wwPDB X-ray Structure Validation Summary Report (i)

May 28, 2020 – 08:40 pm BST

PDB ID	:	1SF8
Title	:	Crystal structure of the carboxy-terminal domain of htpG, the E. coli Hsp90
Authors	:	Harris, S.F.; Shiau, A.K.; Agard, D.A.
Deposited on	:	2004-02-19
Resolution	:	2.60 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 (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

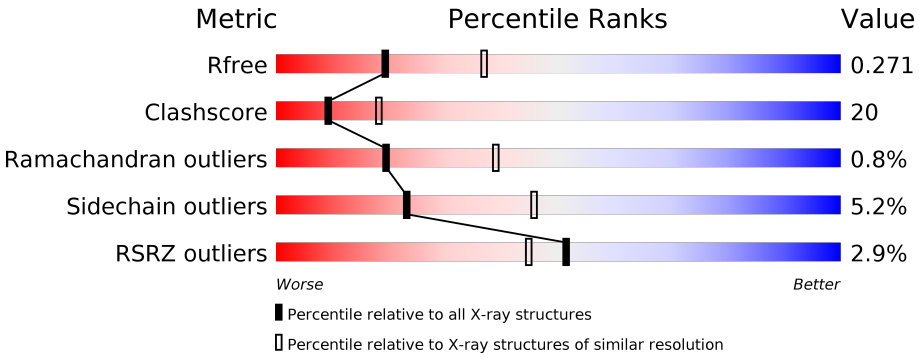
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.60 Å.

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



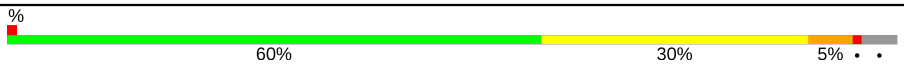
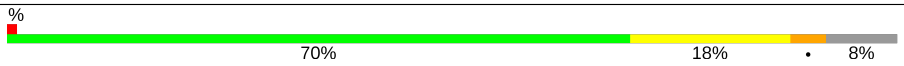
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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 on 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	126	62% 25% • • 9%
1	B	126	57% 30% • 9%
1	C	126	11% 56% 33% 6% • 5%
1	D	126	55% 34% • 9%
1	E	126	63% 26% • 9%
1	F	126	61% 29% • 9%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	G	126	
1	H	126	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	CL	H	705	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 7915 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 Chaperone protein htpG.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	115	Total	C	N	O	Se	0	0	0
			916	579	158	176	3			
1	B	115	Total	C	N	O	Se	0	0	0
			916	579	158	176	3			
1	C	120	Total	C	N	O	Se	0	0	0
			960	605	171	181	3			
1	D	115	Total	C	N	O	Se	0	0	0
			916	579	158	176	3			
1	E	115	Total	C	N	O	Se	0	0	0
			916	579	158	176	3			
1	F	115	Total	C	N	O	Se	0	0	0
			916	579	158	176	3			
1	G	121	Total	C	N	O	Se	0	0	0
			965	608	172	182	3			
1	H	116	Total	C	N	O	Se	0	0	0
			920	581	159	177	3			

There are 120 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
A	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
A	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
A	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
A	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
A	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
A	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
A	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
A	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
A	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
A	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
A	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
A	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
A	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
B	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
B	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
B	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
B	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
B	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
B	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
B	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
B	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
B	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
B	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
B	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
B	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
B	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
B	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
B	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
C	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
C	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
C	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
C	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
C	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
C	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
C	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
C	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
C	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
C	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
C	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
C	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
C	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
C	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
C	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
D	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
D	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
D	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
D	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
D	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
D	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
D	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
D	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
D	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
D	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
D	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
D	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
D	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
D	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
E	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
E	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
E	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
E	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
E	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
E	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
E	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
E	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
E	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
E	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
E	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
E	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
E	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
E	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
E	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
F	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
F	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
F	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
F	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
F	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
F	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
F	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
F	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
F	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
F	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
F	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
F	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
F	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
F	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
F	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
G	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
G	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
G	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
G	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
G	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
G	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
G	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
G	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
G	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
G	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
G	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
G	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
G	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
G	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
H	499	MET	-	CLONING ARTIFACT	UNP P0A6Z3
H	500	ARG	-	CLONING ARTIFACT	UNP P0A6Z3
H	501	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
H	502	SER	-	CLONING ARTIFACT	UNP P0A6Z3
H	503	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
H	504	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
H	505	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
H	506	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
H	507	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
H	508	HIS	-	CLONING ARTIFACT	UNP P0A6Z3
H	509	GLY	-	CLONING ARTIFACT	UNP P0A6Z3
H	510	SER	-	CLONING ARTIFACT	UNP P0A6Z3
H	546	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
H	550	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3
H	618	MSE	MET	MODIFIED RESIDUE	UNP P0A6Z3

