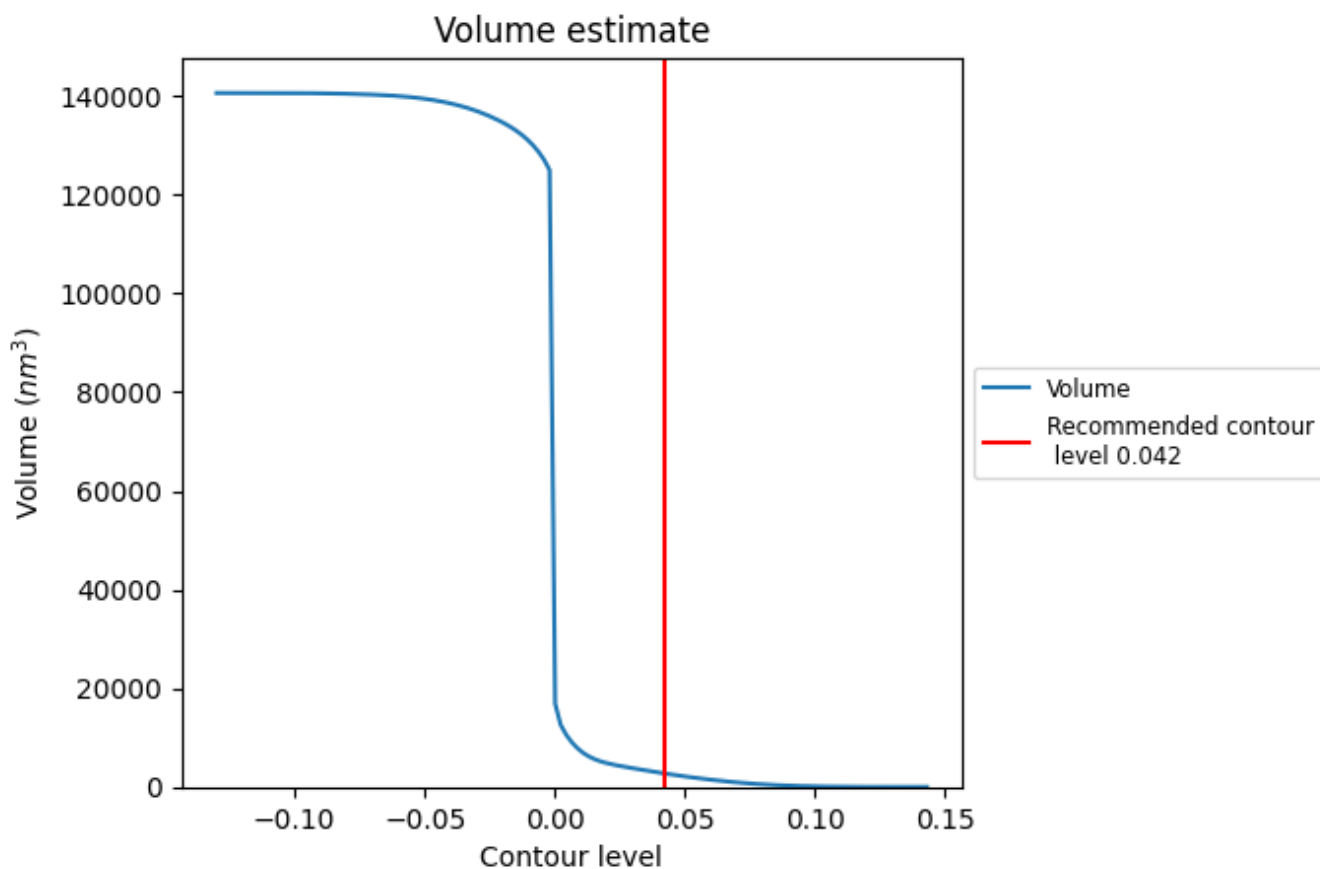
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

