W O R L D W I D E
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P R O T E I N   D A T A   B A N K

wwPDB X-ray Structure Validation Summary Report ⓘ

Oct 31, 2023 – 11:50 AM JST

PDB ID	:	5CDI
Title	:	Chloroplast chaperonin 60b1 of Chlamydomonas
Authors	:	Zhang, S.; Zhou, H.; Yu, F.; Gao, F.; He, J.; Liu, C.
Deposited on	:	2015-07-04
Resolution	:	3.81 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ 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:

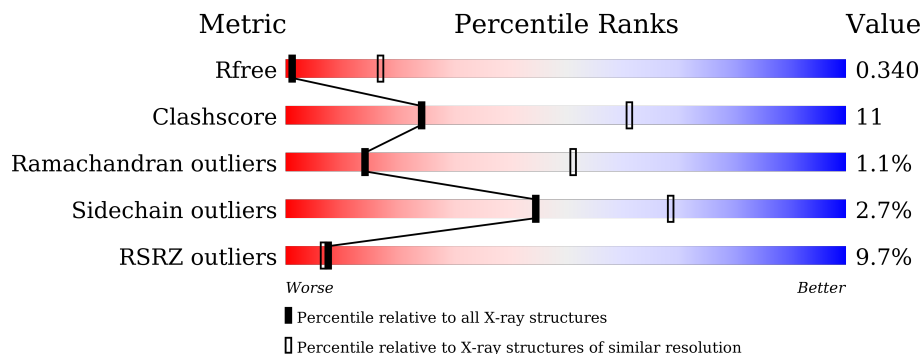|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.81 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	Percentile Ranks	Value
Rfree		0.340
Clashscore		11
Ramachandran outliers		1.1%
Sidechain outliers		2.7%
RSRZ outliers		9.7%

Worse — *Better*

■ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1212 (4.00-3.60)
Clashscore	141614	1288 (4.00-3.60)
Ramachandran outliers	138981	1243 (4.00-3.60)
Sidechain outliers	138945	1237 (4.00-3.60)
RSRZ outliers	127900	1121 (4.00-3.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	552	8% / 69% / 25% · ·
1	B	552	7% / 76% / 18% · ·
1	C	552	7% / 74% / 21% · ·
1	D	552	6% / 73% / 22% · ·
1	E	552	5% / 65% / 26% · ·
1	F	552	6% / 76% / 18% · ·

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Mol	Chain	Length	Quality of chain
1	G	552	9% 74% 21% · ·
1	H	552	9% 75% 20% · ·
1	I	552	11% 74% 21% · ·
1	J	552	10% 74% 21% · ·
1	K	552	12% 76% 19% · ·
1	L	552	14% 75% 20% · ·
1	M	552	14% 75% 20% · ·
1	N	552	11% 78% 17% · ·

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 55706 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Chaperonin 60B1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	N	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	B	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	C	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	D	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	E	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	F	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	G	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	H	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	I	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	J	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	K	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	L	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			
1	M	528	Total	C	N	O	S	0	0	0
			3979	2471	696	788	24			

