Full wwPDB X-ray Structure Validation Report (i)

Aug 22, 2023 – 07:05 PM EDT

PDB ID : 3CEV
Title : ARGINASE FROM BACILLUS CALDEVELOX, COMPLEXED WITH L-ARGININE
Authors : Bewley, M.C.; Jeffrey, P.D.; Patchett, M.L.; Kanyo, Z.F.; Baker, E.N.
Deposited on : 1999-03-15
Resolution : 2.40 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : NOT EXECUTED
EDS : NOT EXECUTED
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
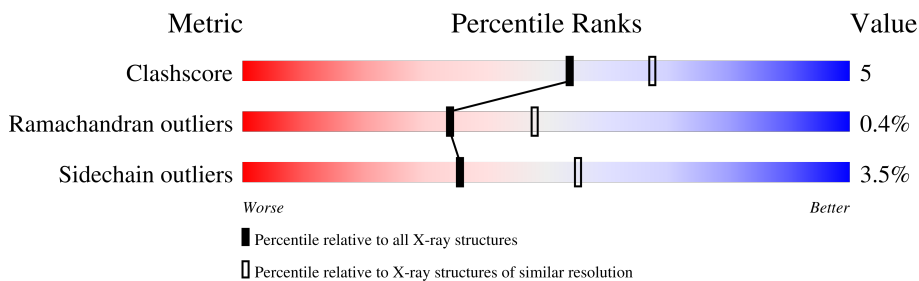Validation Pipeline (wwPDB-VP) : 2.35

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.40 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	Percentile Ranks	Value
Clashscore		5
Ramachandran outliers		0.4%
Sidechain outliers		3.5%

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	299	88% / 10% •
1	B	299	83% / 14% • •
1	C	299	89% / 9% •
1	D	299	87% / 12% •
1	E	299	86% / 13% •
1	F	299	87% / 12% •

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 14395 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.
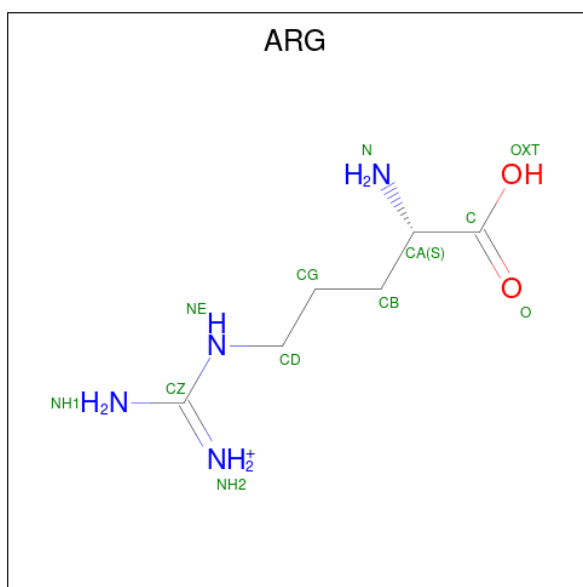
- Molecule 1 is a protein called PROTEIN (ARGINASE).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	298	Total	C	N	O	S	0	0	0
			2268	1425	401	431	11			
1	B	298	Total	C	N	O	S	0	0	0
			2268	1425	401	431	11			
1	C	298	Total	C	N	O	S	0	0	0
			2268	1425	401	431	11			
1	D	298	Total	C	N	O	S	0	0	0
			2268	1425	401	431	11			
1	E	298	Total	C	N	O	S	0	0	0
			2268	1425	401	431	11			
1	F	298	Total	C	N	O	S	0	0	0
			2268	1425	401	431	11			

- Molecule 2 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Mn	0	0
			1	1		
2	B	1	Total	Mn	0	0
			1	1		
2	C	1	Total	Mn	0	0
			1	1		
2	D	1	Total	Mn	0	0
			1	1		
2	E	1	Total	Mn	0	0
			1	1		
2	F	1	Total	Mn	0	0
			1	1		

- Molecule 3 is ARGININE (three-letter code: ARG) (formula: $C_6H_{15}N_4O_2$).

