Full wwPDB X-ray Structure Validation Report ⓘ

Oct 17, 2023 – 05:03 AM EDT

PDB ID	:	2EFU
Title	:	The crystal structure of D-amino acid amidase from Ochrobactrum anthropi SV3 complexed with L-phenylalanine
Authors	:	Okazaki, S.; Suzuki, A.; Mizushima, T.; Komeda, H.; Asano, Y.; Yamane, T.
Deposited on	:	2007-02-26
Resolution	:	2.30 Å(reported)

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	:	2.36
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)	:	2.36

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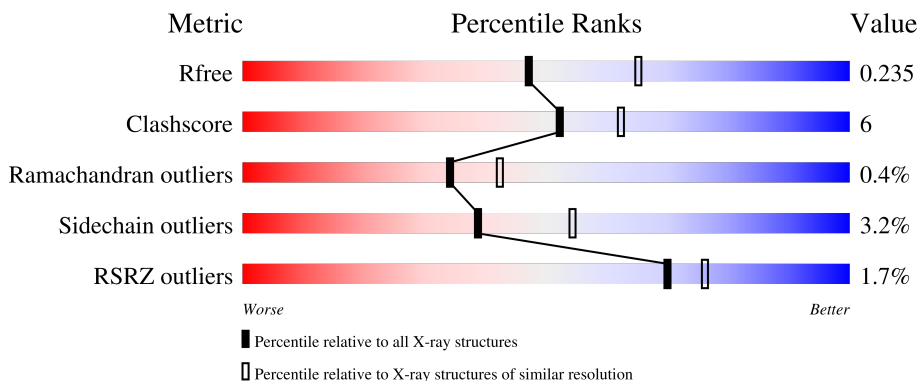
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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 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% 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	363	% 87% 12% ·
1	B	363	2% 87% 11% ··
1	C	363	2% 88% 10% ··
1	D	363	% 85% 11% · ·
1	E	363	2% 83% 9% · 6%

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Mol	Chain	Length	Quality of chain
1	F	363	2% 78% 12% · 9%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 17915 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 D-Amino acid amidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	362	Total 2819	C 1780	N 487	O 535	S 17	0	1	0
1	B	359	Total 2806	C 1774	N 484	O 531	S 17	0	2	0
1	C	361	Total 2805	C 1772	N 485	O 532	S 16	0	0	0
1	D	350	Total 2726	C 1725	N 474	O 511	S 16	0	1	0
1	E	342	Total 2665	C 1688	N 462	O 499	S 16	0	0	0
1	F	330	Total 2589	C 1644	N 447	O 482	S 16	0	2	0

- Molecule 2 is BARIUM ION (three-letter code: BA) (formula: Ba).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	4	Total 4	Ba 4	0	0
2	B	2	Total 2	Ba 2	0	0
2	C	4	Total 4	Ba 4	0	0
2	D	5	Total 6	Ba 6	0	1
2	E	4	Total 4	Ba 4	0	0
2	F	6	Total 6	Ba 6	0	0

- Molecule 3 is PHENYLALANINE (three-letter code: PHE) (formula: $C_9H_{11}NO_2$).
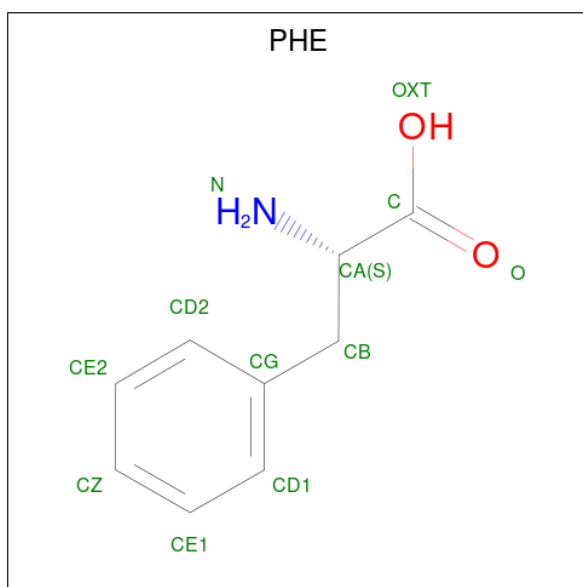
PHE

