



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 23, 2023 – 02:22 PM EDT

PDB ID : 3BE7  
Title : Crystal structure of Zn-dependent arginine carboxypeptidase  
Authors : Patskovsky, Y.; Ramagopal, U.A.; Toro, R.; Meyer, A.J.; Freeman, J.; Iizuka, M.; Bain, K.; Rodgers, L.; Raushel, F.; Sauder, J.M.; Burley, S.K.; Almo, S.C.; New York SGX Research Center for Structural Genomics (NYSGXRC)  
Deposited on : 2007-11-16  
Resolution : 2.30 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

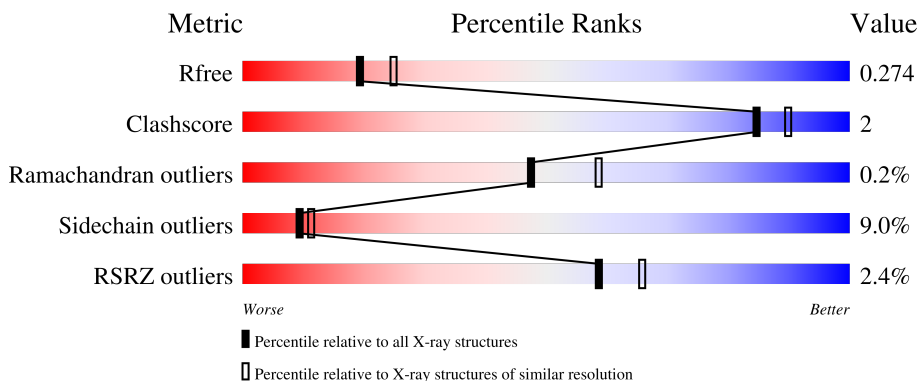
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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.



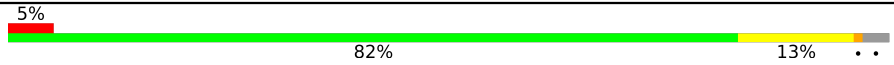
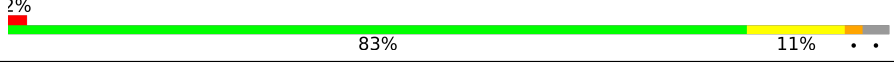

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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  $\leq 5\%$ . 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	408	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 85%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">85% 12% ..</p>
1	B	408	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 14%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">81% 14% ..</p>
1	C	408	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 85%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">85% 11% ..</p>
1	D	408	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 84%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 11%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">84% 11% ..</p>
1	E	408	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 2px;"></div> <div style="width: 87%; height: 10px; background-color: green; margin-right: 2px;"></div> <div style="width: 10%; height: 10px; background-color: yellow; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 2px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">87% 10% .</p>

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Mol	Chain	Length	Quality of chain
1	F	408	 5% 82% 13% ..
1	G	408	 2% 83% 11% ..
1	H	408	 % 85% 11% ..

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 24963 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 Zn-dependent arginine carboxypeptidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	398	Total 3081	C 1938	N 535	O 591	S 17	0	9	0
1	B	395	Total 3041	C 1914	N 531	O 580	S 16	0	5	0
1	C	394	Total 3010	C 1893	N 525	O 576	S 16	0	2	0
1	D	395	Total 3021	C 1900	N 527	O 578	S 16	0	2	0
1	E	394	Total 3010	C 1892	N 523	O 579	S 16	0	2	0
1	F	395	Total 3012	C 1894	N 523	O 578	S 17	0	1	0
1	G	394	Total 3012	C 1894	N 525	O 577	S 16	0	2	0
1	H	395	Total 3010	C 1892	N 523	O 579	S 16	0	1	0

There are 88 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	expression tag	PDB 3BE7
A	0	SER	-	expression tag	PDB 3BE7
A	1	LEU	-	expression tag	PDB 3BE7
A	399	GLU	-	expression tag	PDB 3BE7
A	400	GLY	-	expression tag	PDB 3BE7
A	401	HIS	-	expression tag	PDB 3BE7
A	402	HIS	-	expression tag	PDB 3BE7
A	403	HIS	-	expression tag	PDB 3BE7
A	404	HIS	-	expression tag	PDB 3BE7
A	405	HIS	-	expression tag	PDB 3BE7
A	406	HIS	-	expression tag	PDB 3BE7
B	-1	MET	-	expression tag	PDB 3BE7
B	0	SER	-	expression tag	PDB 3BE7

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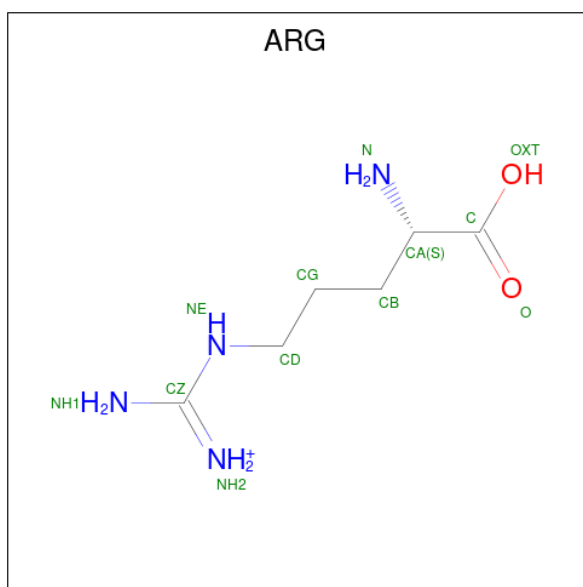
Chain	Residue	Modelled	Actual	Comment	Reference
B	1	LEU	-	expression tag	PDB 3BE7
B	399	GLU	-	expression tag	PDB 3BE7
B	400	GLY	-	expression tag	PDB 3BE7
B	401	HIS	-	expression tag	PDB 3BE7
B	402	HIS	-	expression tag	PDB 3BE7
B	403	HIS	-	expression tag	PDB 3BE7
B	404	HIS	-	expression tag	PDB 3BE7
B	405	HIS	-	expression tag	PDB 3BE7
B	406	HIS	-	expression tag	PDB 3BE7
C	-1	MET	-	expression tag	PDB 3BE7
C	0	SER	-	expression tag	PDB 3BE7
C	1	LEU	-	expression tag	PDB 3BE7
C	399	GLU	-	expression tag	PDB 3BE7
C	400	GLY	-	expression tag	PDB 3BE7
C	401	HIS	-	expression tag	PDB 3BE7
C	402	HIS	-	expression tag	PDB 3BE7
C	403	HIS	-	expression tag	PDB 3BE7
C	404	HIS	-	expression tag	PDB 3BE7
C	405	HIS	-	expression tag	PDB 3BE7
C	406	HIS	-	expression tag	PDB 3BE7
D	-1	MET	-	expression tag	PDB 3BE7
D	0	SER	-	expression tag	PDB 3BE7
D	1	LEU	-	expression tag	PDB 3BE7
D	399	GLU	-	expression tag	PDB 3BE7
D	400	GLY	-	expression tag	PDB 3BE7
D	401	HIS	-	expression tag	PDB 3BE7
D	402	HIS	-	expression tag	PDB 3BE7
D	403	HIS	-	expression tag	PDB 3BE7
D	404	HIS	-	expression tag	PDB 3BE7
D	405	HIS	-	expression tag	PDB 3BE7
D	406	HIS	-	expression tag	PDB 3BE7
E	-1	MET	-	expression tag	PDB 3BE7
E	0	SER	-	expression tag	PDB 3BE7
E	1	LEU	-	expression tag	PDB 3BE7
E	399	GLU	-	expression tag	PDB 3BE7
E	400	GLY	-	expression tag	PDB 3BE7
E	401	HIS	-	expression tag	PDB 3BE7
E	402	HIS	-	expression tag	PDB 3BE7
E	403	HIS	-	expression tag	PDB 3BE7
E	404	HIS	-	expression tag	PDB 3BE7
E	405	HIS	-	expression tag	PDB 3BE7
E	406	HIS	-	expression tag	PDB 3BE7

