



Full wwPDB X-ray Structure Validation Report ⓘ

May 15, 2020 – 10:23 am BST

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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 : 2.11
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

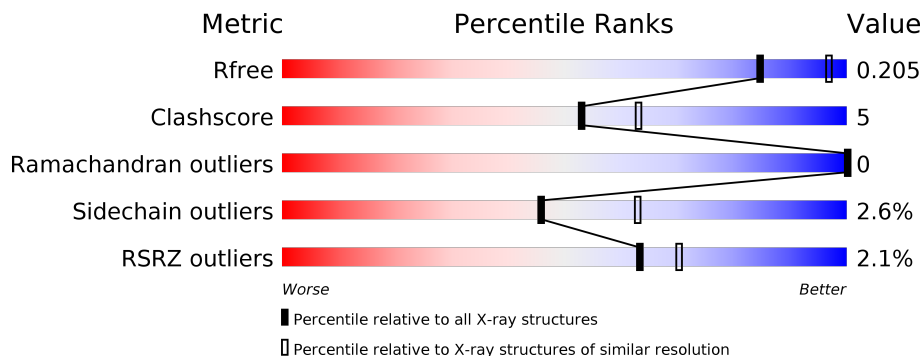
1 Overall quality at a glance

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 $\leq 5\%$. 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	482	 2% 85% 11% ..
1	B	482	 2% 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 [i](#)

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

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.

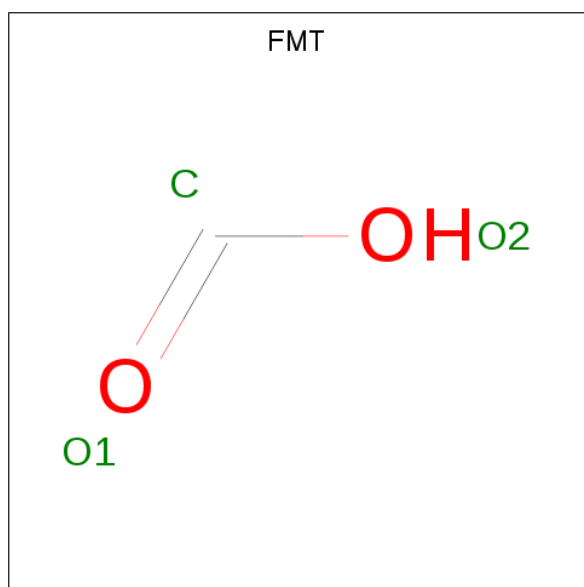
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	H	5	Total	C	N	O	0	0	0
			54	35	15	4			
2	I	5	Total	C	N	O	0	0	0
			54	35	15	4			
2	J	5	Total	C	N	O	0	0	0
			54	35	15	4			

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

- Molecule 3 is FORMIC ACID (three-letter code: FMT) (formula: CH₂O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	A	1	Total 3	C 1	O 2	0	0
3	A	1	Total 3	C 1	O 2	0	0
3	A	1	Total 3	C 1	O 2	0	0
3	A	1	Total 3	C 1	O 2	0	0
3	B	1	Total 3	C 1	O 2	0	0
3	B	1	Total 3	C 1	O 2	0	0
3	B	1	Total 3	C 1	O 2	0	0
3	B	1	Total 3	C 1	O 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	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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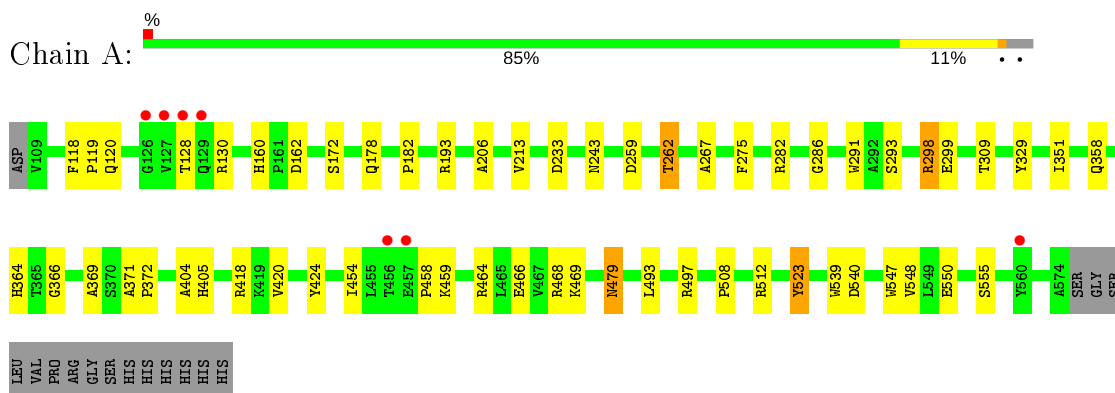
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	J	6	Total O 6 6	0	0
6	K	5	Total O 5 5	0	0
6	L	3	Total O 3 3	0	0
6	N	6	Total O 6 6	0	0