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total 12	C 9	N 1	O 2	0	0
3	B	1	Total 12	C 9	N 1	O 2	0	0
3	C	1	Total 12	C 9	N 1	O 2	0	0
3	D	1	Total 12	C 9	N 1	O 2	0	0
3	E	1	Total 12	C 9	N 1	O 2	0	0
3	F	1	Total 12	C 9	N 1	O 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	223	Total 223	O 223	0	0
4	B	304	Total 304	O 304	0	0
4	C	248	Total 248	O 248	0	0
4	D	255	Total 255	O 255	0	0
4	E	198	Total 198	O 198	0	0
4	F	179	Total 179	O 179	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 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: D-Amino acid amidase

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K274 F282 P283 G284 S285 L296 E303 L304 K305 G306 H307 L308 I311 M318 G319 R320 D321 E322 E323 T324 M329 N333 L344 S363

• Molecule 1: D-Amino acid amidase

Chain E:
2%
83%
9% · 6%

MET S2 N5 V20 P30 S35 Y41 F45 N46 LYS M48 T51 H54 A59 I66 Q75 D80 E83 D171 A179 P180 P195 I196 E197 R198 R201 G202 Y203 A206 ALA ASP ASP GLU ASN PRO GLN TRP ASP VAL SER GLY

ALA GLY ASP PRO VAL ASP G226 V227 W228 A241 A242 G243 L265 D266 Q267 K268 R269 L270 W271 D275 G284 H307 I311 P312 S316 I317 M318 T324 M329 L330 I331 Q332 N333 S334 Y343 R353 S363

• Molecule 1: D-Amino acid amidase

Chain F:
2%
78%
12% · 9%

MET SER ASP L4 N5 N6 V23 L29 P30 Y41 K44 PHE ASN LYS M48 T51 H54 A59 Q75 T78 V79 D80 E83 D112 F113 E114 I120 S124 W125 T126 E129 R136 H172 R176 K184 R201 M204 H205 ALA ALA

ALA ASP ASP GLU ASN PRO GLN TRP ASP VAL SER GLY ALA GLY ASP PRO VAL ASP GLY VAL W228 F260 L265 D266 R269 L270 M273 K274 A280 F281 N290 L296 M297 R298 K305 G306 H307 I311 M318 G319 R320 M329 N333 S334 G335 P350

V354 I358 LYS ASN SER ARG SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	77.47Å 123.27Å 116.16Å 90.00° 104.05° 90.00°	Depositor
Resolution (Å)	47.67 – 2.30 47.66 – 2.30	Depositor EDS
% Data completeness (in resolution range)	100.0 (47.67-2.30) 100.0 (47.66-2.30)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	0.10	Depositor
$< I/\sigma(I) >$ [1]	3.86 (at 2.29Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.170 , 0.235 0.170 , 0.235	Depositor DCC
R_{free} test set	4735 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	23.1	Xtriage
Anisotropy	0.075	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 44.8	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	17915	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.67% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: BA

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	0.46	0/2891	0.59	0/3921
1	B	0.53	0/2880	0.65	1/3904 (0.0%)
1	C	0.49	0/2877	0.61	0/3902
1	D	0.50	0/2797	0.60	0/3788
1	E	0.46	0/2731	0.56	0/3697
1	F	0.49	0/2660	0.61	1/3602 (0.0%)
All	All	0.49	0/16836	0.61	2/22814 (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	B	0	2
1	F	0	1
All	All	0	3

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	114	GLU	N-CA-C	-7.49	90.78	111.00
1	B	226	GLY	N-CA-C	-5.01	100.56	113.10

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	224	VAL	Peptide
1	B	225	ASP	Peptide
1	F	113	PHE	Peptide

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	2819	0	2719	32	0
1	B	2806	0	2711	26	0
1	C	2805	0	2706	26	0
1	D	2726	0	2651	31	0
1	E	2665	0	2587	31	0
1	F	2589	0	2522	39	0
2	A	4	0	0	0	0
2	B	2	0	0	0	0
2	C	4	0	0	1	0
2	D	6	0	0	0	0
2	E	4	0	0	0	0
2	F	6	0	0	0	0
3	A	12	0	8	0	0
3	B	12	0	8	0	0
3	C	12	0	8	0	0
3	D	12	0	8	0	0
3	E	12	0	8	0	0
3	F	12	0	8	0	0
4	A	223	0	0	4	0
4	B	304	0	0	7	0
4	C	248	0	0	4	0
4	D	255	0	0	2	0
4	E	198	0	0	1	0
4	F	179	0	0	4	0
All	All	17915	0	15944	177	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 6.