- Molecule 2 is NICKEL (II) ION (three-letter code: NI) (formula: Ni).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	G	1	Total Ni 1 1	0	0
2	D	1	Total Ni 1 1	0	0
2	C	1	Total Ni 1 1	0	0

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	H	1	Total Cl 1 1	0	0
3	F	1	Total Cl 1 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	E	1	Total Cl 1 1	0	0

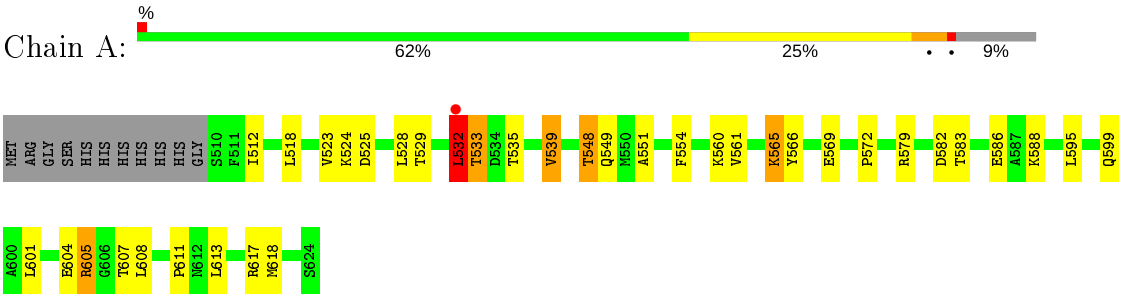
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	58	Total O 58 58	0	0
4	B	55	Total O 55 55	0	0
4	C	42	Total O 42 42	0	0
4	D	45	Total O 45 45	0	0
4	E	45	Total O 45 45	0	0
4	F	57	Total O 57 57	0	0
4	G	70	Total O 70 70	0	0
4	H	112	Total O 112 112	0	0

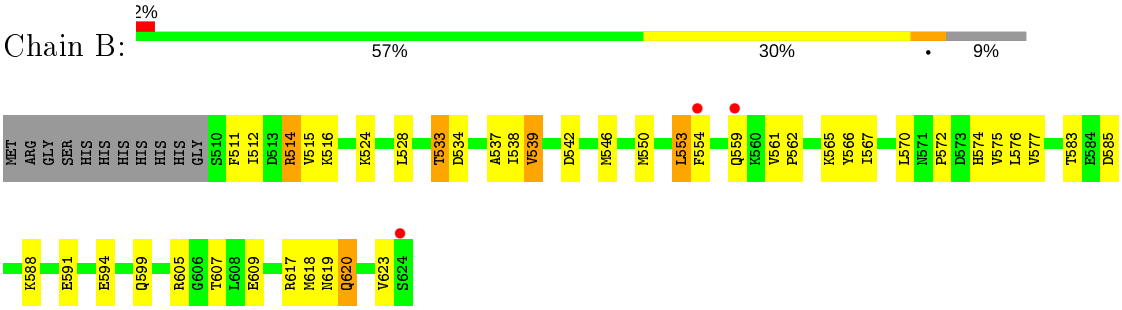
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA 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.