ARG

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

- Molecule 4 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	103	Total 103	O 103	0	0
4	B	114	Total 114	O 114	0	0
4	C	101	Total 101	O 101	0	0
4	D	111	Total 111	O 111	0	0
4	E	105	Total 105	O 105	0	0
4	F	103	Total 103	O 103	0	0

3 Residue-property plots ⓘ

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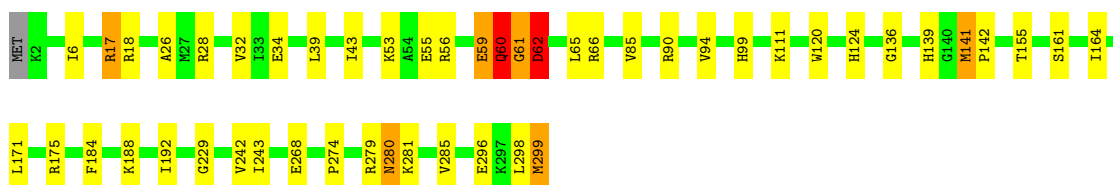
Note EDS was not executed.

• Molecule 1: PROTEIN (ARGINASE)

Chain A:
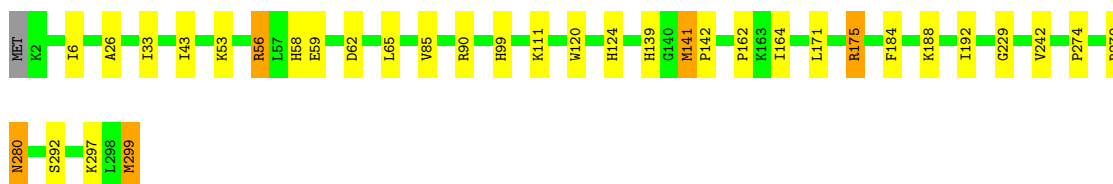
• Molecule 1: PROTEIN (ARGINASE)

Chain B:

• Molecule 1: PROTEIN (ARGINASE)

Chain C:

• Molecule 1: PROTEIN (ARGINASE)

Chain D:

P274 R279 N280 K281 V285 A286 V287 S292 G295 M299
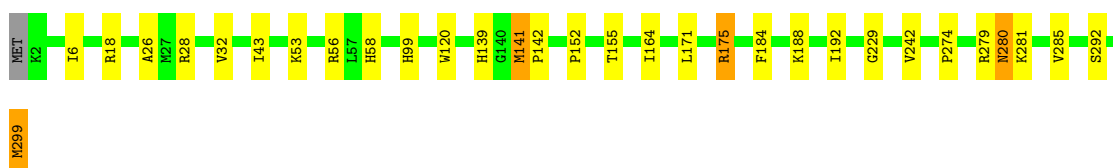
• Molecule 1: PROTEIN (ARGINASE)

Chain E:

86% 13% •

MET K2 I6 R18 A26 M27 R28 V32 I33 E34 R35 R38 L39 H40 I43 K53 R56 L57 H58 E59 D62 L65 V94 H99 W120 V127 H139 G140 M141 P142 L143 A144 I164 L171 R175 F184 K188 I192

M203 G229 V242 L246 E268 P274 N280 K281 V285 S292 M299

• Molecule 1: PROTEIN (ARGINASE)

Chain F:

87% 12% •

MET K2 R17 R18 G19 V20 A26 M27 R28 V32 I33 E34 K53 R56 L57 H58 E59 D62 L65 Q87 H99 H112 Y113 E114 W120 H139 G140 M141 P142 I164 L171 R175 F184 K188 I192 G229 V242 I243 G244

P274 R279 N280 K281 V285 L289 S292 M299

4 Data and refinement statistics ⓘ

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	106.80Å 277.70Å 140.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.40	Depositor
% Data completeness (in resolution range)	89.5 (8.00-2.40)	Depositor
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.193 , 0.243	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	14395	wwPDB-VP
Average B, all atoms (Å^2)	29.0	wwPDB-VP