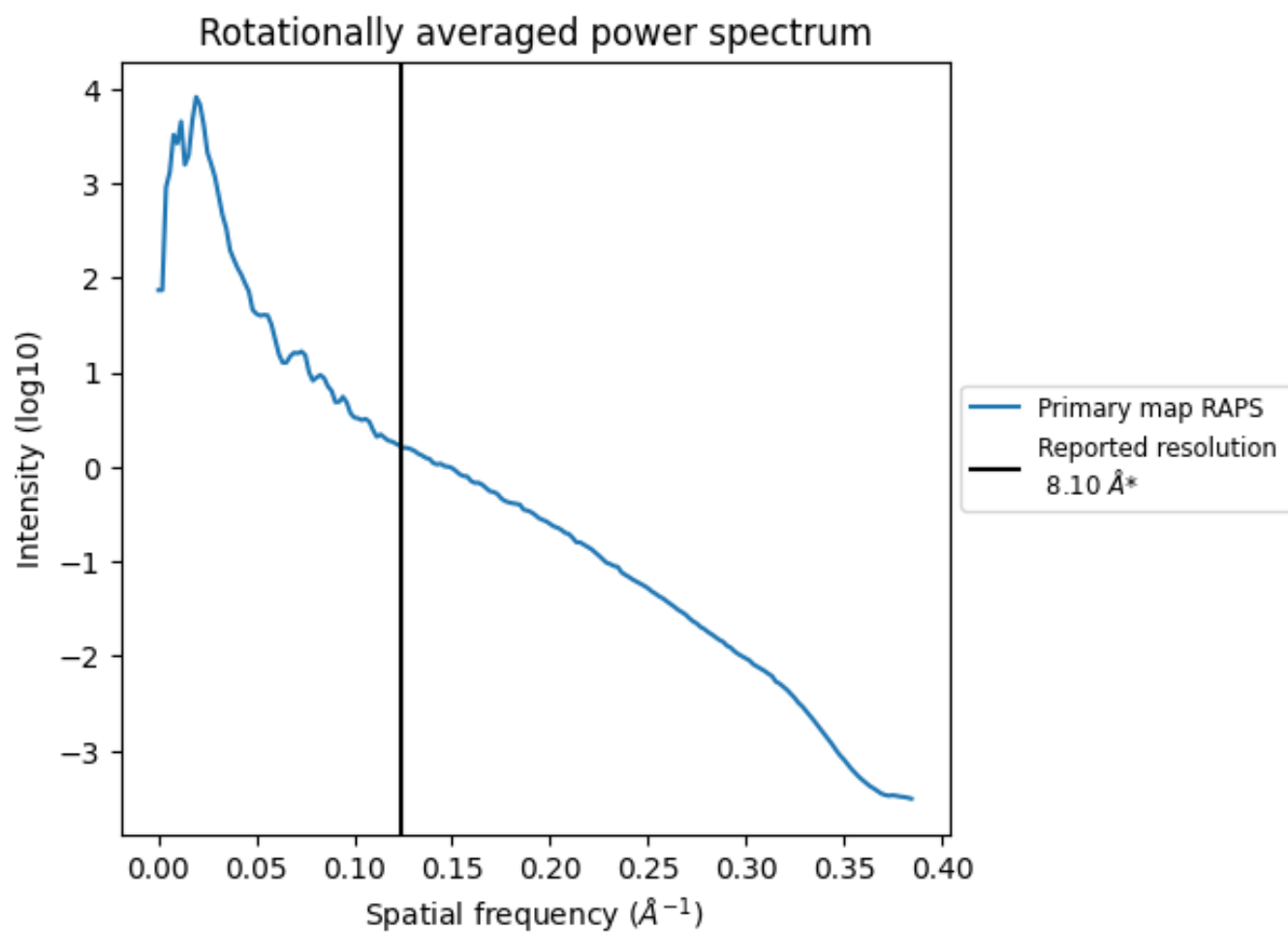
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2748 nm^3 ; this corresponds to an approximate mass of 2483 kDa.