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	expression tag	UNP A8JE91

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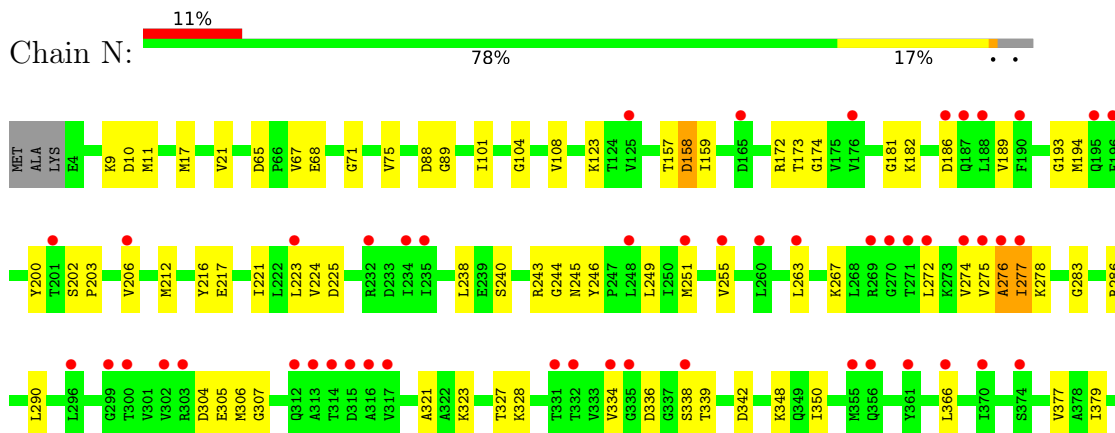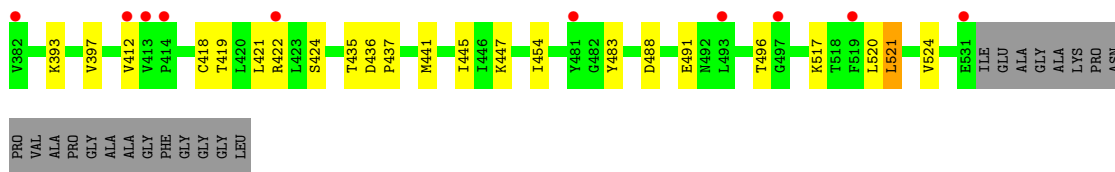| Chain	Residue	Modelled	Actual	Comment	Reference
A	138	VAL	-	see sequence details	UNP A8JE91
N	1	MET	-	expression tag	UNP A8JE91
N	138	VAL	-	see sequence details	UNP A8JE91
B	1	MET	-	expression tag	UNP A8JE91
B	138	VAL	-	see sequence details	UNP A8JE91
C	1	MET	-	expression tag	UNP A8JE91
C	138	VAL	-	see sequence details	UNP A8JE91
D	1	MET	-	expression tag	UNP A8JE91
D	138	VAL	-	see sequence details	UNP A8JE91
E	1	MET	-	expression tag	UNP A8JE91
E	138	VAL	-	see sequence details	UNP A8JE91
F	1	MET	-	expression tag	UNP A8JE91
F	138	VAL	-	see sequence details	UNP A8JE91
G	1	MET	-	expression tag	UNP A8JE91
G	138	VAL	-	see sequence details	UNP A8JE91
H	1	MET	-	expression tag	UNP A8JE91
H	138	VAL	-	see sequence details	UNP A8JE91
I	1	MET	-	expression tag	UNP A8JE91
I	138	VAL	-	see sequence details	UNP A8JE91
J	1	MET	-	expression tag	UNP A8JE91
J	138	VAL	-	see sequence details	UNP A8JE91
K	1	MET	-	expression tag	UNP A8JE91
K	138	VAL	-	see sequence details	UNP A8JE91
L	1	MET	-	expression tag	UNP A8JE91
L	138	VAL	-	see sequence details	UNP A8JE91
M	1	MET	-	expression tag	UNP A8JE91
M	138	VAL	-	see sequence details	UNP A8JE91

