



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 12:14 PM UTC

PDB ID : 5V50 / pdb_00005v50
Title : Crystal Structure of MpPR-1i
Authors : Luo, Z.; Asojo, O.
Deposited on : 2017-03-12
Resolution : 2.43 Å(reported)

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

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<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
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

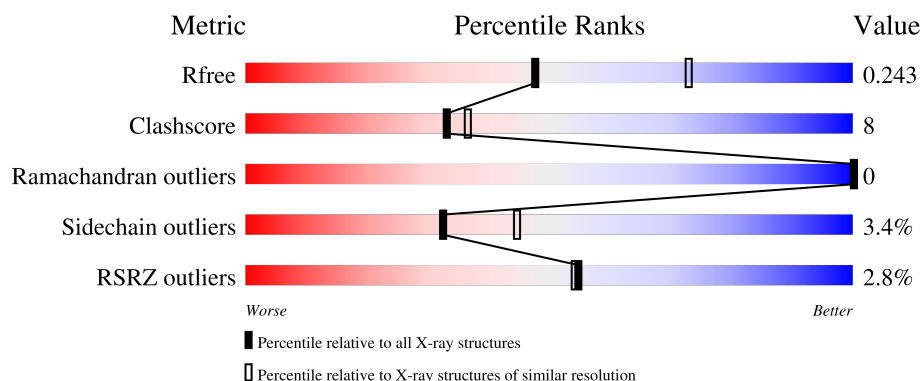
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.43 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	2340 (2.46-2.42)
Clashscore	190562	2400 (2.46-2.42)
Ramachandran outliers	187476	2379 (2.46-2.42)
Sidechain outliers	187428	2379 (2.46-2.42)
RSRZ outliers	180081	2340 (2.46-2.42)

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	175	2% 65% 11% 23%
1	B	175	% 65% 11% 24%
1	C	175	3% 59% 14% 26%
1	D	175	4% 63% 11% 24%
1	E	175	% 63% 13% 23%

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Mol	Chain	Length	Quality of chain
1	F	175	3% 63% 15% 21%
1	G	175	1% 69% 7% 23%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 7433 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 PR-1 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	134	Total	C	N	O	S	0	0	0
			1050	655	180	211	4			
1	B	133	Total	C	N	O	S	0	0	0
			1038	649	178	207	4			
1	C	129	Total	C	N	O	S	0	0	0
			1014	635	174	201	4			
1	D	133	Total	C	N	O	S	0	0	0
			1046	653	180	209	4			
1	E	134	Total	C	N	O	S	0	0	0
			1054	657	181	212	4			
1	F	138	Total	C	N	O	S	0	0	0
			1090	681	188	216	5			
1	G	135	Total	C	N	O	S	0	0	0
			1065	665	182	213	5			

There are 224 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	166	VAL	-	see remark 999	UNP H6U756
A	167	ARG	-	see remark 999	UNP H6U756
A	168	VAL	-	see remark 999	UNP H6U756
A	169	PRO	-	see remark 999	UNP H6U756
A	170	SER	-	see remark 999	UNP H6U756
A	171	LEU	-	see remark 999	UNP H6U756
A	172	ALA	-	see remark 999	UNP H6U756
A	173	LEU	-	see remark 999	UNP H6U756
A	174	LEU	-	see remark 999	UNP H6U756
A	175	ASN	-	see remark 999	UNP H6U756
A	176	LEU	-	see remark 999	UNP H6U756
A	177	ASP	-	see remark 999	UNP H6U756
A	178	LEU	-	see remark 999	UNP H6U756
A	179	THR	-	see remark 999	UNP H6U756
A	180	THR	-	see remark 999	UNP H6U756