All (177) 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)
2:C:3001:BA:BA	4:C:3068:HOH:O	1.25	1.27
1:A:353:ARG:NH1	4:A:3239:HOH:O	1.92	1.02
1:F:265:LEU:CD1	1:F:273:MET:CE	2.38	1.02
1:F:265:LEU:HD12	1:F:273:MET:CE	1.92	0.99
1:A:51:THR:H	1:A:54:HIS:HD2	1.05	0.97
1:F:204:MET:HA	1:F:205:HIS:HB2	1.52	0.92
1:A:353:ARG:HG2	4:A:3240:HOH:O	1.72	0.89
1:A:51:THR:H	1:A:54:HIS:CD2	1.92	0.86
1:E:51:THR:H	1:E:54:HIS:HD2	1.21	0.86
1:C:51:THR:H	1:C:54:HIS:HD2	1.23	0.84
1:D:284:GLY:HA2	1:E:267:GLN:OE1	1.78	0.83
1:B:51:THR:H	1:B:54:HIS:HD2	1.25	0.83
1:F:51:THR:H	1:F:54:HIS:HD2	1.25	0.81
1:F:265:LEU:CD1	1:F:273:MET:HE2	2.09	0.81
1:F:265:LEU:HD11	1:F:273:MET:CE	2.09	0.81
1:D:51:THR:H	1:D:54:HIS:HD2	1.28	0.80
1:C:126:THR:HG22	1:C:129:GLU:H	1.46	0.80
1:A:141:LYS:HE2	4:A:3105:HOH:O	1.84	0.77
1:E:75:GLN:NE2	1:E:266:ASP:H	1.83	0.76
1:F:265:LEU:CD1	1:F:273:MET:HE1	2.16	0.75
1:C:210:ASP:HA	1:C:338:ASP:HB2	1.70	0.73
1:A:72:LEU:HD13	1:A:265:LEU:HD12	1.71	0.72
1:E:171:ASP:HB3	4:E:3125:HOH:O	1.88	0.71
1:E:75:GLN:HE22	1:E:265:LEU:HA	1.55	0.70
1:D:284:GLY:CA	1:E:267:GLN:OE1	2.39	0.70
1:C:267:GLN:HE22	1:E:284:GLY:H	1.37	0.70
1:F:265:LEU:HD12	1:F:273:MET:HE3	1.73	0.69
1:C:75:GLN:HE22	1:C:265:LEU:HA	1.58	0.69
1:F:265:LEU:HD11	1:F:273:MET:HE2	1.74	0.68
1:A:225:ASP:OD1	1:D:2:SER:N	2.27	0.68
1:B:51:THR:H	1:B:54:HIS:CD2	2.10	0.68
1:F:265:LEU:HD11	1:F:273:MET:HE1	1.75	0.68
1:D:296:LEU:CD2	1:D:305:LYS:HD3	2.24	0.68
1:A:71:HIS:HD2	1:A:273:MET:CE	2.08	0.67
1:E:195:PRO:HB2	1:E:198:ARG:HG3	1.77	0.66
1:F:75:GLN:HE22	1:F:265:LEU:HA	1.61	0.65
1:E:75:GLN:HE22	1:E:266:ASP:H	1.44	0.65
1:B:167:LYS:HE3	4:B:3196:HOH:O	1.95	0.64
1:B:269:ARG:HD2	1:B:269:ARG:N	2.12	0.64
1:C:196:ILE:HG22	4:C:3114:HOH:O	1.98	0.63
1:D:296:LEU:HD22	1:D:305:LYS:HD3	1.80	0.63
1:A:57:ARG:H	1:A:314:HIS:HD2	1.46	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:51:THR:H	1:D:54:HIS:CD2	2.16	0.62
1:F:51:THR:H	1:F:54:HIS:CD2	2.12	0.62
1:B:214:GLN:HG2	1:B:337:GLY:O	2.00	0.62
1:F:270:LEU:O	1:F:274:LYS:HG2	2.00	0.61
