



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 17, 2026 – 10:54 PM UTC

PDB ID : 5JXF / pdb_00005jxf
Title : Crystal structure of Flavobacterium psychrophilum DPP11 in complex with dipeptide Arg-Asp
Authors : Bezerra, G.A.; Fedosyuk, S.; Ohara-Nemoto, Y.; Nemoto, T.K.; Djjinovic-Carugo, K.
Deposited on : 2016-05-13
Resolution : 2.10 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

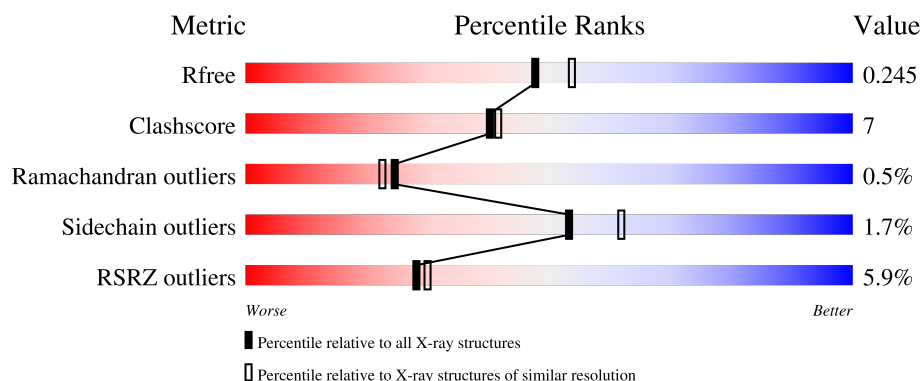
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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}	180053	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

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 $\leq 5\%$. 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	731	 4% 80% 13% • 5%
1	B	731	 % 83% 11% 5%
1	C	731	 7% 77% 16% 7%
1	D	731	 10% 76% 16% • 6%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 22036 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 Asp/Glu-specific dipeptidyl-peptidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	694	Total	C	N	O	S	0	0	0
			5457	3500	898	1040	19			
1	B	692	Total	C	N	O	S	0	0	0
			5503	3532	910	1042	19			
1	C	682	Total	C	N	O	S	0	0	0
			5272	3380	870	1003	19			
1	D	685	Total	C	N	O	S	0	0	0
			5267	3376	865	1007	19			