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Chain	Residue	Modelled	Actual	Comment	Reference
A	181	PRO	-	see remark 999	UNP H6U756
A	182	PHE	-	see remark 999	UNP H6U756
A	183	CYS	-	see remark 999	UNP H6U756
A	184	ASN	-	see remark 999	UNP H6U756
A	185	LEU	-	see remark 999	UNP H6U756
A	186	PRO	-	see remark 999	UNP H6U756
A	187	VAL	-	see remark 999	UNP H6U756
A	188	ASN	-	see remark 999	UNP H6U756
A	189	GLY	-	see remark 999	UNP H6U756
A	190	SER	-	see remark 999	UNP H6U756
A	191	ASN	-	see remark 999	UNP H6U756
A	192	ASP	-	see remark 999	UNP H6U756
A	193	LEU	-	see remark 999	UNP H6U756
A	194	ASP	-	see remark 999	UNP H6U756
A	195	ILE	-	see remark 999	UNP H6U756
A	196	ARG	-	see remark 999	UNP H6U756
A	197	GLU	-	see remark 999	UNP H6U756
B	166	VAL	-	see remark 999	UNP H6U756
B	167	ARG	-	see remark 999	UNP H6U756
B	168	VAL	-	see remark 999	UNP H6U756
B	169	PRO	-	see remark 999	UNP H6U756
B	170	SER	-	see remark 999	UNP H6U756
B	171	LEU	-	see remark 999	UNP H6U756
B	172	ALA	-	see remark 999	UNP H6U756
B	173	LEU	-	see remark 999	UNP H6U756
B	174	LEU	-	see remark 999	UNP H6U756
B	175	ASN	-	see remark 999	UNP H6U756
B	176	LEU	-	see remark 999	UNP H6U756
B	177	ASP	-	see remark 999	UNP H6U756
B	178	LEU	-	see remark 999	UNP H6U756
B	179	THR	-	see remark 999	UNP H6U756
B	180	THR	-	see remark 999	UNP H6U756
B	181	PRO	-	see remark 999	UNP H6U756
B	182	PHE	-	see remark 999	UNP H6U756
B	183	CYS	-	see remark 999	UNP H6U756
B	184	ASN	-	see remark 999	UNP H6U756
B	185	LEU	-	see remark 999	UNP H6U756
B	186	PRO	-	see remark 999	UNP H6U756
B	187	VAL	-	see remark 999	UNP H6U756
B	188	ASN	-	see remark 999	UNP H6U756
B	189	GLY	-	see remark 999	UNP H6U756
B	190	SER	-	see remark 999	UNP H6U756

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Chain	Residue	Modelled	Actual	Comment	Reference
B	191	ASN	-	see remark 999	UNP H6U756
B	192	ASP	-	see remark 999	UNP H6U756
B	193	LEU	-	see remark 999	UNP H6U756
B	194	ASP	-	see remark 999	UNP H6U756
B	195	ILE	-	see remark 999	UNP H6U756
B	196	ARG	-	see remark 999	UNP H6U756
B	197	GLU	-	see remark 999	UNP H6U756
C	166	VAL	-	see remark 999	UNP H6U756
C	167	ARG	-	see remark 999	UNP H6U756
C	168	VAL	-	see remark 999	UNP H6U756
C	169	PRO	-	see remark 999	UNP H6U756
C	170	SER	-	see remark 999	UNP H6U756
C	171	LEU	-	see remark 999	UNP H6U756
C	172	ALA	-	see remark 999	UNP H6U756
C	173	LEU	-	see remark 999	UNP H6U756
C	174	LEU	-	see remark 999	UNP H6U756
C	175	ASN	-	see remark 999	UNP H6U756
C	176	LEU	-	see remark 999	UNP H6U756
C	177	ASP	-	see remark 999	UNP H6U756
C	178	LEU	-	see remark 999	UNP H6U756
C	179	THR	-	see remark 999	UNP H6U756
C	180	THR	-	see remark 999	UNP H6U756
C	181	PRO	-	see remark 999	UNP H6U756
C	182	PHE	-	see remark 999	UNP H6U756
C	183	CYS	-	see remark 999	UNP H6U756
C	184	ASN	-	see remark 999	UNP H6U756
C	185	LEU	-	see remark 999	UNP H6U756
C	186	PRO	-	see remark 999	UNP H6U756
C	187	VAL	-	see remark 999	UNP H6U756
C	188	ASN	-	see remark 999	UNP H6U756
C	189	GLY	-	see remark 999	UNP H6U756
C	190	SER	-	see remark 999	UNP H6U756
C	191	ASN	-	see remark 999	UNP H6U756
C	192	ASP	-	see remark 999	UNP H6U756
C	193	LEU	-	see remark 999	UNP H6U756
C	194	ASP	-	see remark 999	UNP H6U756
C	195	ILE	-	see remark 999	UNP H6U756
C	196	ARG	-	see remark 999	UNP H6U756
C	197	GLU	-	see remark 999	UNP H6U756
D	166	VAL	-	see remark 999	UNP H6U756
D	167	ARG	-	see remark 999	UNP H6U756
D	168	VAL	-	see remark 999	UNP H6U756