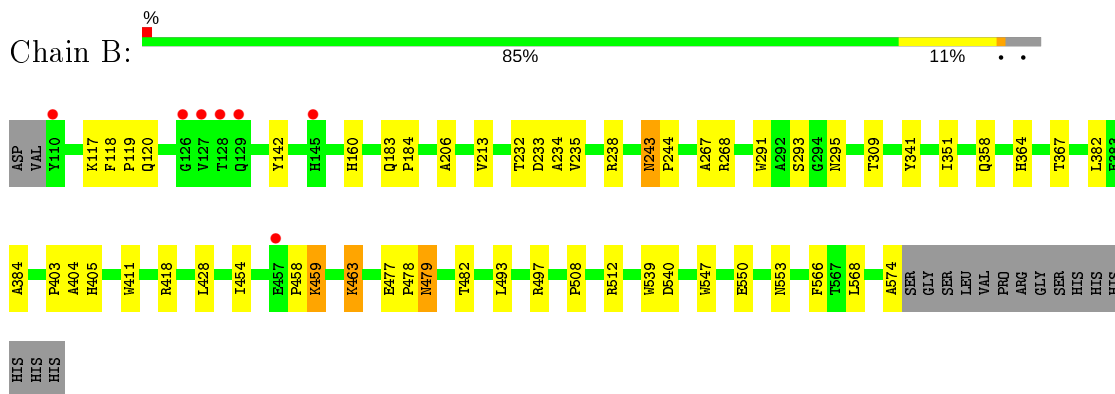
3 Residue-property plots [i](#)

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.

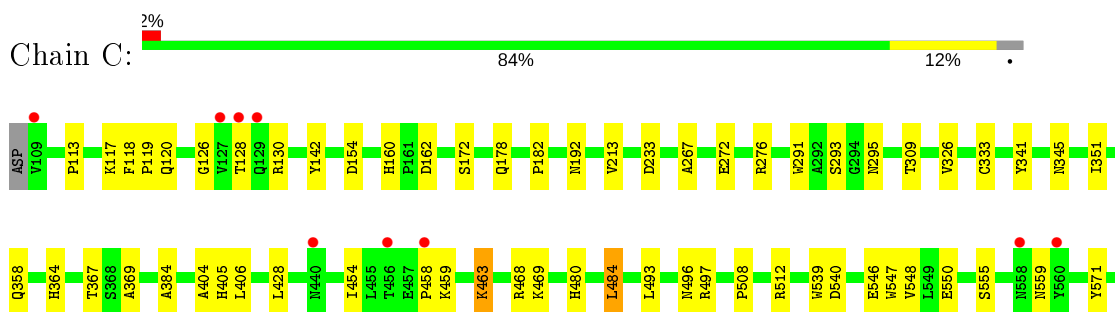
- Molecule 1: Furin



- Molecule 1: Furin



- Molecule 1: Furin



A574
SER
GLY
SER
LEU
VAL
PRO
ARG
GLY
SER
SER
HIS
HIS
HIS
HIS

- Molecule 1: Furin

Chain D: 85% 11% 2%

ASP VAL Y110 F118 F119 Y127 T128 Q129 H160 P161 D162 Q178 H405 P182 Y186 R193 A206 V213 D233 A267 R268 L269 E272 R276 R282 G286 S287 I288 W291 N295 C303 Y329 C333 Y341 I351 L356 R357 Q358

H364 T365 G366 T367 S368 A369 S370 P372 I378 N387 A404 H405 L406 R418 R419 V420 L428 I454 L455 T456 E457 K459 R468 K469 N479 R497 D500 R512 R512 Y523 W539 D540 V548 I549 E550 N558 N559 Y560 G561 T562 A574 SER

