wwPDB X-ray Structure Validation Summary Report (i)

May 15, 2020 – 10:23 am BST

PDB ID	:	4OMC
Title	:	X-ray structure of human furin in complex with the competitive inhibitor meta-guanidinomethyl-Phac-RVR-Amba
Authors	:	Dahms, S.O.; Than, M.E.
Deposited on	:	2014-01-27
Resolution	:	2.30 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

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

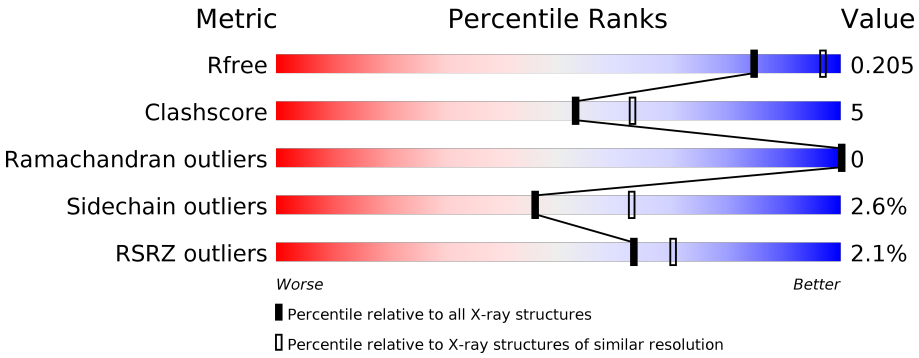
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA,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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.30 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 on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	482	85% 11%
1	B	482	85% 11%
1	C	482	2% 84% 12%
1	D	482	2% 85% 11%
1	E	482	2% 85% 11%
1	F	482	3% 82% 14%

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Mol	Chain	Length	Quality of chain
2	H	5	100%
2	I	5	100%
2	J	5	100%
2	K	5	100%
2	L	5	100%
2	N	5	100%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 23092 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 Furin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	466	Total	C	N	O	S	34	0	0
			3559	2204	637	704	14			
1	B	465	Total	C	N	O	S	41	0	0
			3552	2199	636	703	14			
1	C	466	Total	C	N	O	S	36	0	0
			3559	2204	637	704	14			
1	D	465	Total	C	N	O	S	46	0	0
			3552	2199	636	703	14			
1	E	465	Total	C	N	O	S	40	0	0
			3552	2199	636	703	14			
1	F	465	Total	C	N	O	S	56	0	0
			3552	2199	636	703	14			

There are 90 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	575	SER	-	EXPRESSION TAG	UNP P09958
A	576	GLY	-	EXPRESSION TAG	UNP P09958
A	577	SER	-	EXPRESSION TAG	UNP P09958
A	578	LEU	-	EXPRESSION TAG	UNP P09958
A	579	VAL	-	EXPRESSION TAG	UNP P09958
A	580	PRO	-	EXPRESSION TAG	UNP P09958
A	581	ARG	-	EXPRESSION TAG	UNP P09958
A	582	GLY	-	EXPRESSION TAG	UNP P09958
A	583	SER	-	EXPRESSION TAG	UNP P09958
A	584	HIS	-	EXPRESSION TAG	UNP P09958
A	585	HIS	-	EXPRESSION TAG	UNP P09958
A	586	HIS	-	EXPRESSION TAG	UNP P09958
A	587	HIS	-	EXPRESSION TAG	UNP P09958
A	588	HIS	-	EXPRESSION TAG	UNP P09958
A	589	HIS	-	EXPRESSION TAG	UNP P09958
B	575	SER	-	EXPRESSION TAG	UNP P09958
B	576	GLY	-	EXPRESSION TAG	UNP P09958

