



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 10:01 AM UTC

PDB ID : 4Y5V / pdb_00004y5v
Title : Diabody 305 complex with EpoR
Authors : Moraga, I.; Guo, F.; Ozkan, E.; Jude, K.M.; Garcia, K.C.
Deposited on : 2015-02-12
Resolution : 2.60 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

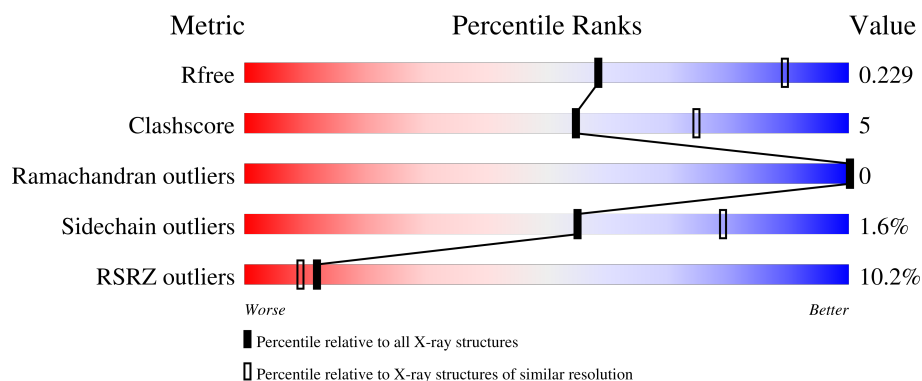
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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	130	2% 84% 9% 7%
1	D	130	3% 76% 17% 6%
1	G	130	2% 82% 8% 8%
2	B	117	2% 89% 6% 5%
2	E	117	4% 87% 9% .

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Mol	Chain	Length	Quality of chain
2	H	117	3% 88% 8%
3	C	229	13% 78% 12% 10%
3	F	229	10% 81% 9% 10%
3	I	229	27% 67% 17% 17%

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 10298 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 diabody 305 VH domain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	121	Total	C	N	O	S	0	1	0
			928	579	164	181	4			
1	D	122	Total	C	N	O	S	0	2	0
			938	584	166	184	4			
1	G	119	Total	C	N	O	S	0	1	0
			920	575	162	179	4			

- Molecule 2 is a protein called Diabody 305 VL domain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	111	Total	C	N	O	S	0	0	0
			821	511	136	171	3			
2	E	112	Total	C	N	O	S	0	0	0
			822	512	136	171	3			
2	H	112	Total	C	N	O	S	0	0	0
			826	514	137	172	3			

- Molecule 3 is a protein called Erythropoietin receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	206	Total	C	N	O	S	0	0	0
			1599	1024	279	289	7			
3	F	206	Total	C	N	O	S	0	0	0
			1592	1019	276	290	7			
3	I	191	Total	C	N	O	S	0	0	0
			1444	928	248	261	7			

There are 39 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	3	PHE	-	expression tag	UNP P19235
C	4	ALA	-	expression tag	UNP P19235

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Chain	Residue	Modelled	Actual	Comment	Reference
C	5	GLY	-	expression tag	UNP P19235
C	6	SER	-	expression tag	UNP P19235
C	7	ALA	-	expression tag	UNP P19235
C	52	GLN	ASN	engineered mutation	UNP P19235
C	164	GLN	ASN	engineered mutation	UNP P19235
C	226	LYS	-	expression tag	UNP P19235
C	227	GLU	-	expression tag	UNP P19235
C	228	LYS	-	expression tag	UNP P19235
C	229	ALA	-	expression tag	UNP P19235
C	230	ALA	-	expression tag	UNP P19235
C	231	ALA	-	expression tag	UNP P19235
F	3	PHE	-	expression tag	UNP P19235
F	4	ALA	-	expression tag	UNP P19235
F	5	GLY	-	expression tag	UNP P19235
F	6	SER	-	expression tag	UNP P19235
F	7	ALA	-	expression tag	UNP P19235
F	52	GLN	ASN	engineered mutation	UNP P19235
F	164	GLN	ASN	engineered mutation	UNP P19235
F	226	LYS	-	expression tag	UNP P19235
F	227	GLU	-	expression tag	UNP P19235
F	228	LYS	-	expression tag	UNP P19235
F	229	ALA	-	expression tag	UNP P19235
F	230	ALA	-	expression tag	UNP P19235
F	231	ALA	-	expression tag	UNP P19235
I	3	PHE	-	expression tag	UNP P19235
I	4	ALA	-	expression tag	UNP P19235
I	5	GLY	-	expression tag	UNP P19235
I	6	SER	-	expression tag	UNP P19235
I	7	ALA	-	expression tag	UNP P19235
I	52	GLN	ASN	engineered mutation	UNP P19235
I	164	GLN	ASN	engineered mutation	UNP P19235
I	226	LYS	-	expression tag	UNP P19235
I	227	GLU	-	expression tag	UNP P19235
I	228	LYS	-	expression tag	UNP P19235
I	229	ALA	-	expression tag	UNP P19235
I	230	ALA	-	expression tag	UNP P19235
I	231	ALA	-	expression tag	UNP P19235