1:C:336:ALA:H	1:C:344:LEU:HD13	1.67	0.60
1:E:51:THR:H	1:E:54:HIS:CD2	2.12	0.60
1:F:80:ASP:O	1:F:83:GLU:HG2	2.02	0.60
1:F:75:GLN:HG3	1:F:269:ARG:HD3	1.84	0.59
1:C:267:GLN:NE2	1:E:284:GLY:H	1.99	0.59
1:F:126:THR:HG21	4:F:3083:HOH:O	2.02	0.59
1:F:126:THR:HG22	1:F:129:GLU:H	1.68	0.59
1:C:75:GLN:NE2	1:C:266:ASP:H	2.02	0.58
1:A:75:GLN:NE2	1:A:266:ASP:H	2.01	0.58
1:C:51:THR:H	1:C:54:HIS:CD2	2.14	0.58
1:D:48:MET:HG3	4:D:3221:HOH:O	2.03	0.58
1:F:75:GLN:NE2	1:F:266:ASP:H	2.02	0.57
1:D:305:LYS:NZ	1:D:322:GLU:OE1	2.38	0.57
1:A:75:GLN:HE22	1:A:266:ASP:H	1.52	0.57
1:F:350:PRO:O	1:F:354:VAL:HG23	2.06	0.56
1:A:296:LEU:HD13	1:A:305:LYS:HE3	1.88	0.56
1:C:362:ARG:HD3	4:C:3234:HOH:O	2.04	0.56
1:F:205:HIS:HB2	1:F:335:GLY:O	2.06	0.56
1:B:201:ARG:O	1:B:333:ASN:HB2	2.07	0.54
1:A:71:HIS:HD2	1:A:273:MET:HE2	1.72	0.54
1:B:5:ASN:HB3	4:B:3204:HOH:O	2.08	0.54
1:B:269:ARG:HD2	1:B:269:ARG:H	1.72	0.54
1:D:284:GLY:HA3	1:E:267:GLN:HE22	1.73	0.54
1:D:274:LYS:HD2	1:D:322:GLU:OE2	2.06	0.54
1:D:59:ALA:HB2	1:D:311:ILE:HB	1.90	0.53
1:F:296:LEU:HD13	1:F:305:LYS:HE3	1.91	0.53
1:F:320:ARG:HD3	4:F:3085:HOH:O	2.07	0.53
1:A:336:ALA:H	1:A:344:LEU:HD13	1.74	0.53
1:C:115:THR:HG22	4:C:3041:HOH:O	2.08	0.53
1:A:265:LEU:HD21	1:A:273:MET:HE3	1.90	0.53
1:E:59:ALA:HB2	1:E:311:ILE:HB	1.91	0.53
1:E:201:ARG:O	1:E:333:ASN:HB2	2.08	0.52
1:B:163:HIS:HD2	4:B:3207:HOH:O	1.92	0.52
1:B:119:MET:HG3	1:B:215:TRP:HB3	1.90	0.52
1:A:71:HIS:HD2	1:A:273:MET:HE3	1.73	0.52
1:C:80:ASP:O	1:C:83:GLU:HG2	2.09	0.52
1:C:267:GLN:HE22	1:E:284:GLY:N	2.08	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:268:LYS:HE3	4:B:3162:HOH:O	2.08	0.52
1:C:269:ARG:N	1:C:269:ARG:HD2	2.25	0.51
1:F:75:GLN:CG	1:F:269:ARG:HD3	2.41	0.51
1:A:318:MET:HB3	1:A:329:MET:SD	2.51	0.51
1:C:132:ASP:O	1:C:136:ARG:HG2	2.11	0.50
1:F:269:ARG:N	1:F:269:ARG:HD2	2.26	0.50
1:B:48[A]:MET:HE2	4:B:3142:HOH:O	2.12	0.50
1:C:318:MET:HB3	1:C:329:MET:SD	2.51	0.50
1:D:201:ARG:O	1:D:333:ASN:HB2	2.12	0.49
1:A:71:HIS:CD2	1:A:273:MET:HE2	2.47	0.49