There are 148 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-17	MET	-	initiating methionine	UNP A6GWM2
A	-16	GLY	-	expression tag	UNP A6GWM2
A	-15	GLY	-	expression tag	UNP A6GWM2
A	-14	SER	-	expression tag	UNP A6GWM2
A	-13	HIS	-	expression tag	UNP A6GWM2
A	-12	HIS	-	expression tag	UNP A6GWM2
A	-11	HIS	-	expression tag	UNP A6GWM2
A	-10	HIS	-	expression tag	UNP A6GWM2
A	-9	HIS	-	expression tag	UNP A6GWM2
A	-8	HIS	-	expression tag	UNP A6GWM2
A	-7	GLY	-	expression tag	UNP A6GWM2
A	-6	MET	-	expression tag	UNP A6GWM2
A	-5	ALA	-	expression tag	UNP A6GWM2
A	-4	SER	-	expression tag	UNP A6GWM2
A	-3	MET	-	expression tag	UNP A6GWM2
A	-2	THR	-	expression tag	UNP A6GWM2
A	-1	GLY	-	expression tag	UNP A6GWM2
A	0	GLY	-	expression tag	UNP A6GWM2
A	1	GLN	-	expression tag	UNP A6GWM2
A	2	GLN	-	expression tag	UNP A6GWM2
A	3	MET	-	expression tag	UNP A6GWM2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	4	GLY	-	expression tag	UNP A6GWM2
A	5	ARG	-	expression tag	UNP A6GWM2
A	6	ASP	-	expression tag	UNP A6GWM2
A	7	LEU	-	expression tag	UNP A6GWM2
A	8	TYR	-	expression tag	UNP A6GWM2
A	9	ASP	-	expression tag	UNP A6GWM2
A	10	ASP	-	expression tag	UNP A6GWM2
A	11	ASP	-	expression tag	UNP A6GWM2
A	12	ASP	-	expression tag	UNP A6GWM2
A	13	LYS	-	expression tag	UNP A6GWM2
A	14	ASP	-	expression tag	UNP A6GWM2
A	15	PRO	-	expression tag	UNP A6GWM2
A	16	THR	-	expression tag	UNP A6GWM2
A	17	LEU	-	expression tag	UNP A6GWM2
A	133	ILE	VAL	conflict	UNP A6GWM2
A	442	SER	ALA	conflict	UNP A6GWM2
B	-17	MET	-	initiating methionine	UNP A6GWM2
B	-16	GLY	-	expression tag	UNP A6GWM2
B	-15	GLY	-	expression tag	UNP A6GWM2
B	-14	SER	-	expression tag	UNP A6GWM2
B	-13	HIS	-	expression tag	UNP A6GWM2
B	-12	HIS	-	expression tag	UNP A6GWM2
B	-11	HIS	-	expression tag	UNP A6GWM2
B	-10	HIS	-	expression tag	UNP A6GWM2
B	-9	HIS	-	expression tag	UNP A6GWM2
B	-8	HIS	-	expression tag	UNP A6GWM2
B	-7	GLY	-	expression tag	UNP A6GWM2
B	-6	MET	-	expression tag	UNP A6GWM2
B	-5	ALA	-	expression tag	UNP A6GWM2
B	-4	SER	-	expression tag	UNP A6GWM2
B	-3	MET	-	expression tag	UNP A6GWM2
B	-2	THR	-	expression tag	UNP A6GWM2
B	-1	GLY	-	expression tag	UNP A6GWM2
B	0	GLY	-	expression tag	UNP A6GWM2
B	1	GLN	-	expression tag	UNP A6GWM2
B	2	GLN	-	expression tag	UNP A6GWM2
B	3	MET	-	expression tag	UNP A6GWM2
B	4	GLY	-	expression tag	UNP A6GWM2
B	5	ARG	-	expression tag	UNP A6GWM2
B	6	ASP	-	expression tag	UNP A6GWM2
B	7	LEU	-	expression tag	UNP A6GWM2
B	8	TYR	-	expression tag	UNP A6GWM2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	9	ASP	-	expression tag	UNP A6GWM2
B	10	ASP	-	expression tag	UNP A6GWM2
B	11	ASP	-	expression tag	UNP A6GWM2
B	12	ASP	-	expression tag	UNP A6GWM2
B	13	LYS	-	expression tag	UNP A6GWM2
B	14	ASP	-	expression tag	UNP A6GWM2
B	15	PRO	-	expression tag	UNP A6GWM2
B	16	THR	-	expression tag	UNP A6GWM2
B	17	LEU	-	expression tag	UNP A6GWM2
B	133	ILE	VAL	conflict	UNP A6GWM2
B	442	SER	ALA	conflict	UNP A6GWM2
C	-17	MET	-	initiating methionine	UNP A6GWM2
C	-16	GLY	-	expression tag	UNP A6GWM2
C	-15	GLY	-	expression tag	UNP A6GWM2
C	-14	SER	-	expression tag	UNP A6GWM2
C	-13	HIS	-	expression tag	UNP A6GWM2
C	-12	HIS	-	expression tag	UNP A6GWM2
C	-11	HIS	-	expression tag	UNP A6GWM2
C	-10	HIS	-	expression tag	UNP A6GWM2
C	-9	HIS	-	expression tag	UNP A6GWM2
C	-8	HIS	-	expression tag	UNP A6GWM2
C	-7	GLY	-	expression tag	UNP A6GWM2
C	-6	MET	-	expression tag	UNP A6GWM2
C	-5	ALA	-	expression tag	UNP A6GWM2
C	-4	SER	-	expression tag	UNP A6GWM2
C	-3	MET	-	expression tag	UNP A6GWM2
C	-2	THR	-	expression tag	UNP A6GWM2
C	-1	GLY	-	expression tag	UNP A6GWM2
C	0	GLY	-	expression tag	UNP A6GWM2
C	1	GLN	-	expression tag	UNP A6GWM2
C	2	GLN	-	expression tag	UNP A6GWM2
C	3	MET	-	expression tag	UNP A6GWM2
C	4	GLY	-	expression tag	UNP A6GWM2
C	5	ARG	-	expression tag	UNP A6GWM2
C	6	ASP	-	expression tag	UNP A6GWM2
C	7	LEU	-	expression tag	UNP A6GWM2
C	8	TYR	-	expression tag	UNP A6GWM2
C	9	ASP	-	expression tag	UNP A6GWM2
C	10	ASP	-	expression tag	UNP A6GWM2
C	11	ASP	-	expression tag	UNP A6GWM2
C	12	ASP	-	expression tag	UNP A6GWM2
C	13	LYS	-	expression tag	UNP A6GWM2