- Molecule 4 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



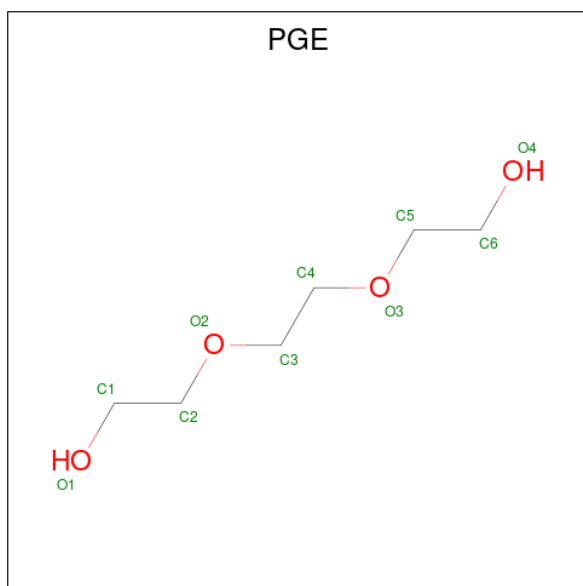
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			6	3	3		
4	B	1	Total	C	O	0	0
			6	3	3		
4	B	1	Total	C	O	0	0
			6	3	3		
4	B	1	Total	C	O	0	0
			6	3	3		
4	D	1	Total	C	O	0	0
			6	3	3		
4	D	1	Total	C	O	0	0
			6	3	3		
4	E	1	Total	C	O	0	0
			6	3	3		
4	E	1	Total	C	O	0	0
			6	3	3		
4	E	1	Total	C	O	0	0
			6	3	3		
4	F	1	Total	C	O	0	0
			6	3	3		
4	G	1	Total	C	O	0	0
			6	3	3		
4	G	1	Total	C	O	0	0
			6	3	3		
4	H	1	Total	C	O	0	0
			6	3	3		
4	H	1	Total	C	O	0	0
			6	3	3		

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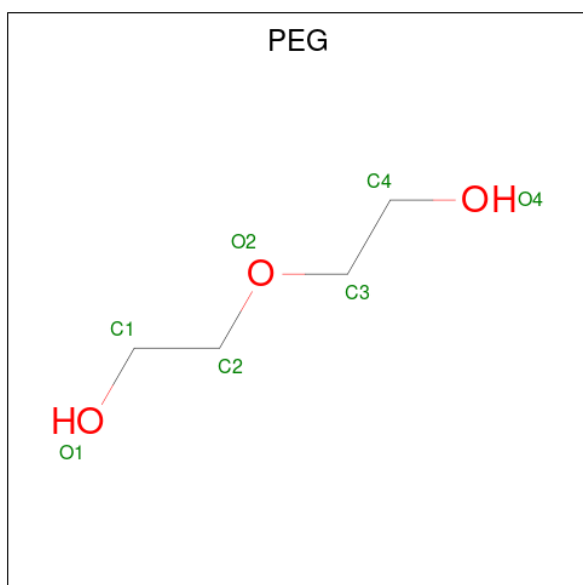
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	H	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	D	1	Total	C	O	0	0
			10	6	4		