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Chain	Residue	Modelled	Actual	Comment	Reference
B	577	SER	-	EXPRESSION TAG	UNP P09958
B	578	LEU	-	EXPRESSION TAG	UNP P09958
B	579	VAL	-	EXPRESSION TAG	UNP P09958
B	580	PRO	-	EXPRESSION TAG	UNP P09958
B	581	ARG	-	EXPRESSION TAG	UNP P09958
B	582	GLY	-	EXPRESSION TAG	UNP P09958
B	583	SER	-	EXPRESSION TAG	UNP P09958
B	584	HIS	-	EXPRESSION TAG	UNP P09958
B	585	HIS	-	EXPRESSION TAG	UNP P09958
B	586	HIS	-	EXPRESSION TAG	UNP P09958
B	587	HIS	-	EXPRESSION TAG	UNP P09958
B	588	HIS	-	EXPRESSION TAG	UNP P09958
B	589	HIS	-	EXPRESSION TAG	UNP P09958
C	575	SER	-	EXPRESSION TAG	UNP P09958
C	576	GLY	-	EXPRESSION TAG	UNP P09958
C	577	SER	-	EXPRESSION TAG	UNP P09958
C	578	LEU	-	EXPRESSION TAG	UNP P09958
C	579	VAL	-	EXPRESSION TAG	UNP P09958
C	580	PRO	-	EXPRESSION TAG	UNP P09958
C	581	ARG	-	EXPRESSION TAG	UNP P09958
C	582	GLY	-	EXPRESSION TAG	UNP P09958
C	583	SER	-	EXPRESSION TAG	UNP P09958
C	584	HIS	-	EXPRESSION TAG	UNP P09958
C	585	HIS	-	EXPRESSION TAG	UNP P09958
C	586	HIS	-	EXPRESSION TAG	UNP P09958
C	587	HIS	-	EXPRESSION TAG	UNP P09958
C	588	HIS	-	EXPRESSION TAG	UNP P09958
C	589	HIS	-	EXPRESSION TAG	UNP P09958
D	575	SER	-	EXPRESSION TAG	UNP P09958
D	576	GLY	-	EXPRESSION TAG	UNP P09958
D	577	SER	-	EXPRESSION TAG	UNP P09958
D	578	LEU	-	EXPRESSION TAG	UNP P09958
D	579	VAL	-	EXPRESSION TAG	UNP P09958
D	580	PRO	-	EXPRESSION TAG	UNP P09958
D	581	ARG	-	EXPRESSION TAG	UNP P09958
D	582	GLY	-	EXPRESSION TAG	UNP P09958
D	583	SER	-	EXPRESSION TAG	UNP P09958
D	584	HIS	-	EXPRESSION TAG	UNP P09958
D	585	HIS	-	EXPRESSION TAG	UNP P09958
D	586	HIS	-	EXPRESSION TAG	UNP P09958
D	587	HIS	-	EXPRESSION TAG	UNP P09958
D	588	HIS	-	EXPRESSION TAG	UNP P09958

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Chain	Residue	Modelled	Actual	Comment	Reference
D	589	HIS	-	EXPRESSION TAG	UNP P09958
E	575	SER	-	EXPRESSION TAG	UNP P09958
E	576	GLY	-	EXPRESSION TAG	UNP P09958
E	577	SER	-	EXPRESSION TAG	UNP P09958
E	578	LEU	-	EXPRESSION TAG	UNP P09958
E	579	VAL	-	EXPRESSION TAG	UNP P09958
E	580	PRO	-	EXPRESSION TAG	UNP P09958
E	581	ARG	-	EXPRESSION TAG	UNP P09958
E	582	GLY	-	EXPRESSION TAG	UNP P09958
E	583	SER	-	EXPRESSION TAG	UNP P09958
E	584	HIS	-	EXPRESSION TAG	UNP P09958
E	585	HIS	-	EXPRESSION TAG	UNP P09958
E	586	HIS	-	EXPRESSION TAG	UNP P09958
E	587	HIS	-	EXPRESSION TAG	UNP P09958
E	588	HIS	-	EXPRESSION TAG	UNP P09958
E	589	HIS	-	EXPRESSION TAG	UNP P09958
F	575	SER	-	EXPRESSION TAG	UNP P09958
F	576	GLY	-	EXPRESSION TAG	UNP P09958
F	577	SER	-	EXPRESSION TAG	UNP P09958
F	578	LEU	-	EXPRESSION TAG	UNP P09958
F	579	VAL	-	EXPRESSION TAG	UNP P09958
F	580	PRO	-	EXPRESSION TAG	UNP P09958
F	581	ARG	-	EXPRESSION TAG	UNP P09958
F	582	GLY	-	EXPRESSION TAG	UNP P09958
F	583	SER	-	EXPRESSION TAG	UNP P09958
F	584	HIS	-	EXPRESSION TAG	UNP P09958
F	585	HIS	-	EXPRESSION TAG	UNP P09958
F	586	HIS	-	EXPRESSION TAG	UNP P09958
F	587	HIS	-	EXPRESSION TAG	UNP P09958
F	588	HIS	-	EXPRESSION TAG	UNP P09958
F	589	HIS	-	EXPRESSION TAG	UNP P09958

