



wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 18, 2024 – 09:53 AM EDT

PDB ID : 4B2T
Title : The crystal structures of the eukaryotic chaperonin CCT reveal its functional partitioning
Authors : Kalisman, N.; Schroeder, G.F.; Levitt, M.
Deposited on : 2012-07-17
Resolution : 5.50 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) : 1.20.1
EDS : 2.37.1
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) : 2.37.1

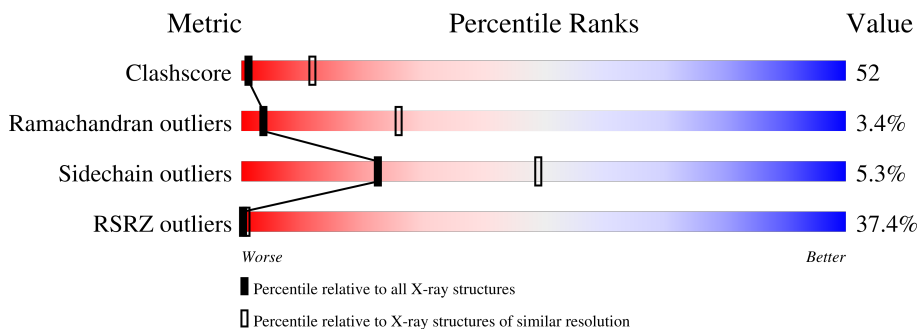
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 5.50 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))
Clashscore	141614	1010 (7.10-3.90)
Ramachandran outliers	138981	1014 (7.12-3.82)
Sidechain outliers	138945	1191 (7.20-3.80)
RSRZ outliers	127900	1023 (7.08-3.76)

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 $\leq 5\%$. 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	556	
1	a	556	
2	B	535	
2	b	535	
3	D	542	
3	d	542	
4	E	541	

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Mol	Chain	Length	Quality of chain
4	e	541	
5	G	545	
5	g	545	
6	H	543	
6	h	543	
7	Q	548	
7	q	548	
8	Z	531	
8	z	531	

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 51877 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 T-COMPLEX PROTEIN 1 SUBUNIT ALPHA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	481	Total 3625	C 2280	N 633	O 692	S 20	0	0	0
1	a	359	Total 2705	C 1703	N 469	O 520	S 13	0	0	0

- Molecule 2 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT BETA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	481	Total 3602	C 2258	N 629	O 696	S 19	0	0	0
2	b	359	Total 2658	C 1652	N 469	O 524	S 13	0	0	0

- Molecule 3 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT DELTA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	D	481	Total 3610	C 2259	N 627	O 703	S 21	0	0	0
3	d	359	Total 2690	C 1671	N 473	O 532	S 14	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	158	VAL	GLU	conflict	UNP Q2T9X2
D	510	LEU	GLN	conflict	UNP Q2T9X2
d	1158	VAL	GLU	conflict	UNP Q2T9X2
d	1510	LEU	GLN	conflict	UNP Q2T9X2

- Molecule 4 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT EPSILON.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	E	481	Total	C	N	O	S	0	0	0
			3674	2299	644	703	28			
4	e	359	Total	C	N	O	S	0	0	0
			2724	1688	486	528	22			

- Molecule 5 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT GAMMA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	G	481	Total	C	N	O	S	0	0	0
			3719	2326	661	705	27			
5	g	359	Total	C	N	O	S	0	0	0
			2735	1711	480	523	21			

- Molecule 6 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT ETA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	H	481	Total	C	N	O	S	0	0	0
			3671	2320	633	693	25			
6	h	359	Total	C	N	O	S	0	0	0
			2724	1719	472	517	16			

- Molecule 7 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT THETA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	Q	481	Total	C	N	O	S	0	0	0
			3673	2317	628	703	25			
7	q	359	Total	C	N	O	S	0	0	0
			2739	1729	467	526	17			

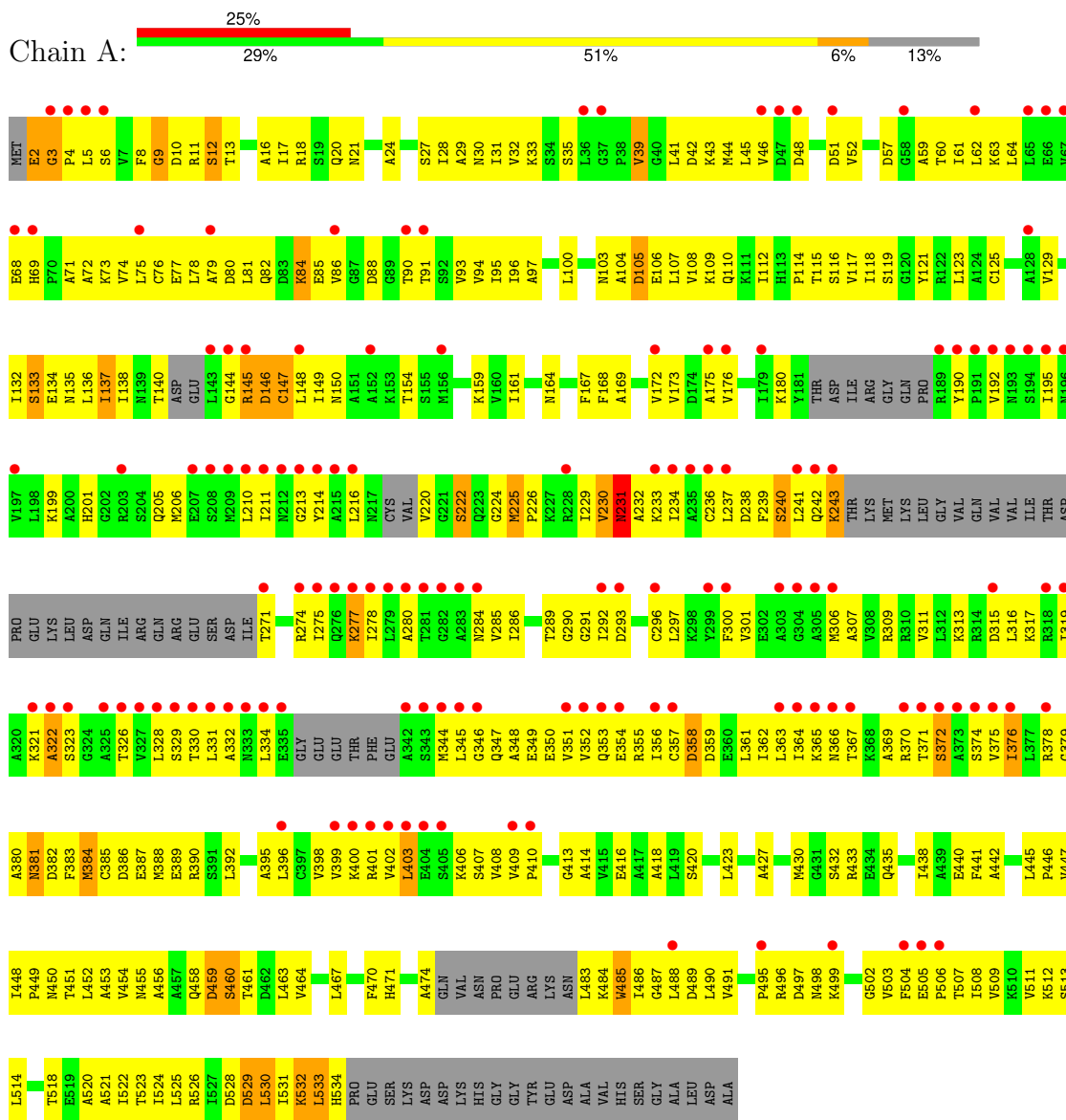
- Molecule 8 is a protein called T-COMPLEX PROTEIN 1 SUBUNIT ZETA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	Z	481	Total	C	N	O	S	0	0	0
			3664	2310	638	697	19			
8	z	481	Total	C	N	O	S	0	0	0
			3664	2310	638	697	19			