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

7.3 Rotationally averaged power spectrum [i](#)



*Reported resolution corresponds to spatial frequency of 0.123\AA^{-1}

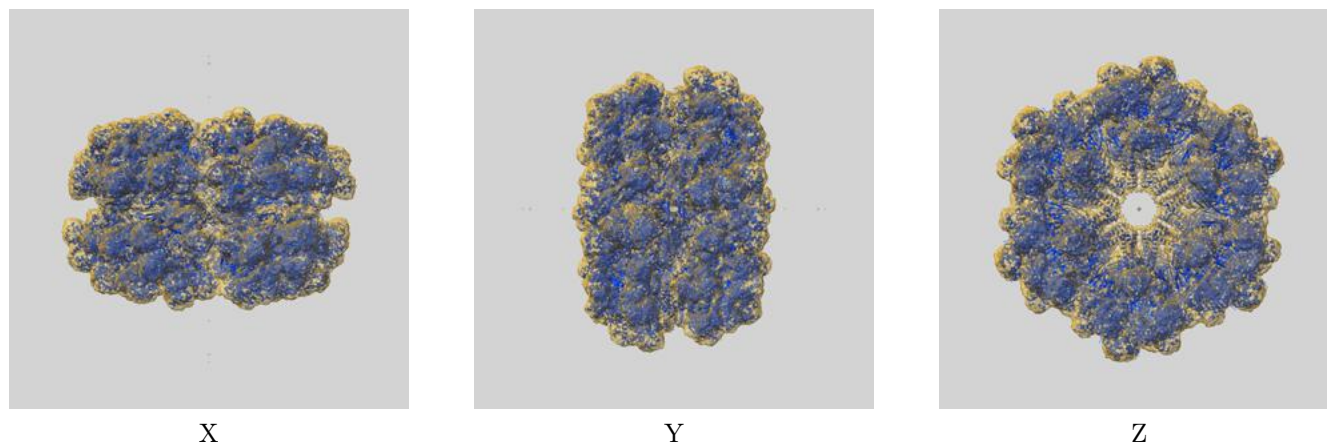
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

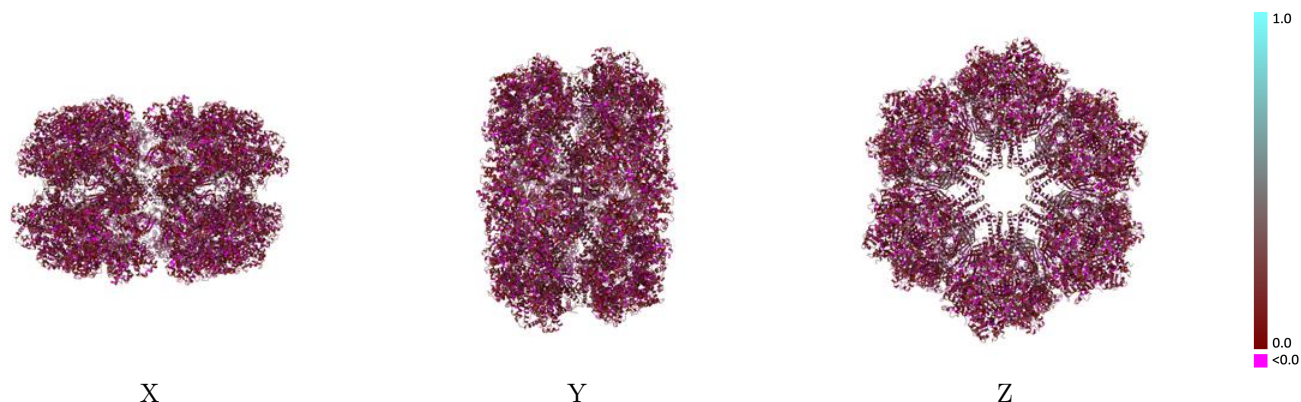
This section contains information regarding the fit between EMDB map EMD-2627 and PDB model 4V93. Per-residue inclusion information can be found in section 3 on page 23.

