



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 5, 2024 – 03:57 AM EST

PDB ID : 1XFZ
Title : Crystal structure of anthrax edema factor (EF) in complex with calmodulin in the presence of 1 millimolar exogenously added calcium chloride
Authors : Shen, Y.; Zhukovskaya, N.L.; Guo, Q.; Florian, J.; Tang, W.J.
Deposited on : 2004-09-15
Resolution : 3.25 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

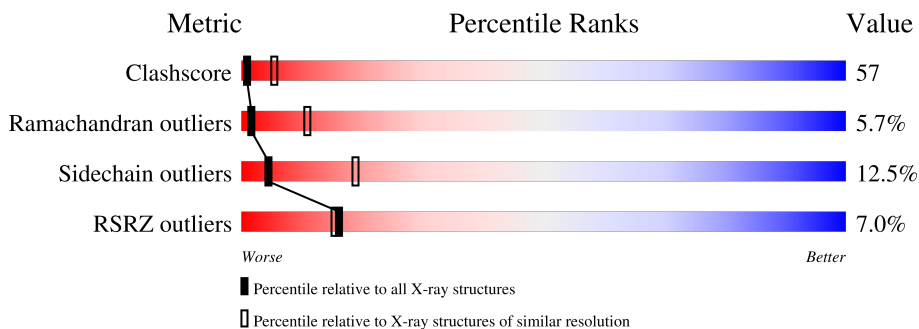
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.25 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	1251 (3.30-3.22)
Ramachandran outliers	138981	1229 (3.30-3.22)
Sidechain outliers	138945	1228 (3.30-3.22)
RSRZ outliers	127900	1154 (3.30-3.22)

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	777	<div style="display: flex; align-items: center;"> <div style="width: 7%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 28%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">7% 28% 54% 11% • 5%</p>
1	B	777	<div style="display: flex; align-items: center;"> <div style="width: 7%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 27%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 12%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">7% 27% 54% 12% • 5%</p>
1	C	777	<div style="display: flex; align-items: center;"> <div style="width: 8%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 28%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">8% 28% 54% 11% • 5%</p>
1	D	777	<div style="display: flex; align-items: center;"> <div style="width: 8%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 28%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">8% 28% 54% 11% • 5%</p>
1	E	777	<div style="display: flex; align-items: center;"> <div style="width: 8%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 28%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">8% 28% 54% 11% • 5%</p>
1	F	777	<div style="display: flex; align-items: center;"> <div style="width: 7%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 28%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">7% 28% 54% 11% • 5%</p>
2	O	149	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 30%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 54%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 12%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">3% 30% 54% 12% ••</p>

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Mol	Chain	Length	Quality of chain
2	P	149	
2	Q	149	
2	R	149	
2	S	149	
2	T	149	

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 42852 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 Calmodulin-sensitive adenylate cyclase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	735	5992	3828	995	1163	6	0	0	0
1	B	735	5992	3828	995	1163	6	0	0	0
1	C	735	5992	3828	995	1163	6	0	0	0
1	D	735	5992	3828	995	1163	6	0	0	0
1	E	735	5992	3828	995	1163	6	0	0	0
1	F	735	5992	3828	995	1163	6	0	0	0

There are 54 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	24	MET	-	initiating methionine	UNP P40136
A	25	HIS	-	expression tag	UNP P40136
A	26	HIS	-	expression tag	UNP P40136
A	27	HIS	-	expression tag	UNP P40136
A	28	HIS	-	expression tag	UNP P40136
A	29	HIS	-	expression tag	UNP P40136
A	30	HIS	-	expression tag	UNP P40136
A	31	ALA	-	cloning artifact	UNP P40136
A	32	ALA	-	cloning artifact	UNP P40136
B	24	MET	-	initiating methionine	UNP P40136
B	25	HIS	-	expression tag	UNP P40136
B	26	HIS	-	expression tag	UNP P40136
B	27	HIS	-	expression tag	UNP P40136
B	28	HIS	-	expression tag	UNP P40136
B	29	HIS	-	expression tag	UNP P40136
B	30	HIS	-	expression tag	UNP P40136
B	31	ALA	-	cloning artifact	UNP P40136

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Chain	Residue	Modelled	Actual	Comment	Reference
B	32	ALA	-	cloning artifact	UNP P40136
C	24	MET	-	initiating methionine	UNP P40136
C	25	HIS	-	expression tag	UNP P40136
C	26	HIS	-	expression tag	UNP P40136
C	27	HIS	-	expression tag	UNP P40136
C	28	HIS	-	expression tag	UNP P40136
C	29	HIS	-	expression tag	UNP P40136
C	30	HIS	-	expression tag	UNP P40136
C	31	ALA	-	cloning artifact	UNP P40136
C	32	ALA	-	cloning artifact	UNP P40136
D	24	MET	-	initiating methionine	UNP P40136
D	25	HIS	-	expression tag	UNP P40136
D	26	HIS	-	expression tag	UNP P40136
D	27	HIS	-	expression tag	UNP P40136
D	28	HIS	-	expression tag	UNP P40136
D	29	HIS	-	expression tag	UNP P40136
D	30	HIS	-	expression tag	UNP P40136
D	31	ALA	-	cloning artifact	UNP P40136
D	32	ALA	-	cloning artifact	UNP P40136
E	24	MET	-	initiating methionine	UNP P40136
E	25	HIS	-	expression tag	UNP P40136
E	26	HIS	-	expression tag	UNP P40136
E	27	HIS	-	expression tag	UNP P40136
E	28	HIS	-	expression tag	UNP P40136
E	29	HIS	-	expression tag	UNP P40136
E	30	HIS	-	expression tag	UNP P40136
E	31	ALA	-	cloning artifact	UNP P40136
E	32	ALA	-	cloning artifact	UNP P40136
F	24	MET	-	initiating methionine	UNP P40136
F	25	HIS	-	expression tag	UNP P40136
F	26	HIS	-	expression tag	UNP P40136
F	27	HIS	-	expression tag	UNP P40136
F	28	HIS	-	expression tag	UNP P40136
F	29	HIS	-	expression tag	UNP P40136
F	30	HIS	-	expression tag	UNP P40136
F	31	ALA	-	cloning artifact	UNP P40136
F	32	ALA	-	cloning artifact	UNP P40136