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-1	MET	-	expression tag	PDB 3BE7
F	0	SER	-	expression tag	PDB 3BE7
F	1	LEU	-	expression tag	PDB 3BE7
F	399	GLU	-	expression tag	PDB 3BE7
F	400	GLY	-	expression tag	PDB 3BE7
F	401	HIS	-	expression tag	PDB 3BE7
F	402	HIS	-	expression tag	PDB 3BE7
F	403	HIS	-	expression tag	PDB 3BE7
F	404	HIS	-	expression tag	PDB 3BE7
F	405	HIS	-	expression tag	PDB 3BE7
F	406	HIS	-	expression tag	PDB 3BE7
G	-1	MET	-	expression tag	PDB 3BE7
G	0	SER	-	expression tag	PDB 3BE7
G	1	LEU	-	expression tag	PDB 3BE7
G	399	GLU	-	expression tag	PDB 3BE7
G	400	GLY	-	expression tag	PDB 3BE7
G	401	HIS	-	expression tag	PDB 3BE7
G	402	HIS	-	expression tag	PDB 3BE7
G	403	HIS	-	expression tag	PDB 3BE7
G	404	HIS	-	expression tag	PDB 3BE7
G	405	HIS	-	expression tag	PDB 3BE7
G	406	HIS	-	expression tag	PDB 3BE7
H	-1	MET	-	expression tag	PDB 3BE7
H	0	SER	-	expression tag	PDB 3BE7
H	1	LEU	-	expression tag	PDB 3BE7
H	399	GLU	-	expression tag	PDB 3BE7
H	400	GLY	-	expression tag	PDB 3BE7
H	401	HIS	-	expression tag	PDB 3BE7
H	402	HIS	-	expression tag	PDB 3BE7
H	403	HIS	-	expression tag	PDB 3BE7
H	404	HIS	-	expression tag	PDB 3BE7
H	405	HIS	-	expression tag	PDB 3BE7
H	406	HIS	-	expression tag	PDB 3BE7

- Molecule 2 is ARGinine (three-letter code: ARG) (formula: C<sub>6</sub>H<sub>15</sub>N<sub>4</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	Total 12	C 6	N 4	O 2	0	0
2	B	1	Total 12	C 6	N 4	O 2	0	0
2	C	1	Total 12	C 6	N 4	O 2	0	0
2	D	1	Total 12	C 6	N 4	O 2	0	0
2	E	1	Total 12	C 6	N 4	O 2	0	0
2	F	1	Total 12	C 6	N 4	O 2	0	0
2	G	1	Total 12	C 6	N 4	O 2	0	0
2	H	1	Total 12	C 6	N 4	O 2	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	B	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0
3	D	1	Total C O 6 3 3	0	0
3	D	1	Total C O 6 3 3	0	0
3	E	1	Total C O 6 3 3	0	0
3	E	1	Total C O 6 3 3	0	0
3	F	1	Total C O 6 3 3	0	0
3	F	1	Total C O 6 3 3	0	0
3	F	1	Total C O 6 3 3	0	0
3	G	1	Total C O 6 3 3	0	0
3	H	1	Total C O 6 3 3	0	0
3	H	1	Total C O 6 3 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	H	1	Total C O 6 3 3	0	0
3	H	1	Total C O 6 3 3	0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	F	1	Total Mg 1 1	0	0
4	H	1	Total Mg 1 1	0	0

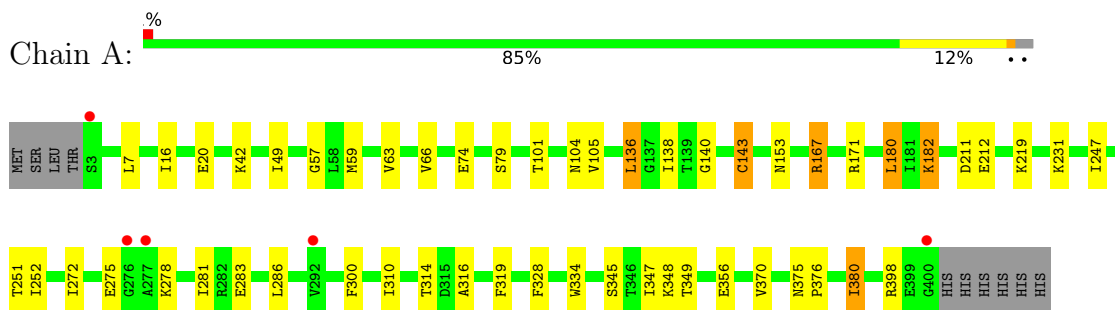
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	65	Total O 65 65	0	0
5	B	57	Total O 57 57	0	0
5	C	60	Total O 60 60	0	0
5	D	65	Total O 65 65	0	0
5	E	78	Total O 78 78	0	0
5	F	75	Total O 75 75	0	0
5	G	82	Total O 82 82	0	0
5	H	90	Total O 90 90	0	0

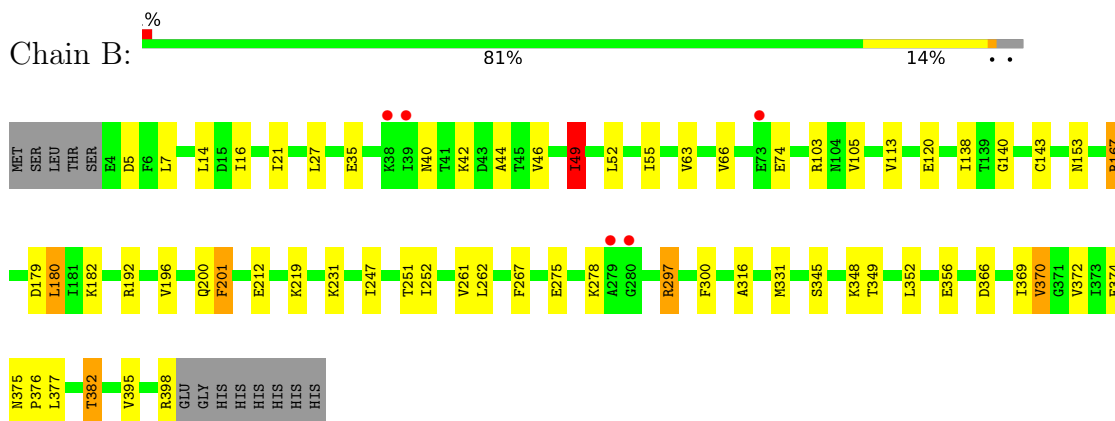
### 3 Residue-property plots [i](#)

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 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.