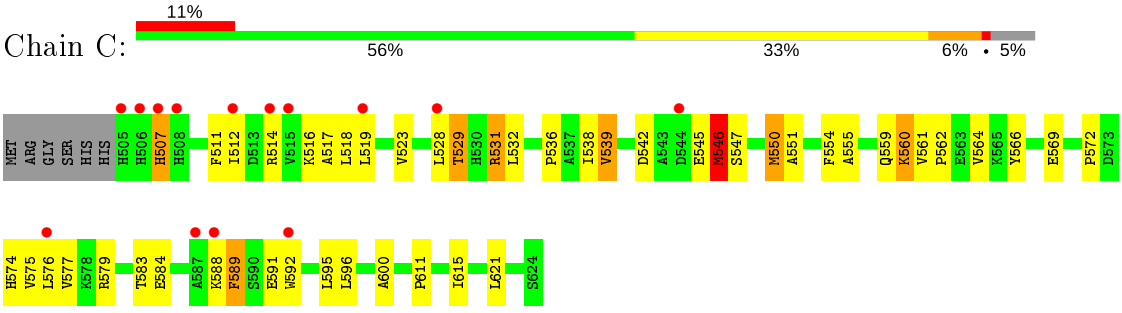
- Molecule 1: Chaperone protein htpG



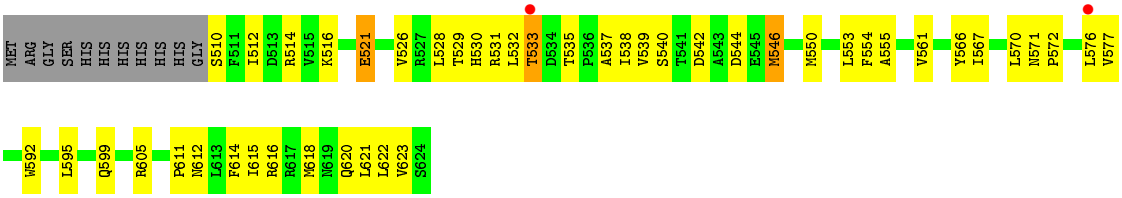
- Molecule 1: Chaperone protein htpG



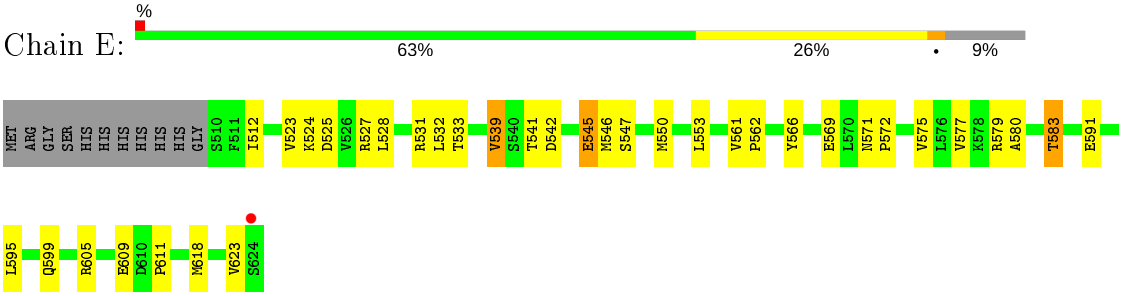
- Molecule 1: Chaperone protein htpG



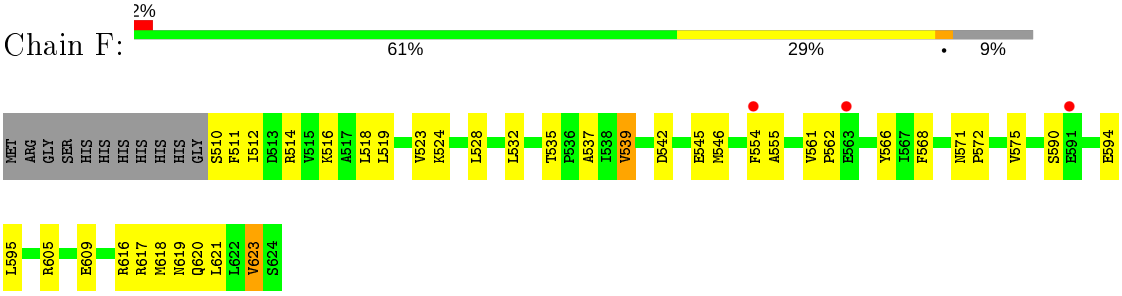
- Molecule 1: Chaperone protein htpG



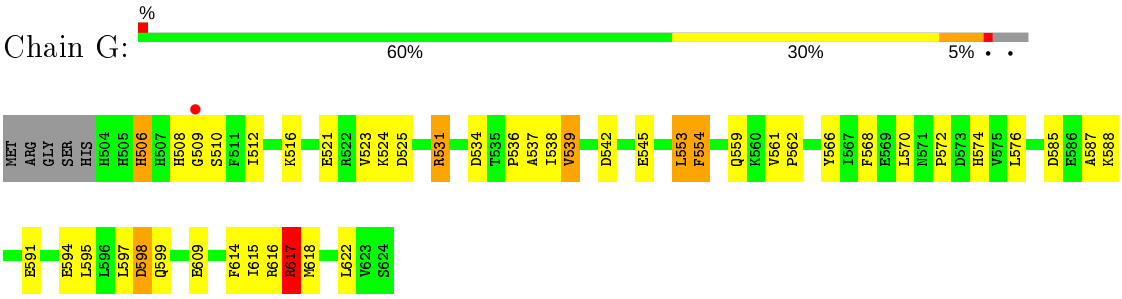
• Molecule 1: Chaperone protein htpG



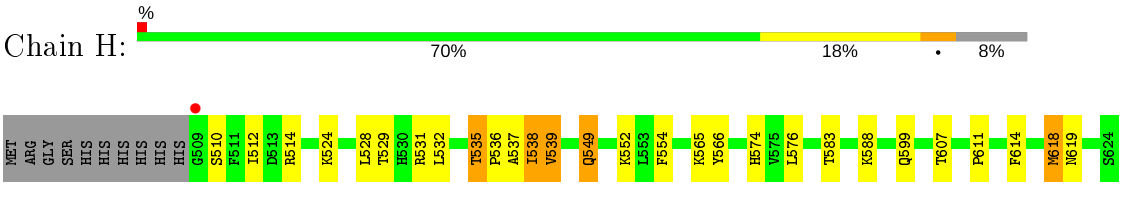
• Molecule 1: Chaperone protein htpG



• Molecule 1: Chaperone protein htpG



• Molecule 1: Chaperone protein htpG



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α, β, γ	103.52Å 103.52Å 249.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.90 – 2.60 95.63 – 2.60	Depositor EDS
% Data completeness (in resolution range)	90.3 (29.90-2.60) 93.8 (95.63-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$< I/\sigma(I) >$ [1]	1.85 (at 2.62Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.223 , 0.261 0.235 , 0.271	Depositor DCC
R_{free} test set	3577 reflections (4.49%)	wwPDB-VP
Wilson B-factor (Å^2)	48.6	Xtriage
Anisotropy	0.205	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 57.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	7915	wwPDB-VP
