



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 21, 2023 – 02:55 PM EDT

PDB ID : 2Q4P  
Title : Ensemble refinement of the crystal structure of protein from *Mus musculus* Mm.29898  
Authors : Levin, E.J.; Kondrashov, D.A.; Wesenberg, G.E.; Phillips Jr., G.N.; Center for Eukaryotic Structural Genomics (CESG)  
Deposited on : 2007-05-31  
Resolution : 2.32 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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The following versions of software and data (see [references ⓘ](#)) 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 : 2.35  
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) : 2.35

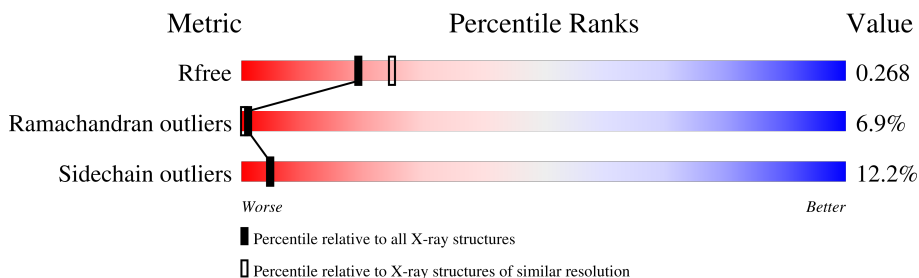
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.32 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.




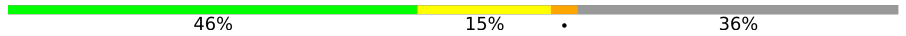

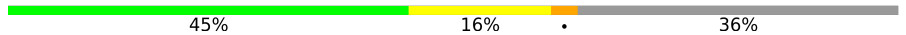

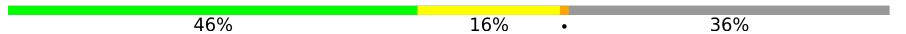
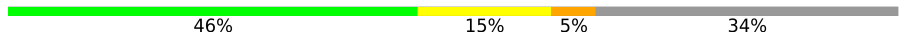
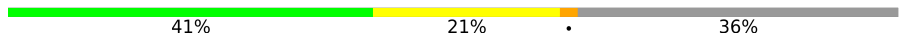
















Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	5974 (2.34-2.30)
Ramachandran outliers	138981	6523 (2.34-2.30)
Sidechain outliers	138945	6523 (2.34-2.30)

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  $\geq 3$ , 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  $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	1-A	170	
1	1-B	170	
1	10-A	170	
1	10-B	170	
1	11-A	170	
1	11-B	170	
1	12-A	170	
1	12-B	170	

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Mol	Chain	Length	Quality of chain
1	13-A	170	 52% 14% 5% 29%
1	13-B	170	 46% 15% 5% 36%
1	14-A	170	 49% 16% 5% 34%
1	14-B	170	 45% 16% 5% 36%
1	15-A	170	 52% 14% 5% 34%
1	15-B	170	 46% 16% 5% 36%
1	16-A	170	 46% 15% 5% 34%
1	16-B	170	 41% 21% 5% 36%
1	2-A	170	 55% 11% 5% 34%
1	2-B	170	 54% 9% 5% 36%
1	3-A	170	 59% 6% 5% 34%
1	3-B	170	 58% 6% 5% 36%
1	4-A	170	 58% 8% 5% 34%
1	4-B	170	 53% 10% 5% 36%
1	5-A	170	 58% 8% 5% 34%
1	5-B	170	 54% 9% 5% 36%
1	6-A	170	 58% 8% 5% 34%
1	6-B	170	 53% 11% 5% 36%
1	7-A	170	 58% 7% 5% 34%
1	7-B	170	 53% 10% 5% 36%
1	8-A	170	 59% 8% 5% 34%
1	8-B	170	 52% 11% 5% 36%
1	9-A	170	 54% 11% 5% 34%
1	9-B	170	 57% 6% 5% 36%

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 29392 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 Protein RS21-C6.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	1-A	113	922	589	163	168	1	1	0	0	0
1	2-A	113	922	589	163	168	1	1	0	0	0
1	3-A	113	922	589	163	168	1	1	0	0	0
1	4-A	113	922	589	163	168	1	1	0	0	0
1	5-A	113	922	589	163	168	1	1	0	0	0
1	6-A	113	922	589	163	168	1	1	0	0	0
1	7-A	113	922	589	163	168	1	1	0	0	0
1	8-A	113	922	589	163	168	1	1	0	0	0
1	9-A	113	922	589	163	168	1	1	0	0	0
1	10-A	113	922	589	163	168	1	1	0	0	0
1	11-A	113	922	589	163	168	1	1	0	0	0
1	12-A	113	922	589	163	168	1	1	0	0	0
1	13-A	113	922	589	163	168	1	1	0	0	0
1	14-A	113	922	589	163	168	1	1	0	0	0
1	15-A	113	922	589	163	168	1	1	0	0	0
1	16-A	113	922	589	163	168	1	1	0	0	0

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	1-B	109	891	569	157	163	1	1	0	0	0
1	2-B	109	891	569	157	163	1	1	0	0	0
1	3-B	109	891	569	157	163	1	1	0	0	0
1	4-B	109	891	569	157	163	1	1	0	0	0
1	5-B	109	891	569	157	163	1	1	0	0	0
1	6-B	109	891	569	157	163	1	1	0	0	0
1	7-B	109	891	569	157	163	1	1	0	0	0
1	8-B	109	891	569	157	163	1	1	0	0	0
1	9-B	109	891	569	157	163	1	1	0	0	0
1	10-B	109	891	569	157	163	1	1	0	0	0
1	11-B	109	891	569	157	163	1	1	0	0	0
1	12-B	109	891	569	157	163	1	1	0	0	0
1	13-B	109	891	569	157	163	1	1	0	0	0
1	14-B	109	891	569	157	163	1	1	0	0	0
1	15-B	109	891	569	157	163	1	1	0	0	0
1	16-B	109	891	569	157	163	1	1	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MSE	MET	modified residue	UNP Q9QY93
A	122	MSE	MET	modified residue	UNP Q9QY93
B	1	MSE	MET	modified residue	UNP Q9QY93
B	122	MSE	MET	modified residue	UNP Q9QY93

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	1-A	12	Total O 12 12	0	0
2	2-A	11	Total O 11 11	0	0
2	3-A	12	Total O 12 12	0	0
2	4-A	11	Total O 11 11	0	0
2	5-A	12	Total O 12 12	0	0
2	6-A	11	Total O 11 11	0	0
2	7-A	12	Total O 12 12	0	0
2	8-A	13	Total O 13 13	0	0
2	9-A	11	Total O 11 11	0	0
2	10-A	10	Total O 10 10	0	0
2	11-A	12	Total O 12 12	0	0
2	12-A	12	Total O 12 12	0	0
2	13-A	13	Total O 13 13	0	0
2	14-A	12	Total O 12 12	0	0
2	15-A	12	Total O 12 12	0	0
2	16-A	13	Total O 13 13	0	0
2	1-B	12	Total O 12 12	0	0
2	2-B	13	Total O 13 13	0	0
2	3-B	12	Total O 12 12	0	0
2	4-B	13	Total O 13 13	0	0
2	5-B	12	Total O 12 12	0	0
2	6-B	13	Total O 13 13	0	0

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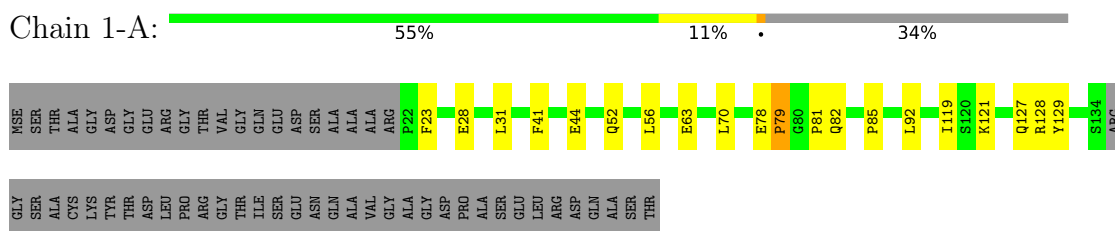
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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>	<b>ZeroOcc</b>	<b>AltConf</b>
2	7-B	12	Total O 12 12	0	0
2	8-B	11	Total O 11 11	0	0
2	9-B	13	Total O 13 13	0	0
2	10-B	14	Total O 14 14	0	0
2	11-B	12	Total O 12 12	0	0
2	12-B	12	Total O 12 12	0	0
2	13-B	11	Total O 11 11	0	0
2	14-B	12	Total O 12 12	0	0
2	15-B	12	Total O 12 12	0	0
2	16-B	11	Total O 11 11	0	0

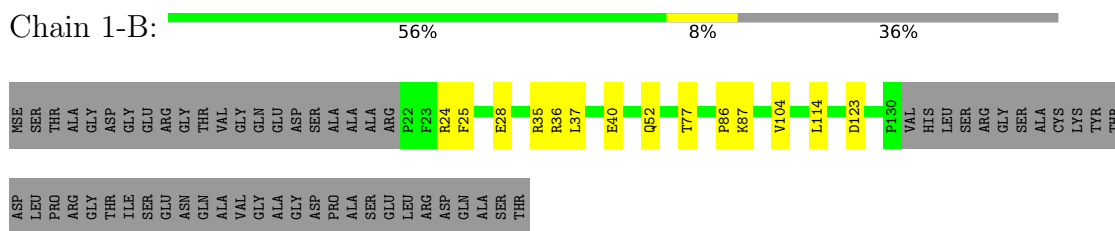
### 3 Residue-property plots [i](#)

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. 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. 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.