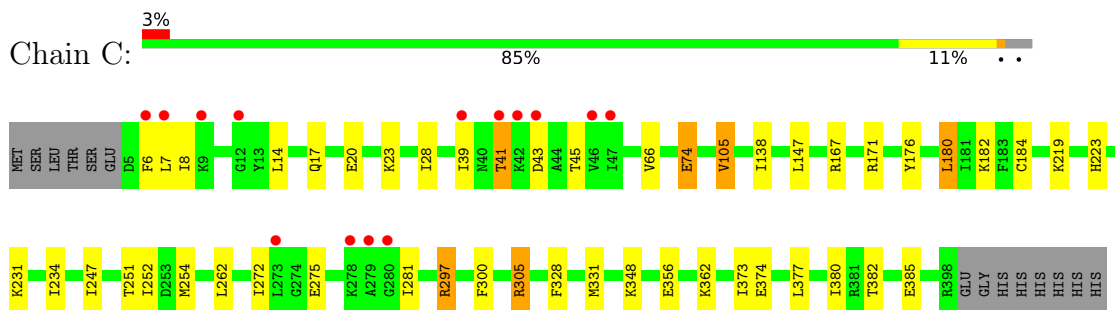
- Molecule 1: Zn-dependent arginine carboxypeptidase



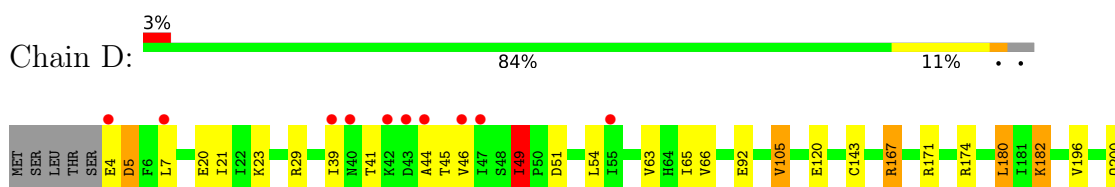
- Molecule 1: Zn-dependent arginine carboxypeptidase



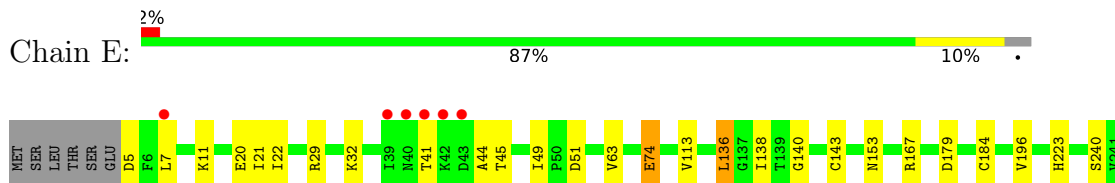
- Molecule 1: Zn-dependent arginine carboxypeptidase



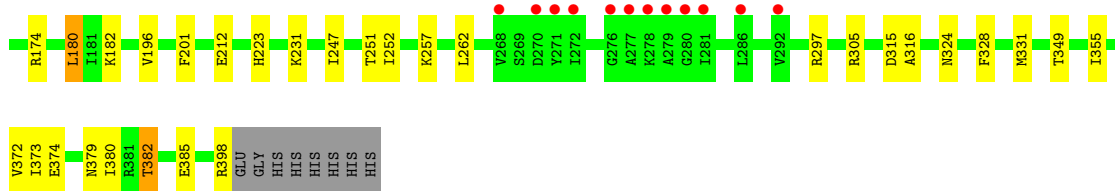
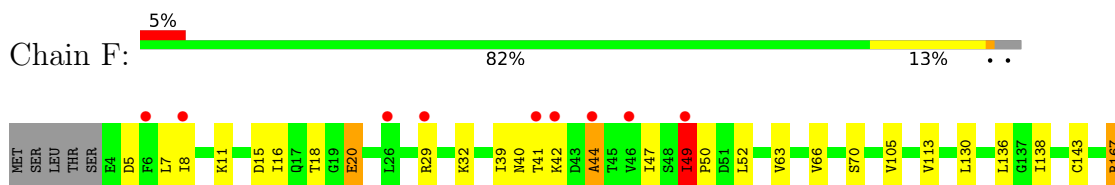
- Molecule 1: Zn-dependent arginine carboxypeptidase



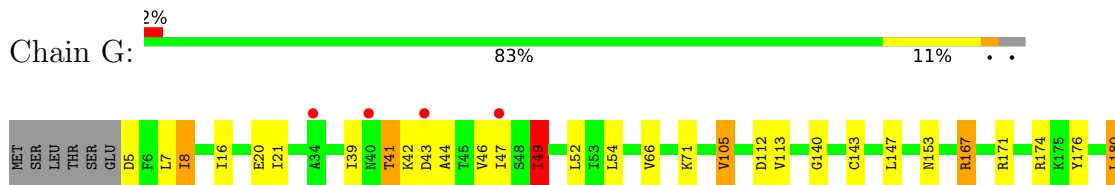
- Molecule 1: Zn-dependent arginine carboxypeptidase



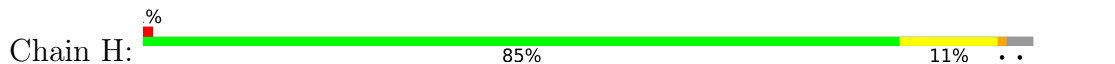
- Molecule 1: Zn-dependent arginine carboxypeptidase

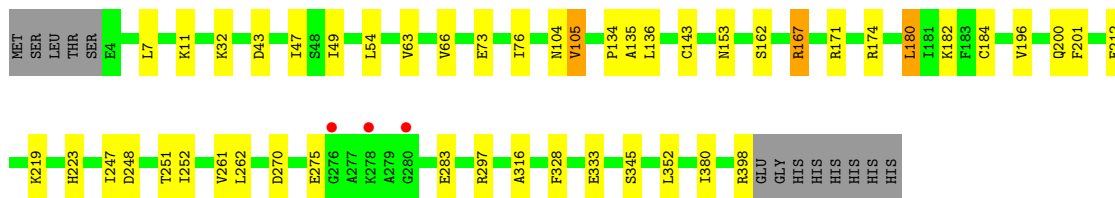


- Molecule 1: Zn-dependent arginine carboxypeptidase



- Molecule 1: Zn-dependent arginine carboxypeptidase





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	113.42Å 146.58Å 255.96Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.30 49.92 – 2.15	Depositor EDS
% Data completeness (in resolution range)	96.0 (20.00-2.30) 94.5 (49.92-2.15)	Depositor EDS
$R_{merge}$	0.13	Depositor
$R_{sym}$	0.10	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.13 (at 2.16Å)	Xtrriage
Refinement program	REFMAC 5.3.0034	Depositor
R, $R_{free}$	0.226 , 0.280 0.223 , 0.274	Depositor DCC
$R_{free}$ test set	6570 reflections (3.02%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	30.0	Xtrriage
Anisotropy	0.153	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 52.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	24963	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	48.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.03% 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