- Molecule 2 is a protein called Calmodulin 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	O	146	1146	702	186	249	9	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	P	146	Total	C	N	O	S	0	0	0
			1146	702	186	249	9			
2	Q	146	Total	C	N	O	S	0	0	0
			1146	702	186	249	9			
2	R	146	Total	C	N	O	S	0	0	0
			1146	702	186	249	9			
2	S	146	Total	C	N	O	S	0	0	0
			1146	702	186	249	9			
2	T	146	Total	C	N	O	S	0	0	0
			1146	702	186	249	9			

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Mg	0	0
			1	1		
3	B	1	Total	Mg	0	0
			1	1		
3	C	1	Total	Mg	0	0
			1	1		
3	D	1	Total	Mg	0	0
			1	1		
3	E	1	Total	Mg	0	0
			1	1		
3	F	1	Total	Mg	0	0
			1	1		

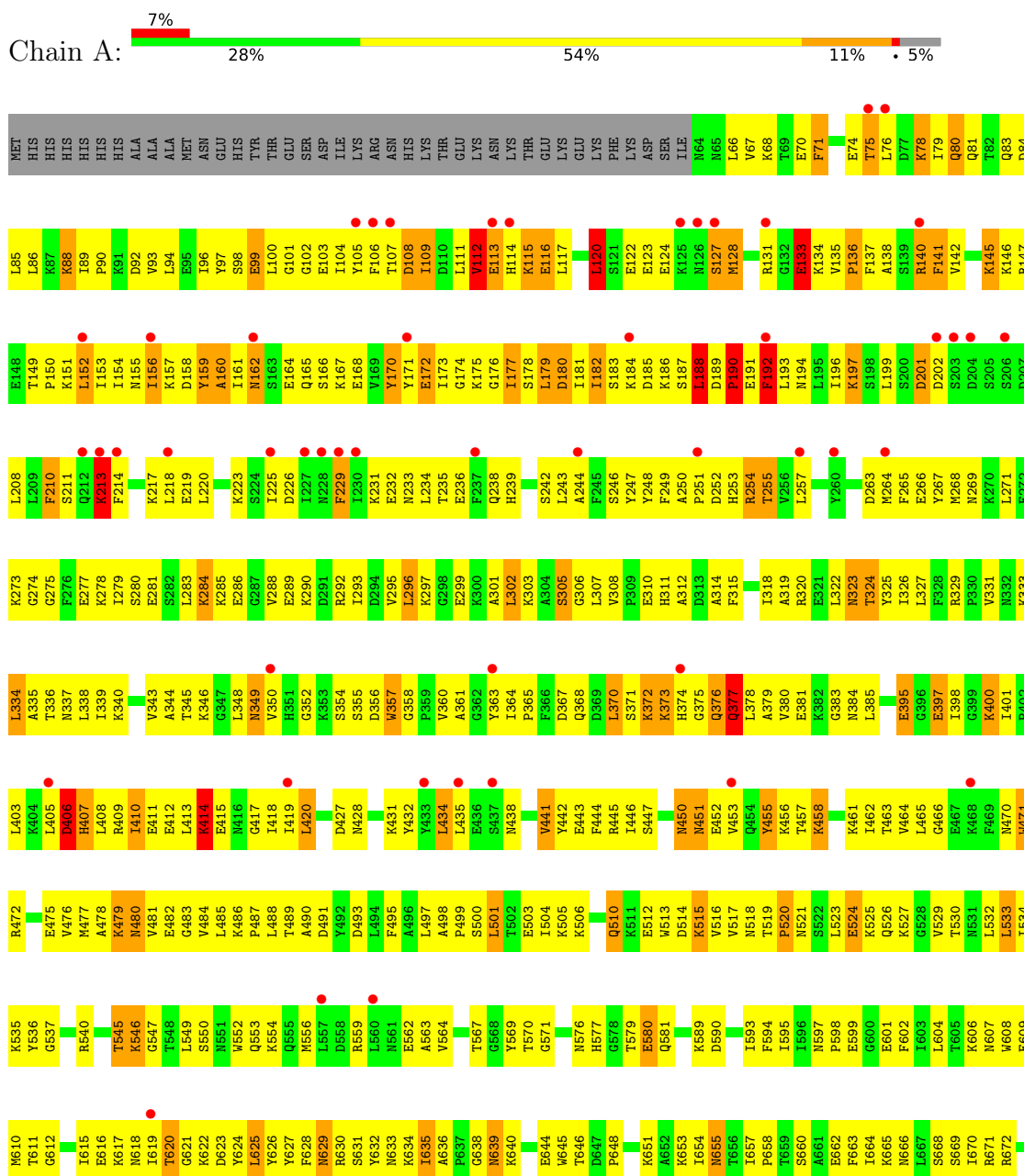
- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