3 Residue-property plots

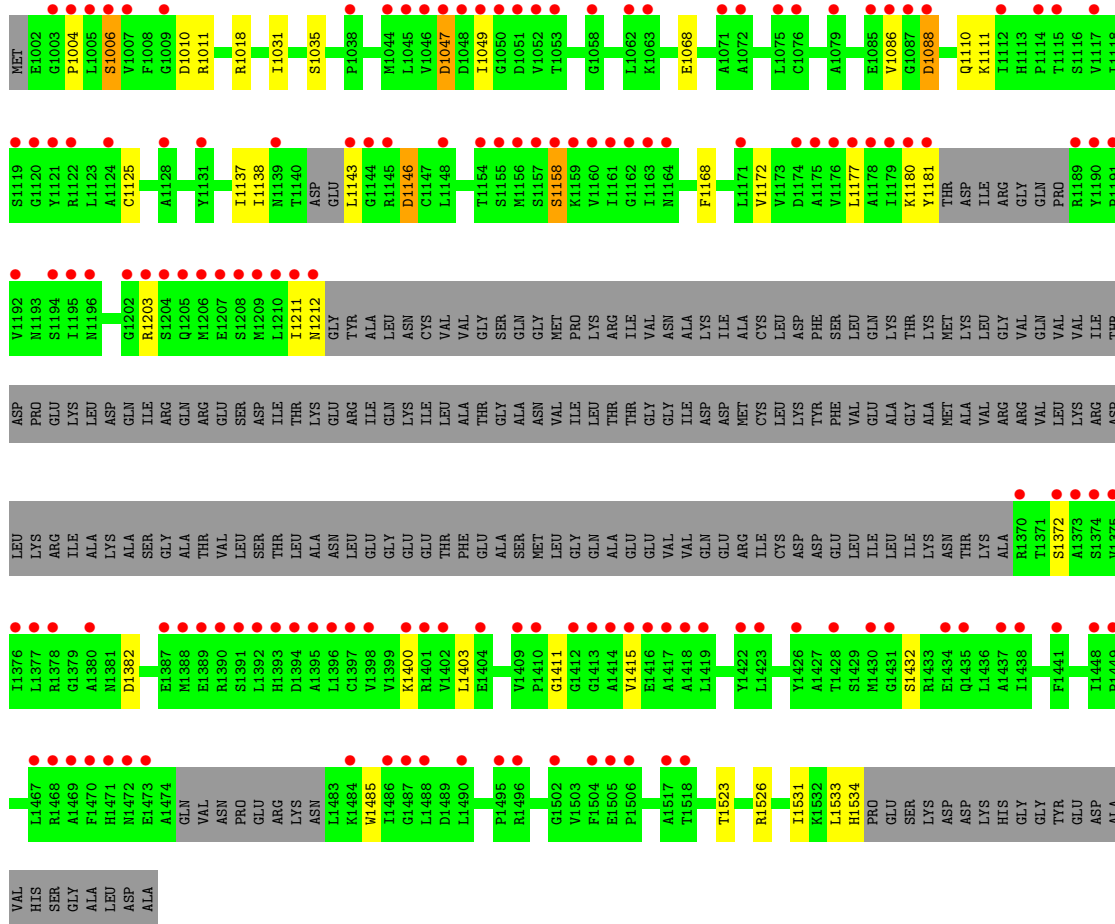
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: T-COMPLEX PROTEIN 1 SUBUNIT ALPHA

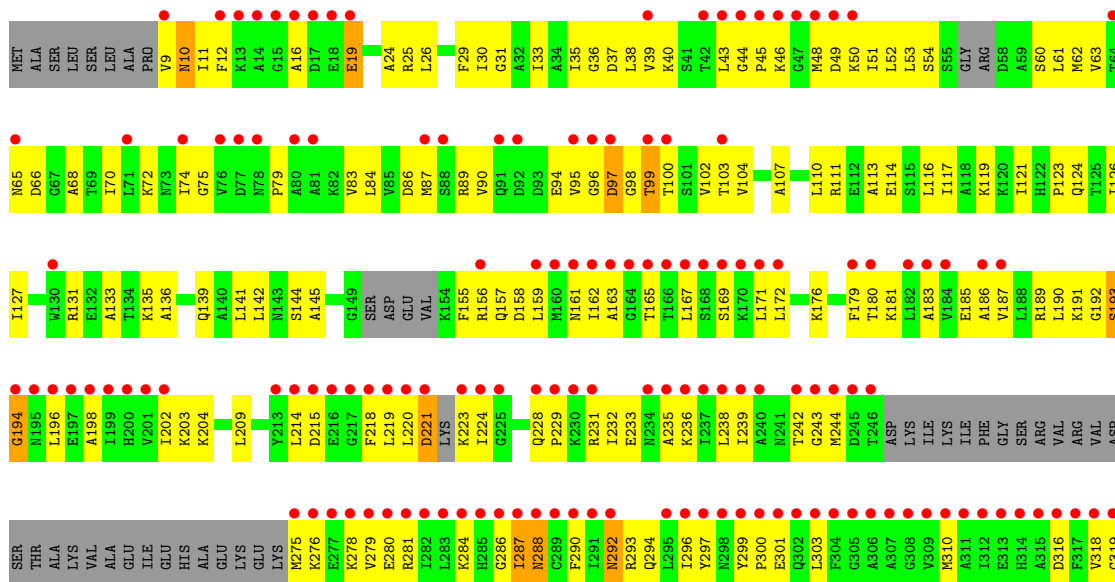


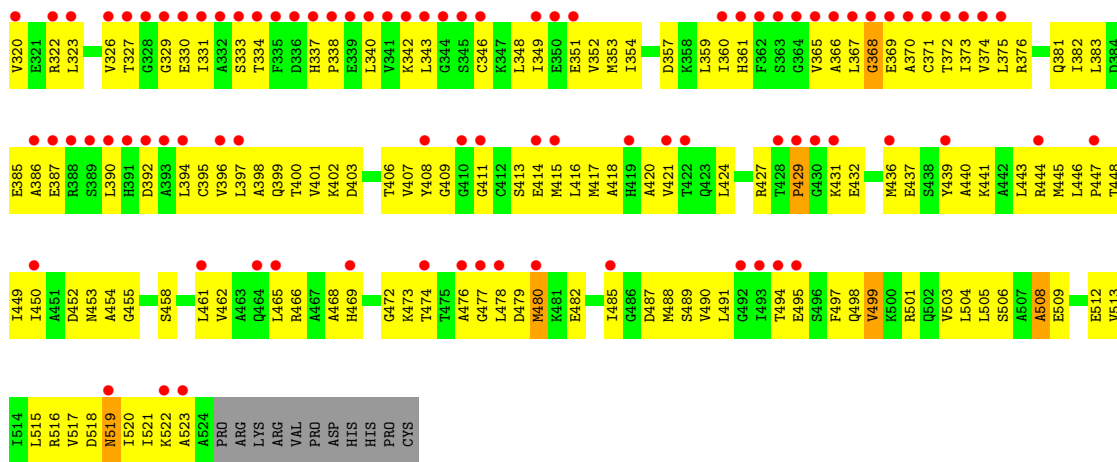
• Molecule 1: T-COMPLEX PROTEIN 1 SUBUNIT ALPHA