GLY
SER
LEU
VAL
PRO
ARG
GLY
SER
SER
HIS
HIS
HIS
HIS

- Molecule 1: Furin

Chain E: 85% 11% 2%

ASP VAL Y110 Q111 F118 P119 Y127 T128 Q129 H148 H160 Q178 Q188 R193 R197 D233 R238 A267 R268 L269 E272 R276 R282 G286 W291 I295 I295 R298 E299 C303 Y329 Y341 I351 Q358 H364 T365 G366

T367 S368 A369 S370 A371 P372 H395 A404 H405 L406 R418 L428 V435 V444 R448 I454 I455 T456 E457 K459 R468 K469 E477 P478 N479 R483 L493 S494 Y495 N496 R497 P508 W539 D540 V548 V547 V548 S555 N558 N559 A574 SER

GLY
SER
LEU
VAL
PRO
ARG
GLY
SER
SER
HIS
HIS
HIS
HIS

- Molecule 1: Furin

Chain F: 82% 14% 3%

ASP VAL Y110 P113 F118 P119 Y127 T128 Q129 A139 T143 H160 S172 P182 Y186 V213 M218 D233 N243 F244 A267 R282 G286 W291 A292 S293 G294 N295 R298 E299 N304 T309 I312 V326 C333 Y341

N345 I351 V352 L356 R357 Q358 E362 S363 H364 T367 S368 A369 S370 A371 P372 L382 K402 A404 H405 L406 R418 K419 V420 L428 Q439 I454 I455 T456 E457 P458 K459 D460 I461 S462 K463 R464 L465 E466 V467 R468 L475 N479 H480 L484

L493 S494 M496 R497 D500 P508 Y523 W539 D540 W547 V548 S555 N558 N559 Y560 F566 Y571 A574 SER GLY SER LEU VAL PRO ARG GLY SER HIS HIS HIS HIS HIS

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

Chain H: 100%

There are no outlier residues recorded for this chain.

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

Chain I:  100%

There are no outlier residues recorded for this chain.

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

Chain J:  100%

There are no outlier residues recorded for this chain.

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

Chain K:  100%

There are no outlier residues recorded for this chain.

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

Chain L:  100%

There are no outlier residues recorded for this chain.

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

Chain N:  100%

There are no outlier residues recorded for this chain.

4 Data and refinement statistics

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
$\langle I/\sigma(I) \rangle$ ¹	2.26 (at 2.29Å)	Xtrriage
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	Xtrriage
Anisotropy	0.421	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 42.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
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

Xtrriage'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.*

¹Intensities estimated from amplitudes.

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

5 Model quality

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

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.