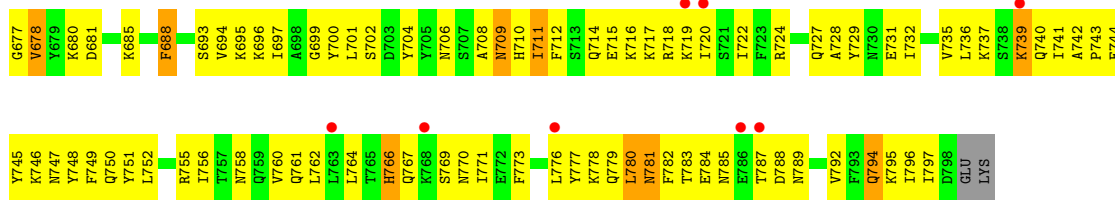
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	O	3	Total	Ca	0	0
			3	3		
4	P	3	Total	Ca	0	0
			3	3		
4	Q	3	Total	Ca	0	0
			3	3		
4	R	3	Total	Ca	0	0
			3	3		
4	S	3	Total	Ca	0	0
			3	3		
4	T	3	Total	Ca	0	0
			3	3		

3 Residue-property plots [i](#)

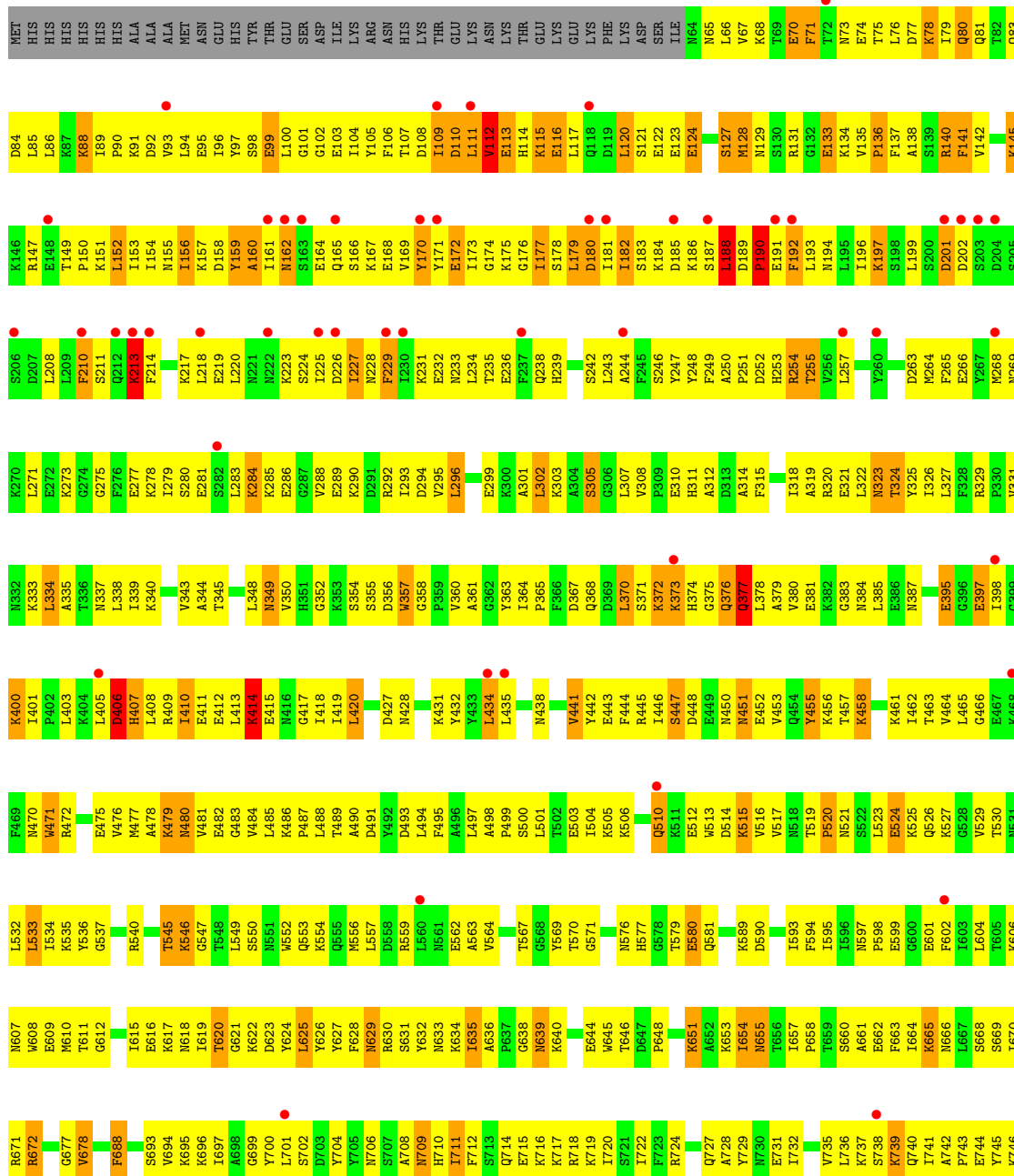
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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