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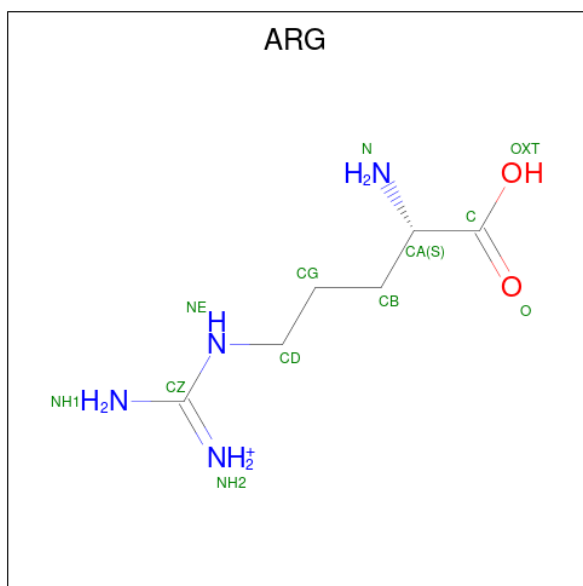
Chain	Residue	Modelled	Actual	Comment	Reference
C	14	ASP	-	expression tag	UNP A6GWM2
C	15	PRO	-	expression tag	UNP A6GWM2
C	16	THR	-	expression tag	UNP A6GWM2
C	17	LEU	-	expression tag	UNP A6GWM2
C	133	ILE	VAL	conflict	UNP A6GWM2
C	442	SER	ALA	conflict	UNP A6GWM2
D	-17	MET	-	initiating methionine	UNP A6GWM2
D	-16	GLY	-	expression tag	UNP A6GWM2
D	-15	GLY	-	expression tag	UNP A6GWM2
D	-14	SER	-	expression tag	UNP A6GWM2
D	-13	HIS	-	expression tag	UNP A6GWM2
D	-12	HIS	-	expression tag	UNP A6GWM2
D	-11	HIS	-	expression tag	UNP A6GWM2
D	-10	HIS	-	expression tag	UNP A6GWM2
D	-9	HIS	-	expression tag	UNP A6GWM2
D	-8	HIS	-	expression tag	UNP A6GWM2
D	-7	GLY	-	expression tag	UNP A6GWM2
D	-6	MET	-	expression tag	UNP A6GWM2
D	-5	ALA	-	expression tag	UNP A6GWM2
D	-4	SER	-	expression tag	UNP A6GWM2
D	-3	MET	-	expression tag	UNP A6GWM2
D	-2	THR	-	expression tag	UNP A6GWM2
D	-1	GLY	-	expression tag	UNP A6GWM2
D	0	GLY	-	expression tag	UNP A6GWM2
D	1	GLN	-	expression tag	UNP A6GWM2
D	2	GLN	-	expression tag	UNP A6GWM2
D	3	MET	-	expression tag	UNP A6GWM2
D	4	GLY	-	expression tag	UNP A6GWM2
D	5	ARG	-	expression tag	UNP A6GWM2
D	6	ASP	-	expression tag	UNP A6GWM2
D	7	LEU	-	expression tag	UNP A6GWM2
D	8	TYR	-	expression tag	UNP A6GWM2
D	9	ASP	-	expression tag	UNP A6GWM2
D	10	ASP	-	expression tag	UNP A6GWM2
D	11	ASP	-	expression tag	UNP A6GWM2
D	12	ASP	-	expression tag	UNP A6GWM2
D	13	LYS	-	expression tag	UNP A6GWM2
D	14	ASP	-	expression tag	UNP A6GWM2
D	15	PRO	-	expression tag	UNP A6GWM2
D	16	THR	-	expression tag	UNP A6GWM2
D	17	LEU	-	expression tag	UNP A6GWM2
D	133	ILE	VAL	conflict	UNP A6GWM2

