



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 01:47 AM UTC

PDB ID : 3B6Y / pdb_00003b6y
Title : Crystal Structure of the Second HIN-200 Domain of Interferon-Inducible Protein 16
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Deposited on : 2007-10-29
Resolution : 2.35 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The 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

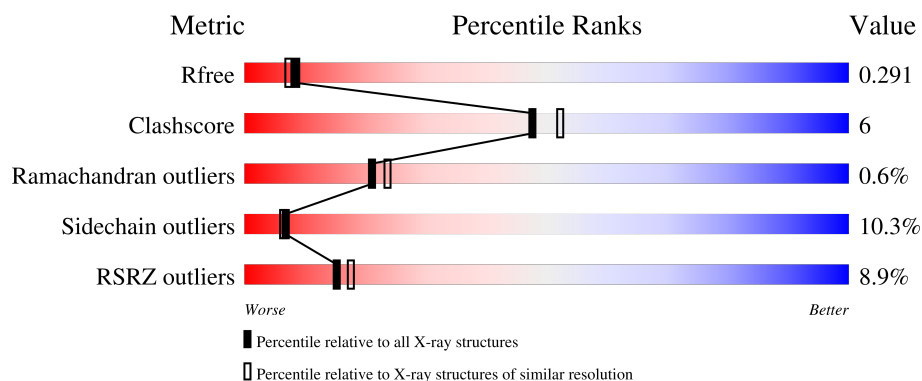
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 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	1596 (2.36-2.36)
Clashscore	190562	1663 (2.36-2.36)
Ramachandran outliers	187476	1646 (2.36-2.36)
Sidechain outliers	187428	1646 (2.36-2.36)
RSRZ outliers	180081	1598 (2.36-2.36)

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	200	8% 72% 16% • 8%
1	B	200	8% 76% 14% • 8%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 2965 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.

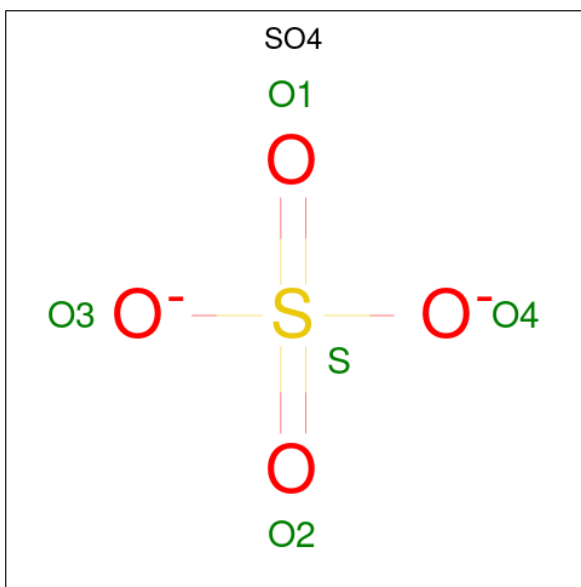
- Molecule 1 is a protein called Gamma-interferon-inducible protein Ifi-16.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	185	Total	C	N	O	S	0	0	0
			1473	941	251	273	8			
1	B	184	Total	C	N	O	S	0	0	0
			1465	937	250	270	8			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	expression tag	UNP Q16666
A	-2	SER	-	expression tag	UNP Q16666
A	-1	HIS	-	expression tag	UNP Q16666
A	0	MET	-	expression tag	UNP Q16666
B	-3	GLY	-	expression tag	UNP Q16666
B	-2	SER	-	expression tag	UNP Q16666
B	-1	HIS	-	expression tag	UNP Q16666
B	0	MET	-	expression tag	UNP Q16666

- Molecule 2 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	S	0	0
			5	4	1		
2	B	1	Total	O	S	0	0
			5	4	1		

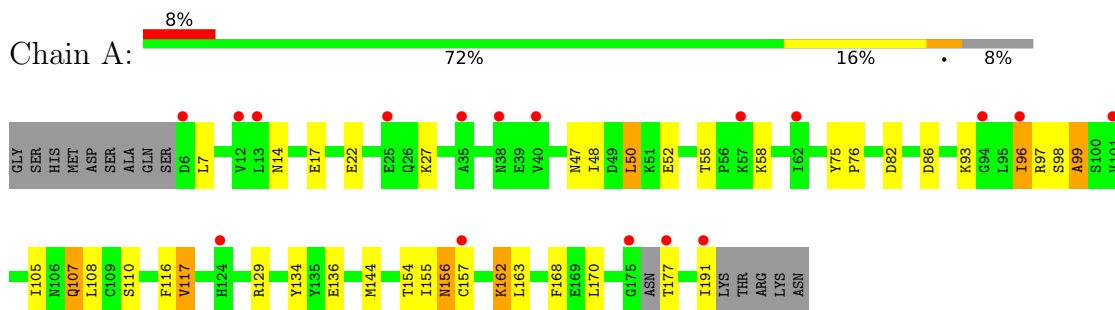
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	10	Total	O	0	0
			10	10		
3	B	7	Total	O	0	0
			7	7		