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
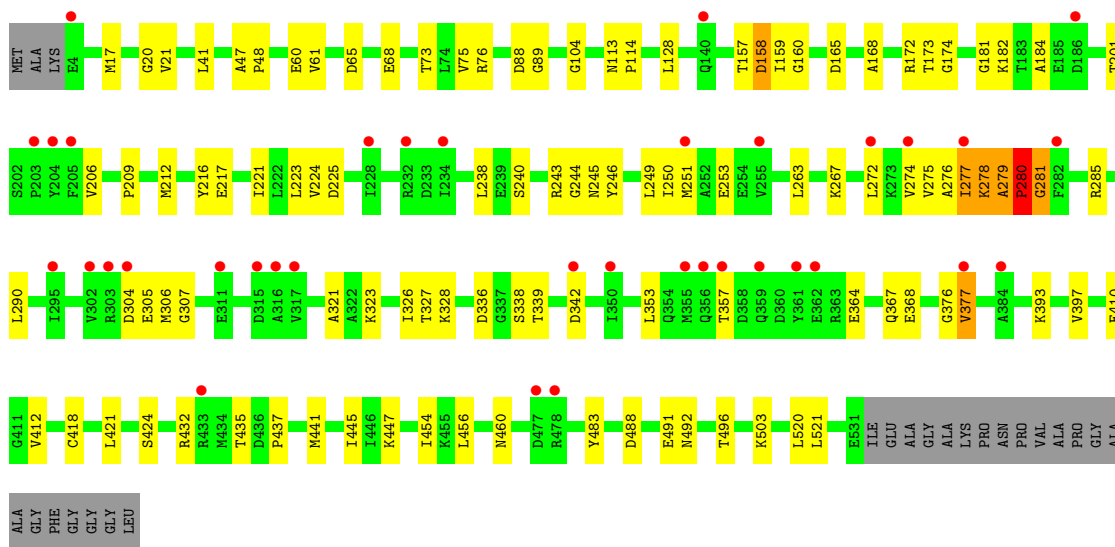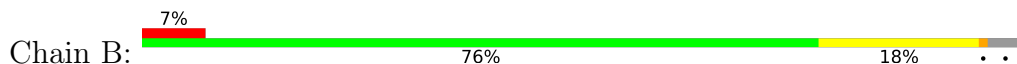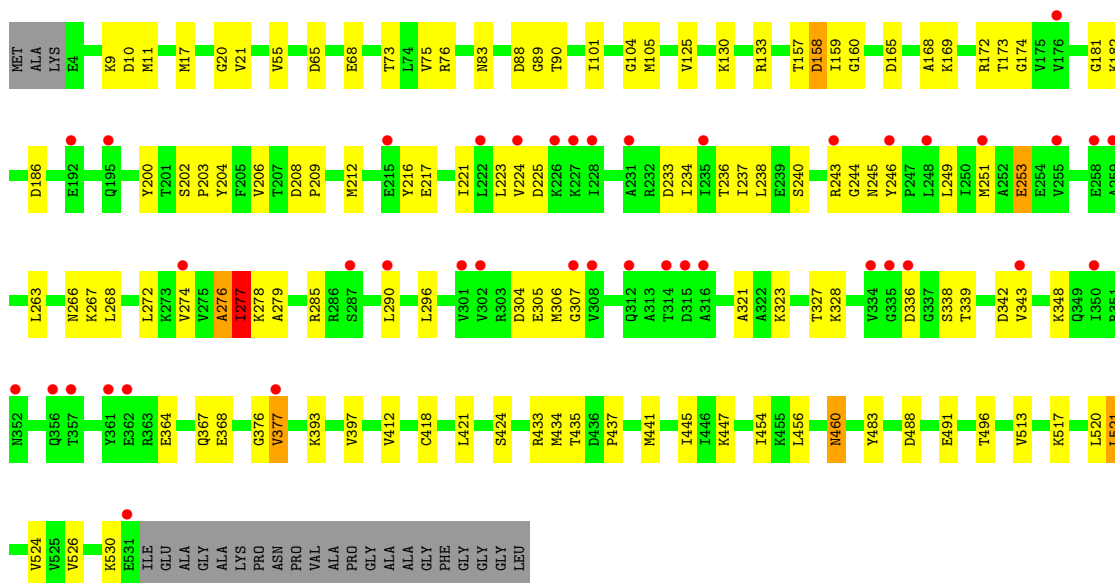
• Molecule 1: Chaperonin 60B1
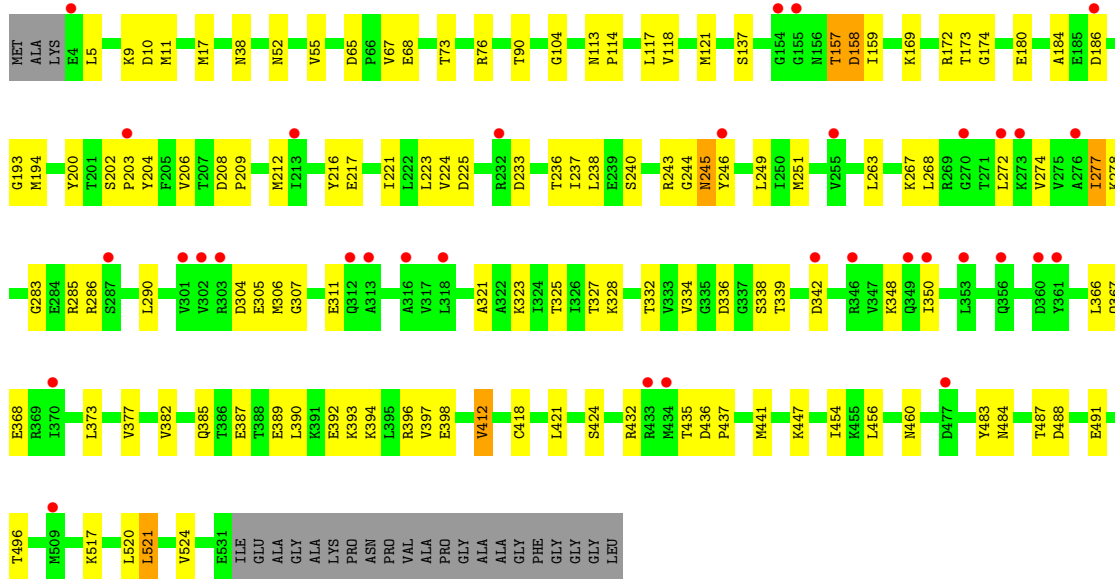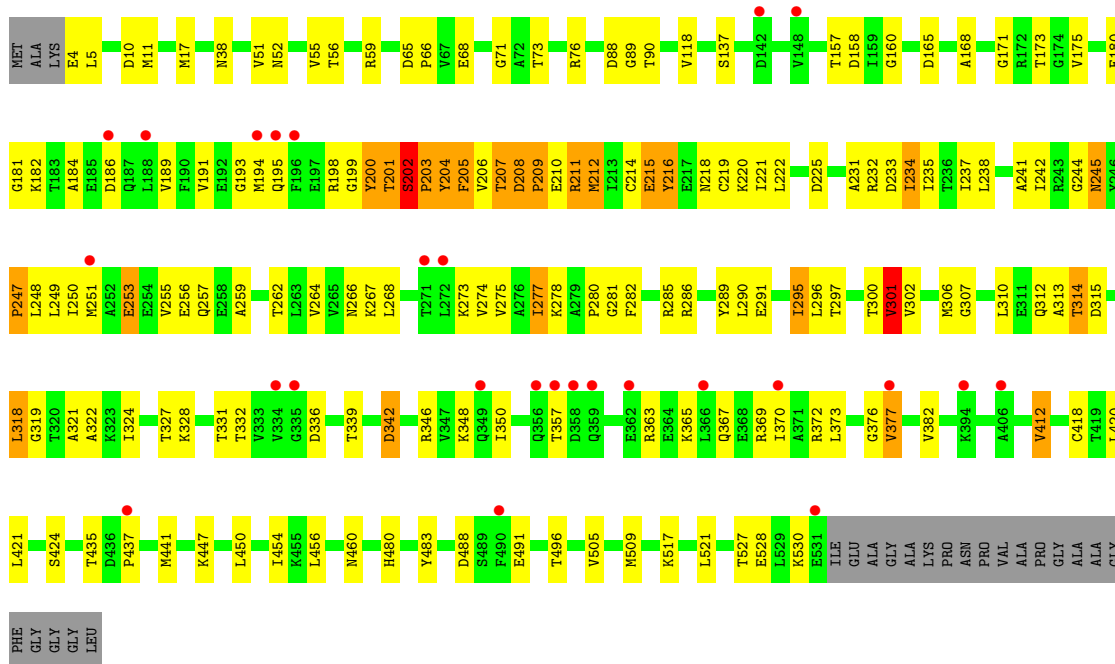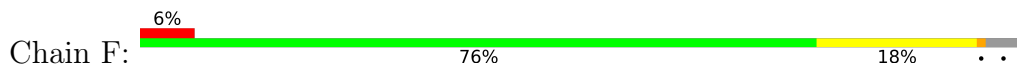