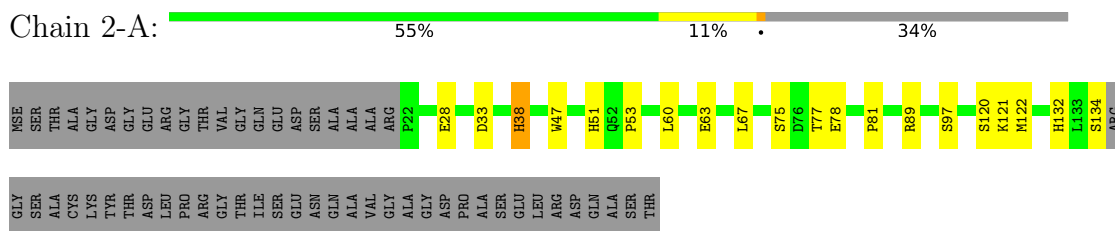
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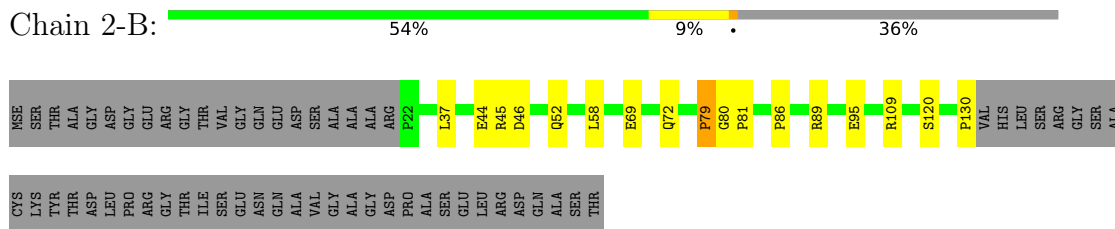
- Molecule 1: Protein RS21-C6



- Molecule 1: Protein RS21-C6



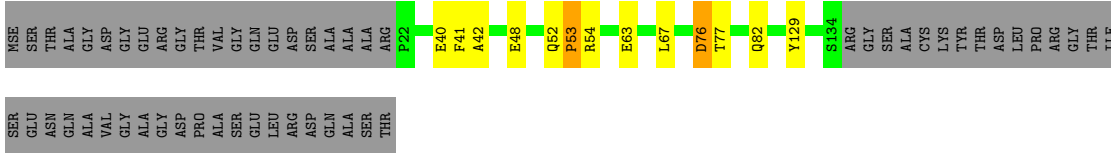
- Molecule 1: Protein RS21-C6



- Molecule 1: Protein RS21-C6



Chain 3-A:  59% 6% 34%



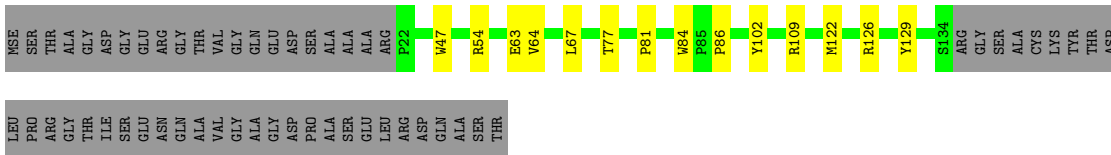
- Molecule 1: Protein RS21-C6

Chain 3-B:  58% 6% 36%



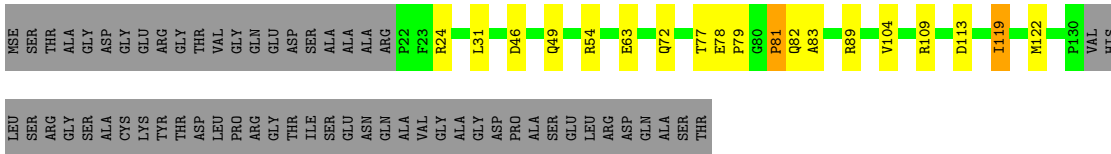
- Molecule 1: Protein RS21-C6

Chain 4-A:  58% 8% 34%



- Molecule 1: Protein RS21-C6

Chain 4-B:  53% 10% 36%



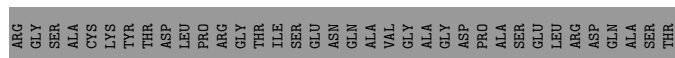
- Molecule 1: Protein RS21-C6

Chain 5-A:  58% 8% 34%

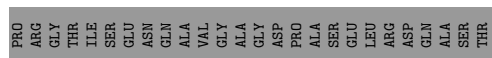


- Molecule 1: Protein RS21-C6

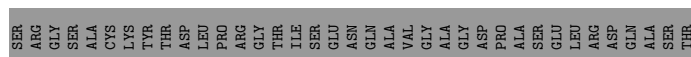
Chain 5-B:  54% 9% 36%



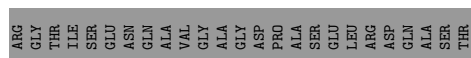
• Molecule 1: Protein RS21-C6



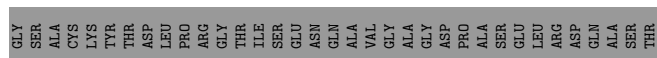
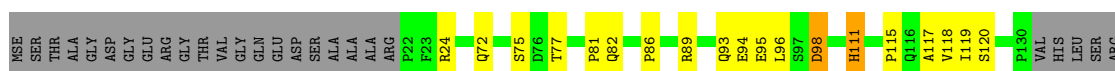
• Molecule 1: Protein RS21-C6



• Molecule 1: Protein RS21-C6



• Molecule 1: Protein RS21-C6



• Molecule 1: Protein RS21-C6



GLY  
THR  
ILE  
SER  
GLU  
ASN  
GLN  
VAL  
ALA  
GLY  
ALA  
GLY  
ASP  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

- Molecule 1: Protein RS21-C6

Chain 8-B: 52% 11% 36%

MSE  
SER  
THR  
ALA  
GLY  
ASP  
GLY  
GLU  
ARG  
THR  
GLY  
VAL  
GLY  
GLN  
ASP  
SER  
ALA  
ALA  
ALA  
ARG  
THR  
ILE  
SER  
GLU  
ASN  
GLN  
ALA  
VAL  
GLY  
ALA  
GLY  
ASP  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

P22 D33 R36 L37 R45 F50 L56 L60 E63 L67 A68 E69 Q72 P85 P86 K87 Q93 E94 E95 H111 V112 D113 L114 D123 Q127

- Molecule 1: Protein RS21-C6

Chain 9-A: 54% 11% 34%

MSE  
SER  
THR  
ALA  
GLY  
ASP  
GLY  
GLU  
ARG  
THR  
GLY  
VAL  
GLY  
GLN  
ASP  
SER  
ALA  
ALA  
ALA  
ARG  
THR  
ILE  
SER  
GLU  
ASN  
GLN  
ALA  
VAL  
GLY  
ALA  
GLY  
ALA  
SER  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

P22 P23 D46 W47 E48 F71 Q72 E78 Q82 P86 K87 E88 Q93 E94 E95 D98 Y99 L100 P115 I119 M122 D123 Y129 S134

ALA  
CYS  
LYS  
THR  
TYR  
THR  
LEU  
PRO  
ARG  
GLY  
THR  
THR  
SER  
GLY  
GLU  
ASP  
PRO  
ALA  
CYS  
THR

- Molecule 1: Protein RS21-C6

Chain 9-B: 57% 6% 36%

MSE  
SER  
THR  
ALA  
GLY  
ASP  
GLY  
GLU  
ARG  
THR  
GLY  
VAL  
GLY  
GLN  
ASP  
SER  
ALA  
ALA  
ALA  
ARG  
THR  
ILE  
SER  
GLU  
ASN  
GLN  
ALA  
VAL  
GLY  
ALA  
GLY  
ALA  
SER  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

P22 R36 D46 Q49 L67 Q72 S75 E78 P85 R89 A90 Q93 Y129 P130 VAL HIS LEU SER ARG GLY SER ALA ALA CYS TYR THR ASP LEU

PRO  
ARG  
GLY  
THR  
ILE  
SER  
GLU  
ASN  
GLN  
ALA  
VAL  
GLY  
ALA  
GLY  
GLU  
ASP  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

- Molecule 1: Protein RS21-C6

Chain 10-A: 55% 9% 34%

MSE  
SER  
THR  
ALA  
GLY  
ASP  
GLY  
GLU  
ARG  
THR  
GLY  
VAL  
GLY  
GLN  
ASP  
SER  
ALA  
ALA  
ALA  
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GLY  
ALA  
GLY  
ALA  
SER  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