### 5.1 Standard geometry

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

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	0.33	0/3153	0.53	2/4248 (0.0%)
1	B	0.34	0/3103	0.54	2/4181 (0.0%)
1	C	0.34	0/3063	0.54	1/4131 (0.0%)
1	D	0.36	0/3074	0.53	1/4144 (0.0%)
1	E	0.33	0/3060	0.53	1/4127 (0.0%)
1	F	0.34	0/3062	0.53	1/4129 (0.0%)
1	G	0.34	0/3065	0.54	1/4133 (0.0%)
1	H	0.33	0/3060	0.54	1/4127 (0.0%)
All	All	0.34	0/24640	0.54	10/33220 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	4
1	B	0	5
1	C	0	2
1	D	0	4
1	E	0	3
1	F	0	3
1	G	0	6
1	H	0	2
All	All	0	29

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	180	LEU	CA-CB-CG	6.42	130.08	115.30
1	H	180	LEU	CA-CB-CG	6.38	129.97	115.30
1	C	180	LEU	CA-CB-CG	6.28	129.75	115.30
1	A	136	LEU	CA-CB-CG	6.28	129.74	115.30
1	A	180	LEU	CA-CB-CG	6.26	129.70	115.30
1	F	180	LEU	CA-CB-CG	6.25	129.68	115.30
1	B	180	LEU	CA-CB-CG	6.23	129.62	115.30
1	D	180	LEU	CA-CB-CG	5.83	128.70	115.30
1	B	180	LEU	CB-CG-CD1	-5.48	101.68	111.00
1	E	136	LEU	CA-CB-CG	5.00	126.81	115.30

There are no chirality outliers.

All (29) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	104	ASN	Peptide
1	A	143	CYS	Peptide
1	A	334	TRP	Peptide
1	A	49	ILE	Peptide
1	B	179	ASP	Peptide
1	B	267	PHE	Peptide
1	B	40	ASN	Peptide
1	B	44	ALA	Peptide
1	B	49	ILE	Peptide
1	C	176	TYR	Peptide
1	C	41	THR	Peptide
1	D	143	CYS	Peptide
1	D	334	TRP	Peptide
1	D	44	ALA	Peptide
1	D	49	ILE	Peptide
1	E	179	ASP	Peptide
1	E	44	ALA	Peptide
1	E	49	ILE	Peptide
1	F	29	ARG	Peptide
1	F	44	ALA	Peptide
1	F	49	ILE	Peptide
1	G	143	CYS	Peptide
1	G	176	TYR	Peptide
1	G	41	THR	Peptide
1	G	42	LYS	Peptide
1	G	44	ALA	Peptide
1	G	49	ILE	Peptide
1	H	104	ASN	Peptide

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Mol	Chain	Res	Type	Group
1	H	43	ASP	Peptide

## 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	3081	0	3102	17	0
1	B	3041	0	3069	16	0
1	C	3010	0	3025	16	0
1	D	3021	0	3037	17	0
1	E	3010	0	3015	11	0
1	F	3012	0	3020	19	0
1	G	3012	0	3024	13	0
1	H	3010	0	3016	13	0
2	A	12	0	12	0	0
2	B	12	0	12	0	0
2	C	12	0	12	0	0
2	D	12	0	12	0	0
2	E	12	0	12	0	0
2	F	12	0	12	0	0
2	G	12	0	12	0	0
2	H	12	0	12	0	0
3	A	12	0	16	0	0
3	B	6	0	8	0	0
3	C	6	0	8	0	0
3	D	12	0	16	0	0
3	E	12	0	16	0	0
3	F	18	0	24	0	0
3	G	6	0	8	0	0
3	H	24	0	32	2	0
4	F	1	0	0	0	0
4	H	1	0	0	0	0
5	A	65	0	0	0	0
5	B	57	0	0	0	0
5	C	60	0	0	0	0
5	D	65	0	0	0	0
5	E	78	0	0	0	0
5	F	75	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	G	82	0	0	0	0
5	H	90	0	0	0	0
All	All	24963	0	24532	113	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 2.