1:B:349:GLU:HB3	1:B:353:ARG:NH1	2.27	0.49
1:E:316:SER:HB3	1:E:331:ILE:HG23	1.95	0.49
1:B:353:ARG:NH1	4:B:3289:HOH:O	2.19	0.48
1:D:318:MET:HB3	1:D:329:MET:SD	2.53	0.48
1:F:48:MET:N	4:F:3197:HOH:O	2.45	0.48
1:F:205:HIS:CB	1:F:335:GLY:O	2.61	0.48
1:B:117:MET:HG3	1:B:118:PRO:HD2	1.95	0.48
1:B:45:PHE:CZ	1:B:224:VAL:HG12	2.49	0.48
1:D:126:THR:HG22	1:D:129:GLU:H	1.78	0.48
1:A:181:LEU:O	4:A:3142:HOH:O	2.20	0.48
1:F:75:GLN:HE22	1:F:265:LEU:CA	2.27	0.48
1:F:201:ARG:O	1:F:333:ASN:HB2	2.13	0.47
1:D:285:SER:CB	1:D:308:LEU:HD22	2.44	0.47
1:F:280:ALA:HB2	1:F:290:ASN:OD1	2.15	0.47
1:B:75:GLN:HB3	1:B:269:ARG:HD3	1.96	0.47
1:D:296:LEU:HD22	1:D:305:LYS:CD	2.43	0.47
1:D:112:ASP:OD2	1:D:114:GLU:HB3	2.15	0.47
1:D:285:SER:HB3	1:D:308:LEU:HD22	1.96	0.47
1:A:58:ILE:HD13	1:A:252:ILE:HD11	1.97	0.46
1:F:298:ARG:NH2	4:F:3178:HOH:O	2.47	0.46
1:A:179:ALA:HB3	1:A:180:PRO:HD3	1.97	0.46
1:E:80:ASP:O	1:E:83:GLU:HG2	2.16	0.46
1:F:260:PHE:CG	1:F:320:ARG:HD2	2.51	0.46
1:B:59:ALA:HB2	1:B:311:ILE:HB	1.97	0.46
1:E:75:GLN:HE22	1:E:266:ASP:N	2.13	0.46
1:F:172:HIS:CE1	1:F:176:ARG:HD3	2.51	0.46
1:C:59:ALA:HB2	1:C:311:ILE:HB	1.98	0.45
1:D:30:PRO:HG2	1:D:324:THR:O	2.15	0.45
1:B:223:PRO:HD3	1:B:228:TRP:CZ2	2.51	0.45
1:A:59:ALA:HB2	1:A:311:ILE:HB	1.97	0.45
1:B:306:GLY:HA3	1:B:318:MET:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:112:ASP:OD2	1:B:114[B]:GLU:HB2	2.17	0.45
1:A:201:ARG:O	1:A:333:ASN:HB2	2.17	0.45
1:C:199:GLU:HG2	1:C:200:ALA:O	2.17	0.45
1:D:282:PHE:CE2	1:D:283:PRO:O	2.70	0.45
1:A:72:LEU:HD13	1:A:265:LEU:CD1	2.44	0.44
1:E:59:ALA:O	1:E:243:GLY:HA2	2.17	0.44
1:F:318:MET:HB3	1:F:329:MET:SD	2.57	0.44
1:E:66:ILE:HG13	1:E:241:ALA:O	2.17	0.44
1:A:78:THR:HG23	1:A:79:VAL:HG23	1.98	0.44
1:D:282:PHE:CD2	1:D:283:PRO:O	2.71	0.44
1:E:20:VAL:HG13	1:E:334:SER:HB2	2.00	0.44
1:B:30:PRO:HG3	1:B:324:THR:O	2.17	0.43
1:B:260:PHE:CB	1:B:320:ARG:HD2	2.48	0.43
1:C:316:SER:HB3	1:C:331:ILE:HG23	2.00	0.43
1:D:113:PHE:HB3	1:D:134:SER:OG	2.18	0.43