P22 F23 R24 E28 L37 D46 W47 E48 V64 Q72 S75 E78 P81 Q82 A83 W84 P85 P86 Q93 E94 E95 Y102 Y129 H132 L133 S134

GLY  
ALA  
CYS  
LYS  
THR  
TYR  
THR  
LEU  
PRO  
ARG  
GLY  
THR  
THR  
SER  
GLY  
ILE  
SER  
GLU  
ASN  
GLN  
ALA  
VAL  
GLY  
ALA  
GLY  
ALA  
SER  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

- Molecule 1: Protein RS21-C6

Chain 10-B: 54% 10% 36%

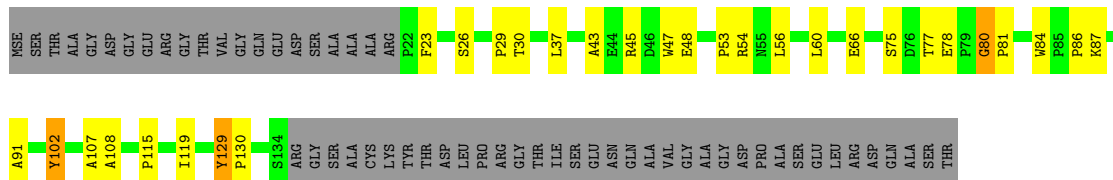
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GLU  
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THR  
GLY  
VAL  
GLY  
GLN  
ASP  
SER  
ALA  
ALA  
ALA  
ARG  
THR  
ILE  
SER  
GLU  
ASN  
GLN  
ALA  
VAL  
GLY  
ALA  
GLY  
ALA  
SER  
PRO  
ALA  
SER  
GLU  
LEU  
ARG  
GLN  
ALA  
SER  
THR

P22 F25 S26 F27 E28 T30 D33 W73 K74 S75 T77 E78 P86 D98 V104 Q116 M122 D123 T124 H125 R126 P130 VAL HIS LEU ASP ARG GLY

SER  
ALA  
CYS  
LYS  
THR  
TYR  
THR  
LEU  
PRO  
ARG  
GLY  
THR  
THR  
SER  
GLY  
ILE  
SER  
GLU  
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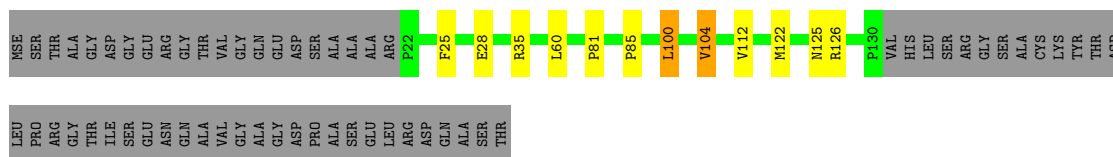
- Molecule 1: Protein RS21-C6

Chain 11-A:  49% 16% 34%



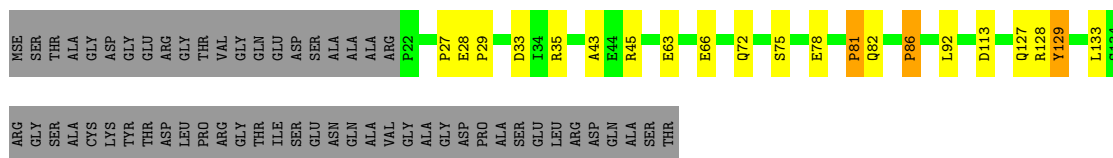
- Molecule 1: Protein RS21-C6

Chain 11-B:  57% 6% 36%



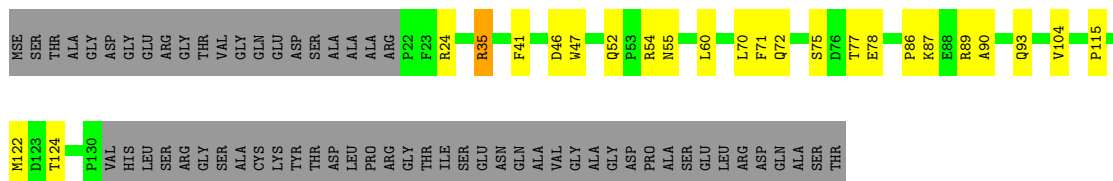
- Molecule 1: Protein RS21-C6

Chain 12-A:  54% 11% 34%



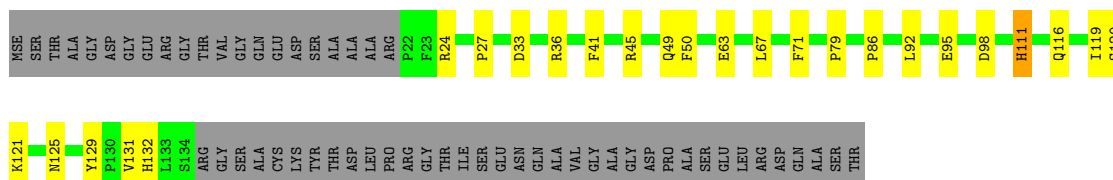
- Molecule 1: Protein RS21-C6

Chain 12-B:  50% 14% 36%



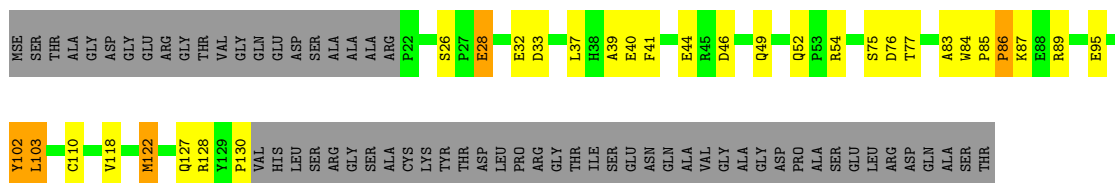
- Molecule 1: Protein RS21-C6

Chain 13-A:  52% 14% 34%



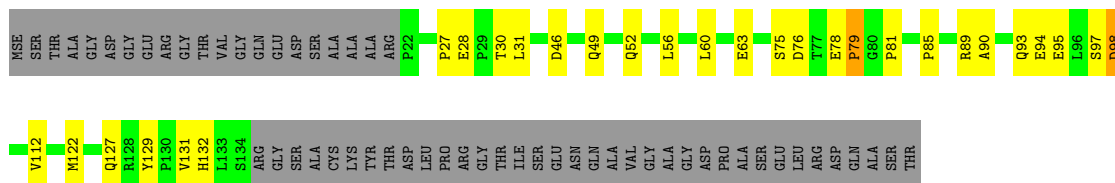
- Molecule 1: Protein RS21-C6

Chain 13-B:



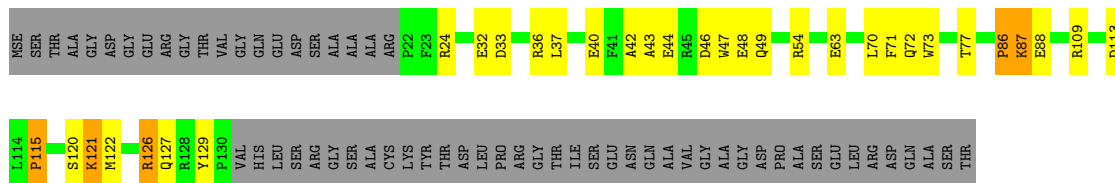
• Molecule 1: Protein RS21-C6

Chain 14-A:



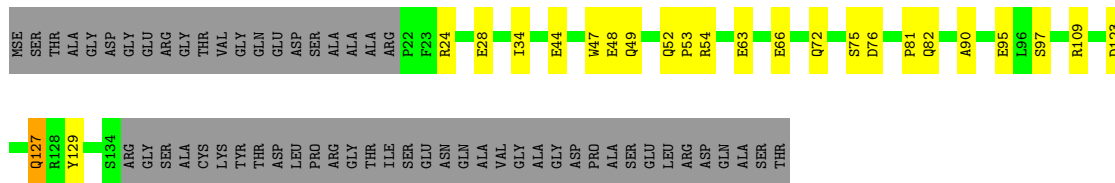
• Molecule 1: Protein RS21-C6

Chain 14-B:



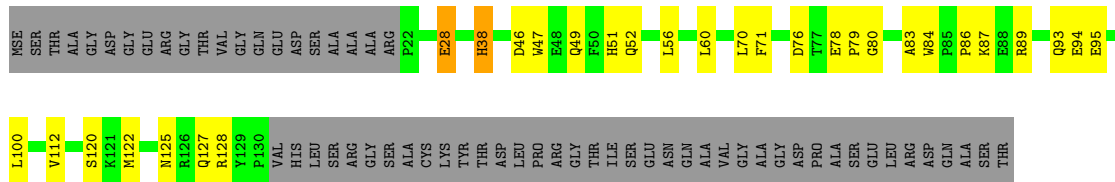
• Molecule 1: Protein RS21-C6

Chain 15-A:



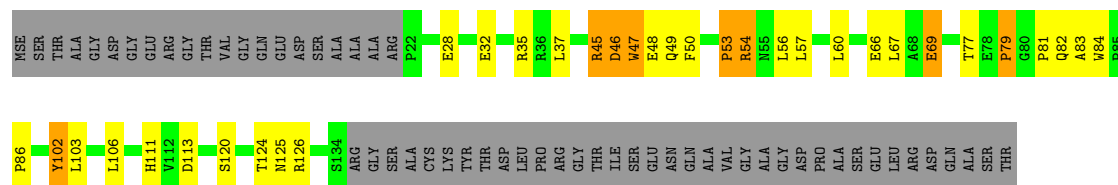
• Molecule 1: Protein RS21-C6

Chain 15-B:



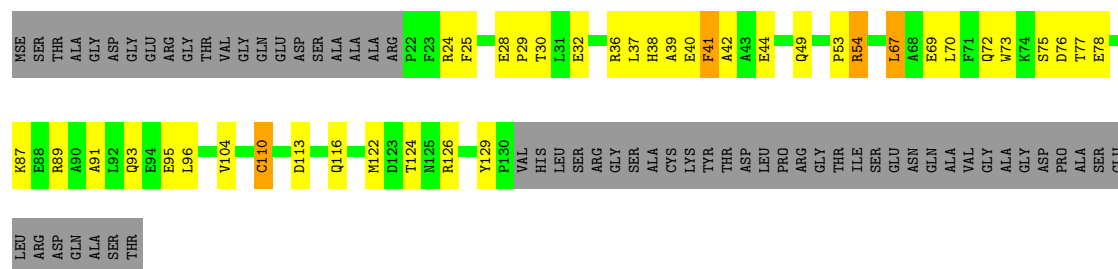
• Molecule 1: Protein RS21-C6

Chain 16-A: 



• Molecule 1: Protein RS21-C6

Chain 16-B: 



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 65 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	73.54Å 73.54Å 236.08Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	37.93 – 2.32 43.29 – 2.32	Depositor EDS
% Data completeness (in resolution range)	98.3 (37.93-2.32) 98.5 (43.29-2.32)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.69 (at 2.32Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.138 , 0.233 0.192 , 0.268	Depositor DCC
$R_{free}$ test set	858 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	55.5	Xtrriage
Anisotropy	0.134	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.40 , 652.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	29392	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	46.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.77% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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	1-A	0.83	0/947	1.09	1/1288 (0.1%)
1	1-B	0.93	0/915	1.02	2/1244 (0.2%)
1	2-A	0.92	0/947	1.08	2/1288 (0.2%)
1	2-B	0.94	1/915 (0.1%)	1.01	1/1244 (0.1%)
1	3-A	0.87	0/947	0.94	0/1288
1	3-B	0.99	0/915	0.95	0/1244
1	4-A	0.94	0/947	0.98	0/1288
1	4-B	1.01	0/915	1.11	3/1244 (0.2%)
1	5-A	0.89	0/947	0.91	0/1288
1	5-B	0.93	1/915 (0.1%)	0.98	3/1244 (0.2%)
1	6-A	0.87	0/947	0.98	0/1288
1	6-B	1.05	2/915 (0.2%)	1.11	4/1244 (0.3%)
1	7-A	0.90	0/947	0.99	2/1288 (0.2%)
1	7-B	0.92	0/915	0.98	1/1244 (0.1%)
1	8-A	0.86	0/947	0.99	1/1288 (0.1%)
1	8-B	0.99	2/915 (0.2%)	1.09	2/1244 (0.2%)
1	9-A	0.94	2/947 (0.2%)	0.98	0/1288
1	9-B	0.90	0/915	0.94	1/1244 (0.1%)
1	10-A	0.93	1/947 (0.1%)	1.01	2/1288 (0.2%)
1	10-B	0.98	0/915	1.04	4/1244 (0.3%)
1	11-A	0.95	1/947 (0.1%)	1.12	7/1288 (0.5%)
1	11-B	0.99	1/915 (0.1%)	1.22	4/1244 (0.3%)
1	12-A	0.96	1/947 (0.1%)	1.02	2/1288 (0.2%)
1	12-B	0.91	1/915 (0.1%)	1.07	3/1244 (0.2%)
1	13-A	1.05	0/947	1.15	2/1288 (0.2%)
1	13-B	1.28	5/915 (0.5%)	1.26	7/1244 (0.6%)
1	14-A	1.05	1/947 (0.1%)	1.23	4/1288 (0.3%)
1	14-B	1.10	2/915 (0.2%)	1.13	3/1244 (0.2%)
1	15-A	0.98	1/947 (0.1%)	1.10	2/1288 (0.2%)
1	15-B	1.16	2/915 (0.2%)	1.16	4/1244 (0.3%)
1	16-A	1.11	2/947 (0.2%)	1.31	10/1288 (0.8%)
1	16-B	1.39	9/915 (1.0%)	1.41	13/1244 (1.0%)
All	All	0.99	35/29792 (0.1%)	1.08	90/40512 (0.2%)



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	5-B	0	1
1	9-A	0	1
1	11-A	0	1
1	12-A	0	1
1	13-B	0	2
1	16-A	0	1
1	16-B	0	1
All	All	0	8

All (35) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	16-B	42	ALA	CA-CB	13.50	1.80	1.52
1	16-B	28	GLU	CD-OE1	-8.05	1.16	1.25
1	16-B	28	GLU	CG-CD	7.98	1.64	1.51
1	13-B	39	ALA	CA-CB	-7.26	1.37	1.52
1	14-A	94	GLU	CG-CD	7.26	1.62	1.51
1	9-A	78	GLU	CG-CD	7.16	1.62	1.51
1	12-A	113	ASP	CB-CG	7.02	1.66	1.51
1	16-B	69	GLU	CG-CD	6.97	1.62	1.51
1	16-B	69	GLU	CB-CG	6.86	1.65	1.52
1	13-B	102	TYR	CD2-CE2	6.27	1.48	1.39
1	14-B	47	TRP	CG-CD1	5.94	1.45	1.36
1	16-B	104	VAL	CB-CG1	-5.85	1.40	1.52
1	5-B	36	ARG	CG-CD	5.78	1.66	1.51
1	15-B	28	GLU	CG-CD	5.64	1.60	1.51
1	15-B	47	TRP	CG-CD1	5.61	1.44	1.36
1	11-A	102	TYR	CD1-CE1	5.59	1.47	1.39
1	13-B	28	GLU	CG-CD	5.57	1.60	1.51
1	16-A	69	GLU	CG-CD	5.47	1.60	1.51
1	15-A	109	ARG	CZ-NH2	5.46	1.40	1.33
1	16-B	28	GLU	CB-CG	5.42	1.62	1.52
1	13-B	44	GLU	CB-CG	5.42	1.62	1.52
1	6-B	41	PHE	CE2-CZ	5.41	1.47	1.37
1	13-B	102	TYR	CZ-OH	5.35	1.47	1.37
1	8-B	69	GLU	CG-CD	5.33	1.59	1.51
1	2-B	69	GLU	CG-CD	5.25	1.59	1.51
1	14-B	73	TRP	CE3-CZ3	5.25	1.47	1.38
1	8-B	33	ASP	CB-CG	5.24	1.62	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	16-A	32	GLU	CG-CD	5.23	1.59	1.51
1	10-A	95	GLU	CG-CD	5.18	1.59	1.51
1	12-B	47	TRP	CB-CG	-5.18	1.41	1.50
1	16-B	40	GLU	CB-CG	-5.17	1.42	1.52
1	16-B	104	VAL	CA-CB	5.16	1.65	1.54
1	9-A	94	GLU	CG-CD	5.06	1.59	1.51
1	11-B	104	VAL	CA-CB	5.05	1.65	1.54
1	6-B	47	TRP	CG-CD1	5.01	1.43	1.36