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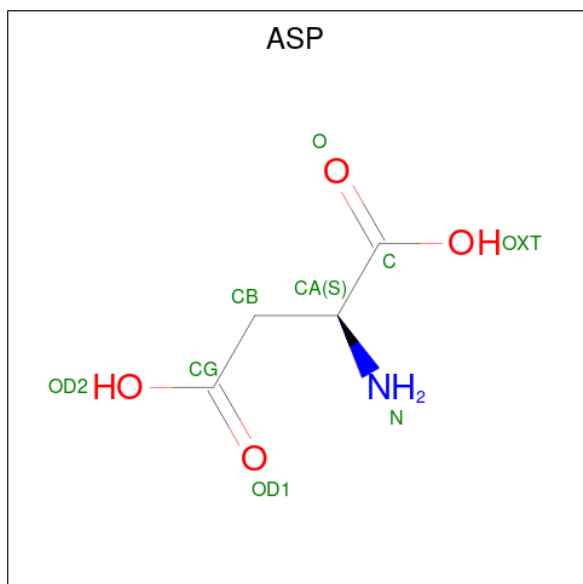
Chain	Residue	Modelled	Actual	Comment	Reference
D	442	SER	ALA	conflict	UNP A6GWM2

- Molecule 2 is ARGinine (CCD ID: ARG) (formula: $C_6H_{15}N_4O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			11	6	4	1		
2	B	1	Total	C	N	O	0	0
			11	6	4	1		

- Molecule 3 is ASPARTIC ACID (CCD ID: ASP) (formula: $C_4H_7NO_4$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			8	4	1	3		
3	B	1	Total	C	N	O	0	0
			8	4	1	3		

- Molecule 4 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	1	Total	Cl	0	0
			1	1		
4	D	2	Total	Cl	0	0
			2	2		

- Molecule 5 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	D	1	Total	Na	0	0
			1	1		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	89	Total	O	0	0
			89	89		
6	B	201	Total	O	0	0
			201	201		
6	C	152	Total	O	0	0
			152	152		
6	D	53	Total	O	0	0
			53	53		

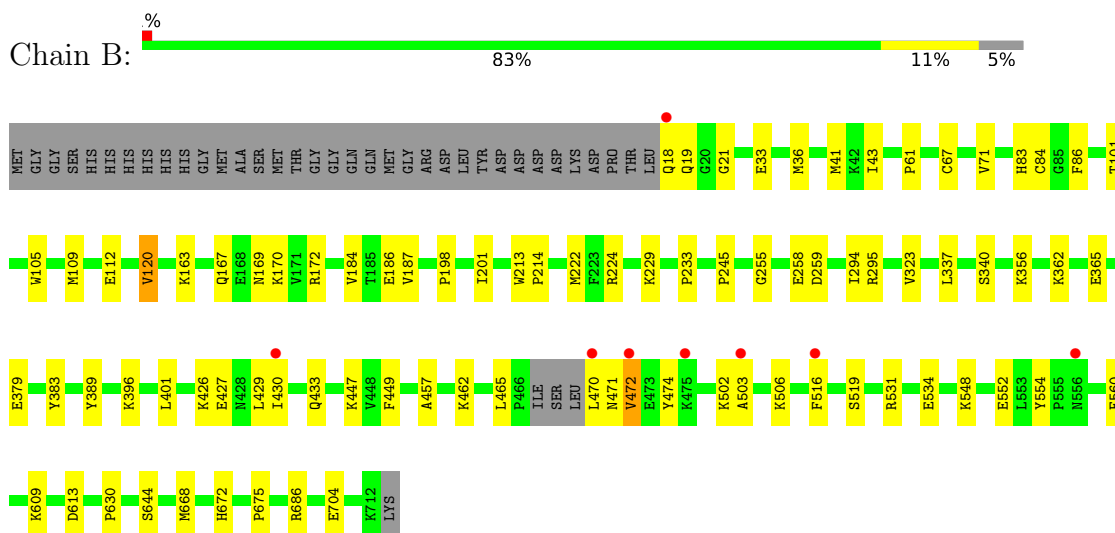
3 Residue-property plots [i](#)