9.1 Map-model overlay [i](#)



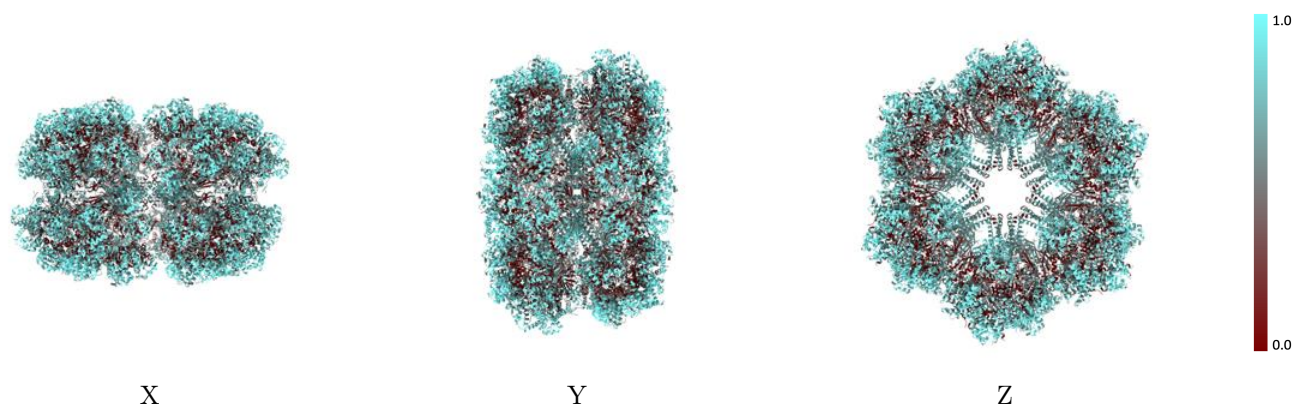
The images above show the 3D surface view of the map at the recommended contour level 0.042 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



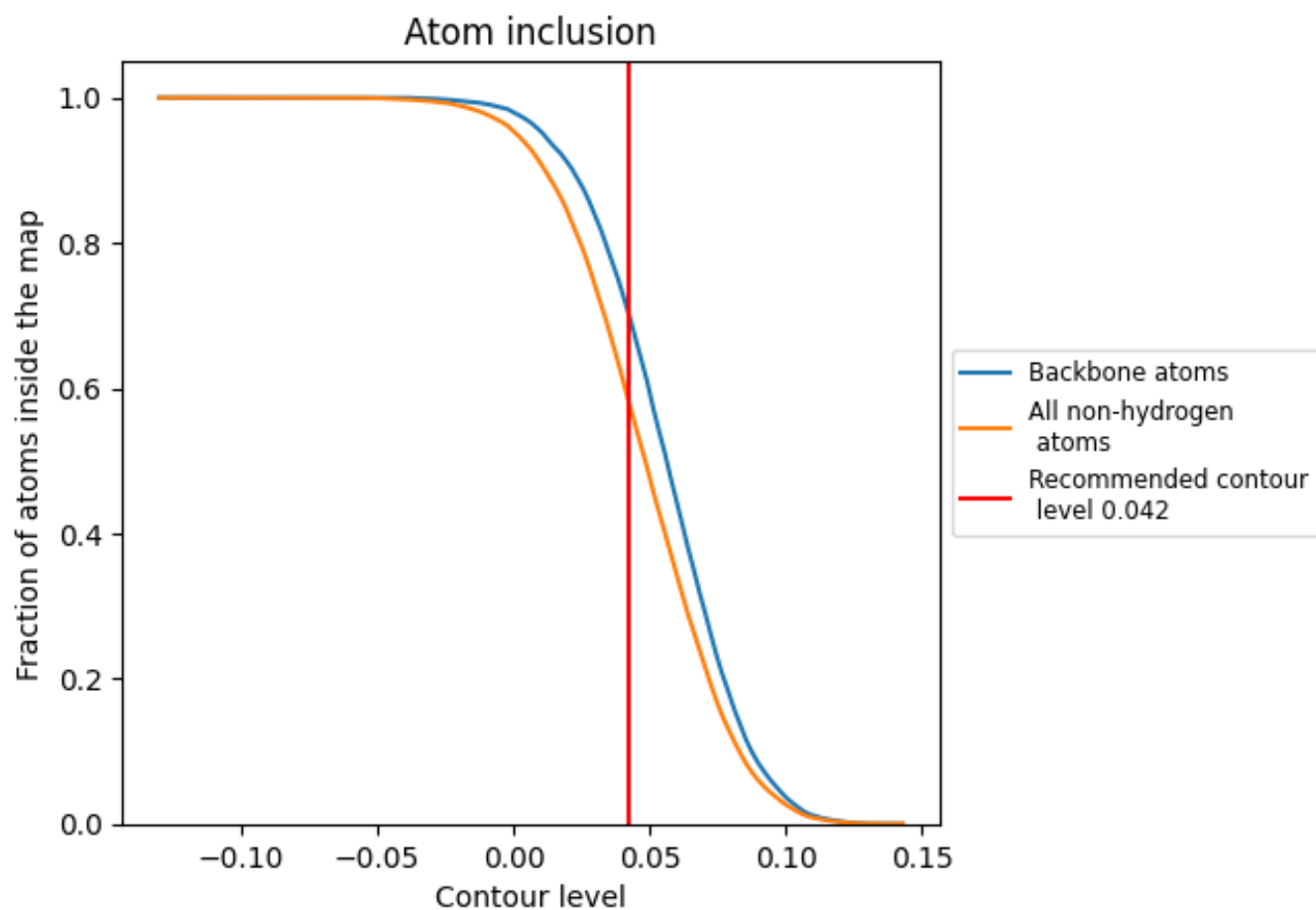
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.042).