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Chain	Residue	Modelled	Actual	Comment	Reference
D	169	PRO	-	see remark 999	UNP H6U756
D	170	SER	-	see remark 999	UNP H6U756
D	171	LEU	-	see remark 999	UNP H6U756
D	172	ALA	-	see remark 999	UNP H6U756
D	173	LEU	-	see remark 999	UNP H6U756
D	174	LEU	-	see remark 999	UNP H6U756
D	175	ASN	-	see remark 999	UNP H6U756
D	176	LEU	-	see remark 999	UNP H6U756
D	177	ASP	-	see remark 999	UNP H6U756
D	178	LEU	-	see remark 999	UNP H6U756
D	179	THR	-	see remark 999	UNP H6U756
D	180	THR	-	see remark 999	UNP H6U756
D	181	PRO	-	see remark 999	UNP H6U756
D	182	PHE	-	see remark 999	UNP H6U756
D	183	CYS	-	see remark 999	UNP H6U756
D	184	ASN	-	see remark 999	UNP H6U756
D	185	LEU	-	see remark 999	UNP H6U756
D	186	PRO	-	see remark 999	UNP H6U756
D	187	VAL	-	see remark 999	UNP H6U756
D	188	ASN	-	see remark 999	UNP H6U756
D	189	GLY	-	see remark 999	UNP H6U756
D	190	SER	-	see remark 999	UNP H6U756
D	191	ASN	-	see remark 999	UNP H6U756
D	192	ASP	-	see remark 999	UNP H6U756
D	193	LEU	-	see remark 999	UNP H6U756
D	194	ASP	-	see remark 999	UNP H6U756
D	195	ILE	-	see remark 999	UNP H6U756
D	196	ARG	-	see remark 999	UNP H6U756
D	197	GLU	-	see remark 999	UNP H6U756
E	166	VAL	-	see remark 999	UNP H6U756
E	167	ARG	-	see remark 999	UNP H6U756
E	168	VAL	-	see remark 999	UNP H6U756
E	169	PRO	-	see remark 999	UNP H6U756
E	170	SER	-	see remark 999	UNP H6U756
E	171	LEU	-	see remark 999	UNP H6U756
E	172	ALA	-	see remark 999	UNP H6U756
E	173	LEU	-	see remark 999	UNP H6U756
E	174	LEU	-	see remark 999	UNP H6U756
E	175	ASN	-	see remark 999	UNP H6U756
E	176	LEU	-	see remark 999	UNP H6U756
E	177	ASP	-	see remark 999	UNP H6U756
E	178	LEU	-	see remark 999	UNP H6U756

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Chain	Residue	Modelled	Actual	Comment	Reference
E	179	THR	-	see remark 999	UNP H6U756
E	180	THR	-	see remark 999	UNP H6U756
E	181	PRO	-	see remark 999	UNP H6U756
E	182	PHE	-	see remark 999	UNP H6U756
E	183	CYS	-	see remark 999	UNP H6U756
E	184	ASN	-	see remark 999	UNP H6U756
E	185	LEU	-	see remark 999	UNP H6U756
E	186	PRO	-	see remark 999	UNP H6U756
E	187	VAL	-	see remark 999	UNP H6U756
E	188	ASN	-	see remark 999	UNP H6U756
E	189	GLY	-	see remark 999	UNP H6U756
E	190	SER	-	see remark 999	UNP H6U756
E	191	ASN	-	see remark 999	UNP H6U756
E	192	ASP	-	see remark 999	UNP H6U756
E	193	LEU	-	see remark 999	UNP H6U756
E	194	ASP	-	see remark 999	UNP H6U756
E	195	ILE	-	see remark 999	UNP H6U756
E	196	ARG	-	see remark 999	UNP H6U756
E	197	GLU	-	see remark 999	UNP H6U756
F	166	VAL	-	see remark 999	UNP H6U756
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F	170	SER	-	see remark 999	UNP H6U756
F	171	LEU	-	see remark 999	UNP H6U756
F	172	ALA	-	see remark 999	UNP H6U756
F	173	LEU	-	see remark 999	UNP H6U756
F	174	LEU	-	see remark 999	UNP H6U756
F	175	ASN	-	see remark 999	UNP H6U756
F	176	LEU	-	see remark 999	UNP H6U756
F	177	ASP	-	see remark 999	UNP H6U756
F	178	LEU	-	see remark 999	UNP H6U756
F	179	THR	-	see remark 999	UNP H6U756
F	180	THR	-	see remark 999	UNP H6U756
F	181	PRO	-	see remark 999	UNP H6U756
F	182	PHE	-	see remark 999	UNP H6U756
F	183	CYS	-	see remark 999	UNP H6U756
F	184	ASN	-	see remark 999	UNP H6U756
F	185	LEU	-	see remark 999	UNP H6U756
F	186	PRO	-	see remark 999	UNP H6U756
F	187	VAL	-	see remark 999	UNP H6U756
F	188	ASN	-	see remark 999	UNP H6U756