- Molecule 2 is a protein called meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	H	5	Total	C	N	O	0	0	0
			54	35	15	4			
2	I	5	Total	C	N	O	0	0	0
			54	35	15	4			
2	J	5	Total	C	N	O	0	0	0
			54	35	15	4			

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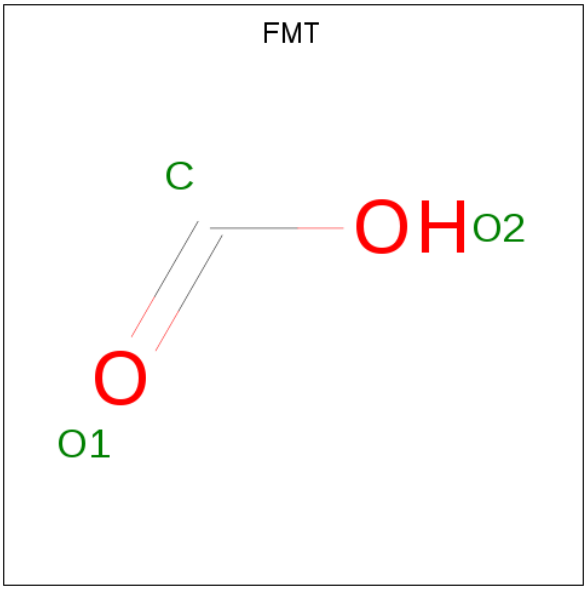
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
2	K	5	Total C N O 54 35 15 4	0	0	0
2	L	5	Total C N O 54 35 15 4	0	0	0
2	N	5	Total C N O 54 35 15 4	0	0	0

- Molecule 3 is FORMIC ACID (three-letter code: FMT) (formula: CH_2O_2).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 3 1 2	0	0
3	A	1	Total C O 3 1 2	0	0
3	A	1	Total C O 3 1 2	0	0
3	A	1	Total C O 3 1 2	0	0
3	B	1	Total C O 3 1 2	0	0
3	B	1	Total C O 3 1 2	0	0
3	B	1	Total C O 3 1 2	0	0
3	B	1	Total C O 3 1 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	1	Total C O 3 1 2	0	0
3	C	1	Total C O 3 1 2	0	0
3	C	1	Total C O 3 1 2	0	0
3	C	1	Total C O 3 1 2	0	0
3	D	1	Total C O 3 1 2	0	0
3	D	1	Total C O 3 1 2	0	0
3	D	1	Total C O 3 1 2	0	0
3	D	1	Total C O 3 1 2	0	0
3	E	1	Total C O 3 1 2	0	0
3	E	1	Total C O 3 1 2	0	0
3	E	1	Total C O 3 1 2	0	0
3	E	1	Total C O 3 1 2	0	0
3	F	1	Total C O 3 1 2	0	0
3	F	1	Total C O 3 1 2	0	0
3	F	1	Total C O 3 1 2	0	0
3	F	1	Total C O 3 1 2	0	0

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

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	D	3	Total Ca 3 3	0	0
4	E	3	Total Ca 3 3	0	0
4	B	3	Total Ca 3 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	3	Total Ca 3 3	0	0
4	A	3	Total Ca 3 3	0	0
4	F	3	Total Ca 3 3	0	0

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	1	Total Na 1 1	0	0
5	E	1	Total Na 1 1	0	0
5	B	1	Total Na 1 1	0	0
5	C	1	Total Na 1 1	0	0
5	A	1	Total Na 1 1	0	0
5	F	1	Total Na 1 1	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	244	Total O 244 244	0	0
6	B	216	Total O 216 216	0	0
6	C	236	Total O 236 236	0	0
6	D	218	Total O 218 218	0	0
6	E	209	Total O 209 209	0	0
6	F	193	Total O 193 193	0	0
6	H	5	Total O 5 5	0	0
6	I	5	Total O 5 5	0	0