9.4 Atom inclusion [i](#)



At the recommended contour level, 71% of all backbone atoms, 59% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary





















































































The table lists the average atom inclusion at the recommended contour level (0.042) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5867	0.1070
A0	0.5473	0.1090
A1	0.6724	0.1140
A2	0.6221	0.1040
A3	0.7115	0.1110
A4	0.6601	0.1230
A5	0.5448	0.1080
A6	0.6715	0.1130
A7	0.6213	0.1070
AA	0.7132	0.1160
AB	0.6610	0.1270
AC	0.5465	0.1110
AD	0.6697	0.1140
AE	0.6187	0.1050
AF	0.7081	0.1140
AG	0.6619	0.1260
AH	0.5473	0.1090
AI	0.6724	0.1140
AJ	0.6221	0.1050
AK	0.7115	0.1140
AL	0.6601	0.1250
AM	0.5448	0.1080
AN	0.6715	0.1120
AO	0.6213	0.1060
AP	0.7132	0.1140
AQ	0.6610	0.1260
AR	0.5465	0.1090
AS	0.6697	0.1120
AT	0.6187	0.1060
AU	0.7081	0.1150
AV	0.6619	0.1270
AW	0.5473	0.1120
AX	0.6724	0.1170
AY	0.6221	0.1040
AZ	0.7115	0.1150



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Chain	Atom inclusion	Q-score
Aa	 0.6601	 0.1250
Ab	 0.5448	 0.1120
Ac	 0.6715	 0.1160
Ad	 0.6213	 0.1050
Ae	 0.7132	 0.1130
Af	 0.6610	 0.1250
Ag	 0.5465	 0.1070
Ah	 0.6697	 0.1110
Ai	 0.6187	 0.1070
Aj	 0.7081	 0.1120
Ak	 0.6619	 0.1230
Al	 0.5473	 0.1080
Am	 0.6724	 0.1150
An	 0.6221	 0.1040
Ao	 0.7115	 0.1120
Ap	 0.6601	 0.1210
Aq	 0.5448	 0.1060
Ar	 0.6715	 0.1150
As	 0.6213	 0.1050
At	 0.7132	 0.1110
Au	 0.6601	 0.1220
Av	 0.5465	 0.1070
Aw	 0.6697	 0.1140
Ax	 0.6187	 0.1060
Ay	 0.7081	 0.1100
Az	 0.6619	 0.1240
B0	 0.7282	 0.1310
B1	 0.5447	 0.0870
B2	 0.6059	 0.1130
B3	 0.5240	 0.0950
B4	 0.6596	 0.1200
B5	 0.7255	 0.1300
B6	 0.5430	 0.0850
B7	 0.6077	 0.1150
BA	 0.5231	 0.0900
BB	 0.6604	 0.1230
BC	 0.7264	 0.1250
BD	 0.5455	 0.0830
BE	 0.6085	 0.1150
BF	 0.5196	 0.0920
BG	 0.6570	 0.1230
BH	 0.7282	 0.1280