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Chain	Residue	Modelled	Actual	Comment	Reference
F	189	GLY	-	see remark 999	UNP H6U756
F	190	SER	-	see remark 999	UNP H6U756
F	191	ASN	-	see remark 999	UNP H6U756
F	192	ASP	-	see remark 999	UNP H6U756
F	193	LEU	-	see remark 999	UNP H6U756
F	194	ASP	-	see remark 999	UNP H6U756
F	195	ILE	-	see remark 999	UNP H6U756
F	196	ARG	-	see remark 999	UNP H6U756
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G	171	LEU	-	see remark 999	UNP H6U756
G	172	ALA	-	see remark 999	UNP H6U756
G	173	LEU	-	see remark 999	UNP H6U756
G	174	LEU	-	see remark 999	UNP H6U756
G	175	ASN	-	see remark 999	UNP H6U756
G	176	LEU	-	see remark 999	UNP H6U756
G	177	ASP	-	see remark 999	UNP H6U756
G	178	LEU	-	see remark 999	UNP H6U756
G	179	THR	-	see remark 999	UNP H6U756
G	180	THR	-	see remark 999	UNP H6U756
G	181	PRO	-	see remark 999	UNP H6U756
G	182	PHE	-	see remark 999	UNP H6U756
G	183	CYS	-	see remark 999	UNP H6U756
G	184	ASN	-	see remark 999	UNP H6U756
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G	186	PRO	-	see remark 999	UNP H6U756
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G	191	ASN	-	see remark 999	UNP H6U756
G	192	ASP	-	see remark 999	UNP H6U756
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G	194	ASP	-	see remark 999	UNP H6U756
G	195	ILE	-	see remark 999	UNP H6U756
G	196	ARG	-	see remark 999	UNP H6U756
G	197	GLU	-	see remark 999	UNP H6U756

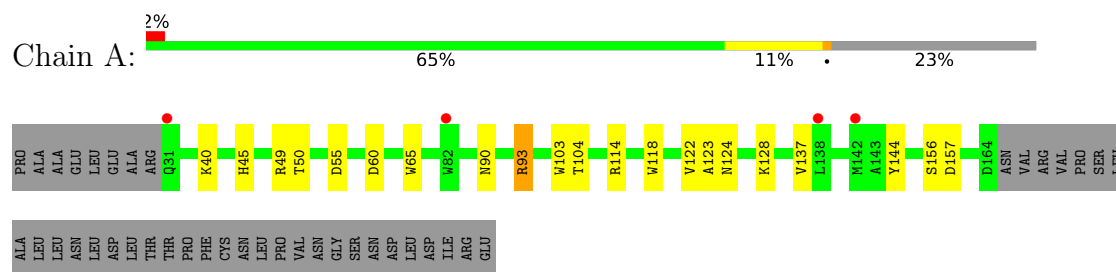
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	6	Total O 6 6	0	0
2	B	11	Total O 11 11	0	0
2	C	7	Total O 7 7	0	0
2	D	5	Total O 5 5	0	0
2	E	8	Total O 8 8	0	0
2	F	16	Total O 16 16	0	0
2	G	23	Total O 23 23	0	0

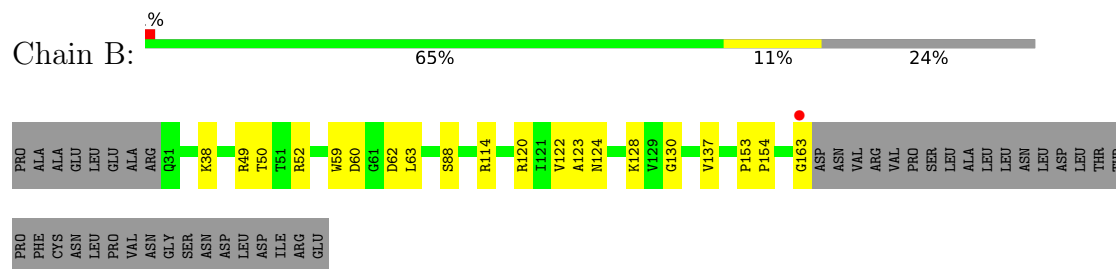
3 Residue-property plots [i](#)

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.