• Molecule 1: Chaperonin 60B1

● Molecule 1: Chaperonin 60B1

Chain B:

● Molecule 1: Chaperonin 60B1

Chain C:

● Molecule 1: Chaperonin 60B1

Chain D:

● Molecule 1: Chaperonin 60B1

Chain E:

● Molecule 1: Chaperonin 60B1

Chain F:

• Molecule 1: Chaperonin 60B1

Chain G:

• Molecule 1: Chaperonin 60B1

Chain H:

E364 K365 L366 Q367 E368 L373 V377 E387 K393 V397 V412 C418 L421 S424 R433 M434 T435 D436 P437 M441 I445 I446 K447 I454 N460 G482 Y483 D488 E491 N492 L493 T496 V515 A516 K517 T518 L521 V524

E531 ILE GLU ALA GLY ALA LYS PRO ASN VAL ALA PRO GLY ALA ALA GLY PHE GLY GLY LEU

• Molecule 1: Chaperonin 60B1

Chain I:

11%
74% 21%

MET ALA LYS E4 L5 K9 M17 G20 V55 D65 E68 A78 D88 G89 T90 G104 V125 Q140 T157 D158 I159 G160 A168 R172 T173 G174 V175 V176 T177 E180 G181 K182 D186 Q187 L188 V189 F190 V191 E192 G193 M194 Q195 S202

P203 Y204 F205 V206 M212 E215 Y216 E217 N218 C219 K220 I221 L222 L223 V224 D225 I228 R232 I237 L238 G244 N245 Y246 L249 I250 M251 V255 L263 L268 R269 G270 T271 L272 K273 V274 V275 A276 I277 K278 A279 P280 G281 E284 R285 R286 S287 S288 Y289 L290

E291 D292 L296 V301 V302 R303 D304 E305 M306 G307 A313 T314 D315 A316 V317 L318 A321 A322 K323 T327 K328 V334 G335 D336 G337 S338 T339 D342 D343 K348 Q349 I350 R351 N352 L353 Q354 M355 Q356 T357 R363 E364 K365 L366 Q367 E368 R369 I370 L373 V377

V382 G383 A384 Q385 K393 V397 A406 E410 G411 V412 V413 C418 T419 L420 L421 R422 L423 S424 D428 R433 M434 T435 D436 P437 M441 I445 I446 K447 I454 K455 L456 N460 G482 Y483 D488 E491 N492 L493 T496 S502 K503 V513