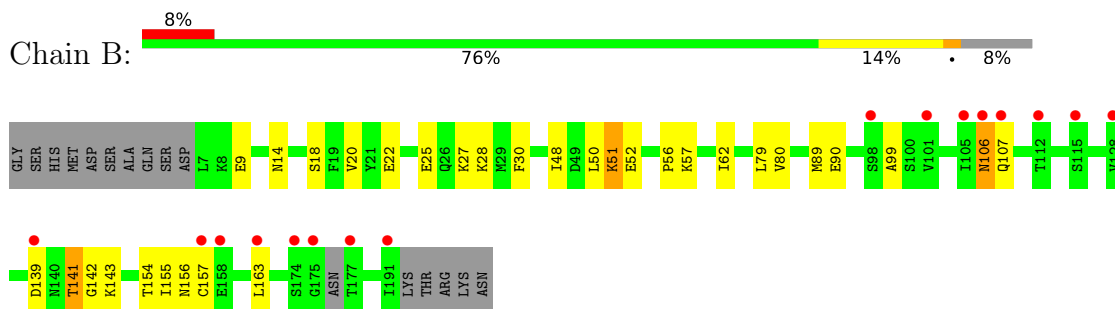
3 Residue-property plots [i](#)

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: Gamma-interferon-inducible protein Ifi-16



- Molecule 1: Gamma-interferon-inducible protein Ifi-16



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	43.00Å 92.89Å 100.37Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	42.14 – 2.35 42.14 – 2.35	Depositor EDS
% Data completeness (in resolution range)	99.8 (42.14-2.35) 99.8 (42.14-2.35)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.30 (at 2.34Å)	Xtrriage
Refinement program	REFMAC refmac_5.2.0019	Depositor
R, R_{free}	0.226 , 0.292 0.227 , 0.291	Depositor DCC
R_{free} test set	877 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	45.0	Xtrriage
Anisotropy	0.084	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 56.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	2965	wwPDB-VP
Average B, all atoms (Å ²)	55.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 35.50 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 5.7769e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SO4

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	0.92	0/1498	0.98	3/2017 (0.1%)
1	B	0.88	0/1490	0.97	2/2006 (0.1%)
All	All	0.90	0/2988	0.97	5/4023 (0.1%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	117	VAL	N-CA-C	6.58	118.89	108.89
1	B	156	ASN	N-CA-C	5.88	118.32	108.96
1	A	22	GLU	CA-C-N	5.55	124.90	118.85
1	A	22	GLU	C-N-CA	5.55	124.90	118.85
1	B	142	GLY	N-CA-C	5.47	117.39	110.38

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	1473	0	1502	19	0
1	B	1465	0	1498	14	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	10	0	0	0	0
3	B	7	0	0	0	0
All	All	2965	0	3000	33	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 (33) 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:156:ASN:ND2	1:A:156:ASN:H	1.74	0.83
1:B:18:SER:CB	1:B:48:ILE:HD11	2.11	0.80
1:A:156:ASN:H	1:A:156:ASN:HD22	1.31	0.79
1:A:129:ARG:HB2	1:A:134:TYR:HE1	1.50	0.77
1:B:139:ASP:OD1	1:B:141:THR:HG22	1.84	0.76
1:B:18:SER:HB2	1:B:48:ILE:HD11	1.67	0.76
1:A:105:ILE:HG23	1:A:144:MET:HE2	1.72	0.72
1:B:18:SER:HB2	1:B:48:ILE:CD1	2.26	0.65
1:A:55:THR:HG22	1:A:58:LYS:HD2	1.77	0.65
1:A:105:ILE:HG23	1:A:144:MET:CE	2.29	0.62
1:B:157:CYS:SG	1:B:163:LEU:HD21	2.42	0.59
1:A:96:ILE:HD13	1:A:96:ILE:O	2.02	0.59
1:B:56:PRO:O	1:B:57:LYS:HB2	2.01	0.59
1:A:156:ASN:ND2	1:A:156:ASN:N	2.47	0.58
1:A:107:GLN:HG3	1:A:108:LEU:N	2.18	0.57
1:A:47:ASN:HB3	1:A:50:LEU:HD22	1.86	0.56
1:A:96:ILE:O	1:A:99:ALA:HB3	2.12	0.50
1:A:105:ILE:HG12	1:A:144:MET:HE3	1.95	0.48
1:A:108:LEU:CB	1:A:144:MET:HE1	2.44	0.47
1:A:75:TYR:HB3	1:A:76:PRO:HD2	1.98	0.46
1:A:162:LYS:HG3	1:A:191:ILE:HB	1.97	0.45
1:B:22:GLU:HB3	1:B:27:LYS:HB2	1.97	0.45
1:A:97:ARG:HE	1:A:97:ARG:HB3	1.61	0.45
1:B:106:ASN:H	1:B:141:THR:CG2	2.31	0.43
1:A:108:LEU:HB3	1:A:144:MET:HE1	2.01	0.43
1:B:30:PHE:CD1	1:B:51:LYS:HD3	2.55	0.42
1:B:62:ILE:HA	1:B:79:LEU:O	2.19	0.42
1:B:9:GLU:HB3	1:B:89:MET:HE1	2.02	0.41
1:A:116:PHE:HA	1:A:168:PHE:O	2.20	0.41
1:A:157:CYS:SG	1:A:163:LEU:HD21	2.61	0.41
1:B:50:LEU:O	1:B:51:LYS:C	2.64	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:20:VAL:HG23	1:B:28:LYS:HE2	2.02	0.40
1:B:106:ASN:H	1:B:141:THR:HG23	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	181/200 (90%)	175 (97%)	5 (3%)	1 (1%)	21	24
1	B	180/200 (90%)	172 (96%)	7 (4%)	1 (1%)	21	24
All	All	361/400 (90%)	347 (96%)	12 (3%)	2 (1%)	21	24