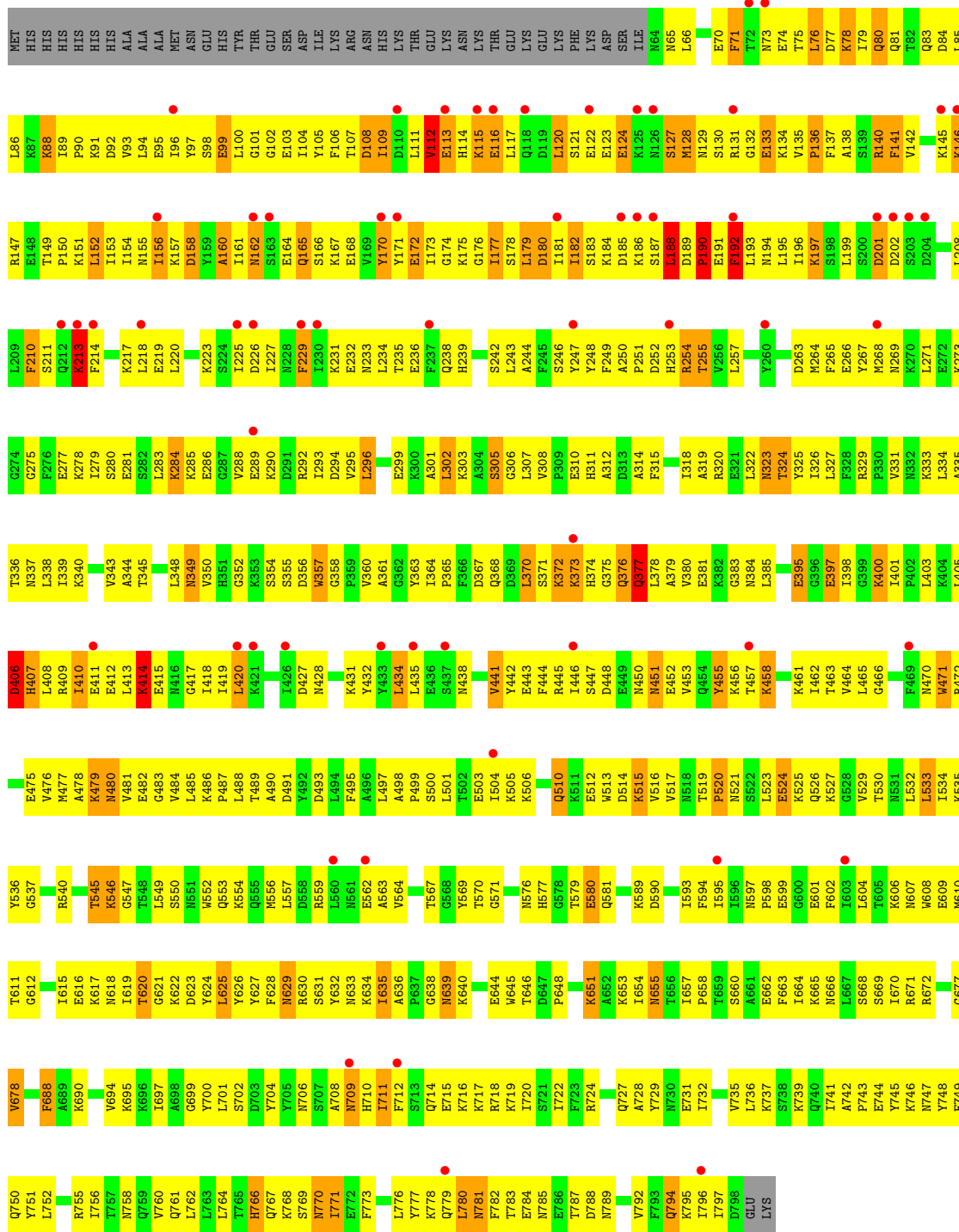


● Molecule 1: Calmodulin-sensitive adenylate cyclase

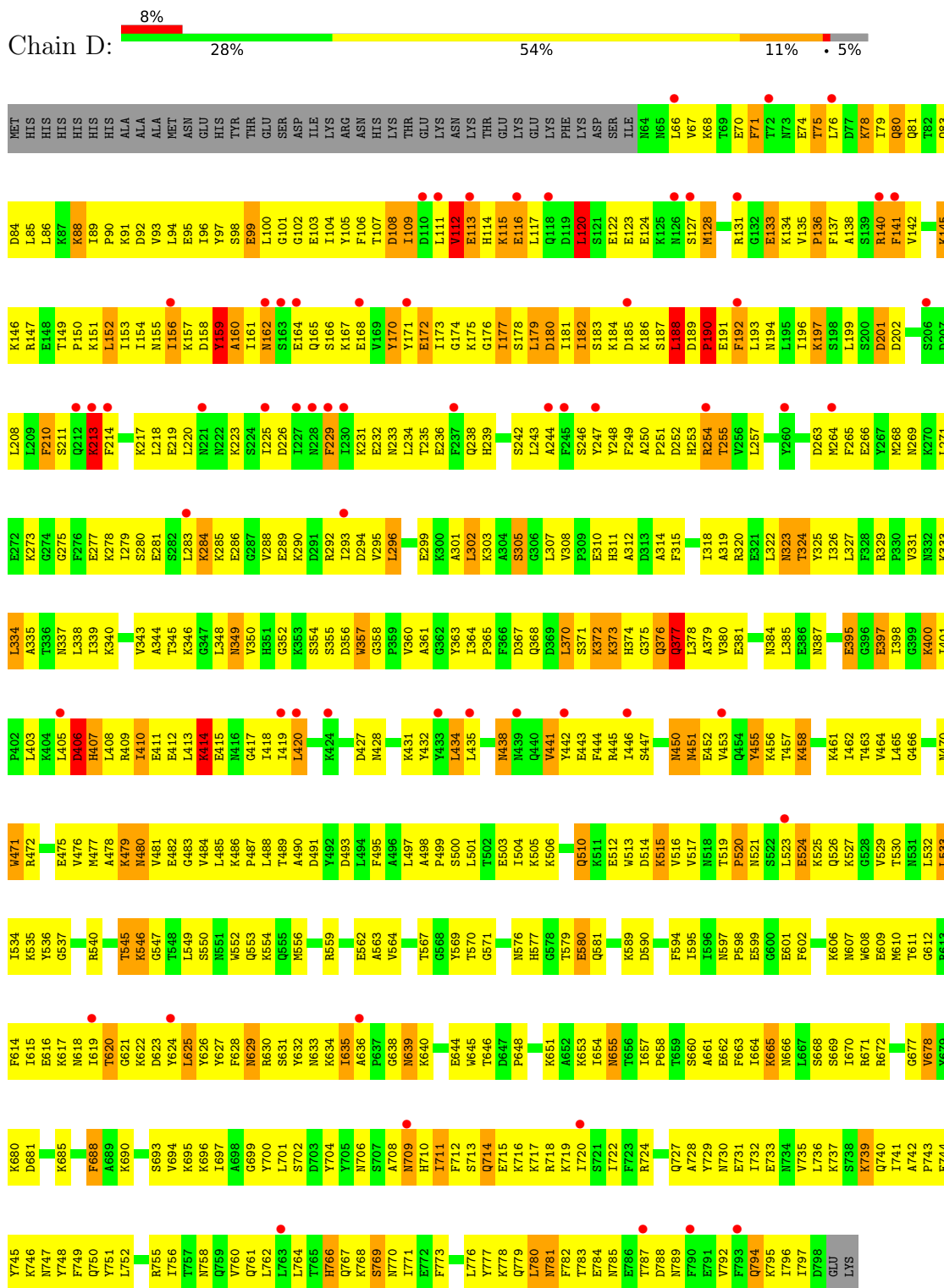


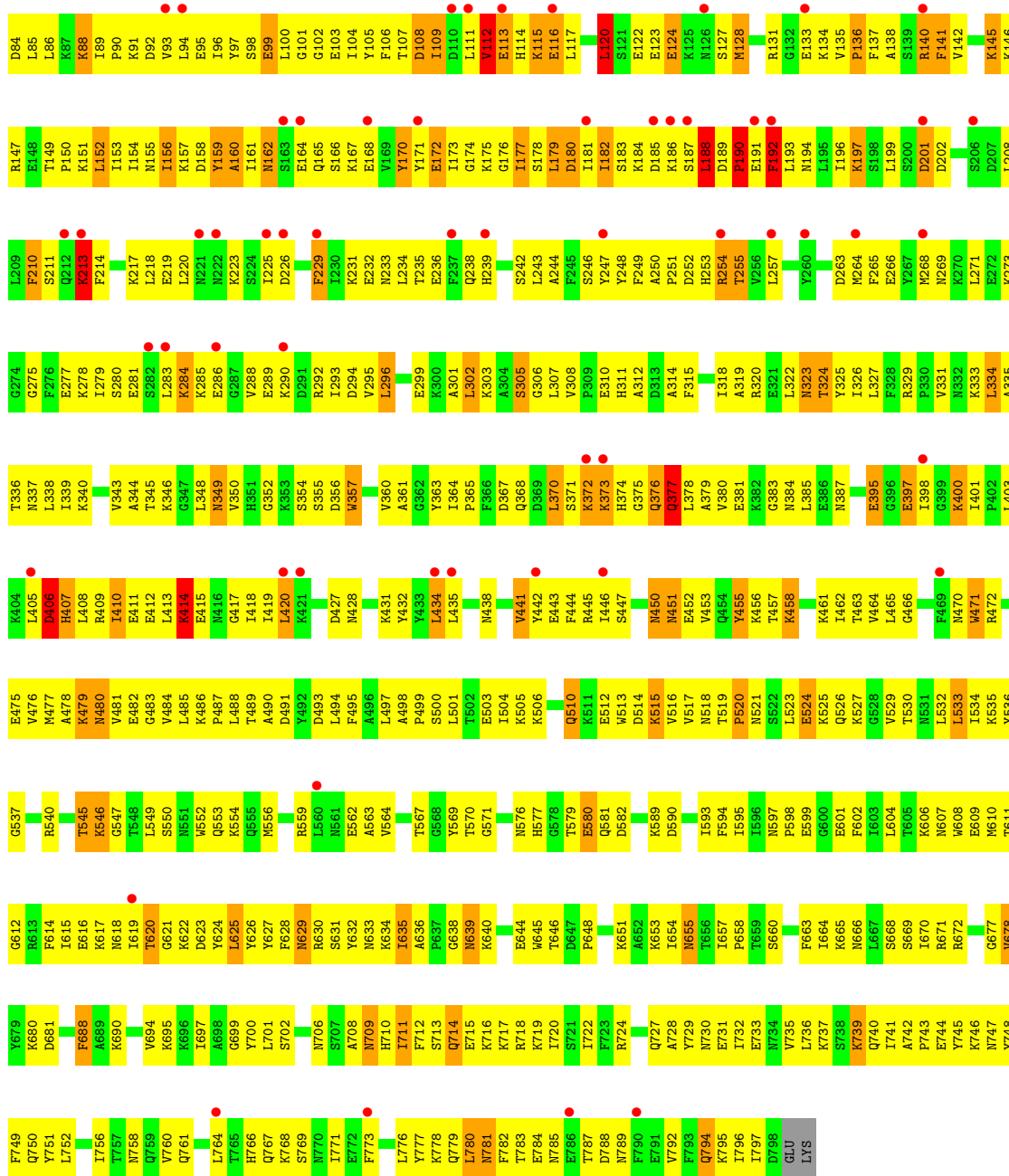


● Molecule 1: Calmodulin-sensitive adenylate cyclase