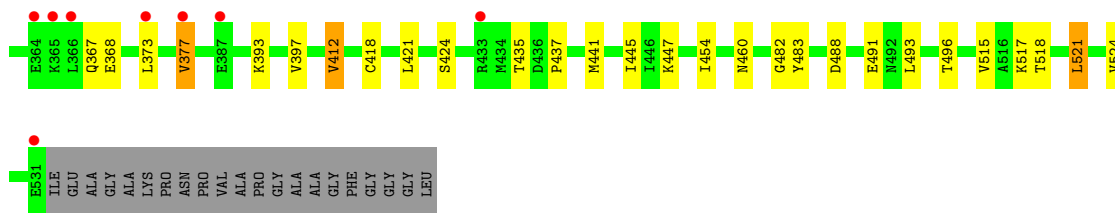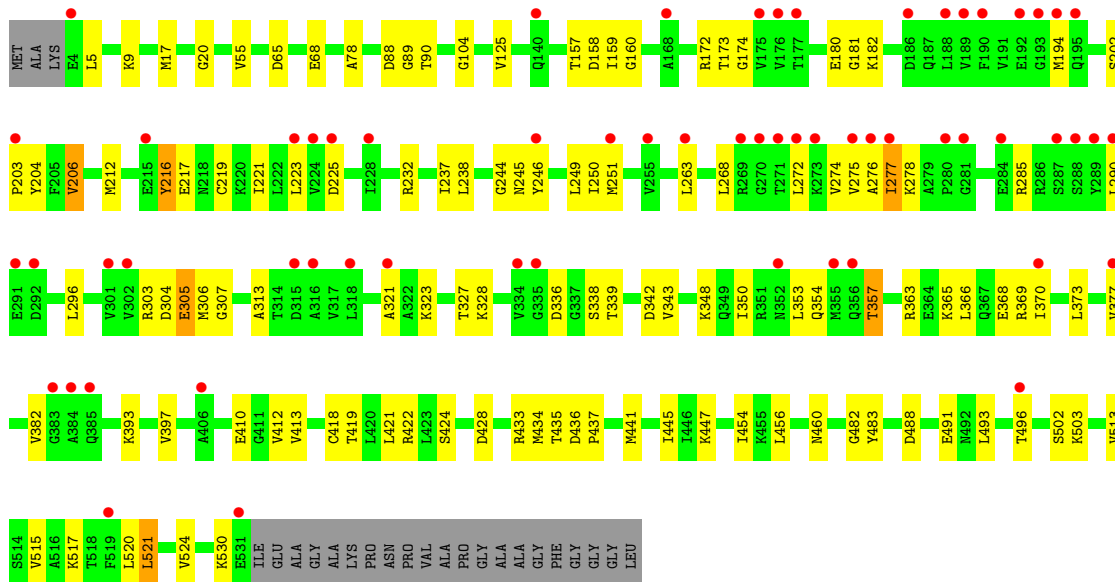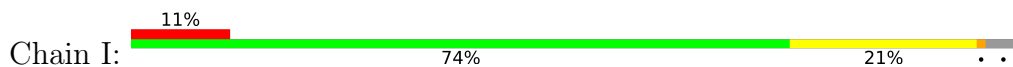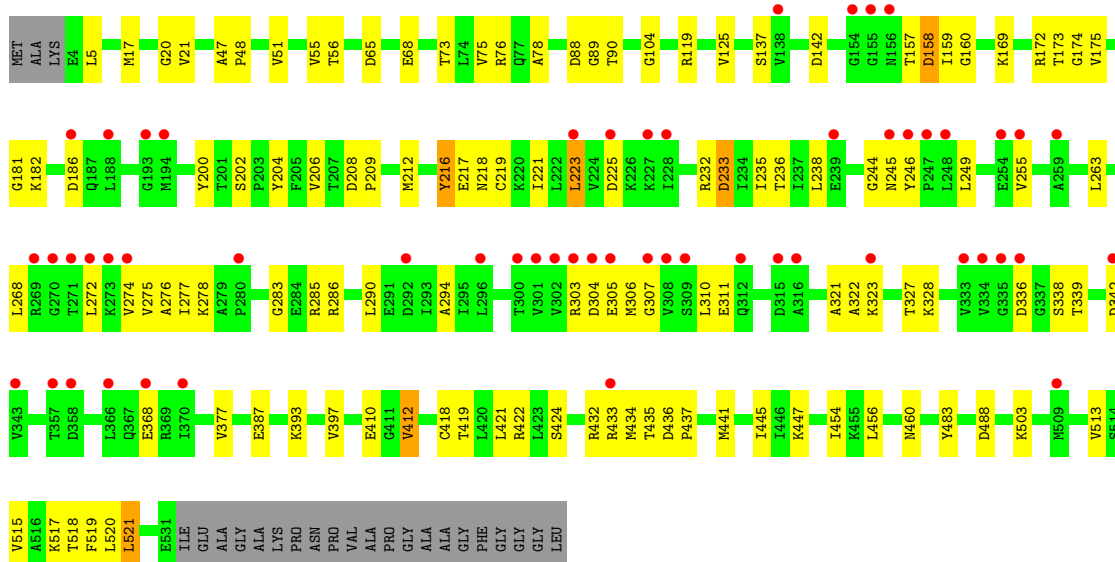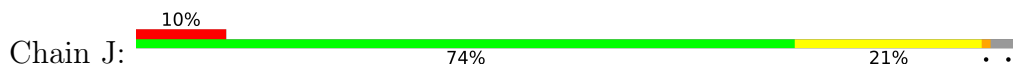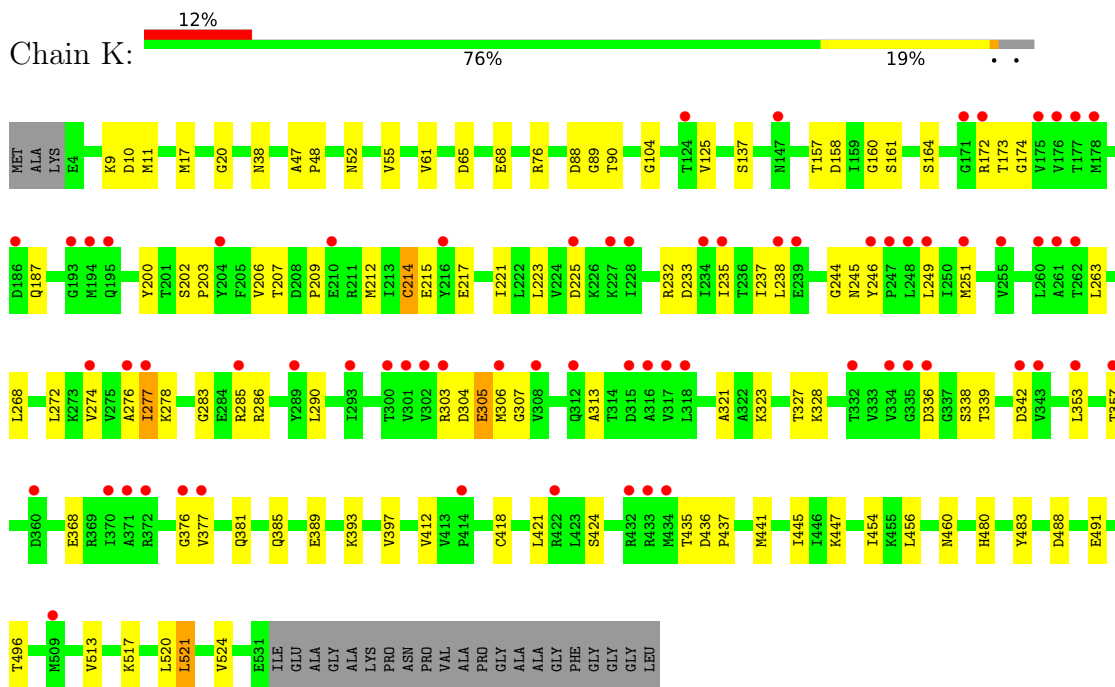S514 V515 A516 K517 T518 F519 L520 L521 V524 K530 E531 ILE GLU ALA GLY ALA LYS PRO ASN VAL ALA PRO GLY ALA ALA GLY PHE GLY GLY LEU