5   Model quality ⓘ

5.1   Standard geometry ⓘ

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

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	0.47	0/2307	0.70	1/3116 (0.0%)
1	B	0.48	0/2307	0.73	3/3116 (0.1%)
1	C	0.47	0/2307	0.69	2/3116 (0.1%)
1	D	0.49	0/2307	0.72	2/3116 (0.1%)
1	E	0.45	0/2307	0.68	0/3116
1	F	0.48	0/2307	0.70	0/3116
All	All	0.47	0/13842	0.70	8/18696 (0.0%)

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	61	GLY	N-CA-C	7.48	131.81	113.10
1	C	175	ARG	NE-CZ-NH2	-5.75	117.42	120.30
1	B	62	ASP	N-CA-C	5.56	126.01	111.00
1	A	175	ARG	NE-CZ-NH2	-5.40	117.60	120.30
1	B	60	GLN	N-CA-C	5.31	125.34	111.00
1	C	175	ARG	NE-CZ-NH1	5.10	122.85	120.30
1	D	295	GLY	N-CA-C	5.07	125.77	113.10
1	D	42	ASP	N-CA-C	-5.03	97.41	111.00

There are no chirality outliers.

There are no planarity outliers.

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	2268	0	2290	23	0
1	B	2268	0	2290	32	0
1	C	2268	0	2290	19	0
1	D	2268	0	2290	28	0
1	E	2268	0	2290	27	0
1	F	2268	0	2290	23	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
3	A	24	0	24	1	0
3	B	24	0	24	1	0
3	C	24	0	24	1	0
3	D	24	0	24	2	0
3	E	24	0	24	1	0
3	F	24	0	24	1	0
4	A	103	0	0	2	0
4	B	114	0	0	4	0
4	C	101	0	0	1	0
4	D	111	0	0	2	0
4	E	105	0	0	3	0
4	F	103	0	0	1	0
All	All	14395	0	13884	147	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 (147) 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:A:56:ARG:HB2	1:A:59:GLU:HG2	1.47	0.94
1:F:56:ARG:HB2	1:F:59:GLU:HB3	1.59	0.83
1:B:62:ASP:HB2	1:B:65:LEU:O	1.82	0.79
1:F:26:ALA:HB1	1:F:280:ASN:HD21	1.54	0.73
1:D:292:SER:HG	3:D:404:ARG:N	1.86	0.73
1:E:56:ARG:HB2	1:E:59:GLU:HG2	1.71	0.72
1:B:17:ARG:HD2	4:B:518:HOH:O	1.88	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:TRP:HB3	1:A:171:LEU:HD23	1.74	0.69
1:A:292:SER:HG	3:A:401:ARG:N	1.90	0.68
1:A:56:ARG:H	1:A:56:ARG:HD2	1.59	0.68
1:E:292:SER:HG	3:E:405:ARG:N	1.94	0.66
1:F:184:PHE:O	1:F:188:LYS:HG2	1.95	0.66
1:C:26:ALA:HB1	1:C:280:ASN:HD21	1.60	0.66
1:E:34:GLU:HG2	1:E:38:ARG:HE	1.61	0.66