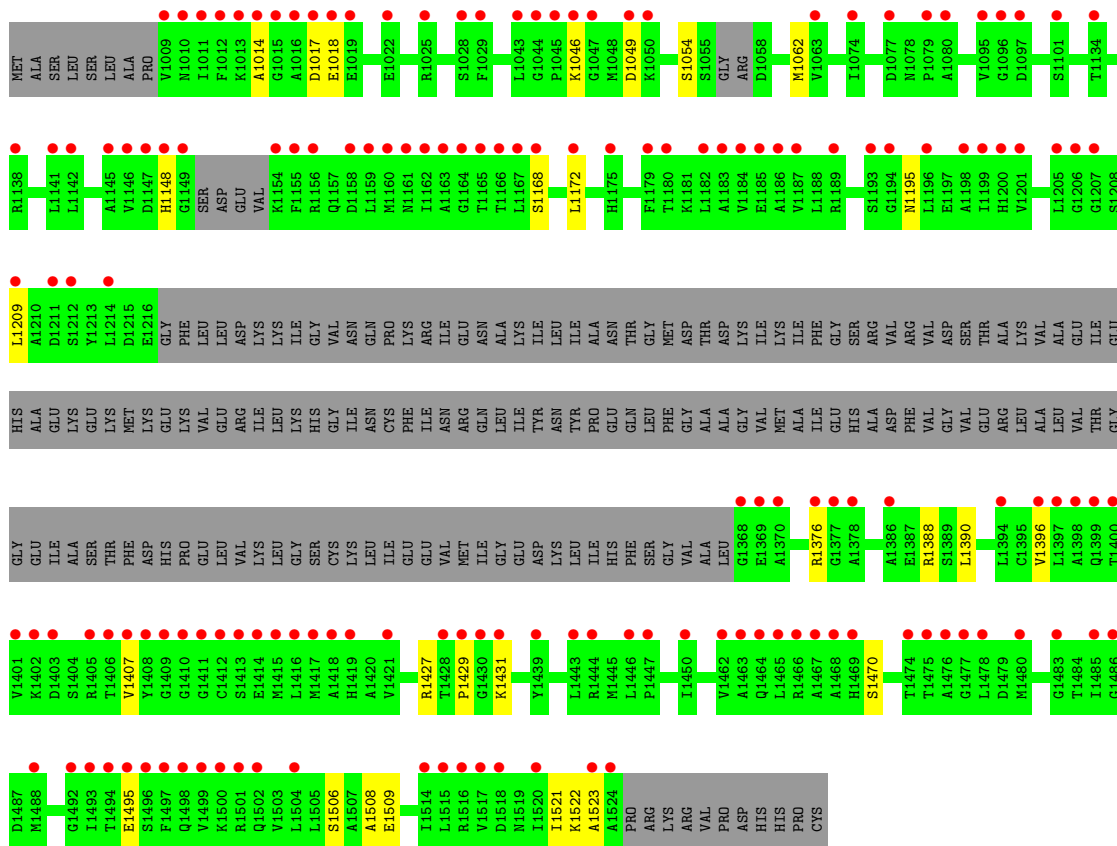


● Molecule 2: T-COMPLEX PROTEIN 1 SUBUNIT BETA



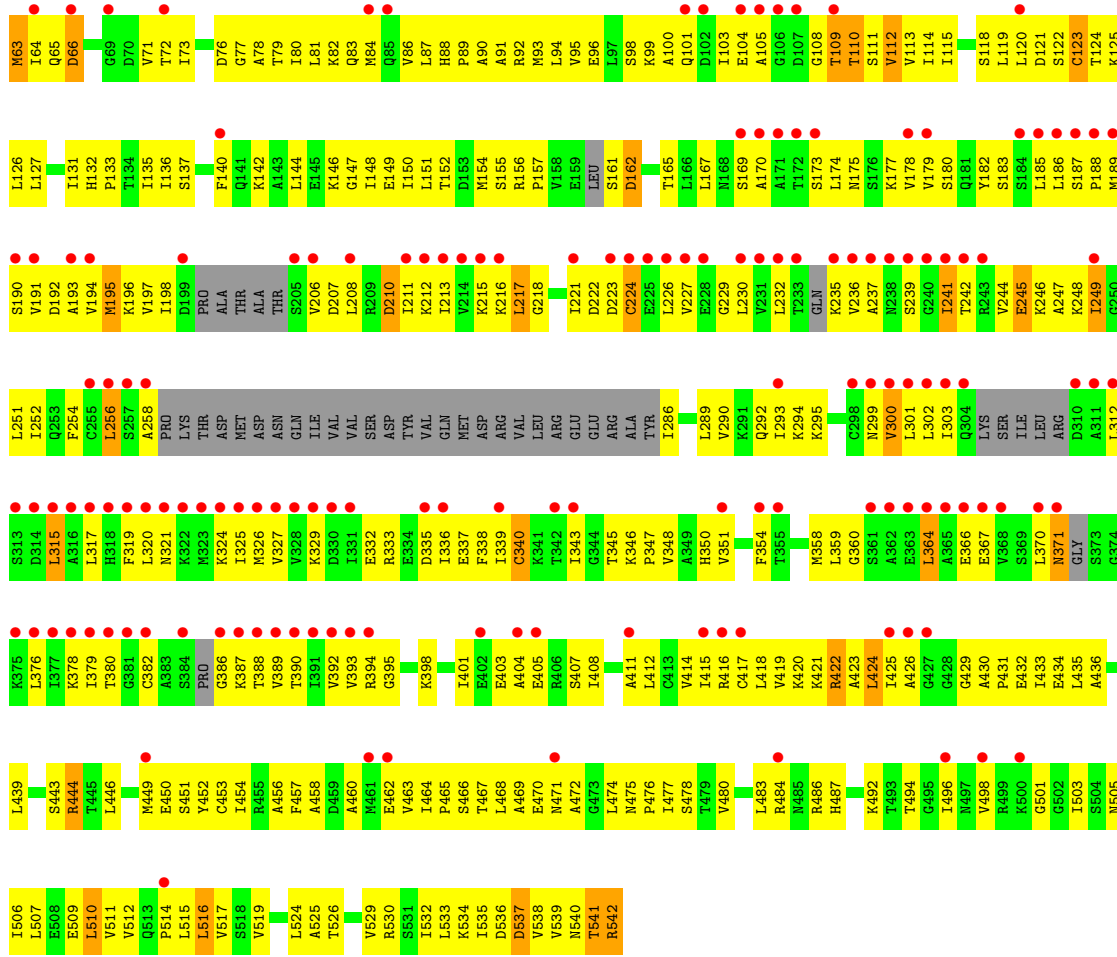


● Molecule 2: T-COMPLEX PROTEIN 1 SUBUNIT BETA

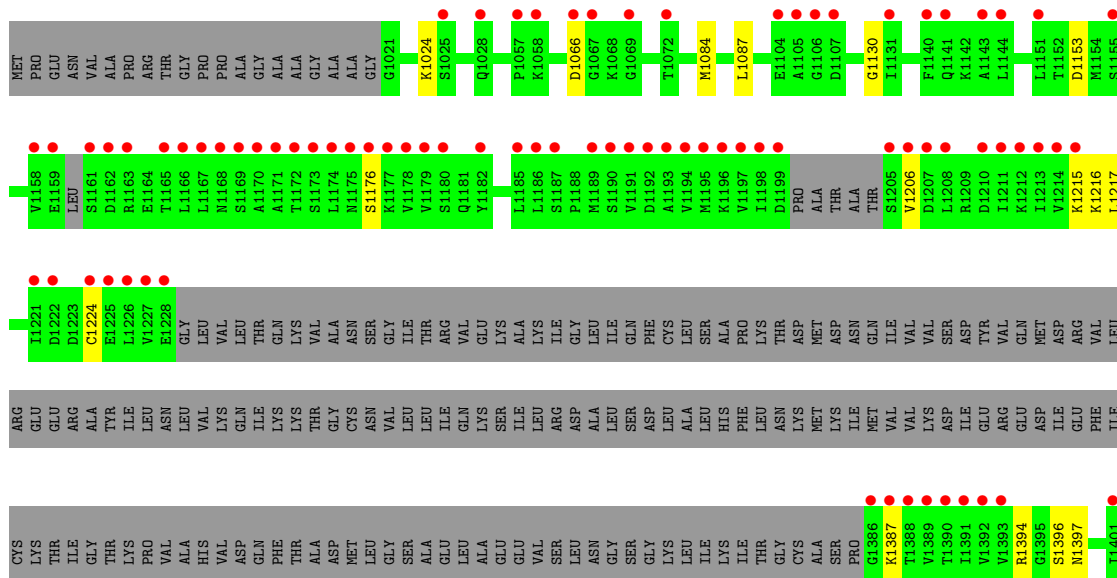


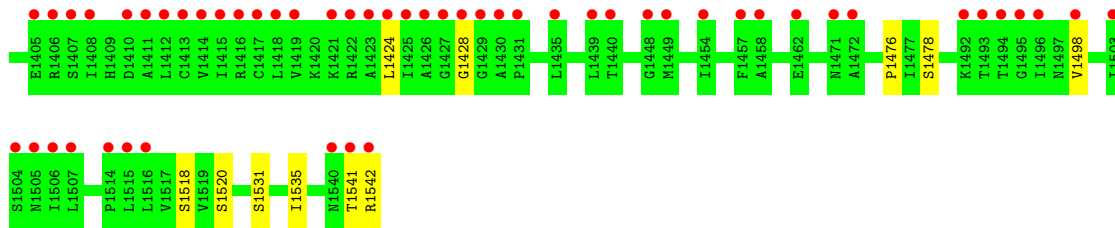
● Molecule 3: T-COMPLEX PROTEIN 1 SUBUNIT DELTA