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	99	ALA
1	B	99	ALA

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	166/179 (93%)	144 (87%)	22 (13%)	4	3
1	B	165/179 (92%)	153 (93%)	12 (7%)	13	14

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	331/358 (92%)	297 (90%)	34 (10%)	7 6

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	LEU
1	A	14	ASN
1	A	17	GLU
1	A	27	LYS
1	A	48	ILE
1	A	50	LEU
1	A	52	GLU
1	A	82	ASP
1	A	86	ASP
1	A	93	LYS
1	A	96	ILE
1	A	98	SER
1	A	107	GLN
1	A	110	SER
1	A	117	VAL
1	A	136	GLU
1	A	154	THR
1	A	155	ILE
1	A	156	ASN
1	A	162	LYS
1	A	170	LEU
1	A	177	THR
1	B	14	ASN
1	B	25	GLU
1	B	51	LYS
1	B	52	GLU
1	B	80	VAL
1	B	90	GLU
1	B	106	ASN
1	B	107	GLN
1	B	141	THR
1	B	143	LYS
1	B	154	THR
1	B	155	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	14	ASN
1	A	47	ASN
1	A	106	ASN
1	A	118	ASN
1	A	127	ASN
1	A	138	GLN
1	A	149	HIS
1	A	156	ASN
1	B	14	ASN
1	B	26	GLN
1	B	106	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](#)

2 ligands are modelled in this entry.

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	$\# Z > 2$
2	SO4	B	197	-	4,4,4	0.30	0	6,6,6	0.35	0
2	SO4	A	197	-	4,4,4	0.28	0	6,6,6	0.15	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

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	185/200 (92%)	0.88	17 (9%) 14 17	40, 53, 66, 74	1 (0%)
1	B	184/200 (92%)	0.88	16 (8%) 16 18	38, 58, 76, 82	0
All	All	369/400 (92%)	0.88	33 (8%) 15 17	38, 55, 72, 82	1 (0%)

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	112	THR	3.2
1	A	6	ASP	3.1
1	A	157	CYS	3.0
1	A	175	GLY	3.0
1	A	62	ILE	2.9
1	A	177	THR	2.9
1	B	175	GLY	2.6
1	B	107	GLN	2.6
1	A	94	GLY	2.6
1	B	177	THR	2.6
1	A	35	ALA	2.5
1	B	191	ILE	2.5
1	A	25	GLU	2.4
1	B	106	ASN	2.4
1	B	174	SER	2.4
1	B	115	SER	2.4
1	B	157	CYS	2.4
1	A	13	LEU	2.4
1	B	105	ILE	2.4
1	A	124	HIS	2.3
1	B	98	SER	2.3
1	B	139	ASP	2.2
1	A	12	VAL	2.1
1	A	40	VAL	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	101	VAL	2.1
1	B	101	VAL	2.1
1	B	128	VAL	2.1
1	B	158	GLU	2.1
1	A	96	ILE	2.1
1	B	163	LEU	2.1
1	A	191	ILE	2.1
1	A	38	ASN	2.0
1	A	57	LYS	2.0

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

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

6.3 Carbohydrates [i](#)

There are no 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(Å ²)	Q<0.9
2	SO4	B	197	5/5	0.73	0.19	91,92,92,92	0
2	SO4	A	197	5/5	0.76	0.15	104,105,105,105	0

6.5 Other polymers [i](#)

There are no such residues in this entry.