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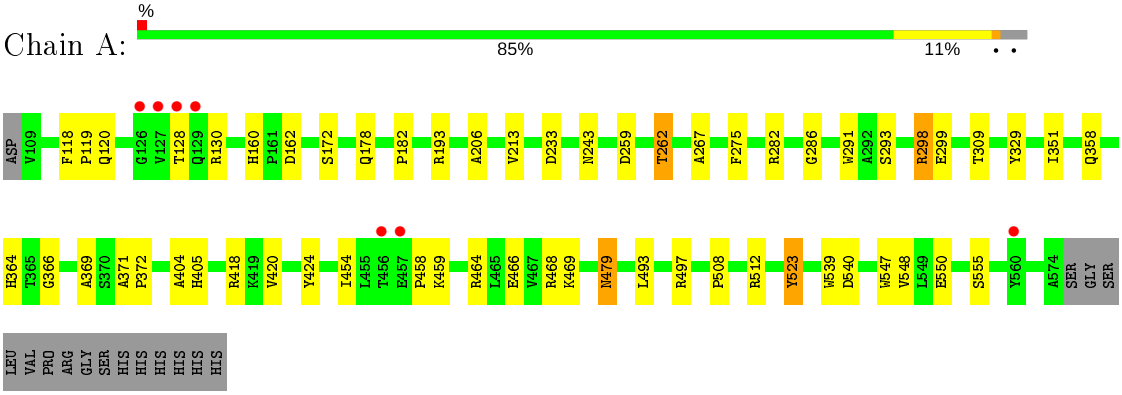
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	J	6	Total O 6 6	0	0
6	K	5	Total O 5 5	0	0
6	L	3	Total O 3 3	0	0
6	N	6	Total O 6 6	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

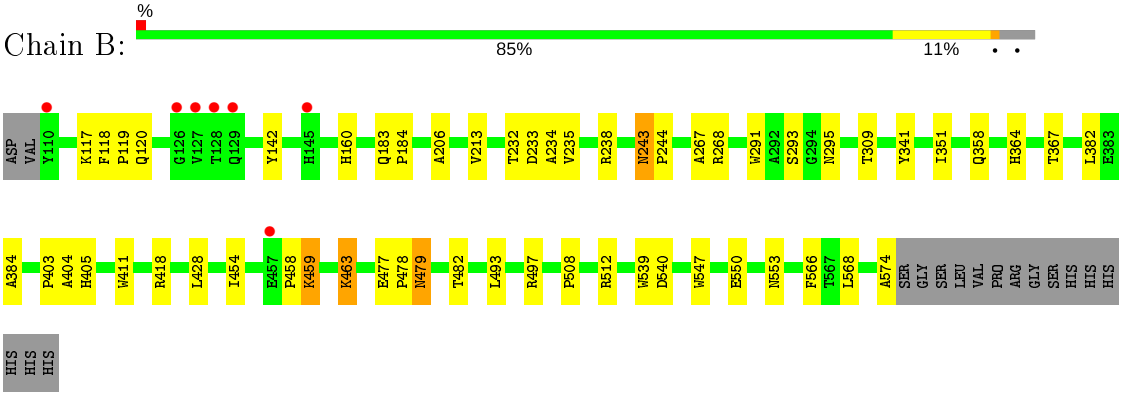
- Molecule 1: Furin

Chain A:



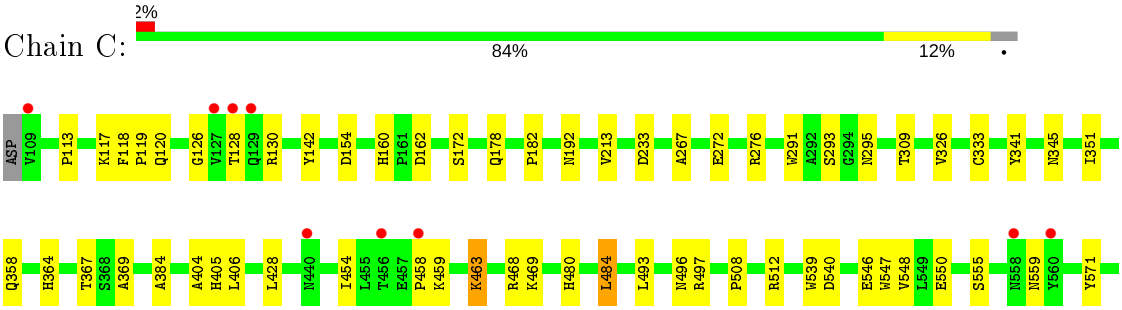
- Molecule 1: Furin

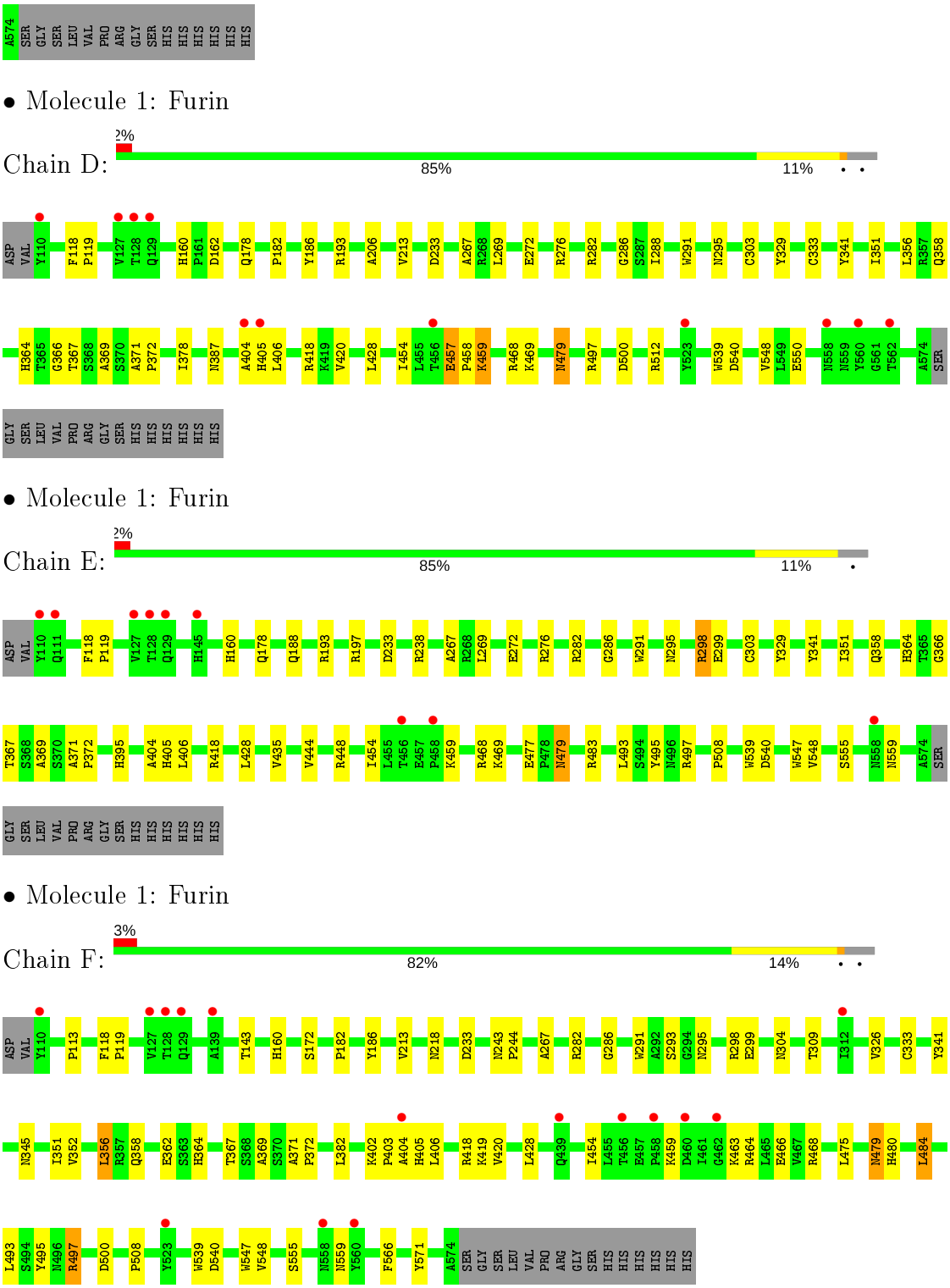
Chain B:



- Molecule 1: Furin

Chain C:





• Molecule 1: Furin

Chain D:

• Molecule 1: Furin

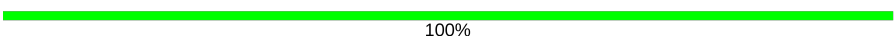
Chain E:

• Molecule 1: Furin

Chain F:

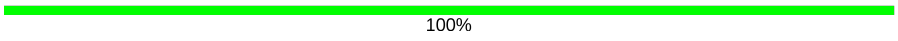
• Molecule 2: meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine

Chain H:



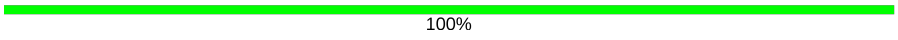
There are no outlier residues recorded for this chain.

• Molecule 2: meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine

Chain I: 

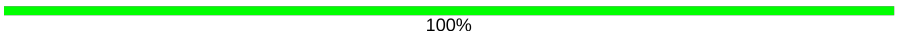
There are no outlier residues recorded for this chain.

- Molecule 2: meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine

Chain J: 

There are no outlier residues recorded for this chain.

- Molecule 2: meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine

Chain K: 

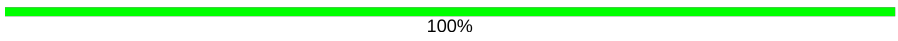
There are no outlier residues recorded for this chain.

- Molecule 2: meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine

Chain L: 

There are no outlier residues recorded for this chain.

- Molecule 2: meta-guanidinomethyl-phenylacetyl-Arg-Val-Arg-(amidomethyl)benzamidine

Chain N: 

There are no outlier residues recorded for this chain.

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	141.18Å 152.85Å 168.31Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.30 45.22 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.5 (50.00-2.30) 99.4 (45.22-2.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.01	Depositor
$< I/\sigma(I) >$ [1]	2.26 (at 2.29Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.185 , 0.216 0.173 , 0.205	Depositor DCC
R_{free} test set	8055 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	26.6	Xtriage
Anisotropy	0.421	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 42.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	23092	wwPDB-VP
Average B, all atoms (Å^2)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.13% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 00S, 2UC, FMT, CA, NA

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	0.42	0/3641	0.67	0/4964
1	B	0.40	0/3634	0.67	0/4954
1	C	0.41	0/3641	0.67	0/4964
1	D	0.40	0/3634	0.67	0/4954
1	E	0.40	0/3634	0.67	0/4954
1	F	0.40	0/3634	0.67	0/4954
2	H	0.33	0/28	0.77	0/35
2	I	0.27	0/28	0.75	0/35
2	J	0.30	0/28	0.76	0/35
2	K	0.28	0/28	0.76	0/35
2	L	0.35	0/28	0.81	0/35
2	N	0.27	0/28	0.78	0/35
All	All	0.40	0/21986	0.67	0/29954

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	424	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	3559	0	3376	35	0
1	B	3552	0	3367	39	0
1	C	3559	0	3376	35	0
1	D	3552	0	3367	35	0
1	E	3552	0	3367	38	0
1	F	3552	0	3367	44	0
2	H	54	0	53	0	0
2	I	54	0	53	0	0
2	J	54	0	53	0	0
2	K	54	0	53	0	0
2	L	54	0	53	0	0
2	N	54	0	53	0	0
3	A	12	0	4	0	0
3	B	12	0	4	0	0
3	C	12	0	4	0	0
3	D	12	0	4	0	0
3	E	12	0	4	0	0
3	F	12	0	4	0	0
4	A	3	0	0	0	0
4	B	3	0	0	0	0
4	C	3	0	0	0	0
4	D	3	0	0	0	0
4	E	3	0	0	0	0
4	F	3	0	0	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
5	E	1	0	0	0	0
5	F	1	0	0	0	0
6	A	244	0	0	3	0
6	B	216	0	0	0	0
6	C	236	0	0	4	0
6	D	218	0	0	3	0
6	E	209	0	0	3	0
6	F	193	0	0	2	0
6	H	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	I	5	0	0	0	0
6	J	6	0	0	0	0
6	K	5	0	0	0	0
6	L	3	0	0	0	0
6	N	6	0	0	0	0
All	All	23092	0	20562	224	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 5.