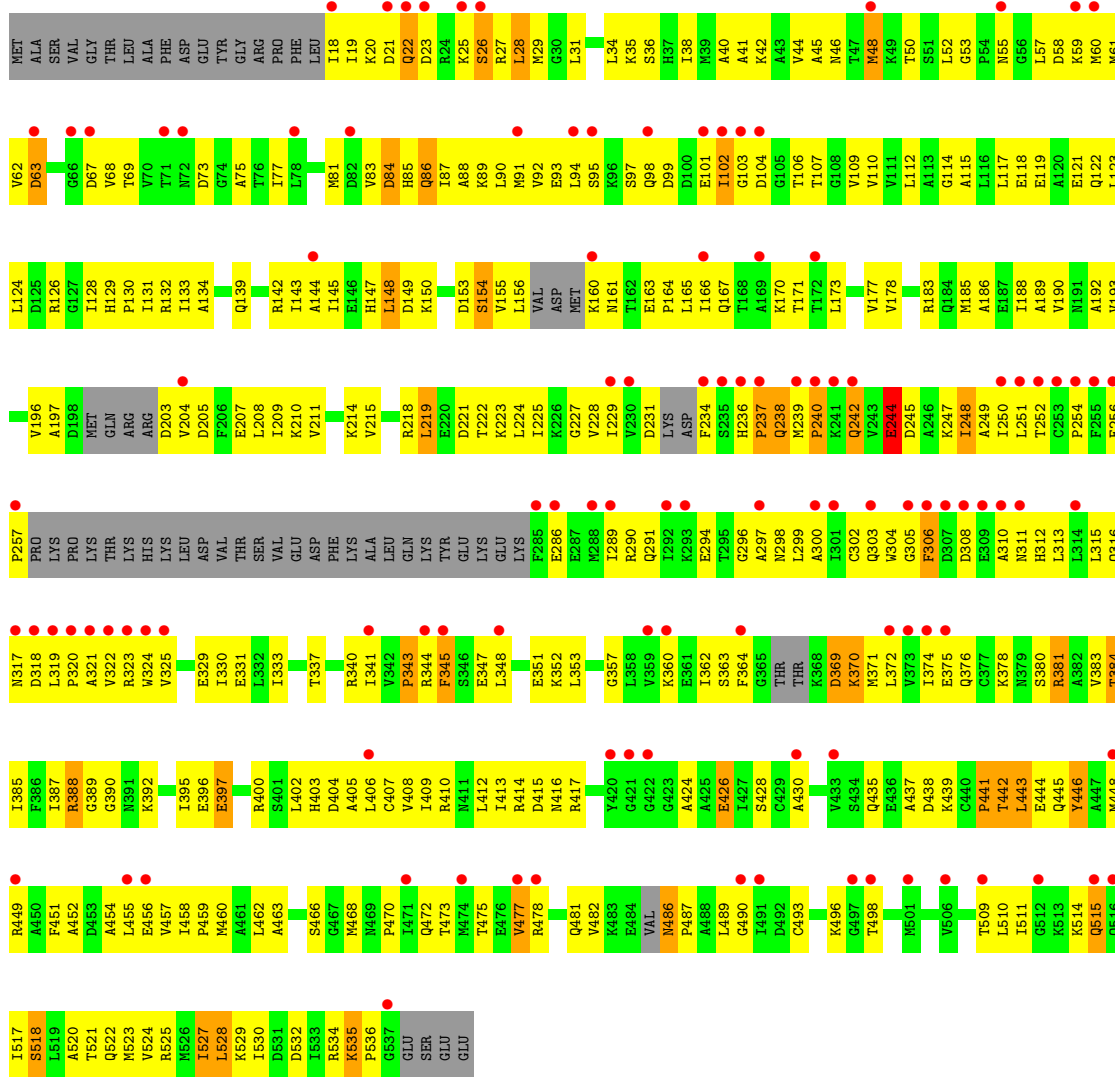


● Molecule 3: T-COMPLEX PROTEIN 1 SUBUNIT DELTA

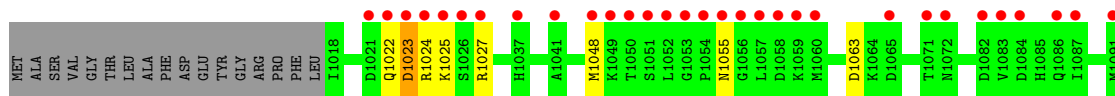


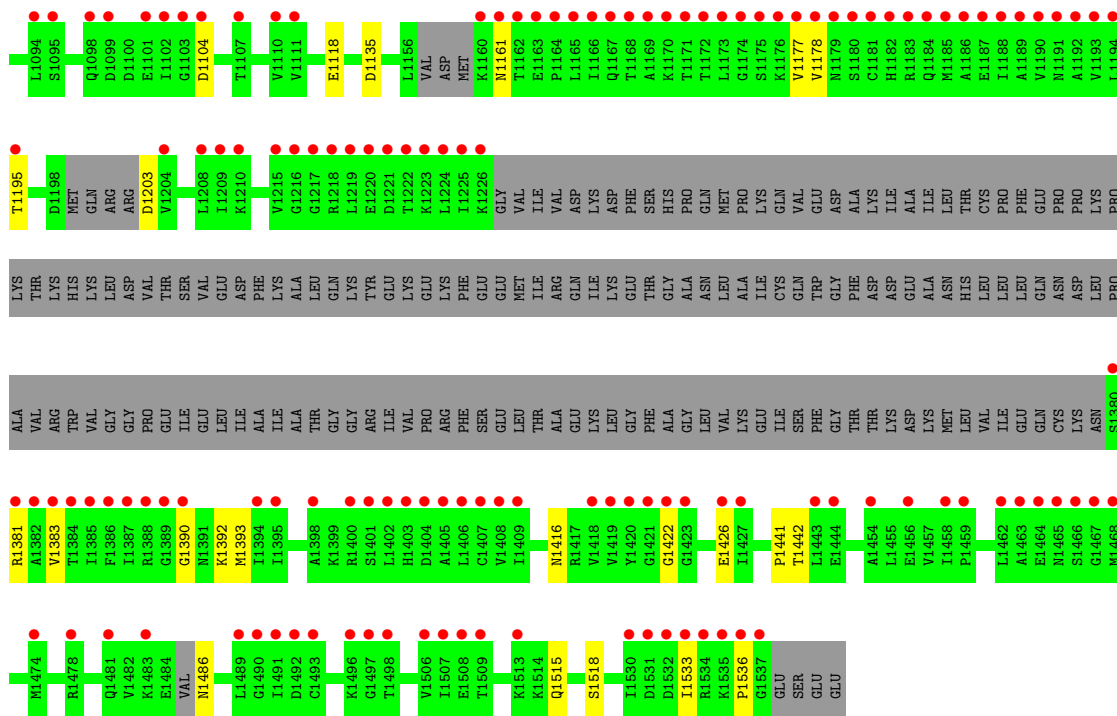


● Molecule 4: T-COMPLEX PROTEIN 1 SUBUNIT EPSILON

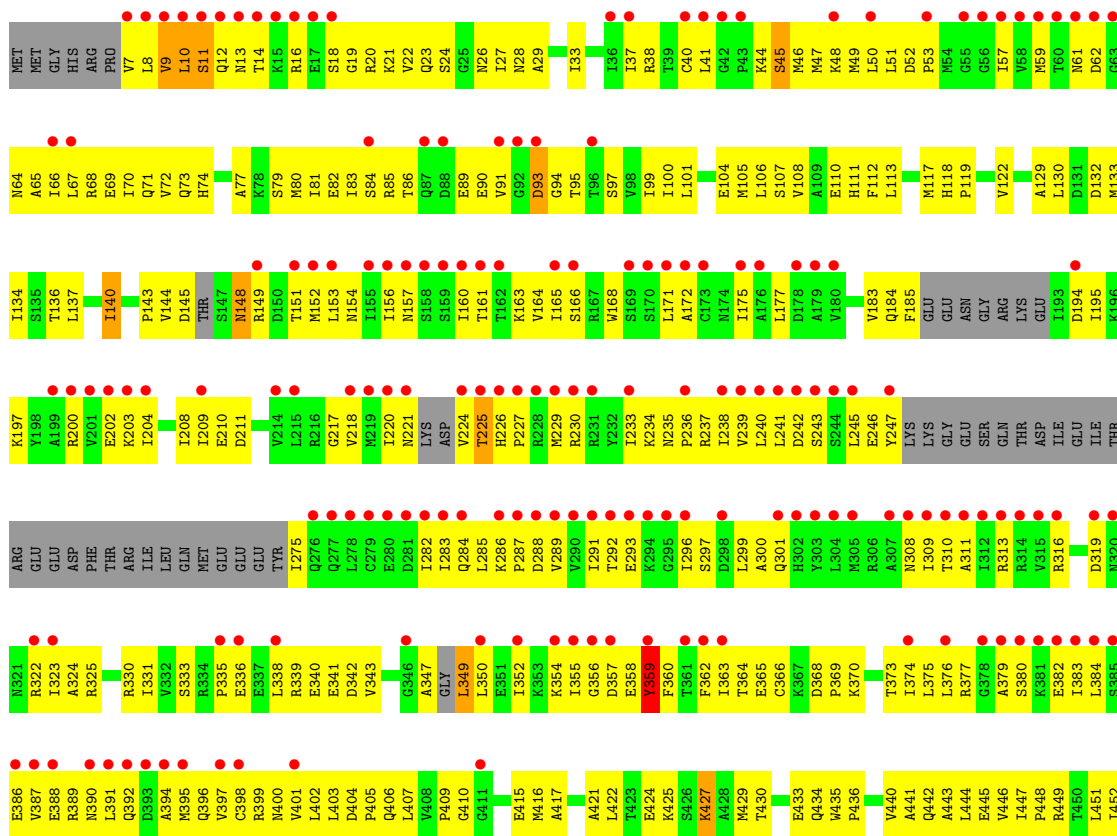


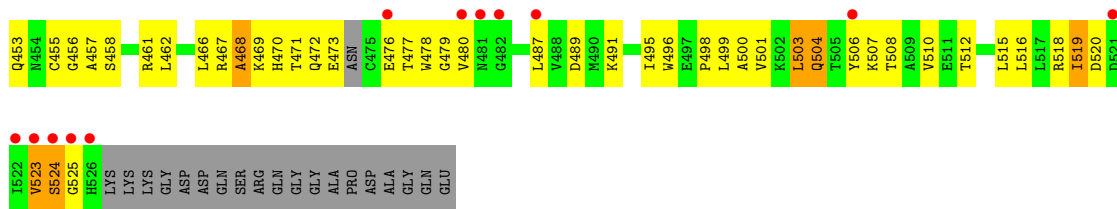
● Molecule 4: T-COMPLEX PROTEIN 1 SUBUNIT EPSILON