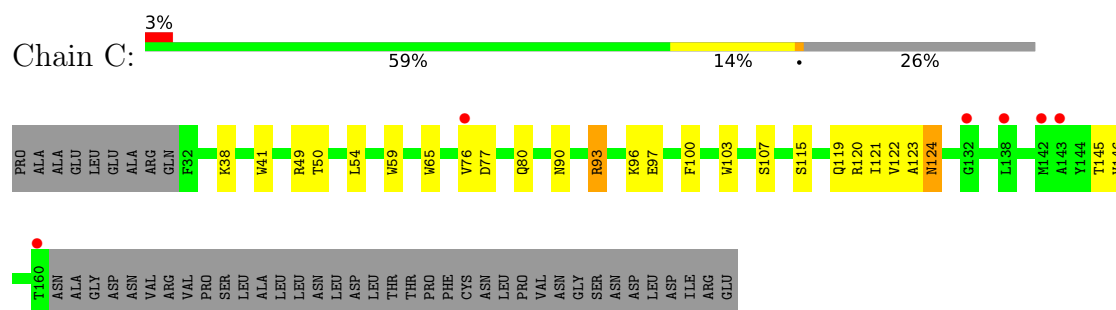
• Molecule 1: PR-1 protein



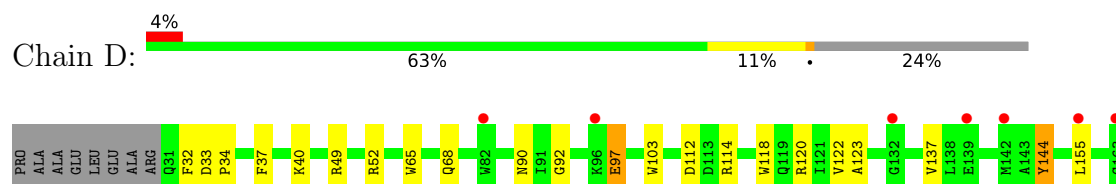
• Molecule 1: PR-1 protein



• Molecule 1: PR-1 protein



• Molecule 1: PR-1 protein



ASP ASN VAL ARG VAL PRO SER LEU ALA LEU ASP THR THR PRO PHE CYS ASN PRO PRO VAL ASN GLY SER ASN ASP LEU ASP ASP TLE ARG GLU

• Molecule 1: PR-1 protein



PRO ALA ALA GLU LEU ASP THR THR ARG Q31 F32 D33 LEU ASN LEU ASP W41 W49 R49 R52 D55 D60 L63 N78 D84 N85 G86 A87 S88 F89 N90 I91 K96 E97 W103 V122 A123 N124 M142 V148 Y158 D164 ASN VAL ARG VAL PRO SER LEU ALA

LEU LEU ASN LEU LEU ASP THR THR ARG Q31 F32 D33 LEU ASN LEU ASP W41 W49 R49 R52 D55 D60 L63 N78 D84 N85 G86 A87 S88 F89 N90 I91 K96 E97 W103 V122 A123 N124 M142 V148 Y158 D164 ASN VAL ARG VAL PRO SER LEU ALA

• Molecule 1: PR-1 protein



PRO ALA ALA L27 W41 W49 R49 T50 T51 R52 D55 L63 V76 S88 F89 N90 R93 Y94 K96 W103 S107 R114 W118 V122 A123 L138 E139 G140 D141 M142 Y144 Y150 P154 L155 S156 M161 A162 G163 ASN

VAL ARG VAL PRO SER LEU ALA LEU LEU ASN ASP LEU THR THR PRO PHE CYS ASN PRO VAL ASN GLY SER ASN ASP TLE ARG GLU

• Molecule 1: PR-1 protein



PRO ALA ALA GLU LEU ASP THR THR ARG Q31 K38 E43 L44 H45 R49 L54 D55 N78 N90 W103 I116 P117 V122 A123 L138 D141 D164 N165 VAL ARG VAL PRO SER LEU ALA LEU LEU ASN LEU ASP LEU THR THR PRO PHE CYS ASN PRO

VAL ASN GLY SER ASP LEU ASP ILE ARG GLU

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	106.30Å 84.08Å 130.88Å 90.00° 111.35° 90.00°	Depositor
Resolution (Å)	45.09 – 2.43 45.09 – 2.43	Depositor EDS
% Data completeness (in resolution range)	99.2 (45.09-2.43) 99.1 (45.09-2.43)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.48 (at 2.42Å)	Xtriage
Refinement program	REFMAC 5.8.0103	Depositor
R, R_{free}	0.201 , 0.243 0.202 , 0.243	Depositor DCC
R_{free} test set	3913 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å ²)	51.3	Xtriage
Anisotropy	0.523	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 60.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	0.013 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	7433	wwPDB-VP
Average B, all atoms (Å ²)	88.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.22% 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 [i](#)

5.1 Standard geometry [i](#)

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	0.91	0/1079	0.96	0/1475
1	B	0.86	0/1067	1.05	2/1459 (0.1%)
1	C	0.92	0/1043	1.05	2/1424 (0.1%)
1	D	0.86	0/1075	1.05	3/1469 (0.2%)
1	E	0.84	0/1083	1.04	2/1480 (0.1%)
1	F	0.94	0/1119	1.01	1/1527 (0.1%)
1	G	0.92	0/1094	0.96	1/1494 (0.1%)
All	All	0.89	0/7560	1.02	11/10328 (0.1%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	33	ASP	CA-C-N	7.56	129.29	119.84
1	D	33	ASP	C-N-CA	7.56	129.29	119.84
1	G	116	ILE	CB-CA-C	-6.27	107.75	113.70
1	C	77	ASP	N-CA-C	6.00	117.62	111.14
1	C	93	ARG	N-CA-C	5.96	119.16	110.17
1	E	33	ASP	CA-C-N	5.58	124.77	118.97
1	E	33	ASP	C-N-CA	5.58	124.77	118.97
1	D	92	GLY	N-CA-C	5.42	118.40	110.38
1	F	93	ARG	N-CA-C	5.38	118.70	110.36
1	B	153	PRO	CA-C-N	-5.38	115.04	120.31
1	B	153	PRO	C-N-CA	-5.38	115.04	120.31