All (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
1:E:178:GLN:HE22	1:E:238:ARG:HH22	1.09	0.90
1:A:479:ASN:ND2	1:A:479:ASN:H	1.71	0.88
1:D:479:ASN:HB3	6:D:845:HOH:O	1.74	0.85
1:E:479:ASN:H	1:E:479:ASN:ND2	1.74	0.85
1:F:479:ASN:HD22	1:F:479:ASN:H	1.24	0.85
1:A:479:ASN:HB3	6:A:871:HOH:O	1.77	0.84
1:E:178:GLN:HE22	1:E:238:ARG:NH2	1.78	0.81
1:C:454:ILE:HD12	1:C:469:LYS:HG2	1.61	0.81
1:C:126:GLY:HA3	6:C:853:HOH:O	1.84	0.78
1:B:479:ASN:H	1:B:479:ASN:ND2	1.78	0.78
1:E:477:GLU:HG2	6:E:856:HOH:O	1.83	0.77
1:F:479:ASN:ND2	1:F:479:ASN:H	1.83	0.77
1:E:479:ASN:N	1:E:479:ASN:HD22	1.74	0.73
1:D:479:ASN:HD22	1:D:479:ASN:N	1.78	0.73
1:E:178:GLN:NE2	1:E:238:ARG:HH22	1.86	0.71
1:A:479:ASN:N	1:A:479:ASN:HD22	1.83	0.71
1:B:463:LYS:HE2	1:B:553:ASN:O	1.91	0.70
1:B:479:ASN:HD22	1:B:479:ASN:N	1.84	0.70
1:A:259:ASP:OD1	1:A:262:THR:HG23	1.93	0.68
1:D:454:ILE:HD12	1:D:469:LYS:HG2	1.76	0.67
1:D:193:ARG:HA	1:D:356:LEU:HG	1.77	0.66
1:A:418:ARG:NH1	1:A:540:ASP:OD2	2.28	0.66
1:A:479:ASN:ND2	1:A:479:ASN:N	2.42	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:479:ASN:HB3	6:E:848:HOH:O	1.97	0.65
1:E:454:ILE:HD12	1:E:469:LYS:HG2	1.79	0.65
1:A:523:TYR:H	1:A:523:TYR:HD1	1.42	0.63
1:D:479:ASN:ND2	1:D:479:ASN:N	2.37	0.62
1:A:206:ALA:HA	1:A:213:VAL:HG12	1.82	0.61
1:A:512:ARG:NH2	1:A:550:GLU:OE2	2.33	0.61
1:B:463:LYS:O	1:B:463:LYS:HD3	2.00	0.60
1:F:352:VAL:HG22	1:F:362:GLU:HG2	1.82	0.60
1:A:404:ALA:O	1:A:405:HIS:HB2	2.00	0.60
1:B:479:ASN:ND2	1:B:479:ASN:N	2.46	0.60
1:A:259:ASP:OD1	1:A:262:THR:CG2	2.50	0.59
1:F:404:ALA:O	1:F:405:HIS:HB2	2.03	0.58
1:E:468:ARG:HG2	1:E:548:VAL:HG22	1.86	0.58
1:A:523:TYR:N	1:A:523:TYR:CD1	2.67	0.58
1:C:333:CYS:HA	6:C:749:HOH:O	2.04	0.58
1:D:233:ASP:CG	1:D:267:ALA:HB3	2.25	0.58
1:C:454:ILE:CD1	1:C:469:LYS:HG2	2.34	0.57
1:E:404:ALA:O	1:E:405:HIS:HB2	2.04	0.57
1:F:186:TYR:CE2	1:F:356:LEU:HD22	2.39	0.57
1:F:298:ARG:HD2	1:F:299:GLU:OE2	2.03	0.57
1:F:233:ASP:CG	1:F:267:ALA:HB3	2.25	0.57
1:C:295:ASN:OD1	1:C:367:THR:HG22	2.05	0.56
1:F:468:ARG:HG2	1:F:548:VAL:HG22	1.88	0.56
1:B:418:ARG:NH1	1:B:540:ASP:OD2	2.38	0.56
1:F:484:LEU:HD23	1:F:571:TYR:O	2.05	0.56
1:A:118:PHE:HB3	1:A:119:PRO:HD3	1.87	0.56
1:B:233:ASP:CG	1:B:267:ALA:HB3	2.26	0.56
1:C:128:THR:O	1:C:130:ARG:HG2	2.06	0.56
1:D:341:TYR:CE2	1:D:428:LEU:HD21	2.41	0.56
1:F:479:ASN:HB3	6:F:828:HOH:O	2.06	0.55
1:C:351:ILE:HG13	1:C:369:ALA:HB1	1.88	0.55
1:E:193:ARG:HE	1:E:197:ARG:CZ	2.20	0.55
1:A:464:ARG:NH2	1:A:466:GLU:OE2	2.40	0.55
1:A:128:THR:O	1:A:130:ARG:HG2	2.06	0.54
1:B:493:LEU:HD12	1:B:493:LEU:C	2.27	0.54
1:D:186:TYR:CE2	1:D:356:LEU:HD22	2.42	0.54
1:D:206:ALA:HA	1:D:213:VAL:HG12	1.90	0.54
1:B:160:HIS:CD2	1:B:358:GLN:HA	2.42	0.54
1:A:523:TYR:HD1	1:A:523:TYR:N	2.03	0.53
1:F:186:TYR:HE2	1:F:356:LEU:HD22	1.72	0.53
1:F:479:ASN:HD22	1:F:479:ASN:N	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:454:ILE:HD11	1:B:568:LEU:HB2	1.91	0.53
1:D:295:ASN:OD1	1:D:367:THR:HG22	2.08	0.53
1:F:293:SER:HA	1:F:309:THR:HG21	1.91	0.53
1:F:295:ASN:OD1	1:F:367:THR:HG22	2.09	0.53
1:B:508:PRO:HD3	1:B:547:TRP:CE2	2.44	0.52
1:C:233:ASP:CG	1:C:267:ALA:HB3	2.29	0.52
1:B:234:ALA:O	1:B:238:ARG:HG3	2.09	0.52
1:F:418:ARG:NH1	1:F:540:ASP:OD2	2.42	0.52
1:C:468:ARG:HG2	1:C:548:VAL:HG22	1.92	0.52
1:F:464:ARG:NH2	1:F:466:GLU:OE2	2.43	0.51