All (113) 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:B:374:GLU:H	1:B:382:THR:HG21	1.51	0.75
1:D:231:LYS:HG2	1:D:251:THR:HG21	1.78	0.66
1:C:231:LYS:HG2	1:C:251:THR:HG21	1.81	0.61
1:F:167:ARG:HH21	1:F:212:GLU:HG2	1.65	0.60
1:D:5:ASP:OD2	1:D:5:ASP:N	2.30	0.59
1:H:105:VAL:HG22	1:H:182:LYS:HD3	1.84	0.59
1:B:140:GLY:O	1:H:174:ARG:NH2	2.36	0.58
1:G:328:PHE:HB3	1:G:380:ILE:HG12	1.86	0.57
1:D:374:GLU:HB2	1:D:382:THR:HG21	1.87	0.56
1:B:103:ARG:HG2	1:B:180:LEU:HD11	1.87	0.56
1:D:251:THR:HA	1:D:254:MET:HB2	1.87	0.56
1:A:247:ILE:HG12	1:A:252:ILE:HG13	1.87	0.55
1:G:49:ILE:HG12	1:G:52:LEU:HD12	1.90	0.54
1:G:374:GLU:H	1:G:382:THR:HG21	1.73	0.54
1:H:135:ALA:H	3:H:504:GOL:H11	1.73	0.53
1:D:63:VAL:HG12	1:D:316:ALA:HB3	1.91	0.52
1:H:247:ILE:HG12	1:H:252:ILE:HG13	1.92	0.52
1:A:231:LYS:HG2	1:A:251:THR:HG21	1.92	0.52
1:C:374:GLU:HB2	1:C:382[A]:THR:HG21	1.92	0.52
1:D:105:VAL:HG22	1:D:182:LYS:HD3	1.91	0.52
1:D:167:ARG:HH21	1:D:212:GLU:HB2	1.75	0.52
1:B:167:ARG:HH21	1:B:212:GLU:HB2	1.75	0.52
1:A:328:PHE:HB3	1:A:380:ILE:HG12	1.91	0.51
1:G:105:VAL:HG22	1:G:182:LYS:HD3	1.92	0.51
1:G:167:ARG:HH21	1:G:212:GLU:HB2	1.76	0.51
1:B:231:LYS:HG2	1:B:251:THR:HG21	1.93	0.51
1:C:272:ILE:HG23	1:C:281:ILE:HD13	1.93	0.50
1:C:328:PHE:HB3	1:C:380:ILE:HG12	1.92	0.50
1:F:328:PHE:HA	1:F:331[B]:MET:HE2	1.93	0.49
1:B:55:ILE:HG13	1:B:370:VAL:HG13	1.93	0.49
1:F:374:GLU:H	1:F:382:THR:HG21	1.75	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:372:VAL:HG21	1:G:383:LEU:HD23	1.94	0.49
1:F:328:PHE:HB3	1:F:380:ILE:HG12	1.93	0.49
1:C:14:LEU:HD13	1:C:377:LEU:HD11	1.95	0.49
1:H:200:GLN:O	1:H:201:PHE:HB2	2.13	0.49
1:A:300:PHE:HE1	1:A:310:ILE:HG21	1.77	0.49
1:B:63:VAL:HG12	1:B:316:ALA:HB3	1.93	0.49
1:F:167:ARG:HG3	1:F:212:GLU:HG3	1.95	0.49
1:E:374:GLU:HB2	1:E:382:THR:HG21	1.95	0.48
1:D:174:ARG:NH2	1:E:140:GLY:O	2.46	0.48
1:A:167:ARG:HH22	1:A:211:ASP:HB3	1.79	0.48
1:B:27:LEU:HD23	1:B:35:GLU:HG3	1.96	0.48
1:B:261:VAL:HG11	1:B:352:LEU:HD22	1.95	0.48
1:E:20:GLU:HB3	1:E:22:ILE:HG13	1.96	0.48
1:C:305:ARG:HH11	1:C:305:ARG:HA	1.79	0.47
1:H:328:PHE:HB3	1:H:380:ILE:HG12	1.96	0.47
1:B:138:ILE:HB	1:H:171:ARG:HD3	1.96	0.47
1:C:297:ARG:HA	1:C:300:PHE:HB3	1.97	0.47
1:G:8:ILE:HG12	1:G:47:ILE:HD12	1.97	0.47
1:C:171:ARG:HD3	1:F:138:ILE:HB	1.97	0.47
1:E:11:LYS:HD2	1:E:51:ASP:HA	1.97	0.47
1:A:138:ILE:HB	1:G:171:ARG:HD3	1.98	0.46
1:D:171:ARG:HD3	1:E:138:ILE:HB	1.97	0.46
1:F:231:LYS:HG2	1:F:251:THR:HG21	1.95	0.46
1:D:200:GLN:O	1:D:201:PHE:HB2	2.15	0.46
1:F:15:ASP:HB3	1:F:18:THR:HG22	1.97	0.46
1:F:247:ILE:HG12	1:F:252:ILE:HG13	1.97	0.46
1:G:231:LYS:HG2	1:G:251:THR:HG21	1.98	0.46
1:B:247:ILE:HG12	1:B:252:ILE:HG13	1.97	0.46
1:G:297:ARG:HG3	1:G:334:TRP:CE2	2.51	0.46
1:E:63:VAL:HG12	1:E:316:ALA:HB3	1.97	0.46
1:C:247:ILE:HG12	1:C:252:ILE:HG13	1.98	0.46
1:D:247:ILE:HG12	1:D:252:ILE:HG13	1.96	0.45
1:H:134:PRO:HB3	3:H:504:GOL:H31	1.98	0.45
1:F:49:ILE:HG12	1:F:52:LEU:HD12	1.98	0.45
1:C:105:VAL:HG22	1:C:182:LYS:HD3	1.98	0.45
1:F:40:ASN:HD22	1:F:42:LYS:HB2	1.81	0.45
1:C:184:CYS:HA	1:C:223:HIS:HB3	1.99	0.45
1:H:63:VAL:HG12	1:H:316:ALA:HB3	1.99	0.45
1:H:167:ARG:HG3	1:H:212:GLU:HG3	1.99	0.44
1:C:6:PHE:HB2	1:C:28:ILE:HB	1.98	0.44
1:H:184:CYS:HA	1:H:223:HIS:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:167:ARG:HD2	1:D:212:GLU:HB2	2.00	0.44
1:C:251:THR:HA	1:C:254:MET:HB2	1.99	0.44
1:D:373:ILE:H	1:D:373:ILE:HG13	1.51	0.44
1:F:247:ILE:HD13	1:F:262:LEU:HD21	1.99	0.44
1:A:140:GLY:O	1:G:174:ARG:NH2	2.51	0.43
1:E:240:SER:HB3	1:E:352:LEU:HD11	2.00	0.43
1:B:297:ARG:HA	1:B:300:PHE:HB3	1.99	0.43
1:A:167:ARG:HG3	1:A:212:GLU:HG3	2.01	0.43
1:A:171:ARG:HD3	1:C:138:ILE:HB	2.00	0.43
1:A:57:GLY:HA2	1:A:370:VAL:HG23	2.01	0.42
1:A:59:MET:HG2	1:A:101:THR:HB	2.02	0.42
1:E:74:GLU:H	1:E:74:GLU:HG3	1.63	0.42
1:E:328:PHE:HB3	1:E:380:ILE:HG12	2.02	0.42
1:F:18:THR:HG23	1:F:20:GLU:H	1.83	0.42
1:H:261:VAL:HG11	1:H:352:LEU:HD22	2.00	0.42
1:C:234:ILE:HG21	1:C:254:MET:HB3	2.00	0.42
1:H:47:ILE:HG22	1:H:49:ILE:HG12	2.00	0.42
1:E:223:HIS:HA	1:E:242:GLU:HB2	2.02	0.42
1:A:283:GLU:HA	1:A:286:LEU:HD12	2.02	0.41
1:B:167:ARG:HD2	1:B:212:GLU:HB2	2.02	0.41
1:D:49:ILE:O	1:D:49:ILE:HG23	2.19	0.41
1:G:112:ASP:OD2	1:G:112:ASP:N	2.53	0.41
1:A:63:VAL:HG12	1:A:316:ALA:HB3	2.02	0.41
1:A:375:ASN:HA	1:A:376:PRO:HD3	1.81	0.41
1:B:49:ILE:HG12	1:B:52:LEU:HD12	2.02	0.41
1:A:314:THR:HB	1:A:319:PHE:HZ	1.85	0.41
1:F:63:VAL:HG12	1:F:316:ALA:HB3	2.01	0.41
1:F:182:LYS:HE2	1:F:223:HIS:HB2	2.03	0.41
1:D:328:PHE:HB3	1:D:380:ILE:HG12	2.03	0.41
1:F:130:LEU:HD11	1:F:355:ILE:HD11	2.02	0.41
1:F:174:ARG:NH2	1:G:140:GLY:O	2.53	0.41
1:A:272:ILE:HG23	1:A:281:ILE:HD13	2.02	0.41
1:B:200:GLN:O	1:B:201:PHE:HB2	2.21	0.41
1:B:375:ASN:HA	1:B:376:PRO:HD3	1.86	0.41
1:E:184:CYS:HA	1:E:223:HIS:HB3	2.02	0.41
1:A:105:VAL:HG22	1:A:182[A]:LYS:HD3	2.03	0.41
1:D:182:LYS:HE3	1:D:223:HIS:HB2	2.04	0.40
1:F:8:ILE:HG12	1:F:47:ILE:HD12	2.03	0.40
1:C:74:GLU:H	1:C:74:GLU:HG3	1.49	0.40
1:F:5:ASP:HB2	1:F:44:ALA:HB3	2.02	0.40
1:D:301:MET:HG3	1:D:334:TRP:HE3	1.87	0.40

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	405/408 (99%)	387 (96%)	18 (4%)	0	100	100
1	B	398/408 (98%)	380 (96%)	16 (4%)	2 (0%)	29	35
1	C	394/408 (97%)	373 (95%)	21 (5%)	0	100	100
1	D	395/408 (97%)	376 (95%)	19 (5%)	0	100	100
1	E	394/408 (97%)	378 (96%)	16 (4%)	0	100	100
1	F	394/408 (97%)	375 (95%)	17 (4%)	2 (0%)	29	35
1	G	394/408 (97%)	374 (95%)	18 (5%)	2 (0%)	29	35
1	H	394/408 (97%)	380 (96%)	14 (4%)	0	100	100
All	All	3168/3264 (97%)	3023 (95%)	139 (4%)	6 (0%)	47	58