All (90) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	11-B	35	ARG	NE-CZ-NH1	15.25	127.92	120.30
1	11-B	35	ARG	NE-CZ-NH2	-14.82	112.89	120.30
1	12-B	35	ARG	NE-CZ-NH2	-10.14	115.23	120.30
1	6-B	89	ARG	NE-CZ-NH1	8.72	124.66	120.30
1	5-B	36	ARG	NE-CZ-NH1	8.12	124.36	120.30
1	12-B	35	ARG	NE-CZ-NH1	8.12	124.36	120.30
1	5-B	67	LEU	CA-CB-CG	7.83	133.32	115.30
1	11-A	56	LEU	CA-CB-CG	7.65	132.90	115.30
1	13-B	54	ARG	NE-CZ-NH1	7.51	124.06	120.30
1	6-B	89	ARG	NE-CZ-NH2	-7.46	116.57	120.30
1	16-A	37	LEU	CA-CB-CG	-7.19	98.76	115.30
1	8-B	56	LEU	CA-CB-CG	7.17	131.79	115.30
1	7-A	31	LEU	N-CA-C	-7.14	91.72	111.00
1	15-A	109	ARG	NE-CZ-NH1	-7.13	116.73	120.30
1	11-A	37	LEU	CA-CB-CG	-7.03	99.14	115.30
1	2-A	38	HIS	N-CA-C	-7.00	92.11	111.00
1	16-B	39	ALA	C-N-CA	6.99	139.19	121.70
1	8-A	113	ASP	CB-CG-OD1	-6.96	112.04	118.30
1	4-B	109	ARG	NE-CZ-NH1	-6.89	116.86	120.30
1	12-B	46	ASP	CB-CG-OD1	6.89	124.50	118.30
1	7-A	31	LEU	CA-CB-CG	6.87	131.10	115.30
1	13-B	54	ARG	NE-CZ-NH2	-6.86	116.87	120.30
1	1-B	28	GLU	N-CA-C	-6.76	92.76	111.00
1	16-B	39	ALA	CA-C-N	-6.74	102.38	117.20
1	10-B	30	THR	N-CA-C	-6.67	92.99	111.00
1	16-A	47	TRP	N-CA-C	6.66	128.97	111.00
1	10-B	26	SER	C-N-CD	-6.65	105.96	120.60
1	14-B	54	ARG	NE-CZ-NH2	-6.62	116.99	120.30
1	16-A	45	ARG	NE-CZ-NH2	6.59	123.60	120.30
1	16-B	91	ALA	N-CA-C	-6.45	93.60	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	15-A	54	ARG	NE-CZ-NH1	6.43	123.52	120.30
1	13-B	49	GLN	N-CA-C	-6.40	93.73	111.00
1	16-B	39	ALA	N-CA-C	6.39	128.25	111.00
1	10-A	24	ARG	NE-CZ-NH2	-6.38	117.11	120.30
1	14-B	109	ARG	NE-CZ-NH1	-6.36	117.12	120.30
1	5-B	36	ARG	NE-CZ-NH2	-6.32	117.14	120.30
1	13-B	130	PRO	N-CA-C	6.30	128.48	112.10
1	11-B	100	LEU	CA-CB-CG	6.24	129.64	115.30
1	6-B	26	SER	C-N-CD	-6.18	107.00	120.60
1	13-A	36	ARG	NE-CZ-NH1	-6.16	117.22	120.30
1	10-B	26	SER	C-N-CA	6.14	147.77	122.00
1	16-A	103	LEU	CA-CB-CG	-6.07	101.34	115.30
1	16-A	54	ARG	NE-CZ-NH1	6.05	123.33	120.30
1	2-B	109	ARG	NE-CZ-NH1	-5.98	117.31	120.30
1	16-A	45	ARG	CG-CD-NE	5.93	124.24	111.80
1	12-A	43	ALA	N-CA-C	-5.92	95.02	111.00
1	16-B	110	CYS	CA-CB-SG	-5.90	103.38	114.00
1	16-B	36	ARG	NE-CZ-NH2	-5.88	117.36	120.30
1	9-B	67	LEU	CA-CB-CG	5.84	128.73	115.30
1	14-A	49	GLN	N-CA-C	-5.84	95.24	111.00
1	1-B	25	PHE	N-CA-C	-5.83	95.26	111.00
1	12-A	113	ASP	CB-CG-OD2	5.76	123.48	118.30
1	16-B	39	ALA	O-C-N	5.69	131.80	122.70
1	2-A	33	ASP	CB-CG-OD1	5.67	123.41	118.30
1	14-A	76	ASP	CB-CG-OD1	5.62	123.36	118.30
1	16-A	113	ASP	N-CA-C	-5.61	95.85	111.00
1	11-A	80	GLY	N-CA-C	5.61	127.12	113.10
1	13-B	103	LEU	CA-CB-CG	-5.55	102.53	115.30
1	16-B	70	LEU	CB-CG-CD1	-5.55	101.57	111.00
1	13-A	36	ARG	NE-CZ-NH2	5.54	123.07	120.30
1	16-A	46	ASP	CB-CG-OD2	5.52	123.27	118.30
1	11-A	84	TRP	N-CA-C	-5.45	96.29	111.00
1	11-A	45	ARG	NE-CZ-NH1	-5.44	117.58	120.30
1	16-B	70	LEU	C-N-CA	-5.42	108.14	121.70
1	16-B	96	LEU	CA-CB-CG	-5.39	102.90	115.30
1	16-B	69	GLU	OE1-CD-OE2	-5.36	116.86	123.30
1	16-B	25	PHE	CB-CA-C	-5.36	99.68	110.40
1	14-B	36	ARG	NE-CZ-NH2	-5.35	117.62	120.30
1	11-A	102	TYR	CA-CB-CG	5.33	123.53	113.40
1	13-B	26	SER	N-CA-C	-5.29	96.72	111.00
1	16-A	46	ASP	CB-CG-OD1	-5.28	113.55	118.30
1	11-B	112	VAL	N-CA-C	-5.26	96.81	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	14-A	131	VAL	CB-CA-C	-5.25	101.42	111.40
1	15-B	56	LEU	CA-CB-CG	-5.24	103.24	115.30
1	1-A	56	LEU	CA-CB-CG	5.23	127.32	115.30
1	7-B	98	ASP	CB-CG-OD1	5.20	122.98	118.30
1	13-B	122	MSE	N-CA-C	-5.20	96.96	111.00
1	15-B	112	VAL	CB-CA-C	-5.19	101.54	111.40
1	8-B	36	ARG	NE-CZ-NH1	5.17	122.88	120.30
1	10-A	37	LEU	CA-CB-CG	-5.17	103.42	115.30
1	4-B	31	LEU	N-CA-C	-5.16	97.08	111.00
1	15-B	70	LEU	CA-CB-CG	5.14	127.12	115.30
1	15-B	38	HIS	N-CA-C	5.14	124.87	111.00
1	16-B	38	HIS	N-CA-C	5.13	124.87	111.00
1	14-A	112	VAL	N-CA-C	-5.06	97.35	111.00
1	4-B	119	ILE	N-CA-C	-5.04	97.41	111.00
1	16-A	46	ASP	CB-CA-C	5.04	120.47	110.40
1	6-B	98	ASP	CB-CG-OD1	5.03	122.83	118.30
1	10-B	30	THR	CB-CA-C	-5.01	98.06	111.60
1	11-A	60	LEU	CA-CB-CG	5.01	126.83	115.30

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	11-A	102	TYR	Sidechain
1	12-A	129	TYR	Sidechain
1	13-B	102	TYR	Sidechain
1	13-B	41	PHE	Sidechain
1	16-A	102	TYR	Sidechain
1	16-B	41	PHE	Sidechain
1	5-B	51	HIS	Sidechain
1	9-A	71	PHE	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	1-A	922	0	901	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	1-B	891	0	869	0	0
1	2-A	922	0	901	0	0
1	2-B	891	0	869	0	0
1	3-A	922	0	901	0	0
1	3-B	891	0	869	0	0
1	4-A	922	0	901	0	0
1	4-B	891	0	869	0	0
1	5-A	922	0	901	0	0
1	5-B	891	0	869	0	0
1	6-A	922	0	901	0	0
1	6-B	891	0	869	0	0
1	7-A	922	0	901	0	0
1	7-B	891	0	869	0	0
1	8-A	922	0	901	0	0
1	8-B	891	0	869	0	0
1	9-A	922	0	901	0	0
1	9-B	891	0	869	0	0
1	10-A	922	0	901	0	0
1	10-B	891	0	869	0	0
1	11-A	922	0	901	0	0
1	11-B	891	0	869	0	0
1	12-A	922	0	901	0	0
1	12-B	891	0	869	0	0
1	13-A	922	0	901	0	0
1	13-B	891	0	869	0	0
1	14-A	922	0	901	0	0
1	14-B	891	0	869	0	0
1	15-A	922	0	901	0	0
1	15-B	891	0	869	0	0
1	16-A	922	0	901	0	0
1	16-B	891	0	869	0	0
2	1-A	12	0	0	0	0
2	1-B	12	0	0	0	0
2	2-A	11	0	0	0	0
2	2-B	13	0	0	0	0
2	3-A	12	0	0	0	0
2	3-B	12	0	0	0	0
2	4-A	11	0	0	0	0
2	4-B	13	0	0	0	0
2	5-A	12	0	0	0	0
2	5-B	12	0	0	0	0
2	6-A	11	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	6-B	13	0	0	0	0
2	7-A	12	0	0	0	0
2	7-B	12	0	0	0	0
2	8-A	13	0	0	0	0
2	8-B	11	0	0	0	0
2	9-A	11	0	0	0	0
2	9-B	13	0	0	0	0
2	10-A	10	0	0	0	0
2	10-B	14	0	0	0	0
2	11-A	12	0	0	0	0
2	11-B	12	0	0	0	0
2	12-A	12	0	0	0	0
2	12-B	12	0	0	0	0
2	13-A	13	0	0	0	0
2	13-B	11	0	0	0	0
2	14-A	12	0	0	0	0
2	14-B	12	0	0	0	0
2	15-A	12	0	0	0	0
2	15-B	12	0	0	0	0
2	16-A	13	0	0	0	0
2	16-B	11	0	0	0	0
All	All	29392	0	28320	0	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). Clashscore could not be calculated for this entry.

There are no clashes within the asymmetric unit.