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

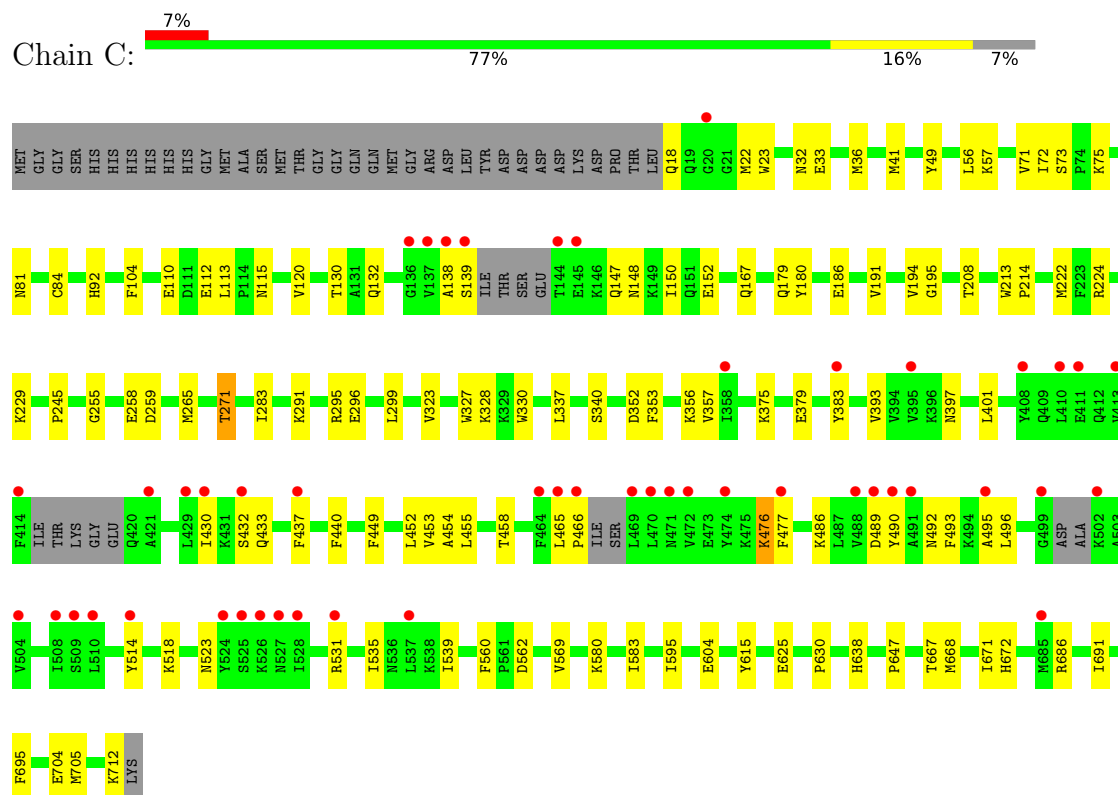
- Molecule 1: Asp/Glu-specific dipeptidyl-peptidase