1:E:160:HIS:CD2	1:E:358:GLN:HA	2.45	0.51
1:A:193:ARG:NH1	6:A:880:HOH:O	2.44	0.51
1:A:160:HIS:CD2	1:A:358:GLN:HA	2.46	0.51
1:B:341:TYR:CZ	1:B:428:LEU:HD21	2.46	0.51
1:F:282:ARG:HD3	1:F:286:GLY:O	2.10	0.51
1:C:463:LYS:HD3	1:C:463:LYS:O	2.12	0.50
6:A:864:HOH:O	1:B:268:ARG:HD3	2.11	0.50
1:D:458:PRO:HG3	6:D:883:HOH:O	2.11	0.50
1:D:457:GLU:OE2	1:D:459:LYS:HE3	2.10	0.50
1:C:295:ASN:CG	1:C:367:THR:HG22	2.32	0.50
1:E:233:ASP:CG	1:E:267:ALA:HB3	2.32	0.50
1:C:404:ALA:O	1:C:405:HIS:HB2	2.12	0.50
1:D:418:ARG:NH1	1:D:540:ASP:OD2	2.45	0.50
1:E:298:ARG:HG2	1:E:299:GLU:OE2	2.12	0.50
1:F:479:ASN:N	1:F:479:ASN:ND2	2.49	0.50
1:D:404:ALA:O	1:D:405:HIS:HB2	2.10	0.49
1:B:295:ASN:CG	1:B:367:THR:HG22	2.33	0.49
1:B:404:ALA:O	1:B:405:HIS:HB2	2.12	0.49
1:D:282:ARG:HD3	1:D:286:GLY:O	2.11	0.49
1:A:371:ALA:HB3	1:A:372:PRO:HD3	1.95	0.49
1:E:298:ARG:HB3	6:E:844:HOH:O	2.13	0.49
1:C:512:ARG:NH1	1:C:550:GLU:OE2	2.38	0.49
1:D:371:ALA:HB3	1:D:372:PRO:HD3	1.95	0.48
1:E:539:TRP:O	1:E:540:ASP:HB2	2.14	0.48
1:E:272:GLU:O	1:E:276:ARG:HG3	2.12	0.48
1:E:479:ASN:ND2	1:E:479:ASN:N	2.44	0.48
1:C:468:ARG:NH2	1:C:546:GLU:OE2	2.46	0.48
1:E:493:LEU:HD12	1:E:493:LEU:C	2.33	0.48
1:E:351:ILE:HG13	1:E:369:ALA:HB1	1.95	0.48
1:E:295:ASN:CG	1:E:367:THR:HG22	2.33	0.48
1:A:298:ARG:HD2	1:A:299:GLU:OE2	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:351:ILE:HG13	1:D:369:ALA:HB1	1.96	0.47
1:F:341:TYR:CZ	1:F:428:LEU:HD21	2.50	0.47
1:F:539:TRP:O	1:F:540:ASP:HB2	2.13	0.47
1:F:351:ILE:HG13	1:F:369:ALA:HB1	1.96	0.47
1:F:508:PRO:HD3	1:F:547:TRP:CE2	2.50	0.47
1:A:233:ASP:CG	1:A:267:ALA:HB3	2.35	0.47
1:A:539:TRP:O	1:A:540:ASP:HB2	2.14	0.47
1:D:295:ASN:CG	1:D:367:THR:HG22	2.35	0.47
1:B:463:LYS:C	1:B:463:LYS:HD3	2.36	0.47
1:E:418:ARG:NH1	1:E:540:ASP:OD2	2.40	0.46
1:B:351:ILE:HB	1:B:364:HIS:HB3	1.96	0.46
1:C:351:ILE:HB	1:C:364:HIS:HB3	1.96	0.46
1:F:118:PHE:N	1:F:119:PRO:CD	2.78	0.46
1:A:282:ARG:HD3	1:A:286:GLY:O	2.16	0.46
1:B:341:TYR:CE2	1:B:428:LEU:HD21	2.51	0.46
1:D:458:PRO:O	1:D:459:LYS:HD2	2.15	0.46
1:E:448:ARG:HD3	1:E:479:ASN:HA	1.98	0.46
1:A:508:PRO:HD3	1:A:547:TRP:CE2	2.50	0.46
1:F:295:ASN:CG	1:F:367:THR:HG22	2.37	0.46
1:F:463:LYS:NZ	1:F:555:SER:O	2.49	0.46
1:C:117:LYS:HD2	1:C:120:GLN:OE1	2.16	0.46
1:C:293:SER:HA	1:C:309:THR:HG21	1.98	0.46
1:D:118:PHE:HB3	1:D:119:PRO:HD3	1.99	0.46
1:A:293:SER:HA	1:A:309:THR:HG21	1.98	0.45
1:B:295:ASN:OD1	1:B:367:THR:HG22	2.15	0.45
1:C:272:GLU:O	1:C:276:ARG:HG3	2.16	0.45
1:C:480:HIS:HE1	6:C:864:HOH:O	2.00	0.45
1:D:341:TYR:CZ	1:D:428:LEU:HD21	2.51	0.45
1:B:539:TRP:O	1:B:540:ASP:HB2	2.15	0.45
1:C:160:HIS:CD2	1:C:358:GLN:HA	2.52	0.45
1:F:333:CYS:HA	6:F:749:HOH:O	2.15	0.45
1:C:539:TRP:O	1:C:540:ASP:HB2	2.16	0.45
1:B:117:LYS:HD2	1:B:120:GLN:OE1	2.16	0.45
1:C:172:SER:HB3	1:C:182:PRO:HG3	1.98	0.45
1:F:351:ILE:HB	1:F:364:HIS:HB3	1.98	0.45
1:A:493:LEU:HD12	1:A:493:LEU:C	2.36	0.44
1:E:298:ARG:HG3	1:E:298:ARG:O	2.17	0.44
1:A:404:ALA:O	1:A:405:HIS:CB	2.65	0.44
1:C:493:LEU:C	1:C:493:LEU:HD12	2.37	0.44
1:F:402:LYS:HA	1:F:403:PRO:HD3	1.86	0.44
1:B:243:ASN:N	1:B:244:PRO:HD3	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:118:PHE:N	1:C:119:PRO:CD	2.80	0.44
1:E:329:TYR:CZ	1:E:366:GLY:HA2	2.53	0.44
1:B:477:GLU:HB3	1:B:478:PRO:CD	2.48	0.44