Average B, all atoms (Å^2)	60.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.51% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NI, CL

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	0.44	0/926	0.67	0/1246
1	B	0.41	0/926	0.60	0/1246
1	C	0.36	0/974	0.55	0/1311
1	D	0.37	0/926	0.55	0/1246
1	E	0.43	0/926	0.59	0/1246
1	F	0.35	0/926	0.53	0/1246
1	G	0.48	0/979	0.68	2/1318 (0.2%)
1	H	0.47	0/930	0.63	0/1251
All	All	0.42	0/7513	0.60	2/10110 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	617	ARG	NE-CZ-NH2	5.47	123.04	120.30
1	G	617	ARG	NE-CZ-NH1	-5.46	117.57	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	916	0	930	35	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	916	0	930	41	0
1	C	960	0	961	52	0
1	D	916	0	930	46	0
1	E	916	0	930	36	0
1	F	916	0	930	32	0
1	G	965	0	963	44	0
1	H	920	0	933	39	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	G	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	H	1	0	0	7	0
4	A	58	0	0	9	0
4	B	55	0	0	8	0
4	C	42	0	0	14	0
4	D	45	0	0	9	0
4	E	45	0	0	12	0
4	F	57	0	0	10	0
4	G	70	0	0	11	0
4	H	112	0	0	9	0
All	All	7915	0	7507	297	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 20.