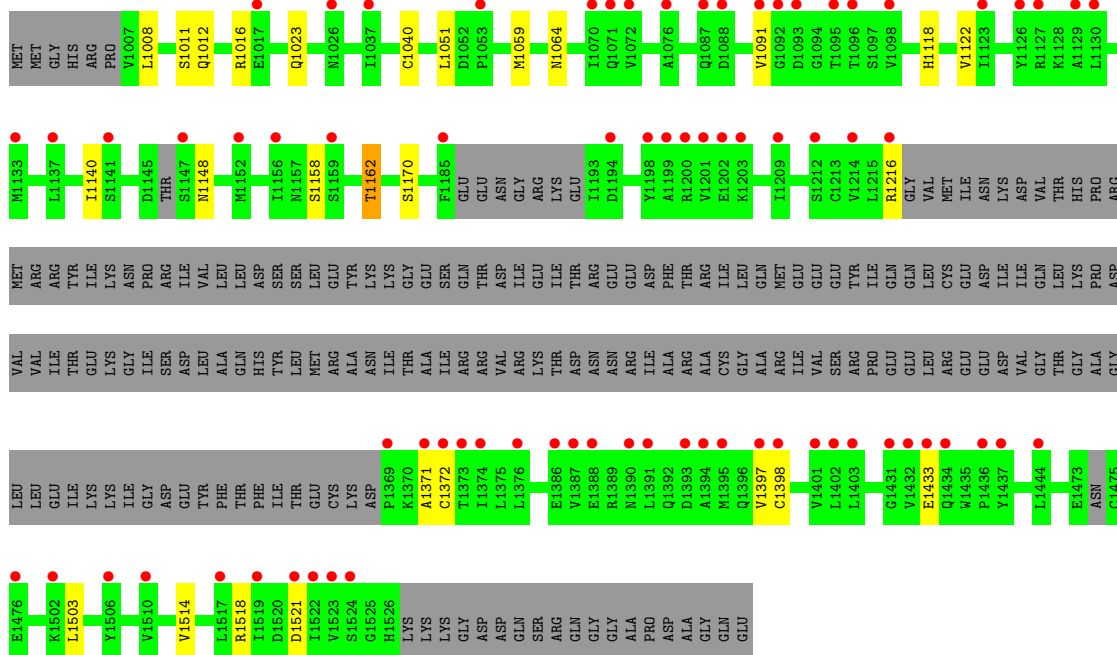


● Molecule 5: T-COMPLEX PROTEIN 1 SUBUNIT GAMMA

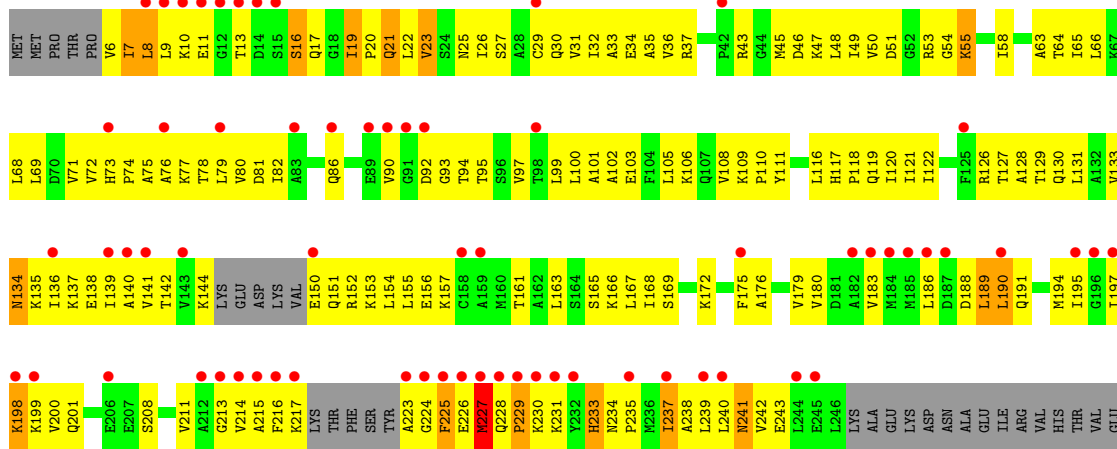


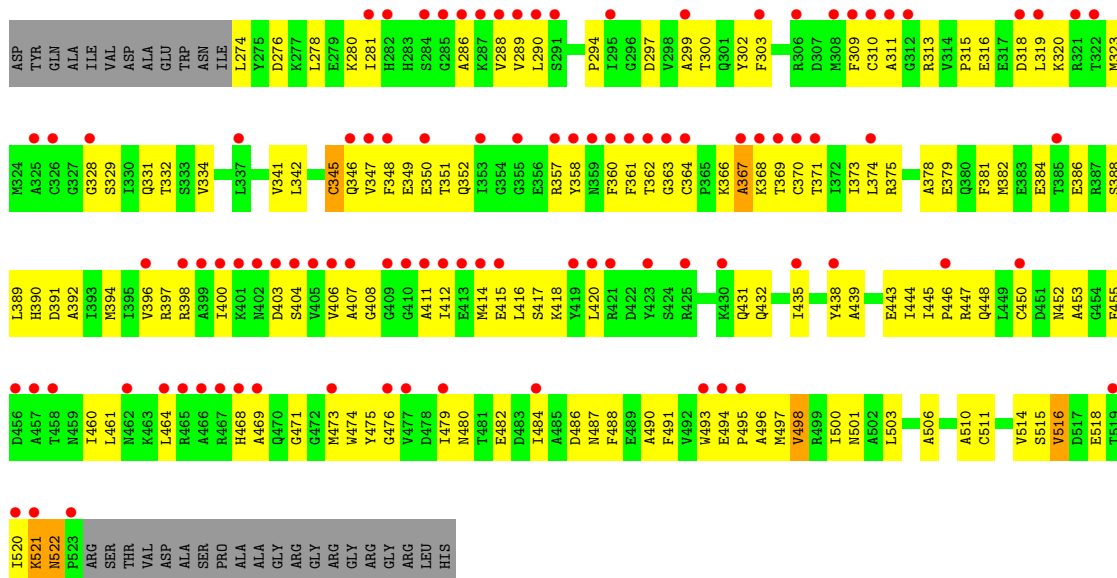


● Molecule 5: T-COMPLEX PROTEIN 1 SUBUNIT GAMMA

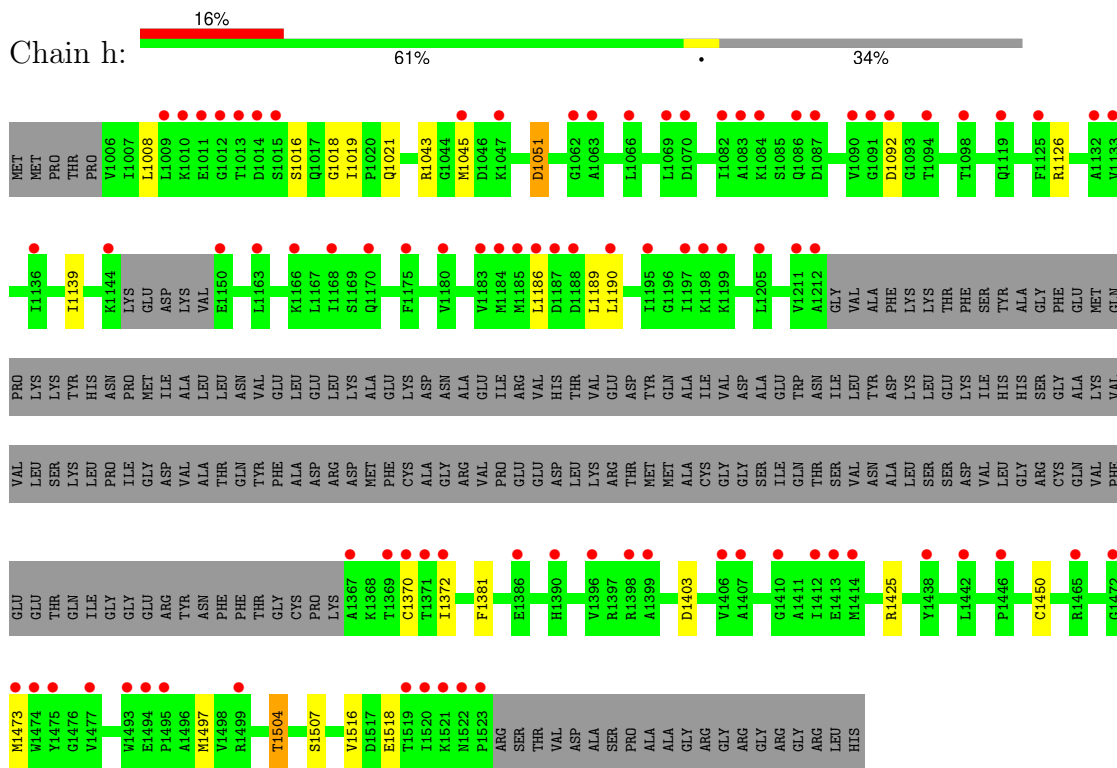