1:E:233:ASP:OD2	1:E:269:LEU:HB2	2.18	0.44
1:F:371:ALA:HB3	1:F:372:PRO:HD3	1.99	0.44
1:D:351:ILE:HB	1:D:364:HIS:HB3	1.99	0.44
1:C:508:PRO:HD3	1:C:547:TRP:CE2	2.53	0.43
1:F:497:ARG:HD2	1:F:500:ASP:OD2	2.17	0.43
1:F:304:ASN:OD1	1:F:333:CYS:HB2	2.18	0.43
1:F:382:LEU:HA	1:F:382:LEU:HD23	1.82	0.43
1:A:458:PRO:O	1:A:459:LYS:HD2	2.18	0.43
1:E:282:ARG:HD3	1:E:286:GLY:O	2.18	0.43
1:E:508:PRO:HD3	1:E:547:TRP:CE2	2.53	0.43
1:E:341:TYR:CZ	1:E:428:LEU:HD21	2.54	0.43
1:D:512:ARG:NH1	1:D:550:GLU:OE1	2.49	0.43
1:E:118:PHE:N	1:E:119:PRO:CD	2.81	0.43
1:A:468:ARG:HG2	1:A:548:VAL:HG22	1.99	0.43
1:E:395:HIS:CD2	1:E:444:VAL:HG11	2.54	0.43
1:A:454:ILE:HD12	1:A:469:LYS:HG2	2.00	0.43
1:D:539:TRP:O	1:D:540:ASP:HB2	2.18	0.43
1:E:295:ASN:ND2	1:E:367:THR:HG22	2.34	0.42
1:A:351:ILE:HB	1:A:364:HIS:HB3	2.01	0.42
1:D:329:TYR:CZ	1:D:366:GLY:HA2	2.54	0.42
1:F:341:TYR:CE2	1:F:428:LEU:HD21	2.54	0.42
1:C:404:ALA:O	1:C:405:HIS:CB	2.67	0.42
1:B:382:LEU:HA	1:B:382:LEU:HD23	1.92	0.42
1:B:404:ALA:O	1:B:405:HIS:CB	2.67	0.42
1:B:458:PRO:O	1:B:459:LYS:HD2	2.19	0.42
1:C:345:ASN:HB2	1:F:326:VAL:O	2.19	0.42
1:C:458:PRO:HG3	6:C:889:HOH:O	2.19	0.42
1:D:160:HIS:CD2	1:D:358:GLN:HA	2.54	0.42
1:A:351:ILE:HG13	1:A:369:ALA:HB1	2.02	0.42
1:E:295:ASN:OD1	1:E:367:THR:HG22	2.20	0.42
1:B:142:TYR:CE1	1:B:384:ALA:HA	2.55	0.42
1:F:160:HIS:CD2	1:F:358:GLN:HA	2.55	0.42
1:B:118:PHE:HB3	1:B:119:PRO:HD3	2.02	0.42
1:B:232:THR:OG1	1:B:235:VAL:HG23	2.20	0.42
1:C:154:ASP:OD2	1:C:192:ASN:HA	2.20	0.42
1:D:468:ARG:HG2	1:D:548:VAL:HG22	2.02	0.42
1:B:206:ALA:HA	1:B:213:VAL:HG12	2.02	0.41
1:F:172:SER:HB3	1:F:182:PRO:HG3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:326:VAL:O	1:F:345:ASN:HB2	2.20	0.41
1:F:113:PRO:HB3	1:F:213:VAL:HG11	2.02	0.41
1:C:142:TYR:CE1	1:C:384:ALA:HA	2.56	0.41
1:A:172:SER:HB3	1:A:182:PRO:HG3	2.03	0.41
1:B:183:GLN:HA	1:B:184:PRO:HD3	1.94	0.41
1:D:333:CYS:HA	6:D:731:HOH:O	2.21	0.41
1:D:288:ILE:HG21	1:D:378:ILE:HG21	2.03	0.41
1:E:371:ALA:HB3	1:E:372:PRO:HD3	2.02	0.41
1:E:495:TYR:OH	1:E:559:ASN:HB2	2.20	0.41
1:F:454:ILE:HD12	1:F:566:PHE:CE2	2.56	0.41
1:D:404:ALA:O	1:D:405:HIS:CB	2.67	0.41
1:F:475:LEU:HA	1:F:480:HIS:ND1	2.35	0.41
1:B:293:SER:HA	1:B:309:THR:HG21	2.03	0.41
1:B:403:PRO:HB3	1:B:411:TRP:CH2	2.56	0.41
1:C:341:TYR:CE2	1:C:428:LEU:HD21	2.56	0.41
1:B:482:THR:OG1	1:B:574:ALA:HA	2.20	0.41
1:B:512:ARG:NH1	1:B:550:GLU:OE1	2.50	0.41
1:D:497:ARG:HD2	1:D:500:ASP:OD2	2.21	0.41
1:F:493:LEU:C	1:F:493:LEU:HD12	2.42	0.41
1:E:351:ILE:HB	1:E:364:HIS:HB3	2.03	0.40
1:E:341:TYR:CE2	1:E:428:LEU:HD21	2.55	0.40
1:F:143:THR:OG1	1:F:218:ASN:HB2	2.20	0.40
1:C:113:PRO:HB3	1:C:213:VAL:HG11	2.02	0.40
1:D:269:LEU:HA	1:D:269:LEU:HD23	1.93	0.40
1:F:495:TYR:OH	1:F:559:ASN:HB2	2.21	0.40
1:A:329:TYR:CZ	1:A:366:GLY:HA2	2.56	0.40
1:C:484:LEU:HD23	1:C:571:TYR:O	2.22	0.40
1:F:243:ASN:N	1:F:244:PRO:HD3	2.37	0.40
1:B:118:PHE:N	1:B:119:PRO:CD	2.85	0.40
1:C:496:ASN:OD1	1:C:559:ASN:HB3	2.21	0.40
1:D:272:GLU:O	1:D:276:ARG:HG3	2.21	0.40
1:B:454:ILE:HD13	1:B:566:PHE:CE2	2.56	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	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
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 [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	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