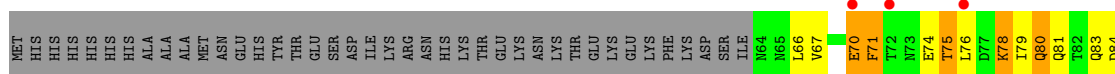


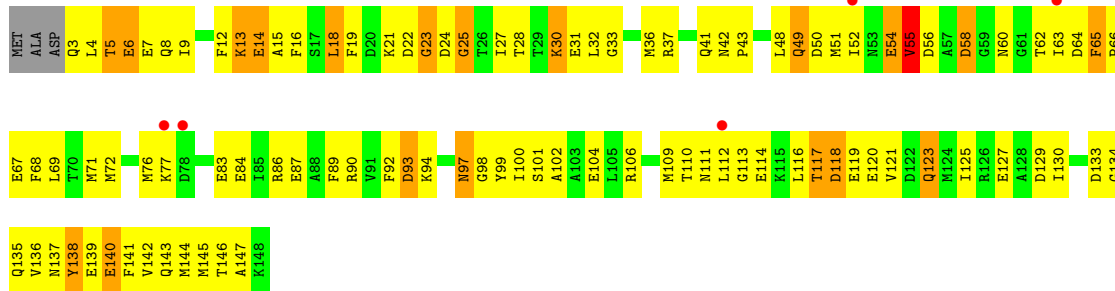
● Molecule 1: Calmodulin-sensitive adenylate cyclase



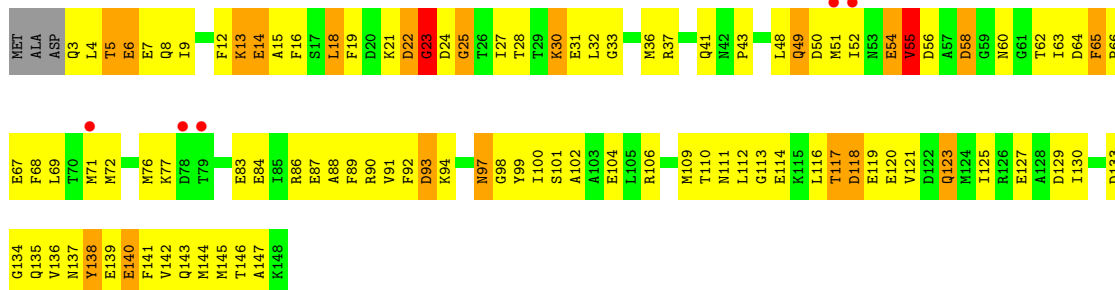


• Molecule 1: Calmodulin-sensitive adenylate cyclase

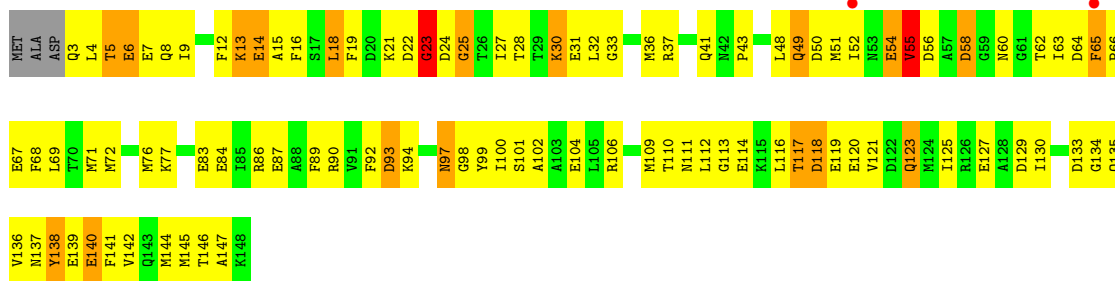




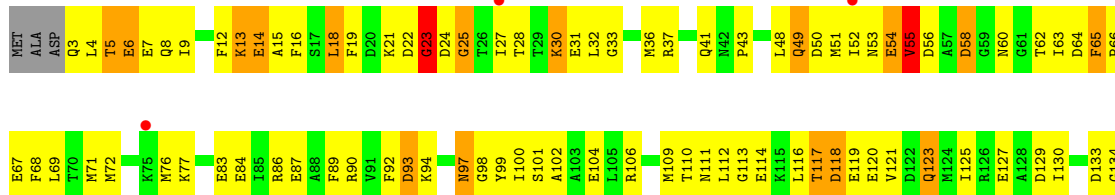
• Molecule 2: Calmodulin 2



• Molecule 2: Calmodulin 2



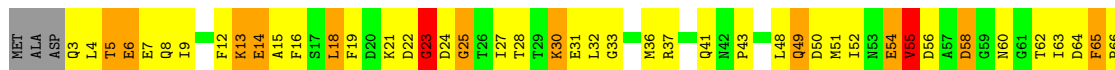
• Molecule 2: Calmodulin 2





● Molecule 2: Calmodulin 2

Chain T: 30% 55% 12% ..