The worst 5 of 224 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:E:479:ASN:H	1:E:479:ASN:HD22	0.98	0.95
1:A:479:ASN:HD22	1:A:479:ASN:H	1.13	0.92
1:D:479:ASN:HD22	1:D:479:ASN:H	1.05	0.92
1:D:479:ASN:ND2	1:D:479:ASN:H	1.67	0.92
1:B:479:ASN:HD22	1:B:479:ASN:H	1.18	0.91

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	464/482 (96%)	446 (96%)	18 (4%)	0	100	100
1	B	463/482 (96%)	444 (96%)	19 (4%)	0	100	100
1	C	464/482 (96%)	443 (96%)	21 (4%)	0	100	100
1	D	463/482 (96%)	443 (96%)	20 (4%)	0	100	100
1	E	463/482 (96%)	442 (96%)	21 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	F	463/482 (96%)	444 (96%)	19 (4%)	0	100	100
2	H	1/5 (20%)	1 (100%)	0	0	100	100
2	I	1/5 (20%)	1 (100%)	0	0	100	100
2	J	1/5 (20%)	1 (100%)	0	0	100	100
2	K	1/5 (20%)	1 (100%)	0	0	100	100
2	L	1/5 (20%)	1 (100%)	0	0	100	100
2	N	1/5 (20%)	1 (100%)	0	0	100	100
All	All	2786/2922 (95%)	2668 (96%)	118 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	376/390 (96%)	363 (96%)	13 (4%)	36	50
1	B	375/390 (96%)	369 (98%)	6 (2%)	62	78
1	C	376/390 (96%)	367 (98%)	9 (2%)	49	66
1	D	375/390 (96%)	364 (97%)	11 (3%)	42	58
1	E	375/390 (96%)	364 (97%)	11 (3%)	42	58
1	F	375/390 (96%)	366 (98%)	9 (2%)	49	66
2	H	3/3 (100%)	3 (100%)	0	100	100
2	I	3/3 (100%)	3 (100%)	0	100	100
2	J	3/3 (100%)	3 (100%)	0	100	100
2	K	3/3 (100%)	3 (100%)	0	100	100
2	L	3/3 (100%)	3 (100%)	0	100	100
2	N	3/3 (100%)	3 (100%)	0	100	100
All	All	2270/2358 (96%)	2211 (97%)	59 (3%)	46	63

5 of 59 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	497	ARG
1	D	387	ASN
1	F	420	VAL
1	C	555	SER
1	D	178	GLN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 22 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	346	GLN
1	D	479	ASN
1	F	479	ASN
1	C	387	ASN
1	C	480	HIS

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 carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 48 ligands modelled in this entry, 24 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	FMT	E	601	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	F	604	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	E	602	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	C	602	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	A	603	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	D	603	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	E	603	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	B	602	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	F	602	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	E	604	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	B	601	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	A	601	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	C	601	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	F	601	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	D	604	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	B	603	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	D	602	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	A	604	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	D	601	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	A	602	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	F	603	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	B	604	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	C	603	-	0,2,2	0.00	-	0,1,1	0.00	-
3	FMT	C	604	-	0,2,2	0.00	-	0,1,1	0.00	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	466/482 (96%)	-0.21	7 (1%)	73	79	14, 22, 41, 77	13 (2%)
1	B	465/482 (96%)	-0.14	7 (1%)	73	79	13, 24, 41, 81	15 (3%)
1	C	466/482 (96%)	-0.23	9 (1%)	66	73	14, 22, 39, 69	14 (3%)
1	D	465/482 (96%)	-0.10	11 (2%)	59	66	14, 24, 42, 79	18 (3%)
1	E	465/482 (96%)	-0.06	9 (1%)	66	73	14, 25, 43, 81	13 (2%)
1	F	465/482 (96%)	0.01	15 (3%)	47	54	15, 27, 45, 82	19 (4%)
2	H	3/5 (60%)	-0.53	0	100	100	20, 20, 20, 22	0
2	I	3/5 (60%)	-0.23	0	100	100	24, 24, 26, 27	0
2	J	3/5 (60%)	-0.85	0	100	100	25, 25, 26, 26	0
2	K	3/5 (60%)	-0.44	0	100	100	18, 18, 19, 21	0
2	L	3/5 (60%)	-0.43	0	100	100	22, 22, 24, 27	0
2	N	3/5 (60%)	-0.59	0	100	100	21, 21, 22, 23	0
All	All	2810/2922 (96%)	-0.12	58 (2%)	63	70	13, 24, 43, 82	92 (3%)