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1050	0	934	11	0
1	B	1038	0	924	13	0
1	C	1014	0	901	25	0
1	D	1046	0	936	25	0
1	E	1054	0	940	18	0
1	F	1090	0	989	15	0
1	G	1065	0	958	10	0
2	A	6	0	0	0	0
2	B	11	0	0	1	0
2	C	7	0	0	0	0
2	D	5	0	0	0	0
2	E	8	0	0	0	0
2	F	16	0	0	0	0
2	G	23	0	0	1	0
All	All	7433	0	6582	109	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 8.

All (109) 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:D:112:ASP:CG	1:D:114:ARG:HH21	1.65	1.03
1:D:112:ASP:OD1	1:D:114:ARG:NH2	1.98	0.96
1:D:52:ARG:HH11	1:D:52:ARG:HG3	1.31	0.96
1:A:49:ARG:NH2	1:A:123:ALA:O	2.08	0.85
1:E:97:GLU:OE1	1:E:97:GLU:N	2.12	0.78
1:C:120:ARG:HH11	1:C:120:ARG:HG2	1.48	0.76
1:D:97:GLU:H	1:D:97:GLU:CD	1.95	0.73
1:F:76:VAL:HG21	1:F:93:ARG:HH21	1.56	0.71
1:E:78:ASN:O	1:E:78:ASN:ND2	2.24	0.70
1:D:97:GLU:N	1:D:97:GLU:OE1	2.27	0.68
1:B:49:ARG:NH2	1:B:123:ALA:O	2.27	0.68
1:E:52:ARG:HG3	1:E:52:ARG:HH11	1.60	0.67
1:D:120:ARG:HA	1:D:155:LEU:HD11	1.78	0.66
1:G:78:ASN:ND2	1:G:78:ASN:O	2.28	0.65
1:B:88:SER:HB2	1:B:154:PRO:HB3	1.78	0.65
1:F:76:VAL:HG21	1:F:93:ARG:NH2	2.13	0.64
1:A:124:ASN:C	1:A:124:ASN:HD22	2.06	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:52:ARG:HG3	1:D:52:ARG:NH1	2.06	0.60
1:F:41:TRP:CZ2	1:F:96:LYS:HG2	2.36	0.60
1:D:112:ASP:CG	1:D:114:ARG:NH2	2.50	0.59
1:B:38:LYS:HD3	1:B:59:TRP:CD2	2.37	0.59
1:A:49:ARG:NH1	1:A:55:ASP:O	2.36	0.58
1:F:88:SER:HB2	1:F:154:PRO:HB3	1.86	0.58
1:G:45:HIS:O	1:G:49:ARG:HG3	2.03	0.58
1:E:49:ARG:NH2	1:E:123:ALA:O	2.35	0.58
1:F:52:ARG:HG3	1:F:52:ARG:HH11	1.68	0.58
1:C:76:VAL:HG21	1:C:93:ARG:NH2	2.19	0.57
1:C:38:LYS:HD3	1:C:59:TRP:CD2	2.39	0.57
1:C:49:ARG:NH2	1:C:123:ALA:O	2.40	0.55
1:C:120:ARG:HH11	1:C:120:ARG:CG	2.19	0.55
1:E:31:GLN:HA	1:E:31:GLN:OE1	2.07	0.55
1:D:90:ASN:HB3	1:D:103:TRP:CZ2	2.42	0.55
1:F:138:LEU:HG	1:F:144:TYR:HE1	1.73	0.53
1:E:49:ARG:NH1	1:E:55:ASP:O	2.38	0.53
1:D:52:ARG:HH11	1:D:52:ARG:CG	2.13	0.52
1:D:90:ASN:HB3	1:D:103:TRP:CE2	2.45	0.52
1:F:155:LEU:HD22	1:F:161:ASN:ND2	2.24	0.52
1:A:60:ASP:HB2	1:A:128:LYS:HD2	1.92	0.52
1:F:63:LEU:HD22	1:F:150:TYR:HB3	1.91	0.52
1:E:41:TRP:CZ2	1:E:96:LYS:HG2	2.45	0.52
1:C:97:GLU:OE1	1:C:97:GLU:N	2.35	0.51
1:C:97:GLU:H	1:C:97:GLU:CD	2.18	0.51
1:C:115:SER:O	1:C:119:GLN:HG3	2.09	0.51
1:B:124:ASN:ND2	1:B:163:GLY:H	2.09	0.51
1:D:144:TYR:CD1	1:D:144:TYR:N	2.78	0.51
1:D:32:PHE:HD2	1:D:34:PRO:HD3	1.76	0.51
1:G:116:ILE:HB	1:G:117:PRO:HD3	1.92	0.51
1:G:38:LYS:NZ	2:G:201:HOH:O	2.44	0.51
1:D:52:ARG:NH1	1:D:52:ARG:CG	2.73	0.51
1:C:65:TRP:CZ3	1:D:52:ARG:HB3	2.47	0.50
1:D:65:TRP:CH2	1:E:52:ARG:HB3	2.47	0.49
1:D:68:GLN:NE2	1:E:158:TYR:CE2	2.81	0.49
1:G:49:ARG:NH2	1:G:123:ALA:O	2.46	0.48
1:B:120:ARG:HH11	1:B:120:ARG:HG2	1.78	0.48
1:F:49:ARG:NH2	1:F:123:ALA:O	2.46	0.48
1:C:122:VAL:HG12	1:C:122:VAL:O	2.13	0.48
1:C:65:TRP:CZ3	1:D:52:ARG:HD3	2.48	0.48
1:G:138:LEU:HD23	1:G:138:LEU:HA	1.52	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:107:SER:HB3	1:F:118:TRP:CD2	2.48	0.48