The worst 5 of 297 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:C:528:LEU:HD22	1:C:572:PRO:HG3	1.50	0.94
1:C:519:LEU:HD13	1:C:523:VAL:HG21	1.54	0.89
1:C:550:MSE:HG2	1:D:550:MSE:SE	2.25	0.87
1:E:562:PRO:HB2	4:E:1240:HOH:O	1.76	0.86
1:E:512:ILE:HD11	1:E:528:LEU:HG	1.57	0.83

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	113/126 (90%)	105 (93%)	6 (5%)	2 (2%)	8 16
1	B	113/126 (90%)	107 (95%)	5 (4%)	1 (1%)	17 35
1	C	118/126 (94%)	106 (90%)	10 (8%)	2 (2%)	9 18
1	D	113/126 (90%)	105 (93%)	7 (6%)	1 (1%)	17 35
1	E	113/126 (90%)	112 (99%)	1 (1%)	0	100 100
1	F	113/126 (90%)	107 (95%)	5 (4%)	1 (1%)	17 35
1	G	119/126 (94%)	113 (95%)	6 (5%)	0	100 100
1	H	114/126 (90%)	111 (97%)	3 (3%)	0	100 100
All	All	916/1008 (91%)	866 (94%)	43 (5%)	7 (1%)	19 39

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	533	THR
1	F	623	VAL
1	A	532	LEU
1	A	533	THR
1	C	546	MSE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	100/106 (94%)	94 (94%)	6 (6%)	19 39

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	B	100/106 (94%)	94 (94%)	6 (6%)	19 39
1	C	104/106 (98%)	96 (92%)	8 (8%)	13 25
1	D	100/106 (94%)	97 (97%)	3 (3%)	41 67
1	E	100/106 (94%)	96 (96%)	4 (4%)	31 57
1	F	100/106 (94%)	99 (99%)	1 (1%)	76 90
1	G	104/106 (98%)	95 (91%)	9 (9%)	10 20
1	H	100/106 (94%)	95 (95%)	5 (5%)	24 47
All	All	808/848 (95%)	766 (95%)	42 (5%)	23 46

5 of 42 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	560	LYS
1	E	539	VAL
1	H	538	ILE
1	C	588	LYS
1	D	533	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	612	ASN
1	D	549	GLN
1	G	599	GLN
1	C	574	HIS
1	H	549	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no carbohydrates in this entry.

5.6 Ligand geometry

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	112/126 (88%)	0.21	1 (0%) 84 82	29, 51, 77, 85	0
1	B	112/126 (88%)	0.45	3 (2%) 54 48	30, 68, 96, 108	0
1	C	117/126 (92%)	0.81	14 (11%) 4 2	47, 75, 114, 142	0
1	D	112/126 (88%)	0.42	2 (1%) 68 64	45, 69, 100, 112	0
1	E	112/126 (88%)	0.20	1 (0%) 84 82	36, 51, 69, 84	0
1	F	112/126 (88%)	0.49	3 (2%) 54 48	43, 73, 99, 107	0
1	G	118/126 (93%)	0.22	1 (0%) 86 84	29, 44, 78, 88	0
1	H	113/126 (89%)	0.08	1 (0%) 84 82	30, 43, 64, 79	0
All	All	908/1008 (90%)	0.36	26 (2%) 51 45	29, 57, 99, 142	0

The worst 5 of 26 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	508	HIS	5.1
1	E	624	SER	4.5
1	C	592	TRP	4.2
1	H	509	GLY	3.3
1	D	533	THR	3.2

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 carbohydrates in this entry.

6.4 Ligands

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	CL	F	704	1/1	0.77	0.17	91,91,91,91	0
2	NI	C	700	1/1	0.91	0.07	86,86,86,86	0
3	CL	H	705	1/1	0.92	0.58	85,85,85,85	0
3	CL	E	703	1/1	0.94	0.17	64,64,64,64	0
2	NI	D	701	1/1	0.94	0.11	78,78,78,78	0
2	NI	G	702	1/1	0.99	0.17	40,40,40,40	0

6.5 Other polymers

There are no such residues in this entry.