• Molecule 1: Chaperonin 60B1

Chain J:

10%
74% 21%

MET ALA LYS E4 L5 M17 G20 V21 A47 P48 V51 V55 T56 D65 E68 T73 L74 V75 R76 Q77 A78 D88 G89 T90 G104 R119 V125 S137 V138 D142 G154 G155 N156 T157 D158 I159 G160 K169 R172 T173 G174 V175

G181 K182 D186 Q187 L188 G193 M194 Y200 T201 S202 P203 Y204 F205 V206 T207 D208 P209 M212 Y216 E217 N218 C219 K220 I221 L222 L223 V224 D225 K226 K227 I228 R232 D233 I234 I235 T236 I237 L238 E239 G244 N245 Y246 P247 L248 L249 E264 V255 A259 L263

L268 R269 G270 T271 L272 K273 V274 V275 A276 I277 K278 A279 P280 G283 E284 R285 R286 L290 E291 D292 I293 A294 I295 L296 T300 V301 V302 R303 D304 E305 M306 G307 V308 S309 L310 E311 Q312 D315 A316 A321 A322 K323 T327 K328 V333 V334 G335 D336 G337 S338 T339 D342

V343 T357 D358 L366 Q367 E368 R369 I370 V377 E387 K393 V397 E410 G411 V412 C418 T419 L420 L421 R422 L423 S424 R432 R433 M434 T435 D436 P437 M441 I445 I446 K447 I454 K455 L456 N460 Y483 D488 K503 M509 V513 S514