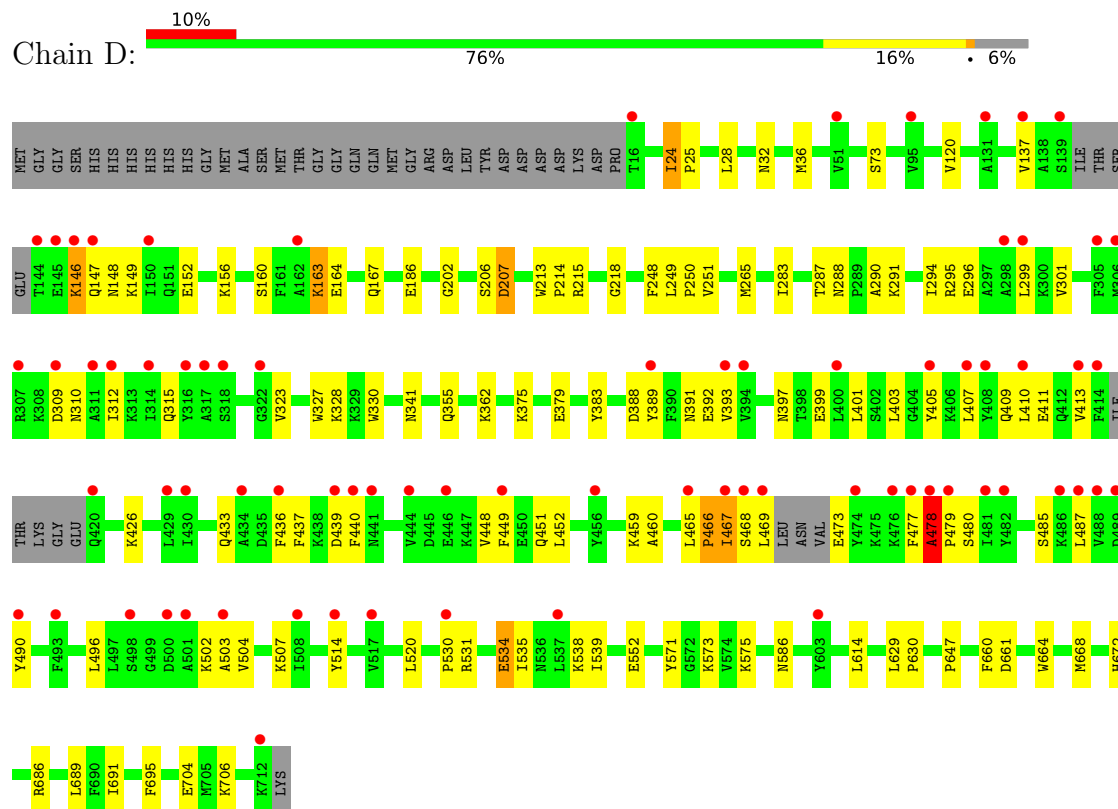
- Molecule 1: Asp/Glu-specific dipeptidyl-peptidase



• Molecule 1: Asp/Glu-specific dipeptidyl-peptidase



• Molecule 1: Asp/Glu-specific dipeptidyl-peptidase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	126.05Å 70.69Å 191.60Å 90.00° 97.26° 90.00°	Depositor
Resolution (Å)	46.83 – 2.10 46.83 – 2.10	Depositor EDS
% Data completeness (in resolution range)	98.8 (46.83-2.10) 98.8 (46.83-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.80 (at 2.10Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.196 , 0.244 0.201 , 0.245	Depositor DCC
R_{free} test set	9751 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å ²)	42.3	Xtriage
Anisotropy	0.506	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 53.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	22036	wwPDB-VP
Average B, all atoms (Å ²)	65.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.18% 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: CL, 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	0.52	0/5586	0.85	9/7578 (0.1%)
1	B	0.59	0/5631	0.80	0/7621
1	C	0.60	0/5395	0.85	3/7325 (0.0%)
1	D	0.46	0/5390	0.86	8/7326 (0.1%)
All	All	0.55	0/22002	0.84	20/29850 (0.1%)

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
1	D	0	1
All	All	0	2

There are no bond length outliers.

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	478	ALA	CA-C-N	-10.61	108.59	120.04
1	D	478	ALA	C-N-CA	-10.61	108.59	120.04
1	A	481	ILE	N-CA-C	-7.98	102.14	113.07
1	D	147	GLN	N-CA-C	-7.69	103.62	113.16
1	A	156	LYS	CD-CE-NZ	-7.15	89.02	111.90

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	480	SER	Peptide
1	D	146	LYS	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	5457	0	5265	67	0
1	B	5503	0	5409	56	0
1	C	5272	0	4980	77	0
1	D	5267	0	4928	78	0
2	A	11	0	12	1	0
2	B	11	0	12	0	0
3	A	8	0	4	1	0
3	B	8	0	4	0	0
4	C	1	0	0	0	0
4	D	2	0	0	0	0
5	D	1	0	0	0	0
6	A	89	0	0	0	0
6	B	201	0	0	3	0
6	C	152	0	0	3	0
6	D	53	0	0	0	0
All	All	22036	0	20614	278	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 7.