● Molecule 6: T-COMPLEX PROTEIN 1 SUBUNIT ETA

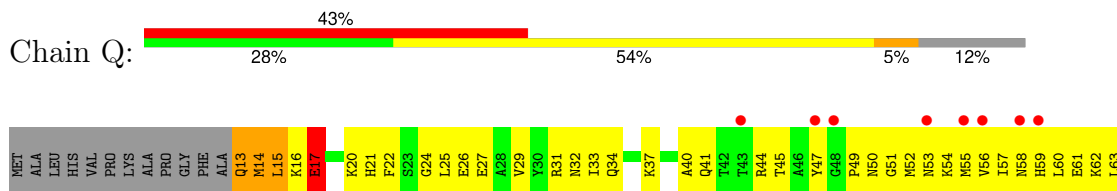


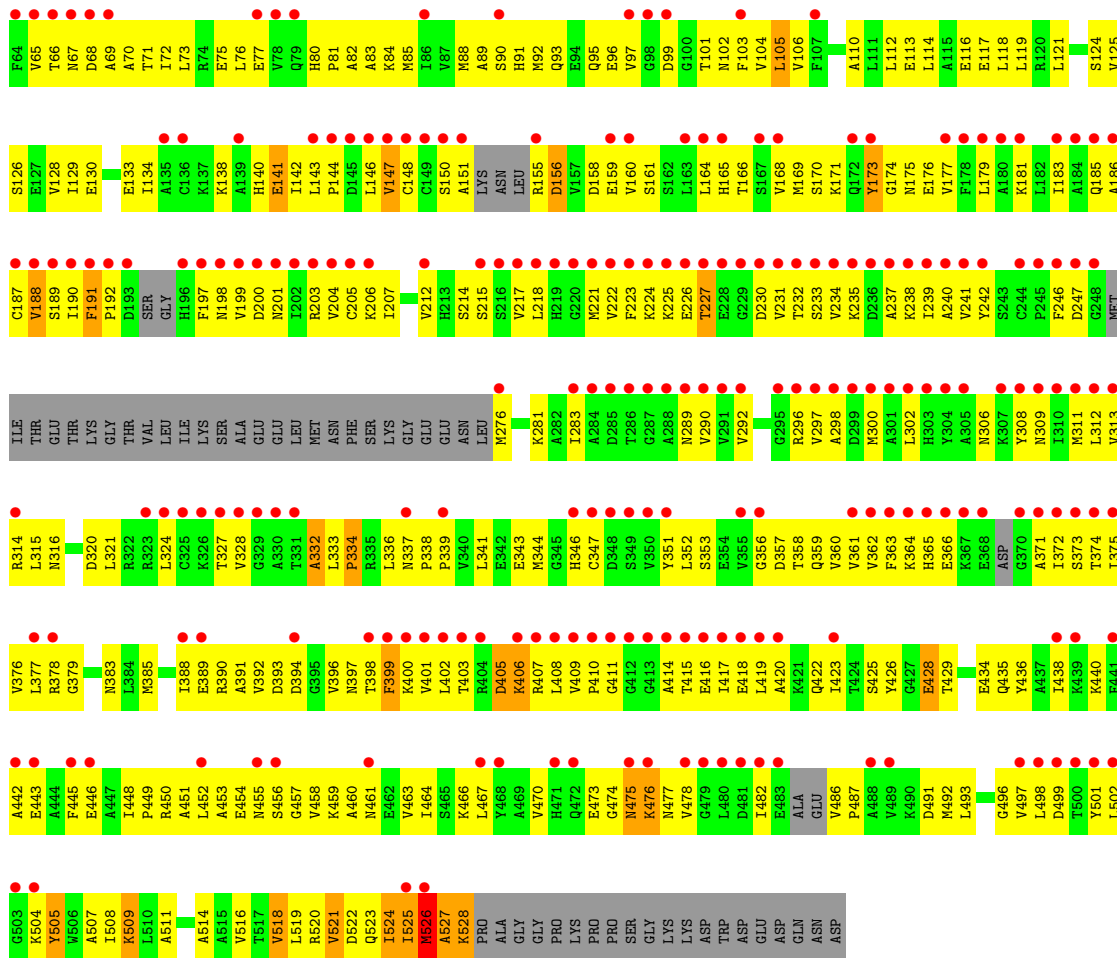


• Molecule 6: T-COMPLEX PROTEIN 1 SUBUNIT ETA

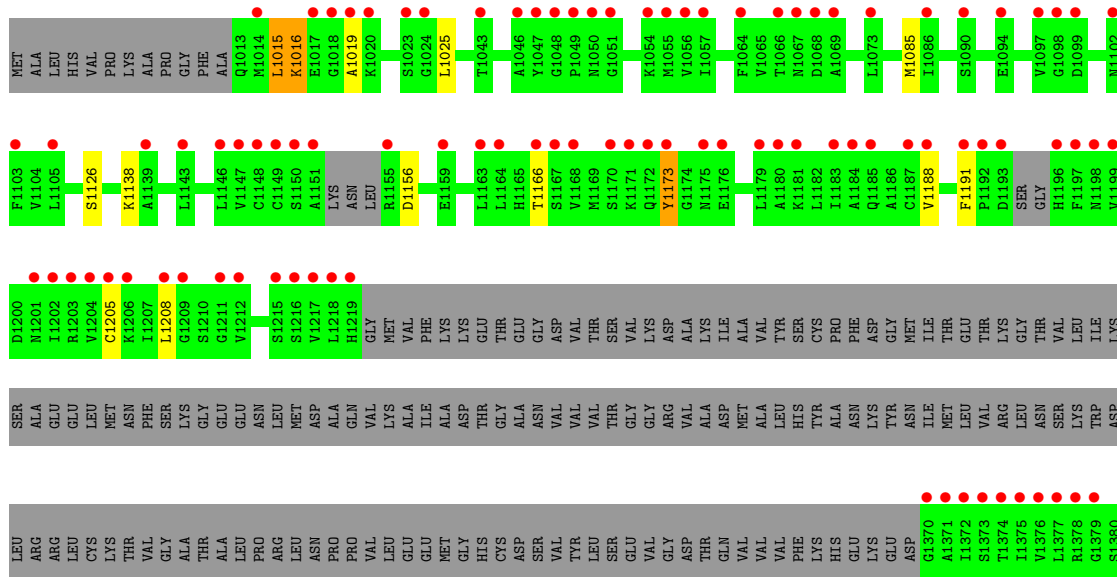


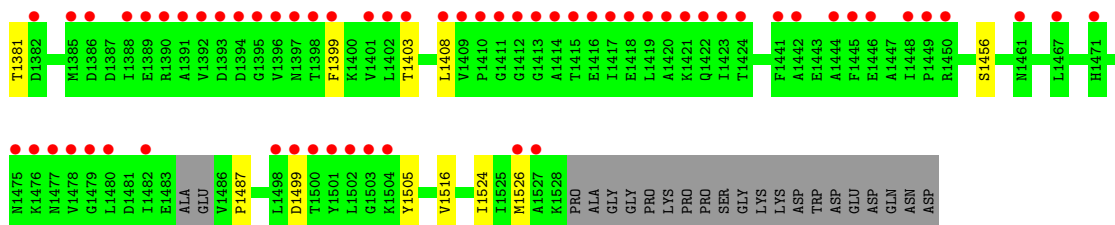
• Molecule 7: T-COMPLEX PROTEIN 1 SUBUNIT THETA