1:C:100:PHE:CE1	1:C:121:ILE:HD13	2.49	0.47
1:C:120:ARG:CG	1:C:120:ARG:NH1	2.75	0.47
1:G:49:ARG:HB3	1:G:54:LEU:HB2	1.95	0.47
1:C:76:VAL:HG21	1:C:93:ARG:HH22	1.79	0.47
1:G:90:ASN:HB3	1:G:103:TRP:CE2	2.49	0.47
1:B:38:LYS:HD3	1:B:59:TRP:CG	2.50	0.47
1:A:65:TRP:CZ3	1:B:52:ARG:HB3	2.50	0.46
1:B:38:LYS:HD3	1:B:59:TRP:CE2	2.50	0.46
1:C:54:LEU:HD11	1:C:122:VAL:HG13	1.96	0.46
1:G:49:ARG:NH1	1:G:55:ASP:O	2.48	0.46
1:A:90:ASN:HB3	1:A:103:TRP:CE2	2.51	0.45
1:G:122:VAL:O	1:G:122:VAL:HG13	2.15	0.45
1:A:93:ARG:HD2	1:A:144:TYR:CE2	2.52	0.45
1:C:90:ASN:HB3	1:C:103:TRP:CE2	2.51	0.45
1:C:41:TRP:CZ2	1:C:96:LYS:HG2	2.51	0.45
1:B:114:ARG:HH21	1:B:114:ARG:HG3	1.82	0.45
1:E:84:ASP:C	1:E:86:GLY:H	2.25	0.44
1:F:93:ARG:HG3	1:F:94:TYR:CE2	2.52	0.44
1:E:90:ASN:HB3	1:E:103:TRP:CE2	2.52	0.44
1:C:145:THR:HG22	1:C:146:VAL:N	2.31	0.44
1:B:62:ASP:OD1	1:C:107:SER:HB2	2.18	0.44
1:C:38:LYS:HD3	1:C:59:TRP:CE2	2.52	0.44
1:A:156:SER:HB3	1:A:157:ASP:H	1.58	0.43
1:D:118:TRP:O	1:D:122:VAL:HG22	2.17	0.43
1:C:124:ASN:OD1	1:C:124:ASN:N	2.51	0.43
1:D:144:TYR:H	1:D:144:TYR:HD1	1.65	0.43
1:E:33:ASP:HA	1:E:34:PRO:HD2	1.81	0.43
1:A:45:HIS:O	1:A:49:ARG:HG3	2.19	0.43
1:C:122:VAL:O	1:C:122:VAL:CG1	2.67	0.43
1:F:90:ASN:HB3	1:F:103:TRP:CE2	2.53	0.43
1:E:52:ARG:HG3	1:E:52:ARG:NH1	2.26	0.43
1:E:60:ASP:HB3	1:E:63:LEU:HD12	1.99	0.43
1:B:60:ASP:HB2	1:B:128:LYS:HD3	2.01	0.43
1:F:49:ARG:NH1	1:F:55:ASP:O	2.50	0.42
1:F:118:TRP:O	1:F:122:VAL:HG22	2.19	0.42
1:A:40:LYS:HA	1:A:40:LYS:HD2	1.77	0.42
1:D:40:LYS:HD2	1:D:40:LYS:HA	1.69	0.42
1:D:65:TRP:CZ3	1:E:52:ARG:HB3	2.55	0.42
1:A:104:THR:HA	1:A:118:TRP:HD1	1.85	0.42
1:D:49:ARG:NH2	1:D:123:ALA:O	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:68:GLN:NE2	1:E:158:TYR:CZ	2.87	0.42
1:C:41:TRP:CE2	1:C:96:LYS:HG2	2.55	0.41
1:D:37:PHE:CD1	1:D:37:PHE:C	2.98	0.41
1:B:114:ARG:HD2	2:B:203:HOH:O	2.20	0.41
1:B:63:LEU:HB2	1:B:130:GLY:HA3	2.02	0.41
1:C:38:LYS:HD3	1:C:59:TRP:CG	2.56	0.41
1:E:91:ILE:HG13	1:E:148:VAL:HG22	2.03	0.41
1:F:41:TRP:CE2	1:F:96:LYS:HG2	2.56	0.41
1:C:120:ARG:HG2	1:C:120:ARG:NH1	2.22	0.40
1:E:88:SER:O	1:E:88:SER:OG	2.38	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	132/175 (75%)	126 (96%)	6 (4%)	0	100	100
1	B	131/175 (75%)	126 (96%)	5 (4%)	0	100	100
1	C	127/175 (73%)	123 (97%)	4 (3%)	0	100	100
1	D	131/175 (75%)	122 (93%)	9 (7%)	0	100	100
1	E	132/175 (75%)	125 (95%)	7 (5%)	0	100	100
1	F	136/175 (78%)	126 (93%)	10 (7%)	0	100	100
1	G	133/175 (76%)	127 (96%)	6 (4%)	0	100	100
All	All	922/1225 (75%)	875 (95%)	47 (5%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	108/149 (72%)	103 (95%)	5 (5%)	24	33
1	B	106/149 (71%)	103 (97%)	3 (3%)	38	51
1	C	104/149 (70%)	101 (97%)	3 (3%)	37	49
1	D	108/149 (72%)	105 (97%)	3 (3%)	38	51
1	E	109/149 (73%)	107 (98%)	2 (2%)	51	64
1	F	113/149 (76%)	106 (94%)	7 (6%)	16	22
1	G	111/149 (74%)	108 (97%)	3 (3%)	39	52
All	All	759/1043 (73%)	733 (97%)	26 (3%)	32	45