The worst 5 of 278 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:C:433:GLN:O	1:C:490:TYR:OH	1.86	0.91
1:A:145:GLU:HA	1:A:148:ASN:HB2	1.56	0.88
1:B:112:GLU:OE2	1:B:224:ARG:NH1	2.10	0.85
1:B:379:GLU:OE2	1:B:531:ARG:NH2	2.12	0.81
1:A:502:LYS:O	1:A:504:VAL:N	2.15	0.79

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	690/731 (94%)	647 (94%)	37 (5%)	6 (1%)	14	10
1	B	688/731 (94%)	662 (96%)	25 (4%)	1 (0%)	48	50
1	C	672/731 (92%)	641 (95%)	29 (4%)	2 (0%)	36	36
1	D	677/731 (93%)	633 (94%)	40 (6%)	4 (1%)	21	18
All	All	2727/2924 (93%)	2583 (95%)	131 (5%)	13 (0%)	24	22

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	143	GLU
1	A	502	LYS
1	A	503	ALA
1	D	206	SER
1	D	467	ILE

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	577/631 (91%)	564 (98%)	13 (2%)	44	51
1	B	593/631 (94%)	588 (99%)	5 (1%)	73	81
1	C	538/631 (85%)	532 (99%)	6 (1%)	65	74
1	D	530/631 (84%)	517 (98%)	13 (2%)	42	48
All	All	2238/2524 (89%)	2201 (98%)	37 (2%)	53	62

5 of 37 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	312	ILE
1	D	530	PRO
1	D	341	ASN
1	D	399	GLU
1	A	512	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 35 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	62	HIS
1	D	282	GLN
1	D	654	ASN
1	B	471	ASN
1	B	433	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	ASP	A	802	-	6,7,8	0.90	0	4,8,10	1.09	0
2	ARG	B	801	-	9,10,11	0.51	0	5,11,13	0.24	0
2	ARG	A	801	-	9,10,11	0.47	0	5,11,13	0.28	0
3	ASP	B	802	-	6,7,8	1.13	0	4,8,10	1.21	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	ASP	A	802	-	-	2/5/6/8	-
2	ARG	B	801	-	-	0/8/9/11	-
2	ARG	A	801	-	-	0/8/9/11	-
3	ASP	B	802	-	-	3/5/6/8	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	802	ASP	C-CA-CB-CG
3	B	802	ASP	O-C-CA-CB
3	B	802	ASP	C-CA-CB-CG
3	A	802	ASP	N-CA-CB-CG
3	B	802	ASP	N-CA-CB-CG

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	802	ASP	1	0
2	A	801	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 [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	694/731 (94%)	0.44	31 (4%) 38 40	35, 66, 106, 139	0
1	B	692/731 (94%)	0.06	8 (1%) 76 78	28, 50, 80, 99	0
1	C	682/731 (93%)	0.41	49 (7%) 21 23	28, 58, 108, 124	0
1	D	685/731 (93%)	0.82	75 (10%) 10 11	44, 73, 126, 143	0
All	All	2753/2924 (94%)	0.43	163 (5%) 28 30	28, 62, 112, 143	0

The worst 5 of 163 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	414	PHE	6.8
1	A	501	ALA	5.2
1	C	528	ILE	5.0
1	D	456	TYR	4.8
1	C	491	ALA	4.7

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 oligosaccharides 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($\text{\AA}^2$)	Q<0.9
5	NA	D	803	1/1	0.88	0.12	57,57,57,57	0
3	ASP	A	802	8/9	0.90	0.29	92,106,138,159	0
2	ARG	A	801	11/12	0.90	0.15	60,69,82,82	0
3	ASP	B	802	8/9	0.93	0.11	35,44,61,68	8
4	CL	D	801	1/1	0.95	0.07	81,81,81,81	0
2	ARG	B	801	11/12	0.95	0.09	33,44,57,60	0
4	CL	C	801	1/1	0.96	0.07	53,53,53,53	0
4	CL	D	802	1/1	0.98	0.05	41,41,41,41	0

6.5 Other polymers [i](#)

There are no such residues in this entry.