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	1-A	111/170 (65%)	83 (75%)	23 (21%)	5 (4%)	<b>2</b> <b>1</b>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	1-B	107/170 (63%)	83 (78%)	22 (21%)	2 (2%)	8	6
1	2-A	111/170 (65%)	89 (80%)	18 (16%)	4 (4%)	3	2
1	2-B	107/170 (63%)	90 (84%)	10 (9%)	7 (6%)	1	0
1	3-A	111/170 (65%)	97 (87%)	9 (8%)	5 (4%)	2	1
1	3-B	107/170 (63%)	98 (92%)	6 (6%)	3 (3%)	5	3
1	4-A	111/170 (65%)	92 (83%)	14 (13%)	5 (4%)	2	1
1	4-B	107/170 (63%)	85 (79%)	14 (13%)	8 (8%)	1	0
1	5-A	111/170 (65%)	95 (86%)	12 (11%)	4 (4%)	3	2
1	5-B	107/170 (63%)	98 (92%)	6 (6%)	3 (3%)	5	3
1	6-A	111/170 (65%)	91 (82%)	13 (12%)	7 (6%)	1	0
1	6-B	107/170 (63%)	85 (79%)	16 (15%)	6 (6%)	2	0
1	7-A	111/170 (65%)	85 (77%)	18 (16%)	8 (7%)	1	0
1	7-B	107/170 (63%)	85 (79%)	10 (9%)	12 (11%)	0	0
1	8-A	111/170 (65%)	96 (86%)	12 (11%)	3 (3%)	5	3
1	8-B	107/170 (63%)	80 (75%)	18 (17%)	9 (8%)	1	0
1	9-A	111/170 (65%)	80 (72%)	22 (20%)	9 (8%)	1	0
1	9-B	107/170 (63%)	92 (86%)	11 (10%)	4 (4%)	3	1
1	10-A	111/170 (65%)	90 (81%)	16 (14%)	5 (4%)	2	1
1	10-B	107/170 (63%)	85 (79%)	15 (14%)	7 (6%)	1	0
1	11-A	111/170 (65%)	79 (71%)	17 (15%)	15 (14%)	0	0
1	11-B	107/170 (63%)	87 (81%)	14 (13%)	6 (6%)	2	0
1	12-A	111/170 (65%)	82 (74%)	19 (17%)	10 (9%)	1	0
1	12-B	107/170 (63%)	75 (70%)	22 (21%)	10 (9%)	0	0
1	13-A	111/170 (65%)	85 (77%)	19 (17%)	7 (6%)	1	0
1	13-B	107/170 (63%)	82 (77%)	16 (15%)	9 (8%)	1	0
1	14-A	111/170 (65%)	77 (69%)	21 (19%)	13 (12%)	0	0
1	14-B	107/170 (63%)	81 (76%)	14 (13%)	12 (11%)	0	0
1	15-A	111/170 (65%)	80 (72%)	20 (18%)	11 (10%)	0	0
1	15-B	107/170 (63%)	84 (78%)	16 (15%)	7 (6%)	1	0
1	16-A	111/170 (65%)	75 (68%)	23 (21%)	13 (12%)	0	0
1	16-B	107/170 (63%)	76 (71%)	19 (18%)	12 (11%)	0	0

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	3488/5440 (64%)	2742 (79%)	505 (14%)	241 (7%)	<b>1</b> <b>0</b>

All (241) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	1-A	78	GLU
1	1-A	128	ARG
1	1-B	86	PRO
1	2-A	81	PRO
1	2-B	72	GLN
1	2-B	81	PRO
1	2-B	86	PRO
1	3-A	41	PHE
1	4-A	47	TRP
1	4-B	72	GLN
1	4-B	79	PRO
1	4-B	81	PRO
1	5-A	26	SER
1	5-B	78	GLU
1	5-B	86	PRO
1	6-A	27	PRO
1	6-A	76	ASP
1	6-A	111	HIS
1	6-A	124	THR
1	6-A	129	TYR
1	6-B	72	GLN
1	6-B	82	GLN
1	6-B	86	PRO
1	7-A	30	THR
1	7-A	74	LYS
1	7-A	88	GLU
1	7-B	75	SER
1	7-B	81	PRO
1	7-B	95	GLU
1	7-B	96	LEU
1	7-B	111	HIS
1	7-B	118	VAL
1	7-B	119	ILE
1	7-B	120	SER
1	8-B	72	GLN
1	8-B	85	PRO
1	8-B	86	PRO

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	8-B	87	LYS
1	8-B	111	HIS
1	9-A	23	PHE
1	9-A	47	TRP
1	9-A	82	GLN
1	9-A	93	GLN
1	9-A	94	GLU
1	9-B	72	GLN
1	10-A	72	GLN
1	10-A	81	PRO
1	10-A	86	PRO
1	10-B	25	PHE
1	10-B	78	GLU
1	10-B	122	MSE
1	11-A	23	PHE
1	11-A	47	TRP
1	11-A	48	GLU
1	11-A	80	GLY
1	11-A	107	ALA
1	12-A	81	PRO
1	12-B	72	GLN
1	12-B	75	SER
1	12-B	86	PRO
1	12-B	87	LYS
1	13-A	49	GLN
1	13-A	111	HIS
1	13-B	76	ASP
1	13-B	83	ALA
1	13-B	110	CYS
1	14-A	30	THR
1	14-A	78	GLU
1	14-A	81	PRO
1	14-A	97	SER
1	14-A	98	ASP
1	14-B	42	ALA
1	14-B	43	ALA
1	14-B	70	LEU
1	14-B	121	LYS
1	14-B	126	ARG
1	14-B	129	TYR
1	15-A	28	GLU
1	15-A	47	TRP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	15-A	48	GLU
1	15-A	75	SER
1	15-A	76	ASP
1	15-A	81	PRO
1	15-A	90	ALA
1	15-B	86	PRO
1	15-B	87	LYS
1	16-A	49	GLN
1	16-A	53	PRO
1	16-A	54	ARG
1	16-A	69	GLU
1	16-A	81	PRO
1	16-A	82	GLN
1	16-A	83	ALA
1	16-A	111	HIS
1	16-B	24	ARG
1	16-B	30	THR
1	16-B	129	TYR
1	1-A	119	ILE
1	1-A	127	GLN
1	2-A	47	TRP
1	4-B	78	GLU
1	4-B	83	ALA
1	6-B	81	PRO
1	7-A	87	LYS
1	7-B	117	ALA
1	8-A	47	TRP
1	8-A	62	GLY
1	8-B	37	LEU
1	9-A	87	LYS
1	9-B	89	ARG
1	10-B	74	LYS
1	10-B	86	PRO
1	11-A	81	PRO
1	11-A	87	LYS
1	11-A	108	ALA
1	11-B	25	PHE
1	11-B	85	PRO
1	12-A	45	ARG
1	12-A	86	PRO
1	12-A	127	GLN
1	12-A	128	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	12-B	41	PHE
1	12-B	122	MSE
1	13-A	50	PHE
1	13-B	127	GLN
1	14-A	132	HIS
1	14-B	120	SER
1	15-A	72	GLN
1	15-B	46	ASP
1	15-B	80	GLY
1	15-B	83	ALA
1	16-B	53	PRO
1	16-B	54	ARG
1	16-B	72	GLN
1	16-B	113	ASP
1	1-A	79	PRO
1	1-B	87	LYS
1	2-B	80	GLY
1	3-A	76	ASP
1	4-A	77	THR
1	4-A	81	PRO
1	4-B	46	ASP
1	5-A	132	HIS
1	6-B	25	PHE
1	7-A	75	SER
1	7-A	76	ASP
1	7-B	94	GLU
1	8-B	50	PHE
1	9-A	88	GLU
1	9-B	85	PRO
1	9-B	90	ALA
1	10-A	84	TRP
1	11-A	75	SER
1	11-B	81	PRO
1	12-A	72	GLN
1	12-B	90	ALA
1	13-A	27	PRO
1	14-A	79	PRO
1	14-A	95	GLU
1	14-A	127	GLN
1	14-B	46	ASP
1	14-B	87	LYS
1	15-B	79	PRO

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	16-A	45	ARG
1	16-A	47	TRP
1	16-A	57	LEU
1	16-B	67	LEU
1	16-B	89	ARG
1	2-A	60	LEU
1	2-B	45	ARG
1	2-B	58	LEU
1	3-A	40	GLU
1	3-B	85	PRO
1	4-B	77	THR
1	4-B	113	ASP
1	6-B	70	LEU
1	7-A	25	PHE
1	7-B	72	GLN
1	7-B	115	PRO
1	8-B	45	ARG
1	10-B	28	GLU
1	10-B	77	THR
1	11-A	43	ALA
1	11-A	86	PRO
1	13-B	46	ASP
1	13-B	85	PRO
1	14-A	75	SER
1	14-A	90	ALA
1	14-B	88	GLU
1	14-B	115	PRO
1	15-A	53	PRO
1	15-A	97	SER
1	16-B	76	ASP
1	2-A	53	PRO
1	2-B	79	PRO
1	3-A	42	ALA
1	3-B	84	TRP
1	3-B	86	PRO
1	4-A	84	TRP
1	4-A	126	ARG
1	7-A	72	GLN
1	10-A	93	GLN
1	11-A	91	ALA
1	11-A	115	PRO
1	12-A	27	PRO