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	THR
1	A	93	ARG
1	A	114	ARG
1	A	122	VAL
1	A	137	VAL
1	B	50	THR
1	B	122	VAL
1	B	137	VAL
1	C	50	THR
1	C	80	GLN
1	C	124	ASN
1	D	97	GLU
1	D	137	VAL
1	D	144	TYR
1	E	122	VAL
1	E	124	ASN
1	F	27	LEU
1	F	43	GLU
1	F	50	THR
1	F	114	ARG

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Mol	Chain	Res	Type
1	F	138	LEU
1	F	142	MET
1	F	156	SER
1	G	43	GLU
1	G	122	VAL
1	G	164	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	98	GLN
1	A	147	ASN
1	B	124	ASN
1	C	98	GLN
1	C	147	ASN
1	D	98	GLN
1	E	98	GLN
1	E	124	ASN
1	E	147	ASN

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](#)

There are no ligands in this entry.

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 ⓘ

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	134/175 (76%)	-0.02	4 (2%)	52	52	51, 78, 134, 204	0
1	B	133/175 (76%)	0.12	1 (0%)	82	83	55, 83, 134, 184	0
1	C	129/175 (73%)	0.61	6 (4%)	36	33	64, 93, 153, 192	0
1	D	133/175 (76%)	0.61	7 (5%)	32	29	66, 103, 156, 194	0
1	E	134/175 (76%)	0.10	1 (0%)	84	85	56, 88, 155, 205	0
1	F	138/175 (78%)	-0.24	5 (3%)	46	44	48, 67, 124, 174	0
1	G	135/175 (77%)	-0.19	2 (1%)	72	73	48, 72, 133, 152	0
All	All	936/1225 (76%)	0.14	26 (2%)	55	54	48, 84, 145, 205	0

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	160	THR	5.5
1	A	31	GLN	4.7
1	B	163	GLY	4.6
1	C	138	LEU	4.3
1	F	141	ASP	4.2
1	D	163	GLY	4.1
1	G	165	ASN	4.0
1	F	27	LEU	4.0
1	F	163	GLY	3.9
1	D	142	MET	3.3
1	C	143	ALA	3.0
1	D	82	TRP	2.9
1	D	139	GLU	2.9
1	F	140	GLY	2.7
1	D	155	LEU	2.7
1	E	142	MET	2.6
1	A	138	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	G	141	ASP	2.6
1	C	142	MET	2.5
1	C	76	VAL	2.4
1	F	26	GLU	2.2
1	D	132	GLY	2.2
1	A	142	MET	2.2
1	D	96	LYS	2.2
1	A	82	TRP	2.1
1	C	132	GLY	2.1

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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.