4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	183.26Å 316.48Å 140.80Å 90.00° 89.91° 90.00°	Depositor
Resolution (Å)	29.99 – 3.25 39.65 – 3.20	Depositor EDS
% Data completeness (in resolution range)	95.0 (29.99-3.25) 93.3 (39.65-3.20)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.92 (at 3.18Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.258 , 0.270 0.277 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	95.5	Xtriage
Anisotropy	0.028	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 68.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.467 for -1/2*h+1/2*k,3/2*h+1/2*k,-l 0.467 for -1/2*h-1/2*k,-3/2*h+1/2*k,-l 0.460 for 1/2*h+1/2*k,3/2*h-1/2*k,-l 0.460 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.469 for -h,-k,l	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	42852	wwPDB-VP
Average B, all atoms (Å ²)	87.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.30% 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

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

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	0.52	1/6104 (0.0%)	0.77	13/8208 (0.2%)
1	B	0.52	2/6104 (0.0%)	0.77	13/8208 (0.2%)
1	C	0.53	2/6104 (0.0%)	0.78	12/8208 (0.1%)
1	D	0.52	0/6104	0.77	12/8208 (0.1%)
1	E	0.52	0/6104	0.78	13/8208 (0.2%)
1	F	0.51	0/6104	0.77	13/8208 (0.2%)
2	O	0.54	0/1158	0.73	1/1553 (0.1%)
2	P	0.53	0/1158	0.72	0/1553
2	Q	0.54	0/1158	0.72	1/1553 (0.1%)
2	R	0.54	0/1158	0.72	1/1553 (0.1%)
2	S	0.54	0/1158	0.72	1/1553 (0.1%)
2	T	0.53	0/1158	0.73	1/1553 (0.1%)
All	All	0.52	5/43572 (0.0%)	0.77	81/58566 (0.1%)

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	A	0	1
1	B	0	1
1	C	0	1
1	D	0	1
1	E	0	1
1	F	0	1
2	O	0	1
2	P	0	1
2	Q	0	1
2	R	0	1
2	S	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
2	T	0	1
All	All	0	12

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	133	GLU	CG-CD	-7.09	1.41	1.51
1	A	133	GLU	CD-OE1	-6.43	1.18	1.25
1	B	133	GLU	CG-CD	-6.42	1.42	1.51
1	B	133	GLU	CD-OE1	-5.36	1.19	1.25
1	C	133	GLU	CD-OE1	-5.11	1.20	1.25

The worst 5 of 81 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	188	LEU	N-CA-C	-9.08	86.49	111.00
1	E	188	LEU	N-CA-C	-8.91	86.95	111.00
1	D	188	LEU	N-CA-C	-8.32	88.53	111.00
1	F	188	LEU	N-CA-C	-8.22	88.81	111.00
1	E	160	ALA	N-CA-C	8.01	132.62	111.00

There are no chirality outliers.

5 of 12 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	170	TYR	Sidechain
1	B	170	TYR	Sidechain
1	C	170	TYR	Sidechain
1	D	170	TYR	Sidechain
1	E	170	TYR	Sidechain

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	5992	0	6010	669	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	5992	0	6010	688	0
1	C	5992	0	6010	684	0
1	D	5992	0	6010	678	1
1	E	5992	0	6010	672	0
1	F	5992	0	6010	674	0
2	O	1146	0	1071	157	0
2	P	1146	0	1071	156	0
2	Q	1146	0	1071	155	0
2	R	1146	0	1071	156	0
2	S	1146	0	1071	151	0
2	T	1146	0	1071	152	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
4	O	3	0	0	0	0
4	P	3	0	0	0	0
4	Q	3	0	0	0	0
4	R	3	0	0	0	0
4	S	3	0	0	0	0
4	T	3	0	0	0	0
All	All	42852	0	42486	4849	2

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 57.

The worst 5 of 4849 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:F:414:LYS:HA	1:F:414:LYS:HZ2	1.13	1.13
1:B:655:ASN:HB3	1:B:758:ASN:HB3	1.31	1.12
1:A:127:SER:O	1:A:133:GLU:HG3	1.50	1.12
1:E:655:ASN:HB3	1:E:758:ASN:HB3	1.32	1.12
1:A:655:ASN:HB3	1:A:758:ASN:HB3	1.30	1.11

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:685:LYS:NZ	1:A:685:LYS:NZ[2_656]	2.09	0.11
1:D:685:LYS:NZ	1:D:685:LYS:NZ[2_657]	2.18	0.02

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	733/777 (94%)	542 (74%)	150 (20%)	41 (6%)	2	11
1	B	733/777 (94%)	546 (74%)	144 (20%)	43 (6%)	1	10
1	C	733/777 (94%)	537 (73%)	151 (21%)	45 (6%)	1	10
1	D	733/777 (94%)	541 (74%)	148 (20%)	44 (6%)	1	10
1	E	733/777 (94%)	537 (73%)	153 (21%)	43 (6%)	1	10
1	F	733/777 (94%)	547 (75%)	142 (19%)	44 (6%)	1	10
2	O	144/149 (97%)	111 (77%)	26 (18%)	7 (5%)	2	14
2	P	144/149 (97%)	111 (77%)	26 (18%)	7 (5%)	2	14
2	Q	144/149 (97%)	112 (78%)	25 (17%)	7 (5%)	2	14
2	R	144/149 (97%)	113 (78%)	24 (17%)	7 (5%)	2	14
2	S	144/149 (97%)	111 (77%)	26 (18%)	7 (5%)	2	14
2	T	144/149 (97%)	113 (78%)	24 (17%)	7 (5%)	2	14
All	All	5262/5556 (95%)	3921 (74%)	1039 (20%)	302 (6%)	1	11