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	201	PHE
1	F	201	PHE
1	G	41	THR
1	G	43	ASP
1	F	50	PRO
1	B	49	ILE

### 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	329/330 (100%)	303 (92%)	26 (8%)	12	15
1	B	323/330 (98%)	285 (88%)	38 (12%)	5	5
1	C	319/330 (97%)	293 (92%)	26 (8%)	11	14
1	D	320/330 (97%)	286 (89%)	34 (11%)	6	7
1	E	319/330 (97%)	298 (93%)	21 (7%)	16	22
1	F	319/330 (97%)	290 (91%)	29 (9%)	9	11
1	G	319/330 (97%)	284 (89%)	35 (11%)	6	7
1	H	319/330 (97%)	292 (92%)	27 (8%)	10	13
All	All	2567/2640 (97%)	2331 (91%)	236 (9%)	9	11

All (236) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	LEU
1	A	16	ILE
1	A	20	GLU
1	A	42	LYS
1	A	66	VAL
1	A	74	GLU
1	A	79	SER
1	A	136	LEU
1	A	143	CYS
1	A	153	ASN
1	A	167	ARG
1	A	180	LEU
1	A	182[A]	LYS
1	A	182[B]	LYS
1	A	219	LYS
1	A	275	GLU
1	A	278	LYS
1	A	345[A]	SER
1	A	345[B]	SER
1	A	347	ILE
1	A	348	LYS
1	A	349	THR
1	A	356[A]	GLU
1	A	356[B]	GLU
1	A	380	ILE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	398	ARG
1	B	5	ASP
1	B	7	LEU
1	B	14	LEU
1	B	16	ILE
1	B	21	ILE
1	B	42	LYS
1	B	46	VAL
1	B	49	ILE
1	B	66	VAL
1	B	74	GLU
1	B	105	VAL
1	B	113	VAL
1	B	120	GLU
1	B	143	CYS
1	B	153	ASN
1	B	167	ARG
1	B	182[A]	LYS
1	B	182[B]	LYS
1	B	192	ARG
1	B	196	VAL
1	B	219	LYS
1	B	262	LEU
1	B	275	GLU
1	B	278	LYS
1	B	297	ARG
1	B	331	MET
1	B	345	SER
1	B	348	LYS
1	B	349	THR
1	B	356	GLU
1	B	366	ASP
1	B	369	ILE
1	B	370	VAL
1	B	372	VAL
1	B	377	LEU
1	B	382	THR
1	B	395	VAL
1	B	398	ARG
1	C	7	LEU
1	C	8	ILE
1	C	17	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	20	GLU
1	C	23	LYS
1	C	39	ILE
1	C	41	THR
1	C	43	ASP
1	C	45	THR
1	C	66	VAL
1	C	74	GLU
1	C	105	VAL
1	C	147	LEU
1	C	167	ARG
1	C	180	LEU
1	C	219	LYS
1	C	262	LEU
1	C	275	GLU
1	C	297	ARG
1	C	305	ARG
1	C	331	MET
1	C	348	LYS
1	C	356	GLU
1	C	362	LYS
1	C	373	ILE
1	C	385	GLU
1	D	4	GLU
1	D	5	ASP
1	D	7	LEU
1	D	20	GLU
1	D	21	ILE
1	D	23	LYS
1	D	29	ARG
1	D	39	ILE
1	D	41	THR
1	D	45	THR
1	D	46	VAL
1	D	49	ILE
1	D	51	ASP
1	D	54	LEU
1	D	65	ILE
1	D	66	VAL
1	D	92	GLU
1	D	105	VAL
1	D	120	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	D	167	ARG
1	D	180	LEU
1	D	182	LYS
1	D	196	VAL
1	D	219	LYS
1	D	262	LEU
1	D	270	ASP
1	D	297	ARG
1	D	301	MET
1	D	331	MET
1	D	348	LYS
1	D	369	ILE
1	D	373	ILE
1	D	395	VAL
1	D	398	ARG
1	E	5	ASP
1	E	7	LEU
1	E	21	ILE
1	E	29	ARG
1	E	32	LYS
1	E	41	THR
1	E	45	THR
1	E	74	GLU
1	E	113	VAL
1	E	136	LEU
1	E	143	CYS
1	E	153	ASN
1	E	167	ARG
1	E	196	VAL
1	E	249	ASP
1	E	262	LEU
1	E	278	LYS
1	E	331	MET
1	E	333	GLU
1	E	356	GLU
1	E	398	ARG
1	F	7	LEU
1	F	11	LYS
1	F	16	ILE
1	F	20	GLU
1	F	32	LYS
1	F	39	ILE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	F	41	THR
1	F	49	ILE
1	F	66	VAL
1	F	70	SER
1	F	105	VAL
1	F	113	VAL
1	F	136	LEU
1	F	143	CYS
1	F	167	ARG
1	F	180	LEU
1	F	196	VAL
1	F	257	LYS
1	F	297	ARG
1	F	305	ARG
1	F	315	ASP
1	F	324	ASN
1	F	349	THR
1	F	372	VAL
1	F	373	ILE
1	F	379	ASN
1	F	382	THR
1	F	385	GLU
1	F	398	ARG
1	G	5	ASP
1	G	7	LEU
1	G	8	ILE
1	G	16	ILE
1	G	20[A]	GLU
1	G	20[B]	GLU
1	G	21	ILE
1	G	39	ILE
1	G	46	VAL
1	G	49	ILE
1	G	54	LEU
1	G	66	VAL
1	G	71	LYS
1	G	105	VAL
1	G	113	VAL
1	G	147	LEU
1	G	153	ASN
1	G	167	ARG
1	G	180	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	G	196	VAL
1	G	219	LYS
1	G	228	ILE
1	G	257	LYS
1	G	262	LEU
1	G	275	GLU
1	G	291	LEU
1	G	297	ARG
1	G	356	GLU
1	G	372	VAL
1	G	374	GLU
1	G	379	ASN
1	G	382	THR
1	G	385	GLU
1	G	395	VAL
1	G	398	ARG
1	H	7	LEU
1	H	11	LYS
1	H	32	LYS
1	H	54	LEU
1	H	66	VAL
1	H	73	GLU
1	H	76	ILE
1	H	105	VAL
1	H	136	LEU
1	H	143	CYS
1	H	153	ASN
1	H	162	SER
1	H	167	ARG
1	H	180	LEU
1	H	196	VAL
1	H	219	LYS
1	H	248	ASP
1	H	251	THR
1	H	262	LEU
1	H	270	ASP
1	H	275	GLU
1	H	283	GLU
1	H	297	ARG
1	H	333	GLU
1	H	345[A]	SER
1	H	345[B]	SER