1:C:120:TRP:HB3	1:C:171:LEU:HD23	1.79	0.65
1:E:299:MET:SD	1:F:192:ILE:HG23	2.37	0.65
1:D:192:ILE:HG23	1:F:299:MET:SD	2.37	0.65
1:E:120:TRP:HB3	1:E:171:LEU:HD23	1.79	0.65
1:F:292:SER:HG	3:F:406:ARG:N	1.94	0.65
1:B:120:TRP:HB3	1:B:171:LEU:HD23	1.78	0.64
1:E:26:ALA:HB1	1:E:280:ASN:HD21	1.62	0.64
1:C:56:ARG:HD2	1:C:58:HIS:CE1	2.33	0.63
1:F:56:ARG:HB2	1:F:59:GLU:CB	2.28	0.63
1:B:26:ALA:HB1	1:B:280:ASN:HD21	1.64	0.63
1:C:292:SER:HG	3:C:403:ARG:N	1.97	0.63
1:B:62:ASP:HB2	1:B:65:LEU:C	2.20	0.62
1:D:26:ALA:HB1	1:D:280:ASN:HD21	1.65	0.60
1:A:56:ARG:HB3	1:A:58:HIS:CE1	2.36	0.60
1:B:184:PHE:O	1:B:188:LYS:HG2	2.02	0.59
1:A:184:PHE:O	1:A:188:LYS:HG2	2.01	0.59
1:D:184:PHE:O	1:D:188:LYS:HG2	2.03	0.59
1:C:184:PHE:O	1:C:188:LYS:HG2	2.03	0.58
1:C:56:ARG:HD2	1:C:58:HIS:HE1	1.69	0.58
1:A:26:ALA:HB1	1:A:280:ASN:HD21	1.68	0.57
1:D:201:LEU:HD13	1:D:205:ARG:HH11	1.69	0.57
1:D:120:TRP:HB3	1:D:171:LEU:HD23	1.87	0.57
1:B:141:MET:N	1:B:142:PRO:CD	2.68	0.56
1:B:56:ARG:HB2	1:B:59:GLU:HG2	1.87	0.56
1:B:141:MET:N	1:B:142:PRO:HD2	2.20	0.56
1:E:184:PHE:O	1:E:188:LYS:HG2	2.05	0.56
1:D:141:MET:N	1:D:142:PRO:HD2	2.21	0.56
1:A:141:MET:N	1:A:142:PRO:CD	2.69	0.56
1:B:66:ARG:HG3	1:B:136:GLY:O	2.07	0.55
1:B:175:ARG:NH2	1:B:229:GLY:O	2.39	0.55
1:C:141:MET:N	1:C:142:PRO:HD2	2.21	0.55
1:A:141:MET:N	1:A:142:PRO:HD2	2.21	0.55
1:B:299:MET:SD	1:C:192:ILE:HG23	2.47	0.55
1:C:6:ILE:HG13	1:C:43:ILE:HD11	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:141:MET:N	1:F:142:PRO:CD	2.70	0.55
1:B:56:ARG:HB2	1:B:59:GLU:HB3	1.90	0.54
1:D:201:LEU:CD1	1:D:205:ARG:HH11	2.20	0.54
1:D:201:LEU:HD13	1:D:205:ARG:HD3	1.89	0.54
1:C:141:MET:N	1:C:142:PRO:CD	2.70	0.54
1:F:175:ARG:HG3	1:F:242:VAL:HG11	1.90	0.54
1:F:141:MET:N	1:F:142:PRO:HD2	2.22	0.54
1:A:56:ARG:HB2	1:A:59:GLU:CG	2.29	0.53
1:C:175:ARG:NH2	1:C:229:GLY:O	2.40	0.53
1:E:56:ARG:HB2	1:E:59:GLU:CG	2.38	0.53
1:E:141:MET:N	1:E:142:PRO:HD2	2.22	0.53
1:F:120:TRP:HB3	1:F:171:LEU:HD23	1.90	0.53
1:E:175:ARG:NH2	1:E:229:GLY:O	2.41	0.53