1:F:29:LEU:HB3	1:F:30:PRO:HD2	2.00	0.43
1:C:201:ARG:O	1:C:333:ASN:HB2	2.19	0.43
1:B:296:LEU:HD23	1:B:303:GLU:OE1	2.19	0.43
1:E:271:TRP:CD1	1:E:275:ASP:HB2	2.53	0.43
1:E:179:ALA:HB3	1:E:180:PRO:HD3	2.01	0.43
1:A:296:LEU:HD11	1:A:303:GLU:OE2	2.19	0.42
1:D:283:PRO:HA	1:D:284:GLY:HA2	1.86	0.42
1:C:48:MET:HA	1:C:49:PRO:HD2	1.88	0.42
1:F:204:MET:CA	1:F:205:HIS:HB2	2.36	0.42
1:B:320:ARG:HD3	4:B:3212:HOH:O	2.19	0.42
1:C:75:GLN:HE22	1:C:266:ASP:H	1.68	0.42
1:D:120:ILE:HG13	1:D:233:TRP:CG	2.55	0.42
1:A:201:ARG:HD3	1:A:229:ASP:OD2	2.20	0.42
1:E:30:PRO:HG3	1:E:324:THR:O	2.20	0.42
1:F:59:ALA:HB2	1:F:311:ILE:HB	2.02	0.42
1:B:102:ILE:HD12	1:B:144:TRP:CE2	2.56	0.41
1:E:318:MET:HB3	1:E:329:MET:SD	2.60	0.41
1:D:344:LEU:HD12	1:D:344:LEU:HA	1.87	0.41
1:A:30:PRO:CG	1:A:362:ARG:HH21	2.33	0.41
1:A:68:THR:N	1:A:273:MET:HE1	2.36	0.41
1:E:265:LEU:HG	1:E:269:ARG:HB3	2.03	0.41
1:C:349:GLU:O	1:C:353:ARG:HG2	2.20	0.41
1:F:51:THR:N	1:F:54:HIS:HD2	2.05	0.41
1:A:60:SER:O	1:A:63:LYS:HB2	2.20	0.41
1:E:5:ASN:HD22	1:E:5:ASN:H	1.67	0.41
1:D:296:LEU:HD13	1:D:303:GLU:OE2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:268:LYS:HD3	1:F:281:PHE:CD2	2.55	0.41
1:D:179:ALA:HB3	1:D:180:PRO:HD3	2.03	0.41
1:E:196:ILE:H	1:E:196:ILE:HG13	1.63	0.41
1:F:260:PHE:CB	1:F:320:ARG:HD2	2.50	0.40
1:D:80:ASP:O	1:D:83:GLU:HG2	2.21	0.40
1:D:284:GLY:C	4:D:3069:HOH:O	2.60	0.40
1:A:280:ALA:HB2	1:A:290:ASN:OD1	2.20	0.40
1:E:5:ASN:HD22	1:E:5:ASN:N	2.18	0.40
1:E:2:SER:OG	1:E:5:ASN:ND2	2.55	0.40
1:C:119:MET:CG	1:C:215:TRP:HB3	2.52	0.40
1:C:359:LYS:HE2	1:C:359:LYS:HB3	1.89	0.40
1:D:284:GLY:HA3	1:E:267:GLN:NE2	2.35	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	361/363 (99%)	353 (98%)	7 (2%)	1 (0%)	41	50
1	B	357/363 (98%)	342 (96%)	12 (3%)	3 (1%)	19	23
1	C	359/363 (99%)	348 (97%)	10 (3%)	1 (0%)	41	50
1	D	347/363 (96%)	332 (96%)	14 (4%)	1 (0%)	41	50
1	E	336/363 (93%)	326 (97%)	8 (2%)	2 (1%)	25	31
1	F	326/363 (90%)	314 (96%)	12 (4%)	0	100	100
All	All	2086/2178 (96%)	2015 (97%)	63 (3%)	8 (0%)	34	42