5 of 302 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	75	THR
1	A	180	ASP
1	A	192	PHE
1	A	458	LYS
1	A	510	GLN

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	664/705 (94%)	581 (88%)	83 (12%)	4	19
1	B	664/705 (94%)	582 (88%)	82 (12%)	4	20
1	C	664/705 (94%)	582 (88%)	82 (12%)	4	20
1	D	664/705 (94%)	581 (88%)	83 (12%)	4	19
1	E	664/705 (94%)	582 (88%)	82 (12%)	4	20
1	F	664/705 (94%)	582 (88%)	82 (12%)	4	20
2	O	123/127 (97%)	107 (87%)	16 (13%)	4	17
2	P	123/127 (97%)	107 (87%)	16 (13%)	4	17
2	Q	123/127 (97%)	107 (87%)	16 (13%)	4	17
2	R	123/127 (97%)	107 (87%)	16 (13%)	4	17
2	S	123/127 (97%)	107 (87%)	16 (13%)	4	17
2	T	123/127 (97%)	107 (87%)	16 (13%)	4	17
All	All	4722/4992 (95%)	4132 (88%)	590 (12%)	4	19

5 of 590 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	438	ASN
2	S	140	GLU
1	F	629	ASN
1	F	434	LEU
2	P	58	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 198 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	767	GLN
1	E	750	GLN
1	D	794	GLN
1	E	510	GLN

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Mol	Chain	Res	Type
1	F	81	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 24 ligands modelled in this entry, 24 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 [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	735/777 (94%)	0.56	58 (7%) 12 12	33, 86, 135, 148	0
1	B	735/777 (94%)	0.57	54 (7%) 15 14	33, 87, 135, 148	0
1	C	735/777 (94%)	0.53	62 (8%) 11 11	34, 87, 136, 148	0
1	D	735/777 (94%)	0.55	60 (8%) 11 11	32, 87, 135, 148	0
1	E	735/777 (94%)	0.57	61 (8%) 11 11	34, 87, 136, 148	0
1	F	735/777 (94%)	0.51	56 (7%) 13 12	34, 87, 135, 148	0
2	O	146/149 (97%)	0.25	4 (2%) 54 51	37, 72, 130, 141	0
2	P	146/149 (97%)	0.29	5 (3%) 45 42	36, 72, 130, 141	0
2	Q	146/149 (97%)	0.31	5 (3%) 45 42	36, 72, 130, 141	0
2	R	146/149 (97%)	0.29	2 (1%) 75 74	36, 72, 130, 141	0
2	S	146/149 (97%)	0.30	4 (2%) 54 51	36, 72, 130, 141	0
2	T	146/149 (97%)	0.24	0 100 100	36, 72, 130, 140	0
All	All	5286/5556 (95%)	0.50	371 (7%) 16 15	32, 84, 135, 148	0

The worst 5 of 371 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	212	GLN	8.4
1	B	212	GLN	7.6
1	B	229	PHE	7.3
1	C	225	ILE	7.3
1	C	229	PHE	7.2

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](#)

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, 95th 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
4	CA	P	804	1/1	0.86	0.24	52,52,52,52	0
3	MG	B	902	1/1	0.89	0.20	28,28,28,28	0
4	CA	Q	705	1/1	0.94	0.11	66,66,66,66	0
4	CA	Q	806	1/1	0.94	0.21	50,50,50,50	0
4	CA	P	703	1/1	0.95	0.11	66,66,66,66	0
4	CA	R	808	1/1	0.95	0.20	51,51,51,51	0
4	CA	S	709	1/1	0.95	0.08	65,65,65,65	0
4	CA	S	809	1/1	0.96	0.17	37,37,37,37	0
4	CA	T	711	1/1	0.96	0.13	65,65,65,65	0
4	CA	R	707	1/1	0.97	0.11	64,64,64,64	0
4	CA	O	701	1/1	0.97	0.14	66,66,66,66	0
4	CA	O	802	1/1	0.97	0.19	47,47,47,47	0
4	CA	Q	805	1/1	0.97	0.13	42,42,42,42	0
4	CA	S	810	1/1	0.97	0.24	52,52,52,52	0
3	MG	D	904	1/1	0.97	0.29	29,29,29,29	0
4	CA	T	812	1/1	0.97	0.18	51,51,51,51	0
3	MG	F	906	1/1	0.98	0.25	25,25,25,25	0
3	MG	C	903	1/1	0.98	0.21	27,27,27,27	0
4	CA	T	811	1/1	0.98	0.11	40,40,40,40	0
3	MG	E	905	1/1	0.98	0.19	23,23,23,23	0
4	CA	R	807	1/1	0.99	0.17	40,40,40,40	0
4	CA	P	803	1/1	0.99	0.19	39,39,39,39	0
3	MG	A	901	1/1	0.99	0.23	26,26,26,26	0
4	CA	O	801	1/1	0.99	0.16	39,39,39,39	0

6.5 Other polymers [i](#)

There are no such residues in this entry.