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Mol	Chain	Res	Type
1	H	398	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	153	ASN
1	B	153	ASN
1	B	296	GLN
1	C	17	GLN
1	C	360	GLN
1	D	153	ASN
1	D	296	GLN
1	D	375	ASN
1	E	375	ASN
1	F	153	ASN
1	F	200	GLN
1	G	109	ASN
1	G	153	ASN
1	G	296	GLN
1	H	17	GLN
1	H	360	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 26 ligands modelled in this entry, 2 are monoatomic - leaving 24 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	GOL	D	503	-	5,5,5	0.38	0	5,5,5	0.36	0
3	GOL	E	503	-	5,5,5	0.39	0	5,5,5	0.20	0
3	GOL	F	504	-	5,5,5	0.35	0	5,5,5	0.37	0
3	GOL	E	502	-	5,5,5	0.36	0	5,5,5	0.27	0
3	GOL	A	502	-	5,5,5	0.41	0	5,5,5	0.25	0
2	ARG	H	501	-	10,11,11	0.75	1 (10%)	11,13,13	1.05	2 (18%)
3	GOL	D	502	-	5,5,5	0.38	0	5,5,5	0.30	0
2	ARG	A	501	-	10,11,11	0.71	1 (10%)	11,13,13	1.00	2 (18%)
3	GOL	A	503	-	5,5,5	0.36	0	5,5,5	0.39	0
3	GOL	G	502	-	5,5,5	0.39	0	5,5,5	0.32	0
3	GOL	H	506	-	5,5,5	0.34	0	5,5,5	0.36	0
3	GOL	H	503	-	5,5,5	0.34	0	5,5,5	0.29	0
2	ARG	C	501	-	10,11,11	0.74	1 (10%)	11,13,13	1.11	2 (18%)
3	GOL	H	504	-	5,5,5	0.36	0	5,5,5	0.20	0
2	ARG	G	501	-	10,11,11	0.74	1 (10%)	11,13,13	1.01	2 (18%)
2	ARG	D	501	-	10,11,11	0.75	1 (10%)	11,13,13	1.16	2 (18%)
3	GOL	F	505	-	5,5,5	0.36	0	5,5,5	0.24	0
2	ARG	F	501	-	10,11,11	0.74	1 (10%)	11,13,13	1.05	2 (18%)
3	GOL	H	505	-	5,5,5	0.35	0	5,5,5	0.45	0
3	GOL	B	502	-	5,5,5	0.36	0	5,5,5	0.26	0
3	GOL	C	502	-	5,5,5	0.36	0	5,5,5	0.46	0
2	ARG	E	501	-	10,11,11	0.74	1 (10%)	11,13,13	1.10	2 (18%)
3	GOL	F	506	-	5,5,5	0.39	0	5,5,5	0.25	0
2	ARG	B	501	-	10,11,11	0.71	1 (10%)	11,13,13	1.00	2 (18%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	D	503	-	-	2/4/4/4	-
3	GOL	E	503	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	F	504	-	-	2/4/4/4	-
3	GOL	E	502	-	-	2/4/4/4	-
3	GOL	A	502	-	-	4/4/4/4	-
2	ARG	H	501	-	-	2/11/11/11	-
3	GOL	D	502	-	-	4/4/4/4	-
2	ARG	A	501	-	-	1/11/11/11	-
3	GOL	A	503	-	-	3/4/4/4	-
3	GOL	G	502	-	-	3/4/4/4	-
3	GOL	H	506	-	-	4/4/4/4	-
3	GOL	H	503	-	-	3/4/4/4	-
2	ARG	C	501	-	-	2/11/11/11	-
3	GOL	H	504	-	-	3/4/4/4	-
2	ARG	G	501	-	-	2/11/11/11	-
2	ARG	D	501	-	-	3/11/11/11	-
3	GOL	F	505	-	-	2/4/4/4	-
2	ARG	F	501	-	-	0/11/11/11	-
3	GOL	H	505	-	-	2/4/4/4	-
3	GOL	B	502	-	-	0/4/4/4	-
3	GOL	C	502	-	-	2/4/4/4	-
2	ARG	E	501	-	-	2/11/11/11	-
3	GOL	F	506	-	-	0/4/4/4	-
2	ARG	B	501	-	-	2/11/11/11	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	501	ARG	OXT-C	-2.26	1.23	1.30
2	D	501	ARG	OXT-C	-2.24	1.23	1.30
2	F	501	ARG	OXT-C	-2.24	1.23	1.30
2	C	501	ARG	OXT-C	-2.24	1.23	1.30
2	E	501	ARG	OXT-C	-2.22	1.23	1.30
2	G	501	ARG	OXT-C	-2.20	1.23	1.30
2	A	501	ARG	OXT-C	-2.14	1.23	1.30
2	B	501	ARG	OXT-C	-2.13	1.23	1.30

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	501	ARG	OXT-C-O	-2.89	117.53	124.09
2	E	501	ARG	OXT-C-O	-2.71	117.93	124.09
2	C	501	ARG	OXT-C-O	-2.65	118.08	124.09
2	F	501	ARG	OXT-C-O	-2.60	118.19	124.09
2	H	501	ARG	OXT-C-O	-2.55	118.30	124.09
2	G	501	ARG	OXT-C-O	-2.44	118.55	124.09
2	D	501	ARG	OXT-C-CA	2.42	121.62	113.38
2	C	501	ARG	OXT-C-CA	2.30	121.22	113.38
2	A	501	ARG	OXT-C-O	-2.28	118.91	124.09
2	E	501	ARG	OXT-C-CA	2.25	121.06	113.38
2	B	501	ARG	OXT-C-CA	2.23	120.99	113.38
2	B	501	ARG	OXT-C-O	-2.22	119.05	124.09
2	F	501	ARG	OXT-C-CA	2.20	120.88	113.38
2	H	501	ARG	OXT-C-CA	2.12	120.62	113.38
2	G	501	ARG	OXT-C-CA	2.11	120.58	113.38
2	A	501	ARG	OXT-C-CA	2.08	120.47	113.38

There are no chirality outliers.

All (52) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	501	ARG	O-C-CA-N
3	A	502	GOL	O2-C2-C3-O3
3	A	503	GOL	O1-C1-C2-O2
3	A	503	GOL	O1-C1-C2-C3
3	C	502	GOL	C1-C2-C3-O3
3	D	502	GOL	O1-C1-C2-C3
3	D	502	GOL	C1-C2-C3-O3
3	D	503	GOL	C1-C2-C3-O3
3	E	502	GOL	C1-C2-C3-O3
3	F	504	GOL	C1-C2-C3-O3
3	H	504	GOL	O1-C1-C2-C3
3	H	506	GOL	O1-C1-C2-O2
3	H	506	GOL	O1-C1-C2-C3
2	D	501	ARG	OXT-C-CA-N
3	C	502	GOL	O2-C2-C3-O3
3	D	502	GOL	O2-C2-C3-O3
3	D	503	GOL	O2-C2-C3-O3
3	A	502	GOL	C1-C2-C3-O3
3	A	503	GOL	C1-C2-C3-O3
3	E	503	GOL	O1-C1-C2-C3
3	F	505	GOL	C1-C2-C3-O3
3	G	502	GOL	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
3	G	502	GOL	C1-C2-C3-O3
3	H	503	GOL	O1-C1-C2-C3
3	H	505	GOL	O1-C1-C2-C3
3	D	502	GOL	O1-C1-C2-O2
3	E	502	GOL	O2-C2-C3-O3
3	E	503	GOL	O1-C1-C2-O2
3	F	504	GOL	O2-C2-C3-O3
3	G	502	GOL	O2-C2-C3-O3
3	H	504	GOL	O1-C1-C2-O2
2	B	501	ARG	OXT-C-CA-N
3	H	503	GOL	O1-C1-C2-O2
2	H	501	ARG	OXT-C-CA-N
2	B	501	ARG	O-C-CA-N
2	C	501	ARG	O-C-CA-N
2	H	501	ARG	O-C-CA-N
2	D	501	ARG	CA-CB-CG-CD
3	H	505	GOL	O1-C1-C2-O2
3	A	502	GOL	O1-C1-C2-C3
3	A	502	GOL	O1-C1-C2-O2
2	E	501	ARG	NE-CD-CG-CB
3	H	503	GOL	C1-C2-C3-O3
3	H	506	GOL	C1-C2-C3-O3
2	G	501	ARG	O-C-CA-N
2	C	501	ARG	OXT-C-CA-N
3	H	506	GOL	O2-C2-C3-O3
2	G	501	ARG	OXT-C-CA-N
3	F	505	GOL	O2-C2-C3-O3
2	A	501	ARG	OXT-C-CA-N
3	H	504	GOL	C1-C2-C3-O3
2	E	501	ARG	OXT-C-CA-N