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	224	VAL

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Mol	Chain	Res	Type
1	C	243	GLY
1	A	243	GLY
1	B	225	ASP
1	B	243	GLY
1	D	243	GLY
1	E	243	GLY
1	E	312	PRO

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	301/301 (100%)	292 (97%)	9 (3%)	41	57
1	B	300/301 (100%)	293 (98%)	7 (2%)	50	67
1	C	299/301 (99%)	288 (96%)	11 (4%)	34	48
1	D	291/301 (97%)	282 (97%)	9 (3%)	40	55
1	E	285/301 (95%)	277 (97%)	8 (3%)	43	60
1	F	277/301 (92%)	265 (96%)	12 (4%)	29	40
All	All	1753/1806 (97%)	1697 (97%)	56 (3%)	39	54

All (56) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	72	LEU
1	A	115	THR
1	A	196	ILE
1	A	201	ARG
1	A	265	LEU
1	A	307	HIS
1	A	320	ARG
1	A	344	LEU
1	A	345	LYS
1	B	92	LEU
1	B	97	GLN

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Mol	Chain	Res	Type
1	B	112	ASP
1	B	269	ARG
1	B	307	HIS
1	B	329	MET
1	B	363	SER
1	C	48	MET
1	C	112	ASP
1	C	115	THR
1	C	126	THR
1	C	227	VAL
1	C	236	LEU
1	C	269	ARG
1	C	307	HIS
1	C	329	MET
1	C	344	LEU
1	C	353	ARG
1	D	97	GLN
1	D	114	GLU
1	D	119	MET
1	D	122	ASP
1	D	126	THR
1	D	173	LEU
1	D	307	HIS
1	D	320	ARG
1	D	329	MET
1	E	35	SER
1	E	196	ILE
1	E	198	ARG
1	E	201	ARG
1	E	265	LEU
1	E	307	HIS
1	E	329	MET
1	E	353	ARG
1	F	6	ASN
1	F	23	VAL
1	F	48	MET
1	F	78	THR
1	F	112	ASP
1	F	114	GLU
1	F	124	SER
1	F	126	THR
1	F	136	ARG

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Mol	Chain	Res	Type
1	F	184	LYS
1	F	269	ARG
1	F	307	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	46	ASN
1	A	54	HIS
1	A	71	HIS
1	A	75	GLN
1	A	205	HIS
1	A	267	GLN
1	A	314	HIS
1	B	54	HIS
1	B	163	HIS
1	B	267	GLN
1	B	348	ASN
1	B	360	ASN
1	C	54	HIS
1	C	75	GLN
1	C	267	GLN
1	C	348	ASN
1	D	6	ASN
1	D	54	HIS
1	D	360	ASN
1	E	5	ASN
1	E	46	ASN
1	E	54	HIS
1	E	75	GLN
1	E	163	HIS
1	E	205	HIS
1	F	54	HIS
1	F	75	GLN
1	F	205	HIS

5.3.3 RNA (i)

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 32 ligands modelled in this entry, 26 are monoatomic - leaving 6 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	PHE	A	2001	-	11,12,12	0.82	0	14,15,15	1.01	2 (14%)
3	PHE	B	2002	-	11,12,12	0.76	0	14,15,15	0.95	2 (14%)
3	PHE	E	2005	-	11,12,12	0.77	0	14,15,15	0.95	2 (14%)
3	PHE	C	2003	-	11,12,12	0.79	0	14,15,15	0.82	1 (7%)
3	PHE	F	2006	2	11,12,12	0.78	0	14,15,15	1.20	2 (14%)
3	PHE	D	2004	2	11,12,12	0.74	0	14,15,15	0.98	2 (14%)

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	PHE	A	2001	-	-	0/8/8/8	0/1/1/1
3	PHE	B	2002	-	-	1/8/8/8	0/1/1/1
3	PHE	E	2005	-	-	0/8/8/8	0/1/1/1
3	PHE	C	2003	-	-	0/8/8/8	0/1/1/1
3	PHE	F	2006	2	-	4/8/8/8	0/1/1/1
3	PHE	D	2004	2	-	0/8/8/8	0/1/1/1

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	2006	PHE	OXT-C-O	-3.44	116.28	124.09
3	A	2001	PHE	OXT-C-O	-2.89	117.53	124.09
3	F	2006	PHE	OXT-C-CA	2.80	122.92	113.38
3	D	2004	PHE	OXT-C-O	-2.65	118.08	124.09
3	E	2005	PHE	OXT-C-CA	2.45	121.72	113.38
3	B	2002	PHE	OXT-C-CA	2.43	121.66	113.38
3	D	2004	PHE	OXT-C-CA	2.36	121.44	113.38
3	B	2002	PHE	OXT-C-O	-2.34	118.78	124.09
3	A	2001	PHE	OXT-C-CA	2.33	121.33	113.38
3	C	2003	PHE	OXT-C-O	-2.28	118.90	124.09
3	E	2005	PHE	OXT-C-O	-2.19	119.12	124.09

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	F	2006	PHE	C-CA-CB-CG
3	F	2006	PHE	OXT-C-CA-N
3	F	2006	PHE	N-CA-CB-CG
3	F	2006	PHE	O-C-CA-N
3	B	2002	PHE	O-C-CA-CB