V515 A516 K517 T518 F519 L520 L521 E531 ILE GLU ALA GLY ALA LYS PRO ASN VAL ALA PRO GLY ALA ALA GLY PHE GLY GLY LEU
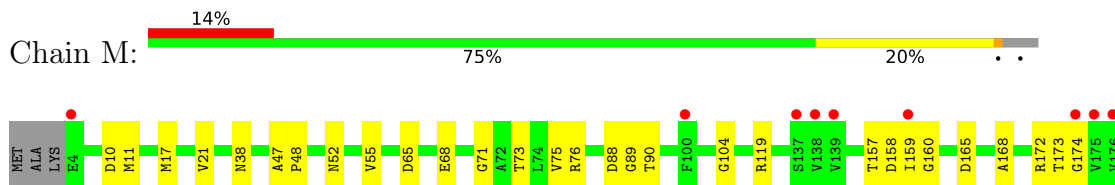
• Molecule 1: Chaperonin 60B1

Chain K:

● Molecule 1: Chaperonin 60B1

Chain L:

● Molecule 1: Chaperonin 60B1

Chain M:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	143.34Å 174.39Å 213.68Å 90.00° 94.69° 90.00°	Depositor
Resolution (Å)	48.66 – 3.81	Depositor
	48.66 – 3.81	EDS
% Data completeness	96.7 (48.66-3.81)	Depositor
(in resolution range)	85.1 (48.66-3.81)	EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	1.77 (at 3.77Å)	Xtriage
Refinement program	PHENIX 1.9_1692	Depositor
R, R_{free}	0.275 , 0.325	Depositor
	0.296 , 0.340	DCC
R_{free} test set	2003 reflections (2.01%)	wwPDB-VP
Wilson B-factor (Å^2)	129.8	Xtriage
Anisotropy	0.235	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 114.7	EDS
L-test for twinning [2]	$<|L|> = 0.48, <L^2> = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	55706	wwPDB-VP
Average B, all atoms (Å^2)	186.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.25% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.21	0/4011	0.40	0/5417
1	B	0.25	1/4011 (0.0%)	0.43	1/5417 (0.0%)
1	C	0.25	0/4011	0.44	3/5417 (0.1%)
1	D	0.23	0/4011	0.41	0/5417
1	E	0.32	3/4011 (0.1%)	0.49	4/5417 (0.1%)
1	F	0.23	0/4011	0.41	0/5417
1	G	0.25	1/4011 (0.0%)	0.40	0/5417
1	H	0.23	0/4011	0.43	2/5417 (0.0%)
1	I	0.22	0/4011	0.41	0/5417
1	J	0.24	0/4011	0.40	0/5417
1	K	0.21	0/4011	0.43	1/5417 (0.0%)
1	L	0.22	0/4011	0.41	0/5417
1	M	0.24	0/4011	0.40	0/5417
1	N	0.24	1/4011 (0.0%)	0.41	0/5417
All	All	0.24	6/56154 (0.0%)	0.42	11/75838 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1
1	C	0	1
1	E	0	1
1	L	0	1
All	All	0	4

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	377	VAL	C-N	10.25	1.57	1.34
1	N	276	ALA	C-N	-5.80	1.20	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	206	VAL	C-N	-5.68	1.21	1.34
1	E	209	PRO	N-CD	5.45	1.55	1.47
1	B	280	PRO	N-CD	5.40	1.55	1.47

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	276	ALA	O-C-N	-7.55	110.61	122.70
1	H	276	ALA	O-C-N	-6.88	111.69	122.70
1	B	277	ILE	N-CA-C	6.17	127.65	111.00
1	C	277	ILE	O-C-N	-5.72	113.55	122.70
1	K	376	GLY	O-C-N	-5.68	113.61	122.70

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	279	ALA	Peptide
1	C	277	ILE	Mainchain
1	E	202	SER	Peptide
1	L	277	ILE	Mainchain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3979	0	4104	88	0
1	B	3979	0	4104	88	0
1	C	3979	0	4103	82	0
1	D	3979	0	4104	94	0
1	E	3979	0	4104	212	0
1	F	3979	0	4104	87	0
1	G	3979	0	4103	82	0
1	H	3979	0	4103	75	0
1	I	3979	0	4104	71	0
1	J	3979	0	4104	81	0
1	K	3979	0	4104	71	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	3979	0	4104	71	0
1	M	3979	0	4103	69	0
1	N	3979	0	4103	75	0
All	All	55706	0	57451	1242	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 11.