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Mol	Chain	Res	Type
1	12-A	82	GLN
1	12-B	115	PRO
1	14-A	27	PRO
1	14-A	56	LEU
1	14-B	86	PRO
1	15-A	127	GLN
1	16-B	87	LYS
1	16-B	95	GLU
1	5-A	27	PRO
1	11-B	125	ASN
1	11-B	126	ARG
1	12-A	133	LEU
1	12-B	55	ASN
1	12-B	78	GLU
1	13-A	131	VAL
1	13-B	33	ASP
1	13-B	84	TRP
1	13-B	86	PRO
1	15-B	84	TRP
1	3-A	53	PRO
1	6-A	81	PRO
1	8-A	86	PRO
1	13-A	119	ILE
1	5-A	81	PRO
1	6-A	86	PRO
1	8-B	114	LEU
1	9-A	86	PRO
1	9-A	115	PRO
1	11-A	53	PRO
1	16-A	79	PRO
1	12-A	78	GLU
1	16-A	86	PRO
1	11-A	129	TYR
1	11-B	28	GLU
1	13-A	79	PRO
1	5-B	84	TRP

### 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	1-A	98/136 (72%)	83 (85%)	15 (15%)	2	2
1	1-B	94/136 (69%)	84 (89%)	10 (11%)	6	7
1	2-A	98/136 (72%)	83 (85%)	15 (15%)	2	2
1	2-B	94/136 (69%)	85 (90%)	9 (10%)	8	9
1	3-A	98/136 (72%)	88 (90%)	10 (10%)	7	8
1	3-B	94/136 (69%)	86 (92%)	8 (8%)	10	12
1	4-A	98/136 (72%)	89 (91%)	9 (9%)	9	10
1	4-B	94/136 (69%)	84 (89%)	10 (11%)	6	7
1	5-A	98/136 (72%)	88 (90%)	10 (10%)	7	8
1	5-B	94/136 (69%)	82 (87%)	12 (13%)	4	4
1	6-A	98/136 (72%)	89 (91%)	9 (9%)	9	10
1	6-B	94/136 (69%)	85 (90%)	9 (10%)	8	9
1	7-A	98/136 (72%)	89 (91%)	9 (9%)	9	10
1	7-B	94/136 (69%)	86 (92%)	8 (8%)	10	12
1	8-A	98/136 (72%)	89 (91%)	9 (9%)	9	10
1	8-B	94/136 (69%)	84 (89%)	10 (11%)	6	7
1	9-A	98/136 (72%)	87 (89%)	11 (11%)	6	6
1	9-B	94/136 (69%)	86 (92%)	8 (8%)	10	12
1	10-A	98/136 (72%)	84 (86%)	14 (14%)	3	3
1	10-B	94/136 (69%)	86 (92%)	8 (8%)	10	12
1	11-A	98/136 (72%)	88 (90%)	10 (10%)	7	8
1	11-B	94/136 (69%)	90 (96%)	4 (4%)	29	40
1	12-A	98/136 (72%)	87 (89%)	11 (11%)	6	6
1	12-B	94/136 (69%)	82 (87%)	12 (13%)	4	4
1	13-A	98/136 (72%)	80 (82%)	18 (18%)	1	1
1	13-B	94/136 (69%)	79 (84%)	15 (16%)	2	2
1	14-A	98/136 (72%)	85 (87%)	13 (13%)	4	4
1	14-B	94/136 (69%)	74 (79%)	20 (21%)	1	1
1	15-A	98/136 (72%)	86 (88%)	12 (12%)	5	5
1	15-B	94/136 (69%)	75 (80%)	19 (20%)	1	1

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	16-A	98/136 (72%)	79 (81%)	19 (19%)	1	1
1	16-B	94/136 (69%)	76 (81%)	18 (19%)	1	1
All	All	3072/4352 (71%)	2698 (88%)	374 (12%)	5	5