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Chain	Atom inclusion	Q-score
BI	0.5447	0.0850
BJ	0.6059	0.1170
BK	0.5240	0.0980
BL	0.6596	0.1240
BM	0.7255	0.1290
BN	0.5430	0.0810
BO	0.6077	0.1160
BP	0.5231	0.0950
BQ	0.6604	0.1270
BR	0.7264	0.1290
BS	0.5455	0.0830
BT	0.6085	0.1140
BU	0.5196	0.0930
BV	0.6570	0.1230
BW	0.7282	0.1290
BX	0.5447	0.0840
BY	0.6059	0.1120
BZ	0.5240	0.0940
Ba	0.6596	0.1220
Bb	0.7255	0.1280
Bc	0.5430	0.0820
Bd	0.6077	0.1120
Be	0.5231	0.0910
Bf	0.6604	0.1180
Bg	0.7264	0.1280
Bh	0.5455	0.0830
Bi	0.6085	0.1170
Bj	0.5196	0.0880
Bk	0.6570	0.1190
Bl	0.7282	0.1310
Bm	0.5447	0.0820
Bn	0.6059	0.1170
Bo	0.5240	0.0900
Bp	0.6596	0.1220
Bq	0.7255	0.1290
Br	0.5430	0.0810
Bs	0.6077	0.1160
Bt	0.5231	0.0880
Bu	0.6604	0.1220
Bv	0.7264	0.1300
Bw	0.5455	0.0840
Bx	0.6085	0.1140









































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Chain	Atom inclusion	Q-score
By	0.5196	0.0900
Bz	0.6570	0.1200
C0	0.4218	0.0950
C1	0.4210	0.0940
C2	0.5453	0.1010
C3	0.6288	0.0980
C4	0.7012	0.1200
C5	0.4194	0.0960
C6	0.4233	0.0950
C7	0.5459	0.1040
CA	0.6323	0.0990
CB	0.7012	0.1150
CC	0.4200	0.0980
CD	0.4227	0.0990
CE	0.5441	0.1020
CF	0.6305	0.0990
CG	0.7057	0.1160
CH	0.4218	0.0960
CI	0.4210	0.0990
CJ	0.5453	0.1040
CK	0.6288	0.0980
CL	0.7012	0.1130
CM	0.4194	0.0960
CN	0.4233	0.0990
CO	0.5459	0.1050
CP	0.6323	0.0970
CQ	0.7012	0.1140
CR	0.4200	0.0970
CS	0.4227	0.0980
CT	0.5441	0.1040
CU	0.6305	0.0950
CV	0.7057	0.1170
CW	0.4218	0.0960
CX	0.4210	0.0970
CY	0.5453	0.1030
CZ	0.6288	0.0960
Ca	0.7012	0.1190
Cb	0.4194	0.0970
Cc	0.4233	0.0970
Cd	0.5459	0.1020
Ce	0.6323	0.1020
Cf	0.7012	0.1190

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Chain	Atom inclusion	Q-score
Cg	 0.4200	 0.0960
Ch	 0.4227	 0.0970
Ci	 0.5441	 0.1040
Cj	 0.6305	 0.1010
Ck	 0.7057	 0.1180
Cl	 0.4218	 0.0940
Cm	 0.4210	 0.0960
Cn	 0.5453	 0.1050
Co	 0.6288	 0.0980
Cp	 0.7012	 0.1170
Cq	 0.4194	 0.0940
Cr	 0.4233	 0.0960
Cs	 0.5459	 0.1030
Ct	 0.6323	 0.0970
Cu	 0.7012	 0.1170
Cv	 0.4200	 0.0960
Cw	 0.4227	 0.0950
Cx	 0.5441	 0.1030
Cy	 0.6305	 0.0960
Cz	 0.7057	 0.1190