The worst 5 of 1242 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:205:PHE:CE2	1:E:267:LYS:CB	1.85	1.55
1:E:205:PHE:CE2	1:E:267:LYS:HB3	0.97	1.47
1:E:59:ARG:HH22	1:E:212:MET:CE	1.27	1.46
1:E:251:MET:HA	1:E:277:ILE:CG2	1.46	1.46
1:E:277:ILE:HD12	1:E:278:LYS:N	1.27	1.43

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	526/552 (95%)	480 (91%)	40 (8%)	6 (1%)	14	51
1	B	526/552 (95%)	473 (90%)	46 (9%)	7 (1%)	12	48
1	C	526/552 (95%)	479 (91%)	40 (8%)	7 (1%)	12	48
1	D	526/552 (95%)	479 (91%)	42 (8%)	5 (1%)	15	52
1	E	526/552 (95%)	472 (90%)	40 (8%)	14 (3%)	5	35
1	F	526/552 (95%)	480 (91%)	42 (8%)	4 (1%)	19	57
1	G	526/552 (95%)	483 (92%)	37 (7%)	6 (1%)	14	51

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	526/552 (95%)	478 (91%)	43 (8%)	5 (1%)	15	52
1	I	526/552 (95%)	482 (92%)	39 (7%)	5 (1%)	15	52
1	J	526/552 (95%)	480 (91%)	42 (8%)	4 (1%)	19	57
1	K	526/552 (95%)	478 (91%)	43 (8%)	5 (1%)	15	52
1	L	526/552 (95%)	478 (91%)	43 (8%)	5 (1%)	15	52
1	M	526/552 (95%)	475 (90%)	47 (9%)	4 (1%)	19	57
1	N	526/552 (95%)	480 (91%)	42 (8%)	4 (1%)	19	57
All	All	7364/7728 (95%)	6697 (91%)	586 (8%)	81 (1%)	14	51

5 of 81 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	158	ASP
1	A	173	THR
1	A	245	ASN
1	N	158	ASP
1	N	173	THR

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	433/445 (97%)	422 (98%)	11 (2%)	47	70
1	B	433/445 (97%)	424 (98%)	9 (2%)	53	74
1	C	433/445 (97%)	424 (98%)	9 (2%)	53	74
1	D	433/445 (97%)	422 (98%)	11 (2%)	47	70
1	E	433/445 (97%)	410 (95%)	23 (5%)	22	54
1	F	433/445 (97%)	422 (98%)	11 (2%)	47	70
1	G	433/445 (97%)	421 (97%)	12 (3%)	43	68
1	H	433/445 (97%)	421 (97%)	12 (3%)	43	68
1	I	433/445 (97%)	420 (97%)	13 (3%)	41	66

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	J	433/445 (97%)	422 (98%)	11 (2%)	47	70
1	K	433/445 (97%)	424 (98%)	9 (2%)	53	74
1	L	433/445 (97%)	420 (97%)	13 (3%)	41	66
1	M	433/445 (97%)	421 (97%)	12 (3%)	43	68
1	N	433/445 (97%)	425 (98%)	8 (2%)	59	77
All	All	6062/6230 (97%)	5898 (97%)	164 (3%)	44	69

5 of 164 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	I	370	ILE
1	L	268	LEU
1	J	5	LEU
1	K	214	CYS
1	L	435	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Fit of model and data ⓘ

6.1   Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	528/552 (95%)	0.41	45 (8%)	10	9	64, 175, 274, 319	0
1	B	528/552 (95%)	0.41	36 (6%)	17	13	49, 165, 283, 325	0
1	C	528/552 (95%)	0.40	41 (7%)	13	10	50, 166, 284, 318	0
1	D	528/552 (95%)	0.31	34 (6%)	19	15	55, 153, 262, 292	0
1	E	528/552 (95%)	0.30	26 (4%)	29	25	26, 159, 234, 301	0
1	F	528/552 (95%)	0.41	35 (6%)	18	14	69, 184, 271, 303	0
1	G	528/552 (95%)	0.56	52 (9%)	7	7	55, 193, 280, 315	0
1	H	528/552 (95%)	0.43	48 (9%)	9	7	57, 182, 288, 319	0
1	I	528/552 (95%)	0.54	61 (11%)	4	5	57, 192, 299, 325	0
1	J	528/552 (95%)	0.51	55 (10%)	6	5	84, 203, 315, 369	0
1	K	528/552 (95%)	0.65	68 (12%)	3	4	71, 189, 307, 340	0
1	L	528/552 (95%)	0.70	77 (14%)	2	2	70, 185, 310, 357	0
1	M	528/552 (95%)	0.71	78 (14%)	2	2	81, 207, 326, 366	0
1	N	528/552 (95%)	0.64	60 (11%)	5	5	77, 194, 294, 335	0
All	All	7392/7728 (95%)	0.50	716 (9%)	7	7	26, 178, 296, 369	0

The worst 5 of 716 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	L	302	VAL	18.9
1	C	302	VAL	11.9
1	G	316	ALA	10.4
1	M	362	GLU	9.8
1	L	225	ASP	9.1

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

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

6.3   Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4   Ligands ⓘ

There are no ligands in this entry.

6.5   Other polymers ⓘ

There are no such residues in this entry.