1:B:55:GLU:HG3	1:B:60:GLN:HB2	1.91	0.53
1:E:281:LYS:O	1:E:285:VAL:HG23	2.09	0.53
1:D:56:ARG:HB2	1:D:59:GLU:HG2	1.91	0.52
1:D:141:MET:N	1:D:142:PRO:CD	2.72	0.52
1:A:124:HIS:HB3	4:A:432:HOH:O	2.09	0.52
1:D:175:ARG:NH2	1:D:229:GLY:O	2.42	0.52
1:E:141:MET:N	1:E:142:PRO:CD	2.73	0.52
1:E:175:ARG:HG3	1:E:242:VAL:HG11	1.92	0.52
1:B:298:LEU:HD21	3:B:402:ARG:HG3	1.92	0.51
1:D:299:MET:SD	1:E:192:ILE:HG23	2.49	0.51
1:F:281:LYS:O	1:F:285:VAL:HG23	2.09	0.51
1:A:299:MET:SD	1:B:192:ILE:HG23	2.51	0.50
1:B:243:ILE:HG12	4:B:459:HOH:O	2.12	0.50
1:E:28:ARG:HA	1:E:32:VAL:HG12	1.93	0.50
1:C:175:ARG:HG3	1:C:242:VAL:HG11	1.93	0.50
1:F:175:ARG:NH2	1:F:229:GLY:O	2.45	0.50
1:A:175:ARG:NH2	1:A:229:GLY:O	2.44	0.49
1:B:175:ARG:HG3	1:B:242:VAL:HG11	1.93	0.49
1:C:280:ASN:ND2	4:C:419:HOH:O	2.46	0.49
1:C:281:LYS:O	1:C:285:VAL:HG23	2.12	0.49
1:F:56:ARG:HB3	1:F:58:HIS:CE1	2.48	0.49
1:D:6:ILE:HG13	1:D:43:ILE:HD11	1.94	0.48
1:B:28:ARG:HA	1:B:32:VAL:HG12	1.96	0.48
1:B:155:THR:O	1:B:161:SER:HB3	2.14	0.48
1:B:6:ILE:HG13	1:B:43:ILE:HD11	1.95	0.47
1:A:26:ALA:HB2	1:A:274:PRO:HG3	1.95	0.47
1:B:124:HIS:HB3	4:B:435:HOH:O	2.14	0.47
1:B:18:ARG:HD3	1:B:18:ARG:HA	1.67	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:18:ARG:HA	1:F:18:ARG:HD3	1.72	0.47
1:D:26:ALA:HB2	1:D:274:PRO:HG3	1.97	0.47
1:B:62:ASP:CB	1:B:65:LEU:O	2.60	0.47
1:D:205:ARG:CZ	1:D:209:GLU:OE2	2.64	0.46
1:D:18:ARG:HA	1:D:18:ARG:HD3	1.66	0.46
1:B:281:LYS:O	1:B:285:VAL:HG23	2.16	0.45
1:B:34:GLU:CD	1:B:34:GLU:H	2.19	0.45
1:F:244:GLY:HA2	4:F:415:HOH:O	2.16	0.45
1:A:175:ARG:HG3	1:A:242:VAL:HG11	1.98	0.44
1:F:34:GLU:CD	1:F:34:GLU:H	2.21	0.44
1:C:18:ARG:HD3	1:C:18:ARG:HA	1.73	0.44
1:D:201:LEU:CD2	1:D:205:ARG:HH11	2.31	0.44
1:D:56:ARG:O	1:D:59:GLU:HG2	2.17	0.44
1:C:152:PRO:HA	1:C:155:THR:OG1	2.19	0.43
1:B:26:ALA:HB2	1:B:274:PRO:HG3	1.99	0.43
1:D:28:ARG:HA	1:D:32:VAL:HG12	2.00	0.43
1:E:18:ARG:HD3	1:E:18:ARG:HA	1.76	0.43
1:A:6:ILE:HD12	1:A:33:ILE:CD1	2.49	0.43
1:D:201:LEU:HD22	1:D:205:ARG:HH11	1.82	0.43
1:C:28:ARG:HA	1:C:32:VAL:HG12	2.01	0.43