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	H	504	GOL	2	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.



## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	398/408 (97%)	-0.16	5 (1%) 77 81	19, 46, 81, 117	0
1	B	395/408 (96%)	-0.21	5 (1%) 77 81	18, 46, 84, 117	0
1	C	394/408 (96%)	-0.09	14 (3%) 42 49	20, 47, 82, 119	0
1	D	395/408 (96%)	-0.21	11 (2%) 53 60	13, 44, 81, 119	0
1	E	394/408 (96%)	-0.22	10 (2%) 57 64	18, 41, 77, 117	0
1	F	395/408 (96%)	-0.11	21 (5%) 26 33	19, 45, 84, 117	0
1	G	394/408 (96%)	-0.17	8 (2%) 65 71	22, 45, 81, 118	0
1	H	395/408 (96%)	-0.31	3 (0%) 86 89	17, 42, 78, 117	0
All	All	3160/3264 (96%)	-0.18	77 (2%) 59 66	13, 45, 81, 119	0

All (77) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	400	GLY	7.1
1	E	280	GLY	6.1
1	D	43	ASP	5.4
1	C	280	GLY	5.3
1	D	39	ILE	5.3
1	E	43	ASP	5.2
1	E	40	ASN	5.1
1	F	280	GLY	4.8
1	C	278	LYS	4.5
1	G	47	ILE	4.5
1	D	40	ASN	4.4
1	E	42	LYS	4.4
1	E	41	THR	4.3
1	H	276	GLY	3.9
1	D	278	LYS	3.7
1	F	268	VAL	3.7

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Mol	Chain	Res	Type	RSRZ
1	F	49	ILE	3.6
1	C	41	THR	3.6
1	F	277	ALA	3.5
1	F	41	THR	3.5
1	C	12	GLY	3.4
1	C	6	PHE	3.3
1	H	278	LYS	3.3
1	F	6	PHE	3.3
1	A	3	SER	3.2
1	G	276	GLY	3.2
1	C	47	ILE	3.2
1	F	272	ILE	3.2
1	A	277	ALA	3.2
1	F	44	ALA	3.2
1	F	279	ALA	3.2
1	D	7	LEU	3.2
1	B	280	GLY	3.1
1	F	42	LYS	3.0
1	C	7	LEU	3.0
1	F	8	ILE	3.0
1	G	40	ASN	3.0
1	F	271	TYR	2.9
1	E	39	ILE	2.9
1	A	276	GLY	2.9
1	C	43	ASP	2.8
1	B	38	LYS	2.8
1	F	276	GLY	2.7
1	E	7	LEU	2.7
1	G	278	LYS	2.7
1	D	46	VAL	2.6
1	D	47	ILE	2.6
1	C	39	ILE	2.6
1	F	292	VAL	2.6
1	G	275	GLU	2.5
1	C	273	LEU	2.5
1	F	46	VAL	2.5
1	C	279	ALA	2.5
1	A	292	VAL	2.4
1	B	39	ILE	2.4
1	C	46	VAL	2.4
1	G	280	GLY	2.4
1	D	4	GLU	2.4

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Mol	Chain	Res	Type	RSRZ
1	D	44	ALA	2.3
1	F	29	ARG	2.3
1	D	55	ILE	2.3
1	C	42	LYS	2.2
1	G	43	ASP	2.2
1	F	278	LYS	2.2
1	F	26	LEU	2.2
1	F	270	ASP	2.2
1	D	42	LYS	2.2
1	F	286	LEU	2.1
1	B	279	ALA	2.1
1	E	275[A]	GLU	2.1
1	G	34	ALA	2.1
1	E	277	ALA	2.1
1	B	73	GLU	2.1
1	F	281	ILE	2.1
1	E	278	LYS	2.0
1	H	280	GLY	2.0
1	C	9	LYS	2.0

## 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
2	ARG	G	501	12/12	0.84	0.17	49,56,63,64	0
3	GOL	F	505	6/6	0.86	0.16	46,58,70,77	0
3	GOL	H	505	6/6	0.87	0.14	48,67,75,79	0
3	GOL	E	503	6/6	0.88	0.22	58,76,86,94	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	ARG	E	501	12/12	0.88	0.22	67,69,77,80	0
3	GOL	C	502	6/6	0.88	0.22	44,58,60,97	0
3	GOL	F	504	6/6	0.89	0.16	52,80,84,93	0
3	GOL	H	503	6/6	0.91	0.15	59,64,75,75	0
2	ARG	H	501	12/12	0.91	0.13	38,60,64,74	0
2	ARG	D	501	12/12	0.92	0.16	44,54,70,74	0
3	GOL	H	504	6/6	0.92	0.16	52,67,71,75	0
3	GOL	A	503	6/6	0.92	0.17	47,62,63,93	0
3	GOL	D	502	6/6	0.93	0.14	51,56,65,75	0
3	GOL	H	506	6/6	0.93	0.10	35,63,76,80	0
3	GOL	F	506	6/6	0.94	0.20	42,60,68,74	0
2	ARG	C	501	12/12	0.95	0.08	25,49,55,56	0
2	ARG	F	501	12/12	0.95	0.13	36,43,60,62	0
3	GOL	A	502	6/6	0.95	0.10	49,59,61,76	0
3	GOL	D	503	6/6	0.95	0.10	57,60,76,80	0
3	GOL	B	502	6/6	0.96	0.20	37,53,68,72	0
3	GOL	E	502	6/6	0.96	0.12	40,49,68,68	0
2	ARG	A	501	12/12	0.98	0.06	17,35,47,51	0
3	GOL	G	502	6/6	0.98	0.07	26,39,42,51	0
2	ARG	B	501	12/12	0.98	0.09	31,39,53,57	0
4	MG	H	502	1/1	0.98	0.04	37,37,37,37	0
4	MG	F	503	1/1	0.99	0.07	34,34,34,34	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.