All (374) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	1-A	23	PHE
1	1-A	28	GLU
1	1-A	31	LEU
1	1-A	41	PHE
1	1-A	44	GLU
1	1-A	52	GLN
1	1-A	63	GLU
1	1-A	70	LEU
1	1-A	79	PRO
1	1-A	81	PRO
1	1-A	82	GLN
1	1-A	85	PRO
1	1-A	92	LEU
1	1-A	121	LYS
1	1-A	129	TYR
1	1-B	24	ARG
1	1-B	35	ARG
1	1-B	36	ARG
1	1-B	37	LEU
1	1-B	40	GLU
1	1-B	52	GLN
1	1-B	77	THR
1	1-B	104	VAL
1	1-B	114	LEU
1	1-B	123	ASP
1	2-A	28	GLU
1	2-A	38	HIS
1	2-A	51	HIS
1	2-A	63	GLU
1	2-A	67	LEU
1	2-A	75	SER
1	2-A	77	THR
1	2-A	78	GLU
1	2-A	89	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	2-A	97	SER
1	2-A	120	SER
1	2-A	121	LYS
1	2-A	122	MSE
1	2-A	132	HIS
1	2-A	134	SER
1	2-B	37	LEU
1	2-B	44	GLU
1	2-B	46	ASP
1	2-B	52	GLN
1	2-B	79	PRO
1	2-B	89	ARG
1	2-B	95	GLU
1	2-B	120	SER
1	2-B	130	PRO
1	3-A	48	GLU
1	3-A	52	GLN
1	3-A	53	PRO
1	3-A	54	ARG
1	3-A	63	GLU
1	3-A	67	LEU
1	3-A	76	ASP
1	3-A	77	THR
1	3-A	82	GLN
1	3-A	129	TYR
1	3-B	24	ARG
1	3-B	38	HIS
1	3-B	77	THR
1	3-B	79	PRO
1	3-B	89	ARG
1	3-B	94	GLU
1	3-B	104	VAL
1	3-B	119	ILE
1	4-A	54	ARG
1	4-A	63	GLU
1	4-A	64	VAL
1	4-A	67	LEU
1	4-A	86	PRO
1	4-A	102	TYR
1	4-A	109	ARG
1	4-A	122	MSE
1	4-A	129	TYR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	4-B	24	ARG
1	4-B	49	GLN
1	4-B	54	ARG
1	4-B	63	GLU
1	4-B	81	PRO
1	4-B	82	GLN
1	4-B	89	ARG
1	4-B	104	VAL
1	4-B	119	ILE
1	4-B	122	MSE
1	5-A	33	ASP
1	5-A	48	GLU
1	5-A	67	LEU
1	5-A	72	GLN
1	5-A	79	PRO
1	5-A	82	GLN
1	5-A	89	ARG
1	5-A	119	ILE
1	5-A	128	ARG
1	5-A	129	TYR
1	5-B	24	ARG
1	5-B	49	GLN
1	5-B	70	LEU
1	5-B	75	SER
1	5-B	77	THR
1	5-B	84	TRP
1	5-B	87	LYS
1	5-B	95	GLU
1	5-B	106	LEU
1	5-B	110	CYS
1	5-B	119	ILE
1	5-B	123	ASP
1	6-A	26	SER
1	6-A	28	GLU
1	6-A	44	GLU
1	6-A	66	GLU
1	6-A	67	LEU
1	6-A	75	SER
1	6-A	89	ARG
1	6-A	109	ARG
1	6-A	129	TYR
1	6-B	28	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	6-B	40	GLU
1	6-B	60	LEU
1	6-B	77	THR
1	6-B	78	GLU
1	6-B	97	SER
1	6-B	98	ASP
1	6-B	104	VAL
1	6-B	115	PRO
1	7-A	25	PHE
1	7-A	51	HIS
1	7-A	63	GLU
1	7-A	67	LEU
1	7-A	75	SER
1	7-A	82	GLN
1	7-A	87	LYS
1	7-A	129	TYR
1	7-A	133	LEU
1	7-B	24	ARG
1	7-B	77	THR
1	7-B	82	GLN
1	7-B	86	PRO
1	7-B	89	ARG
1	7-B	93	GLN
1	7-B	98	ASP
1	7-B	111	HIS
1	8-A	26	SER
1	8-A	28	GLU
1	8-A	63	GLU
1	8-A	66	GLU
1	8-A	74	LYS
1	8-A	75	SER
1	8-A	98	ASP
1	8-A	129	TYR
1	8-A	132	HIS
1	8-B	50	PHE
1	8-B	60	LEU
1	8-B	63	GLU
1	8-B	67	LEU
1	8-B	87	LYS
1	8-B	93	GLN
1	8-B	95	GLU
1	8-B	113	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	8-B	123	ASP
1	8-B	127	GLN
1	9-A	46	ASP
1	9-A	47	TRP
1	9-A	48	GLU
1	9-A	72	GLN
1	9-A	95	GLU
1	9-A	98	ASP
1	9-A	100	LEU
1	9-A	119	ILE
1	9-A	122	MSE
1	9-A	123	ASP
1	9-A	129	TYR
1	9-B	36	ARG
1	9-B	46	ASP
1	9-B	49	GLN
1	9-B	75	SER
1	9-B	78	GLU
1	9-B	89	ARG
1	9-B	93	GLN
1	9-B	129	TYR
1	10-A	28	GLU
1	10-A	46	ASP
1	10-A	48	GLU
1	10-A	64	VAL
1	10-A	72	GLN
1	10-A	75	SER
1	10-A	78	GLU
1	10-A	82	GLN
1	10-A	86	PRO
1	10-A	94	GLU
1	10-A	95	GLU
1	10-A	102	TYR
1	10-A	129	TYR
1	10-A	132	HIS
1	10-B	33	ASP
1	10-B	73	TRP
1	10-B	75	SER
1	10-B	98	ASP
1	10-B	104	VAL
1	10-B	116	GLN
1	10-B	124	THR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	10-B	126	ARG
1	11-A	26	SER
1	11-A	29	PRO
1	11-A	30	THR
1	11-A	54	ARG
1	11-A	66	GLU
1	11-A	77	THR
1	11-A	78	GLU
1	11-A	119	ILE
1	11-A	129	TYR
1	11-A	130	PRO
1	11-B	60	LEU
1	11-B	100	LEU
1	11-B	104	VAL
1	11-B	122	MSE
1	12-A	28	GLU
1	12-A	29	PRO
1	12-A	33	ASP
1	12-A	35	ARG
1	12-A	63	GLU
1	12-A	66	GLU
1	12-A	75	SER
1	12-A	81	PRO
1	12-A	86	PRO
1	12-A	92	LEU
1	12-A	129	TYR
1	12-B	24	ARG
1	12-B	35	ARG
1	12-B	52	GLN
1	12-B	54	ARG
1	12-B	60	LEU
1	12-B	70	LEU
1	12-B	71	PHE
1	12-B	77	THR
1	12-B	89	ARG
1	12-B	93	GLN
1	12-B	104	VAL
1	12-B	124	THR
1	13-A	24	ARG
1	13-A	33	ASP
1	13-A	41	PHE
1	13-A	45	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	13-A	63	GLU
1	13-A	67	LEU
1	13-A	71	PHE
1	13-A	86	PRO
1	13-A	92	LEU
1	13-A	95	GLU
1	13-A	98	ASP
1	13-A	111	HIS
1	13-A	116	GLN
1	13-A	120	SER
1	13-A	121	LYS
1	13-A	125	ASN
1	13-A	129	TYR
1	13-A	132	HIS
1	13-B	28	GLU
1	13-B	32	GLU
1	13-B	37	LEU
1	13-B	40	GLU
1	13-B	52	GLN
1	13-B	75	SER
1	13-B	77	THR
1	13-B	86	PRO
1	13-B	87	LYS
1	13-B	89	ARG
1	13-B	95	GLU
1	13-B	103	LEU
1	13-B	118	VAL
1	13-B	122	MSE
1	13-B	128	ARG
1	14-A	28	GLU
1	14-A	31	LEU
1	14-A	46	ASP
1	14-A	52	GLN
1	14-A	60	LEU
1	14-A	63	GLU
1	14-A	79	PRO
1	14-A	85	PRO
1	14-A	89	ARG
1	14-A	93	GLN
1	14-A	98	ASP
1	14-A	122	MSE
1	14-A	129	TYR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	14-B	24	ARG
1	14-B	32	GLU
1	14-B	33	ASP
1	14-B	37	LEU
1	14-B	40	GLU
1	14-B	44	GLU
1	14-B	48	GLU
1	14-B	49	GLN
1	14-B	63	GLU
1	14-B	71	PHE
1	14-B	72	GLN
1	14-B	77	THR
1	14-B	86	PRO
1	14-B	87	LYS
1	14-B	113	ASP
1	14-B	115	PRO
1	14-B	121	LYS
1	14-B	122	MSE
1	14-B	126	ARG
1	14-B	127	GLN
1	15-A	24	ARG
1	15-A	34	ILE
1	15-A	44	GLU
1	15-A	49	GLN
1	15-A	52	GLN
1	15-A	63	GLU
1	15-A	66	GLU
1	15-A	82	GLN
1	15-A	95	GLU
1	15-A	123	ASP
1	15-A	127	GLN
1	15-A	129	TYR
1	15-B	28	GLU
1	15-B	38	HIS
1	15-B	49	GLN
1	15-B	51	HIS
1	15-B	52	GLN
1	15-B	60	LEU
1	15-B	71	PHE
1	15-B	76	ASP
1	15-B	78	GLU
1	15-B	89	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	15-B	93	GLN
1	15-B	94	GLU
1	15-B	95	GLU
1	15-B	100	LEU
1	15-B	120	SER
1	15-B	122	MSE
1	15-B	125	ASN
1	15-B	127	GLN
1	15-B	128	ARG
1	16-A	28	GLU
1	16-A	35	ARG
1	16-A	46	ASP
1	16-A	48	GLU
1	16-A	50	PHE
1	16-A	53	PRO
1	16-A	56	LEU
1	16-A	60	LEU
1	16-A	66	GLU
1	16-A	67	LEU
1	16-A	77	THR
1	16-A	79	PRO
1	16-A	84	TRP
1	16-A	102	TYR
1	16-A	106	LEU
1	16-A	120	SER
1	16-A	124	THR
1	16-A	125	ASN
1	16-A	126	ARG
1	16-B	29	PRO
1	16-B	32	GLU
1	16-B	37	LEU
1	16-B	41	PHE
1	16-B	44	GLU
1	16-B	49	GLN
1	16-B	54	ARG
1	16-B	67	LEU
1	16-B	73	TRP
1	16-B	75	SER
1	16-B	77	THR
1	16-B	78	GLU
1	16-B	93	GLN
1	16-B	110	CYS

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Mol	Chain	Res	Type
1	16-B	116	GLN
1	16-B	122	MSE
1	16-B	124	THR
1	16-B	126	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (114) such sidechains are listed below:

Mol	Chain	Res	Type
1	1-A	93	GLN
1	1-A	127	GLN
1	1-B	93	GLN
1	2-A	38	HIS
1	2-A	52	GLN
1	2-A	55	ASN
1	2-A	82	GLN
1	2-A	93	GLN
1	2-B	52	GLN
1	2-B	72	GLN
1	2-B	125	ASN
1	3-A	38	HIS
1	3-A	93	GLN
1	3-A	111	HIS
1	3-A	127	GLN
1	3-A	132	HIS
1	3-B	49	GLN
1	3-B	52	GLN
1	3-B	111	HIS
1	4-A	93	GLN
1	4-A	127	GLN
1	4-B	38	HIS
1	4-B	72	GLN
1	4-B	82	GLN
1	4-B	93	GLN
1	4-B	111	HIS
1	5-B	55	ASN
1	5-B	93	GLN
1	5-B	111	HIS
1	5-B	116	GLN
1	5-B	125	ASN
1	5-B	127	GLN
1	6-A	49	GLN
1	6-A	82	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	6-A	93	GLN
1	6-A	127	GLN
1	6-B	38	HIS
1	6-B	82	GLN
1	6-B	93	GLN
1	6-B	127	GLN
1	7-A	49	GLN
1	7-A	111	HIS
1	7-A	116	GLN
1	7-A	127	GLN
1	7-B	49	GLN
1	7-B	52	GLN
1	7-B	82	GLN
1	7-B	111	HIS
1	8-A	55	ASN
1	8-A	111	HIS
1	8-B	38	HIS
1	8-B	51	HIS
1	8-B	82	GLN
1	8-B	93	GLN
1	8-B	127	GLN
1	9-A	72	GLN
1	9-A	111	HIS
1	9-B	52	GLN
1	9-B	125	ASN
1	10-A	38	HIS
1	10-A	127	GLN
1	10-B	93	GLN
1	10-B	116	GLN
1	10-B	125	ASN
1	10-B	127	GLN
1	11-A	55	ASN
1	11-A	72	GLN
1	11-A	93	GLN
1	11-A	127	GLN
1	11-B	38	HIS
1	11-B	93	GLN
1	11-B	111	HIS
1	11-B	116	GLN
1	11-B	125	ASN
1	12-A	55	ASN
1	12-A	82	GLN

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Mol	Chain	Res	Type
1	12-A	111	HIS
1	12-B	51	HIS
1	12-B	52	GLN
1	12-B	82	GLN
1	12-B	93	GLN
1	12-B	116	GLN
1	12-B	125	ASN
1	13-A	38	HIS
1	13-A	52	GLN
1	13-A	55	ASN
1	13-A	72	GLN
1	13-A	93	GLN
1	13-A	111	HIS
1	13-B	51	HIS
1	13-B	52	GLN
1	13-B	55	ASN
1	13-B	111	HIS
1	14-A	55	ASN
1	14-A	93	GLN
1	14-A	116	GLN
1	14-A	127	GLN
1	14-B	38	HIS
1	14-B	51	HIS
1	14-B	52	GLN
1	14-B	93	GLN
1	15-A	49	GLN
1	15-A	52	GLN
1	15-A	72	GLN
1	15-A	127	GLN
1	15-B	38	HIS
1	15-B	52	GLN
1	15-B	111	HIS
1	15-B	127	GLN
1	16-A	51	HIS
1	16-A	52	GLN
1	16-A	111	HIS
1	16-B	72	GLN
1	16-B	93	GLN

### 5.3.3 RNA ⓘ

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

### 6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.