1:E:6:ILE:HG13	1:E:43:ILE:HD11	2.01	0.43
1:A:6:ILE:HG13	1:A:43:ILE:HD11	2.01	0.42
1:D:205:ARG:O	1:D:209:GLU:HG3	2.19	0.42
1:B:94:VAL:O	1:B:268:GLU:HA	2.19	0.42
1:D:30:ALA:HB3	1:D:287:VAL:HG21	2.00	0.42
1:F:62:ASP:HB3	1:F:65:LEU:HB2	2.01	0.42
1:E:62:ASP:HB3	1:E:65:LEU:HB2	2.00	0.42
1:F:26:ALA:HB2	1:F:274:PRO:HG3	2.01	0.42
1:B:299:MET:HB2	4:B:520:HOH:O	2.20	0.41
1:A:192:ILE:HG23	1:C:299:MET:SD	2.60	0.41
1:E:280:ASN:ND2	4:E:422:HOH:O	2.53	0.41
1:F:285:VAL:O	1:F:289:LEU:HG	2.20	0.41
1:A:162:PRO:HA	4:A:419:HOH:O	2.19	0.41
1:E:26:ALA:HB2	1:E:274:PRO:HG3	2.01	0.41
1:E:35:ARG:HD3	4:E:492:HOH:O	2.20	0.41
1:F:87:GLN:HG3	1:F:112:HIS:HE1	1.86	0.41
1:E:127:VAL:HA	1:E:144:ALA:HB2	2.01	0.41
1:C:26:ALA:HB2	1:C:274:PRO:HG3	2.01	0.41
1:B:39:LEU:HD11	1:B:296:GLU:HG3	2.01	0.41
1:B:141:MET:H	1:B:142:PRO:CD	2.33	0.41
1:D:201:LEU:HD22	1:D:205:ARG:NH1	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:85:VAL:HG13	1:A:90:ARG:HB2	2.02	0.41
1:D:127:VAL:HA	1:D:144:ALA:HB2	2.03	0.41
1:E:203:MET:HE2	1:E:246:LEU:HD22	2.03	0.41
1:A:297:LYS:HE2	1:A:297:LYS:HB3	1.91	0.41
1:B:85:VAL:HG13	1:B:90:ARG:HB2	2.02	0.41
1:D:280:ASN:ND2	4:D:417:HOH:O	2.54	0.41
1:D:281:LYS:O	1:D:285:VAL:HG23	2.21	0.41
1:E:39:LEU:O	1:E:40:HIS:HB2	2.21	0.41
1:E:94:VAL:O	1:E:268:GLU:HA	2.21	0.41
1:D:56:ARG:O	1:D:60:GLN:HG3	2.22	0.40
1:A:62:ASP:HB3	1:A:65:LEU:HB2	2.03	0.40
3:D:410:ARG:CZ	4:D:411:HOH:O	2.69	0.40
1:E:56:ARG:HD2	1:E:58:HIS:CE1	2.56	0.40
1:E:38:ARG:NH2	4:E:491:HOH:O	2.53	0.40
1:F:28:ARG:HA	1:F:32:VAL:HG12	2.03	0.40
1:A:56:ARG:HD2	1:A:56:ARG:N	2.31	0.40
1:F:20:VAL:O	1:F:20:VAL:HG22	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	296/299 (99%)	285 (96%)	10 (3%)	1 (0%)	41	55
1	B	296/299 (99%)	288 (97%)	6 (2%)	2 (1%)	22	32
1	C	296/299 (99%)	288 (97%)	7 (2%)	1 (0%)	41	55
1	D	296/299 (99%)	288 (97%)	7 (2%)	1 (0%)	41	55
1	E	296/299 (99%)	287 (97%)	8 (3%)	1 (0%)	41	55
1	F	296/299 (99%)	286 (97%)	9 (3%)	1 (0%)	41	55
All	All	1776/1794 (99%)	1722 (97%)	47 (3%)	7 (0%)	34	48