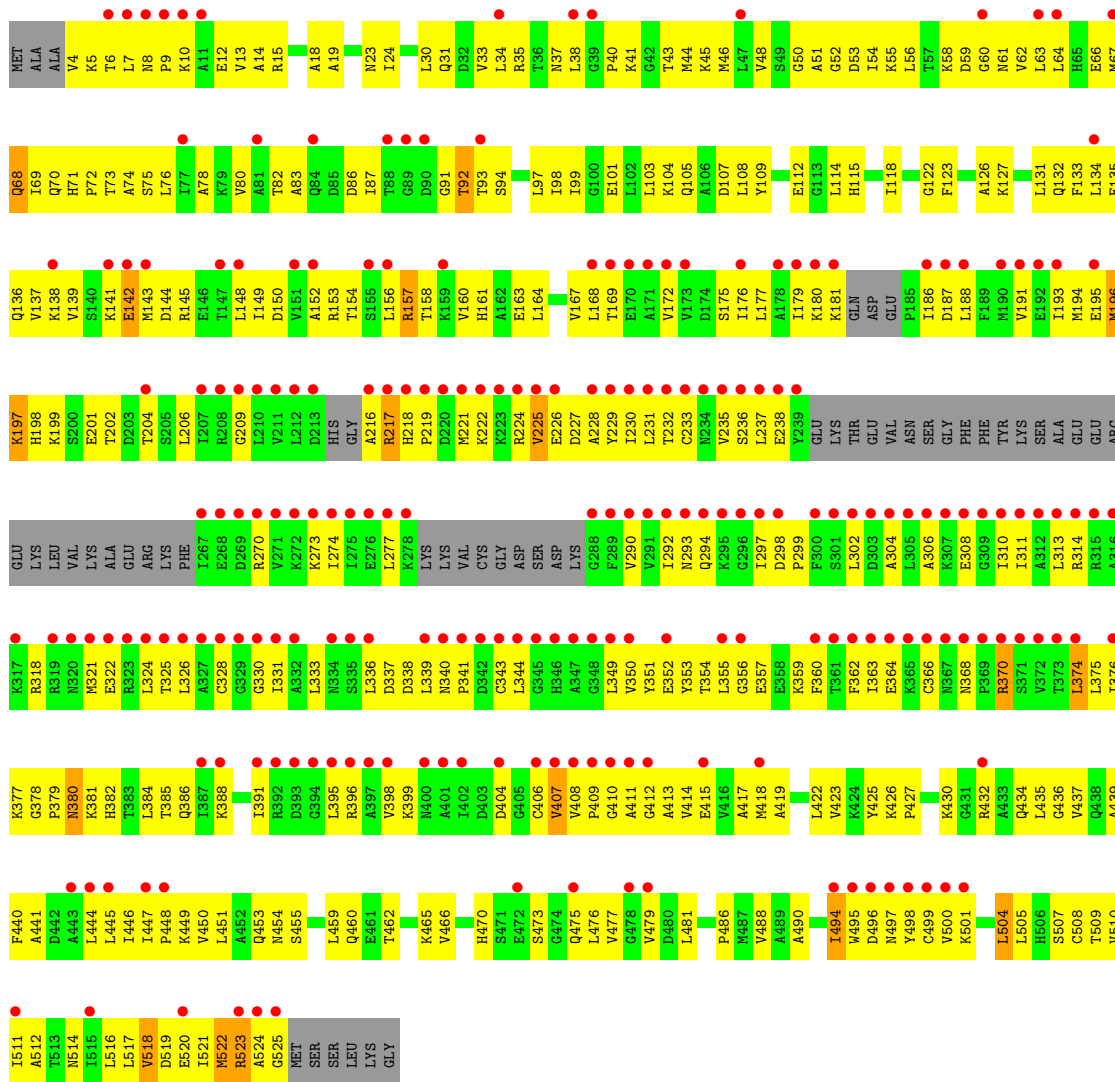


● Molecule 7: T-COMPLEX PROTEIN 1 SUBUNIT THETA

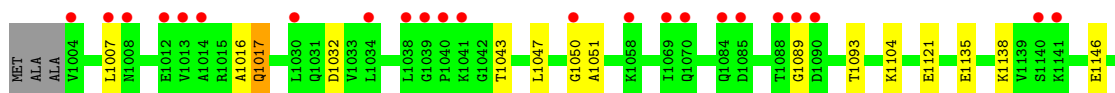
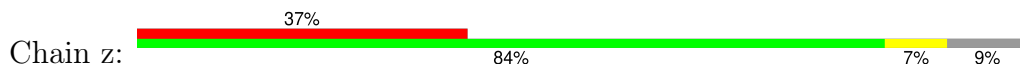




• Molecule 8: T-COMPLEX PROTEIN 1 SUBUNIT ZETA



• Molecule 8: T-COMPLEX PROTEIN 1 SUBUNIT ZETA



V1151	ASP	●
A1152	SER	●
S1155	ASP	●
L1156	LYS	●
R1157	F1288	●
T1158	V1290	●
K1159	I1291	●
V1160	I1292	●
H1161	N1293	●
L1168	Q1294	●
V1172	K1295	●
V1173	G1296	●
D1174	I1297	●
S1175	D1298	●
I1176	S1301	●
L1177	L1302	●
A1178	N1302	●
I1179	D1303	●
K1180	A1304	●
K1181	L1305	●
GLN	A1306	●
ASP	K1307	●
GLU	E1308	●
GLU	G1309	●
F1185	I1310	●
I1186	I1311	●
D1187	A1312	●
L1188	L1313	●
F1189	R1314	●
M1190	R1315	●
V1191	A1316	●
E1192	R1317	●
I1193	N1320	●
M1194	M1321	●
E1195	E1322	●
M1196	R1323	●
E1201	L1324	●
T1204	A1327	●
S1205	C1328	●
L1206	G1329	●
I1207	G1330	●
R1209	I1331	●
L1210	A1332	●
V1211	L1333	●
L1212	N1334	●
D1213	S1335	●
HIS	L1336	●
GLY	D1337	●
A1216	D1338	●
R1217	L1339	●
H1218	N1340	●
M1221	P1341	●
K1222	D1342	●
K1223	C1343	●
	L1344	●
	G1345	●
	H1346	●
R1224	ASP	●
V1225	SER	●
E1226	ASP	●
D1227	LYS	●
A1228	F1288	●
I1230	V1290	●
L1231	I1291	●
T1232	I1292	●
C1233	N1293	●
N1234	Q1294	●
V1235	K1295	●
S1236	G1296	●
L1237	I1297	●
E1238	D1298	●
GLU	S1301	●
LYS	L1302	●
THR	N1302	●
GLU	D1303	●
VAL	A1304	●
ASN	L1305	●
SER	A1306	●
GLY	K1307	●
PHE	E1308	●
PHE	G1309	●
TYR	I1310	●
LYS	I1311	●
SER	A1312	●
ALA	L1313	●
GLU	R1314	●
GLU	R1315	●
ARG	A1316	●
GLU	R1317	●
LYS	N1320	●
LEU	M1321	●
VAL	E1322	●
LYS	R1323	●
ALA	L1324	●
GLU	A1327	●
ARG	C1328	●
LYS	G1329	●
PHE	G1330	●
I1267	I1331	●
E1268	A1332	●
D1269	L1333	●
R1270	N1334	●
V1271	S1335	●
K1272	L1336	●
L1273	D1337	●
I1274	D1338	●
I1275	L1339	●
E1276	N1340	●
L1277	P1341	●
K1278	D1342	●
LYS	C1343	●
LYS	L1344	●
VAL	G1345	●
CYS	H1346	●
GLY		●
A1347	A1347	●
G1348	G1348	●
L1349	L1349	●
V1350	V1350	●
Y1351	Y1351	●
E1352	E1352	●
Y1353	Y1353	●
E1358	E1358	●
K1359	K1359	●
F1360	F1360	●
Q1361	Q1361	●
F1362	F1362	●
I1363	I1363	●
E1364	E1364	●
K1365	K1365	●
C1366	C1366	●
N1367	N1367	●
N1368	N1368	●
P1369	P1369	●
R1370	R1370	●
S1371	S1371	●
V1372	V1372	●
L1373	L1373	●
L1374	L1374	●
L1375	L1375	●
I1376	I1376	●
K1377	K1377	●
Q1386	Q1386	●
T1391	T1391	●
R1392	R1392	●
D1393	D1393	●
G1394	G1394	●
L1395	L1395	●
R1396	R1396	●
A1397	A1397	●
V1398	V1398	●
V1408	V1408	●
P1409	P1409	●
G1410	G1410	●
A1411	A1411	●
G1412	G1412	●
K1430	K1430	●
P1448	P1448	●
Q1460	Q1460	●
V1466	V1466	●
S1471	S1471	●
Q1475	Q1475	●
G1478	G1478	●
V1479	V1479	●
D1480	D1480	●
L1481	L1481	●
G1493	G1493	●
I1494	I1494	●
M1495	M1495	●
D1496	D1496	●
N1497	N1497	●
L1504	L1504	●
V1510	V1510	●
M1522	M1522	●
R1523	R1523	●
G1525	G1525	●
MET	MET	●
SER	SER	●
SER	SER	●
LEU	LEU	●
LYS	LYS	●
GLY	GLY	●