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
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

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	120	GLN
1	A	162	ASP
1	A	178	GLN
1	A	243	ASN
1	A	262	THR
1	A	275	PHE
1	A	291	TRP
1	A	298	ARG
1	A	420	VAL
1	A	479	ASN
1	A	497	ARG
1	A	523	TYR
1	A	555	SER
1	B	243	ASN
1	B	291	TRP
1	B	459	LYS
1	B	463	LYS
1	B	479	ASN
1	B	497	ARG
1	C	162	ASP
1	C	178	GLN
1	C	291	TRP
1	C	406	LEU
1	C	459	LYS
1	C	463	LYS
1	C	484	LEU
1	C	497	ARG
1	C	555	SER
1	D	162	ASP

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Mol	Chain	Res	Type
1	D	178	GLN
1	D	182	PRO
1	D	291	TRP
1	D	303	CYS
1	D	387	ASN
1	D	406	LEU
1	D	420	VAL
1	D	457	GLU
1	D	459	LYS
1	D	479	ASN
1	E	188	GLN
1	E	291	TRP
1	E	298	ARG
1	E	303	CYS
1	E	406	LEU
1	E	435	VAL
1	E	459	LYS
1	E	479	ASN
1	E	483	ARG
1	E	497	ARG
1	E	555	SER
1	F	291	TRP
1	F	356	LEU
1	F	406	LEU
1	F	419	LYS
1	F	420	VAL
1	F	459	LYS
1	F	479	ASN
1	F	484	LEU
1	F	497	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	111	GLN
1	A	346	GLN
1	A	387	ASN
1	A	479	ASN
1	B	243	ASN
1	B	346	GLN
1	B	387	ASN
1	B	479	ASN