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	61	GLY
1	A	141	MET
1	B	141	MET
1	C	141	MET
1	D	141	MET
1	E	141	MET
1	F	141	MET

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	239/240 (100%)	230 (96%)	9 (4%)	33	51
1	B	239/240 (100%)	227 (95%)	12 (5%)	24	40
1	C	239/240 (100%)	232 (97%)	7 (3%)	42	62
1	D	239/240 (100%)	231 (97%)	8 (3%)	38	57
1	E	239/240 (100%)	233 (98%)	6 (2%)	47	67
1	F	239/240 (100%)	230 (96%)	9 (4%)	33	51
All	All	1434/1440 (100%)	1383 (96%)	51 (4%)	36	54

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	53	LYS
1	A	56	ARG
1	A	99	HIS
1	A	111	LYS
1	A	139	HIS
1	A	164	ILE
1	A	279	ARG
1	A	280	ASN
1	A	299	MET
1	B	17	ARG

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Mol	Chain	Res	Type
1	B	53	LYS
1	B	59	GLU
1	B	60	GLN
1	B	62	ASP
1	B	99	HIS
1	B	111	LYS
1	B	139	HIS
1	B	164	ILE
1	B	279	ARG
1	B	280	ASN
1	B	299	MET
1	C	53	LYS
1	C	99	HIS
1	C	139	HIS
1	C	164	ILE
1	C	279	ARG
1	C	280	ASN
1	C	299	MET
1	D	53	LYS
1	D	99	HIS
1	D	111	LYS
1	D	139	HIS
1	D	164	ILE
1	D	279	ARG
1	D	280	ASN
1	D	299	MET
1	E	53	LYS
1	E	99	HIS
1	E	139	HIS
1	E	164	ILE
1	E	280	ASN
1	E	299	MET
1	F	17	ARG
1	F	53	LYS
1	F	99	HIS
1	F	114	GLU
1	F	139	HIS
1	F	164	ILE
1	F	279	ARG
1	F	280	ASN
1	F	299	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	280	ASN
1	B	280	ASN
1	C	58	HIS
1	C	280	ASN
1	D	58	HIS
1	D	84	GLN
1	D	280	ASN
1	E	58	HIS
1	E	84	GLN
1	E	168	HIS
1	E	280	ASN
1	F	280	ASN

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

5.4　Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5　Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6　Ligand geometry ⓘ

Of 18 ligands modelled in this entry, 6 are monoatomic - leaving 12 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	ARG	B	402	-	10,11,11	0.70	0	11,13,13	0.52	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
3	ARG	C	403	-	10,11,11	0.69	0	11,13,13	0.53	0
3	ARG	D	410	2	10,11,11	0.60	0	11,13,13	0.68	0
3	ARG	E	411	2	10,11,11	0.71	0	11,13,13	0.59	0
3	ARG	F	412	2	10,11,11	0.65	0	11,13,13	0.55	0
3	ARG	A	407	2	10,11,11	0.71	0	11,13,13	0.54	0
3	ARG	C	409	2	10,11,11	0.69	0	11,13,13	0.60	0
3	ARG	E	405	-	10,11,11	0.73	0	11,13,13	0.41	0
3	ARG	B	408	2	10,11,11	0.70	0	11,13,13	0.49	0
3	ARG	A	401	-	10,11,11	0.71	0	11,13,13	0.65	0
3	ARG	F	406	-	10,11,11	0.65	0	11,13,13	0.66	0
3	ARG	D	404	-	10,11,11	0.67	0	11,13,13	0.64	0

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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ARG	B	402	-	-	1/11/11/11	-
3	ARG	C	403	-	-	0/11/11/11	-
3	ARG	D	410	2	-	0/11/11/11	-
3	ARG	E	411	2	-	0/11/11/11	-
3	ARG	F	412	2	-	0/11/11/11	-
3	ARG	A	407	2	-	0/11/11/11	-
3	ARG	C	409	2	-	0/11/11/11	-
3	ARG	E	405	-	-	2/11/11/11	-
3	ARG	B	408	2	-	0/11/11/11	-
3	ARG	A	401	-	-	1/11/11/11	-
3	ARG	F	406	-	-	1/11/11/11	-
3	ARG	D	404	-	-	1/11/11/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	405	ARG	C-CA-CB-CG
3	A	401	ARG	N-CA-CB-CG
3	B	402	ARG	N-CA-CB-CG
3	D	404	ARG	N-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
3	E	405	ARG	N-CA-CB-CG
3	F	406	ARG	N-CA-CB-CG

There are no ring outliers.

7 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	402	ARG	1	0
3	C	403	ARG	1	0
3	D	410	ARG	1	0
3	E	405	ARG	1	0
3	A	401	ARG	1	0
3	F	406	ARG	1	0
3	D	404	ARG	1	0

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 ⓘ

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section is therefore empty.

6.4 Ligands ⓘ

EDS was not executed - this section is therefore empty.

6.5 Other polymers ⓘ

EDS was not executed - this section is therefore empty.