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	272.70Å 313.50Å 158.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	200.00 – 5.50 97.58 – 5.44	Depositor EDS
% Data completeness (in resolution range)	99.1 (200.00-5.50) 98.4 (97.58-5.44)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.37 (at 5.41Å)	Xtrriage
Refinement program	CNS 1.3	Depositor
R, R_{free}	0.340 , 0.399 0.342 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	257.8	Xtrriage
Anisotropy	0.400	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 425.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.32$, $\langle L^2 \rangle = 0.16$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.75	EDS
Total number of atoms	51877	wwPDB-VP
Average B, all atoms (Å ²)	277.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.63% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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	A	0.22	0/3657	0.44	0/4934
1	a	0.22	0/2733	0.46	0/3695
2	B	0.22	0/3638	0.43	0/4903
2	b	0.21	0/2680	0.44	0/3615
3	D	0.21	0/3632	0.46	0/4891
3	d	0.21	0/2707	0.45	0/3650
4	E	0.22	0/3712	0.44	0/4997
4	e	0.21	0/2743	0.44	0/3687
5	G	0.21	0/3758	0.45	0/5073
5	g	0.21	0/2763	0.46	0/3733
6	H	0.23	0/3716	0.43	0/5008
6	h	0.22	0/2751	0.45	0/3711
7	Q	0.23	0/3724	0.44	0/5032
7	q	0.23	0/2774	0.43	0/3746
8	Z	0.22	0/3702	0.44	0/4995
8	z	0.21	0/3702	0.45	0/4995
All	All	0.22	0/52392	0.44	0/70665

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	3625	0	3783	380	0
1	a	2705	0	2799	0	0
2	B	3602	0	3705	353	0
2	b	2658	0	2733	0	0
3	D	3610	0	3810	456	0
3	d	2690	0	2818	0	0
4	E	3674	0	3781	382	0
4	e	2724	0	2822	0	0
5	G	3719	0	3870	398	0
5	g	2735	0	2851	0	0
6	H	3671	0	3783	366	0
6	h	2724	0	2842	0	0
7	Q	3673	0	3719	383	0
7	q	2739	0	2777	0	0
8	Z	3664	0	3820	413	0
8	z	3664	0	3820	0	0
All	All	51877	0	53733	2912	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 52.

The worst 5 of 2912 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)
5:G:456:GLY:HA3	8:Z:118:ILE:HD11	1.37	1.06
1:A:211:ILE:HG22	1:A:213:GLY:H	1.21	1.04
3:D:540:ASN:HB3	3:D:542:ARG:HD3	1.36	1.03
3:D:31:ASP:HB3	3:D:36:ILE:HB	1.39	1.03
4:E:94:LEU:HD21	4:E:523:MET:HB2	1.39	1.03

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	471/556 (85%)	390 (83%)	63 (13%)	18 (4%)	3	24
1	a	351/556 (63%)	283 (81%)	50 (14%)	18 (5%)	2	19
2	B	473/535 (88%)	398 (84%)	62 (13%)	13 (3%)	5	31
2	b	353/535 (66%)	301 (85%)	42 (12%)	10 (3%)	5	30
3	D	469/542 (86%)	385 (82%)	70 (15%)	14 (3%)	4	28
3	d	351/542 (65%)	300 (86%)	42 (12%)	9 (3%)	5	31
4	E	471/541 (87%)	392 (83%)	60 (13%)	19 (4%)	3	23
4	e	351/541 (65%)	295 (84%)	39 (11%)	17 (5%)	2	21
5	G	471/545 (86%)	396 (84%)	62 (13%)	13 (3%)	5	30
5	g	351/545 (64%)	291 (83%)	51 (14%)	9 (3%)	5	31
6	H	473/543 (87%)	384 (81%)	73 (15%)	16 (3%)	3	26
6	h	353/543 (65%)	289 (82%)	54 (15%)	10 (3%)	5	30
7	Q	473/548 (86%)	406 (86%)	45 (10%)	22 (5%)	2	21
7	q	351/548 (64%)	292 (83%)	48 (14%)	11 (3%)	4	27
8	Z	473/531 (89%)	400 (85%)	57 (12%)	16 (3%)	3	26
8	z	473/531 (89%)	403 (85%)	57 (12%)	13 (3%)	5	31
All	All	6708/8682 (77%)	5605 (84%)	875 (13%)	228 (3%)	3	26

5 of 228 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3	GLY
1	A	145	ARG
1	A	146	ASP
1	A	230	VAL
2	B	54	SER

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	395/461 (86%)	368 (93%)	27 (7%)	16	42
1	a	297/461 (64%)	269 (91%)	28 (9%)	8	29
2	B	382/429 (89%)	372 (97%)	10 (3%)	46	67
2	b	281/429 (66%)	263 (94%)	18 (6%)	17	44
3	D	407/454 (90%)	388 (95%)	19 (5%)	26	52
3	d	303/454 (67%)	285 (94%)	18 (6%)	19	46
4	E	400/455 (88%)	371 (93%)	29 (7%)	14	40
4	e	298/455 (66%)	283 (95%)	15 (5%)	24	50
5	G	416/470 (88%)	402 (97%)	14 (3%)	37	60
5	g	307/470 (65%)	288 (94%)	19 (6%)	18	45
6	H	394/445 (88%)	381 (97%)	13 (3%)	38	61
6	h	292/445 (66%)	274 (94%)	18 (6%)	18	45
7	Q	398/452 (88%)	380 (96%)	18 (4%)	27	53
7	q	296/452 (66%)	279 (94%)	17 (6%)	20	47
8	Z	398/440 (90%)	386 (97%)	12 (3%)	41	63
8	z	398/440 (90%)	374 (94%)	24 (6%)	19	46
All	All	5662/7212 (78%)	5363 (95%)	299 (5%)	22	49

5 of 299 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	g	1162	THR
8	z	1196	MET
5	g	1503	LEU
7	q	1085	MET
5	G	503	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 144 such sidechains are listed below:

Mol	Chain	Res	Type
6	h	1191	GLN
8	z	1503	GLN
6	h	1431	GLN
7	q	1523	GLN
6	H	25	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	481/556 (86%)	1.59	140 (29%) 0 1	260, 260, 260, 260	0
1	a	359/556 (64%)	2.09	151 (42%) 0 0	282, 282, 282, 282	0
2	B	481/535 (89%)	2.59	229 (47%) 0 0	281, 281, 281, 281	0
2	b	359/535 (67%)	2.16	159 (44%) 0 0	272, 272, 272, 272	0
3	D	481/542 (88%)	1.82	158 (32%) 0 1	289, 289, 289, 289	0
3	d	359/542 (66%)	1.78	134 (37%) 0 1	266, 266, 266, 266	0
4	E	481/541 (88%)	1.26	112 (23%) 0 2	262, 262, 262, 262	0
4	e	359/541 (66%)	2.37	164 (45%) 0 0	283, 283, 283, 283	0
5	G	481/545 (88%)	1.97	185 (38%) 0 1	283, 283, 283, 283	0
5	g	359/545 (65%)	1.18	76 (21%) 0 2	275, 275, 275, 275	0
6	H	481/543 (88%)	1.70	163 (33%) 0 1	272, 272, 272, 272	0
6	h	359/543 (66%)	1.18	85 (23%) 0 2	258, 258, 258, 258	0
7	Q	481/548 (87%)	2.56	233 (48%) 0 0	308, 308, 308, 308	0
7	q	359/548 (65%)	2.01	156 (43%) 0 0	261, 261, 261, 261	0
8	Z	481/531 (90%)	2.52	219 (45%) 0 0	297, 297, 297, 297	0
8	z	481/531 (90%)	2.37	194 (40%) 0 1	276, 276, 276, 276	0
All	All	6842/8682 (78%)	1.96	2558 (37%) 0 1	258, 276, 308, 308	0

The worst 5 of 2558 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
8	Z	288	GLY	25.1
8	z	1209	GLY	21.8
6	H	224	GLY	18.3
8	z	1288	GLY	16.3
4	e	1226	LYS	15.8

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.