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Mol	Chain	Res	Type
1	C	111	GLN
1	C	346	GLN
1	C	387	ASN
1	C	480	HIS
1	D	479	ASN
1	E	178	GLN
1	E	188	GLN
1	E	387	ASN
1	E	479	ASN
1	F	325	ASN
1	F	346	GLN
1	F	387	ASN
1	F	479	ASN
1	F	504	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 [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	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%)

All (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
1	A	128	THR	5.7
1	E	110	TYR	5.1
1	C	128	THR	5.0
1	F	128	THR	4.7
1	F	456	THR	4.5
1	E	128	THR	4.5

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Mol	Chain	Res	Type	RSRZ
1	B	128	THR	4.1
1	F	129	GLN	3.9
1	F	560	TYR	3.8
1	D	128	THR	3.6
1	F	110	TYR	3.6
1	D	129	GLN	3.6
1	D	405	HIS	3.3
1	B	126	GLY	3.3
1	F	139	ALA	2.9
1	D	523	TYR	2.9
1	F	558	ASN	2.8
1	E	456	THR	2.8
1	F	460	ASP	2.8
1	D	562	THR	2.7
1	F	404	ALA	2.7
1	C	558	ASN	2.7
1	D	560	TYR	2.6
1	C	458	PRO	2.6
1	F	462	GLY	2.5
1	E	558	ASN	2.4
1	D	456	THR	2.4
1	A	560	TYR	2.4
1	B	110	TYR	2.4
1	D	110	TYR	2.4
1	C	440	ASN	2.4
1	B	145	HIS	2.3
1	A	126	GLY	2.3
1	F	523	TYR	2.3
1	C	127	VAL	2.2
1	A	129	GLN	2.2
1	C	129	GLN	2.2
1	B	457	GLU	2.2
1	E	129	GLN	2.2
1	F	439	GLN	2.2
1	C	560	TYR	2.1
1	A	457	GLU	2.1
1	A	456	THR	2.1
1	C	456	THR	2.1
1	F	312	ILE	2.1
1	C	109	VAL	2.1
1	F	458	PRO	2.1
1	E	458	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
1	E	111	GLN	2.1
1	D	404	ALA	2.1
1	E	145	HIS	2.0
1	B	129	GLN	2.0
1	D	558	ASN	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 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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
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

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
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
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.