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, 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	362/363 (99%)	-0.25	4 (1%)	80	85	12, 27, 39, 54	0
1	B	359/363 (98%)	-0.36	6 (1%)	70	76	9, 17, 44, 55	0
1	C	361/363 (99%)	-0.27	8 (2%)	62	69	10, 22, 40, 46	0
1	D	350/363 (96%)	-0.32	3 (0%)	84	88	9, 19, 37, 52	0
1	E	342/363 (94%)	-0.08	8 (2%)	60	67	12, 28, 49, 59	0
1	F	330/363 (90%)	-0.05	7 (2%)	63	70	16, 30, 43, 54	0
All	All	2104/2178 (96%)	-0.23	36 (1%)	70	76	9, 24, 44, 59	0

All (36) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	363	SER	5.4
1	E	45	PHE	4.5
1	E	48	MET	4.1
1	F	4	LEU	4.0
1	F	228	TRP	3.7
1	F	6	ASN	3.6
1	F	48	MET	3.1
1	B	212	ASN	3.1
1	E	343	TYR	2.9
1	E	226	GLY	2.8
1	C	45	PHE	2.8
1	E	41	TYR	2.7
1	C	207	ALA	2.7
1	C	41	TYR	2.7
1	A	2	SER	2.7
1	F	41	TYR	2.6
1	D	363	SER	2.5
1	D	119	MET	2.4
1	A	45	PHE	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	224	VAL	2.4
1	B	31	GLY	2.4
1	E	203	TYR	2.4
1	C	363	SER	2.4
1	C	4	LEU	2.4
1	E	227	VAL	2.3
1	E	228	TRP	2.3
1	C	360	ASN	2.2
1	B	208	ALA	2.2
1	C	208	ALA	2.2
1	F	120	ILE	2.2
1	F	205	HIS	2.2
1	D	118	PRO	2.2
1	B	211	GLU	2.2
1	A	41	TYR	2.1
1	C	47	LYS	2.0
1	A	363	SER	2.0

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 ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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
2	BA	A	3020	1/1	0.79	0.12	46,46,46,46	1
3	PHE	E	2005	12/12	0.82	0.24	33,38,40,40	0
3	PHE	F	2006	12/12	0.82	0.23	40,42,42,42	0
2	BA	E	3018	1/1	0.83	0.16	50,50,50,50	1
2	BA	F	3021	1/1	0.85	0.17	42,42,42,42	1
3	PHE	D	2004	12/12	0.86	0.22	37,40,43,43	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
2	BA	B	3010	1/1	0.87	0.43	49,49,49,49	1
2	BA	D	3014	1/1	0.89	0.56	45,45,45,45	1
3	PHE	C	2003	12/12	0.90	0.17	36,38,39,39	0
2	BA	A	3004	1/1	0.92	0.08	62,62,62,62	1
3	PHE	B	2002	12/12	0.92	0.15	33,34,35,35	0
2	BA	D	3022	1/1	0.92	0.11	53,53,53,53	1
2	BA	E	3012	1/1	0.92	0.15	44,44,44,44	1
2	BA	C	3013	1/1	0.92	0.24	46,46,46,46	1
2	BA	E	3019	1/1	0.92	0.14	48,48,48,48	1
2	BA	F	3016	1/1	0.93	0.06	48,48,48,48	1
2	BA	A	3009	1/1	0.93	0.34	48,48,48,48	1
3	PHE	A	2001	12/12	0.93	0.15	31,33,33,33	0
2	BA	D	3017	1/1	0.93	0.09	57,57,57,57	1
2	BA	C	3011	1/1	0.96	0.07	47,47,47,47	1
2	BA	E	3024	1/1	0.97	0.07	44,44,44,44	1
2	BA	F	3008	1/1	0.97	0.20	24,24,24,24	1
2	BA	F	3007	1/1	0.98	0.18	67,67,67,67	1
2	BA	D	3015	1/1	0.98	0.03	52,52,52,52	1
2	BA	B	3002	1/1	0.99	0.09	32,32,32,32	1
2	BA	F	3025	1/1	0.99	0.07	36,36,36,36	1
2	BA	C	3005	1/1	0.99	0.09	22,22,22,22	1
2	BA	F	3006	1/1	0.99	0.06	30,30,30,30	1
2	BA	C	3001	1/1	1.00	0.08	27,27,27,27	1
2	BA	A	3003	1/1	1.00	0.12	21,21,21,21	1
2	BA	D	3023[A]	1/1	1.00	0.07	33,33,33,33	1
2	BA	D	3023[B]	1/1	1.00	0.07	39,39,39,39	1

6.5 Other polymers ⓘ

There are no such residues in this entry.