The worst 5 of 58 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	127	VAL	11.3
1	E	127	VAL	10.4
1	A	127	VAL	8.6
1	D	127	VAL	8.3
1	B	127	VAL	6.8

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

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

6.3 Carbohydrates (i)

There are no carbohydrates 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^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	FMT	B	601	3/3	0.83	0.27	27,27,28,34	0
3	FMT	E	601	3/3	0.86	0.36	39,39,40,42	0
3	FMT	B	604	3/3	0.87	0.17	39,39,40,43	0
3	FMT	A	603	3/3	0.89	0.24	27,27,32,36	0
3	FMT	C	603	3/3	0.89	0.26	23,23,23,28	0
3	FMT	C	601	3/3	0.91	0.20	29,29,33,36	0
3	FMT	B	603	3/3	0.92	0.25	40,40,41,41	0
3	FMT	F	601	3/3	0.93	0.31	25,25,37,37	0
3	FMT	A	602	3/3	0.94	0.15	36,36,37,37	0
3	FMT	A	601	3/3	0.94	0.31	35,35,38,39	0
3	FMT	D	603	3/3	0.94	0.28	37,37,37,37	0
3	FMT	F	603	3/3	0.95	0.22	36,36,38,39	0
3	FMT	E	602	3/3	0.95	0.16	34,34,36,40	0
3	FMT	E	603	3/3	0.95	0.27	22,22,27,29	0
3	FMT	F	604	3/3	0.96	0.14	35,35,38,42	0
3	FMT	C	602	3/3	0.96	0.11	34,34,35,35	0
3	FMT	D	602	3/3	0.96	0.24	23,23,25,27	0
3	FMT	D	601	3/3	0.96	0.27	28,28,32,34	0
4	CA	E	607	1/1	0.96	0.03	35,35,35,35	0
3	FMT	D	604	3/3	0.97	0.13	34,34,35,37	0
5	NA	C	608	1/1	0.98	0.14	17,17,17,17	0
5	NA	E	608	1/1	0.98	0.12	19,19,19,19	0
5	NA	B	608	1/1	0.99	0.13	18,18,18,18	0
4	CA	D	606	1/1	0.99	0.08	16,16,16,16	0
4	CA	B	606	1/1	0.99	0.09	17,17,17,17	0
4	CA	C	606	1/1	0.99	0.07	20,20,20,20	0
3	FMT	B	602	3/3	0.99	0.15	20,20,21,22	0
4	CA	B	605	1/1	0.99	0.04	26,26,26,26	0
4	CA	D	605	1/1	0.99	0.03	24,24,24,24	0
3	FMT	A	604	3/3	0.99	0.18	24,24,27,29	0
3	FMT	F	602	3/3	0.99	0.28	23,23,27,28	0
5	NA	F	608	1/1	0.99	0.11	16,16,16,16	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	CA	F	607	1/1	0.99	0.06	33,33,33,33	0
5	NA	D	608	1/1	0.99	0.10	17,17,17,17	0
4	CA	A	606	1/1	0.99	0.10	16,16,16,16	0
4	CA	C	607	1/1	0.99	0.09	31,31,31,31	0
4	CA	D	607	1/1	0.99	0.04	25,25,25,25	0
4	CA	B	607	1/1	0.99	0.05	38,38,38,38	0
4	CA	A	607	1/1	0.99	0.05	32,32,32,32	0
3	FMT	C	604	3/3	0.99	0.25	25,25,25,26	0
4	CA	E	605	1/1	0.99	0.05	29,29,29,29	0
4	CA	A	605	1/1	1.00	0.05	21,21,21,21	0
4	CA	C	605	1/1	1.00	0.05	18,18,18,18	0
4	CA	E	606	1/1	1.00	0.09	16,16,16,16	0
4	CA	F	606	1/1	1.00	0.09	18,18,18,18	0
3	FMT	E	604	3/3	1.00	0.23	18,18,21,21	0
4	CA	F	605	1/1	1.00	0.04	27,27,27,27	0
5	NA	A	608	1/1	1.00	0.14	17,17,17,17	0

6.5 Other polymers (i)

There are no such residues in this entry.