- Molecule 6 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	D	1	Total	C	O	0	0
			7	4	3		

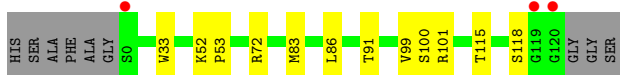
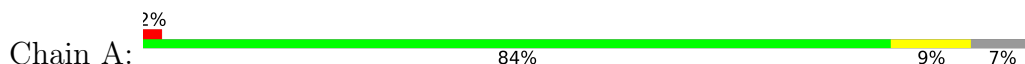
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	50	Total	O	0	0
			50	50		
7	B	35	Total	O	0	0
			35	35		
7	C	31	Total	O	0	0
			31	31		
7	D	47	Total	O	0	0
			47	47		
7	E	17	Total	O	0	0
			17	17		
7	F	29	Total	O	0	0
			29	29		
7	G	48	Total	O	0	0
			48	48		
7	H	34	Total	O	0	0
			34	34		
7	I	10	Total	O	0	0
			10	10		

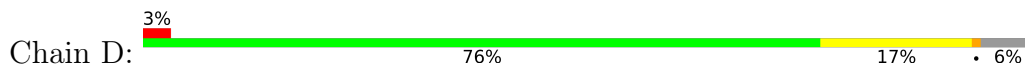
3 Residue-property plots [i](#)

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.

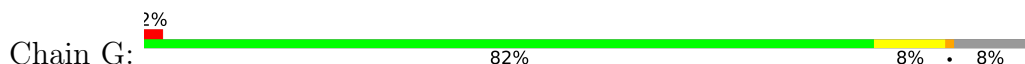
- Molecule 1: diabody 305 VH domain



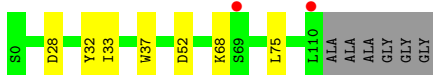
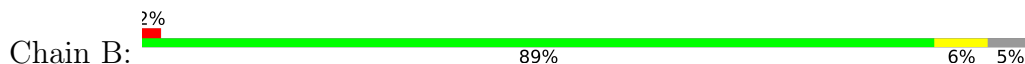
- Molecule 1: diabody 305 VH domain



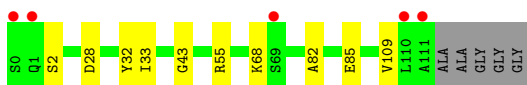
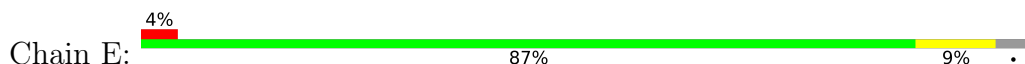
- Molecule 1: diabody 305 VH domain



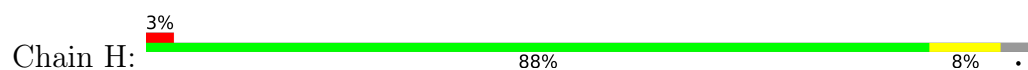
- Molecule 2: Diabody 305 VL domain



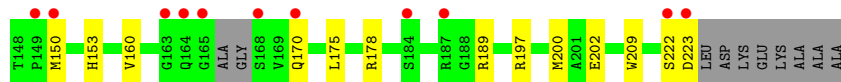
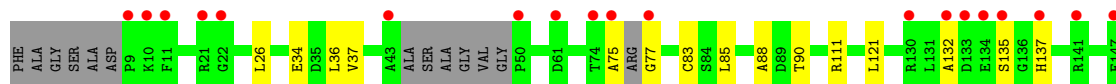
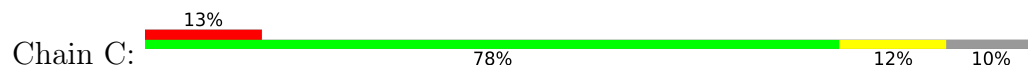
- Molecule 2: Diabody 305 VL domain



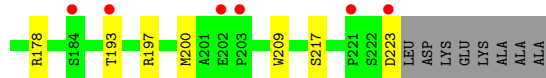
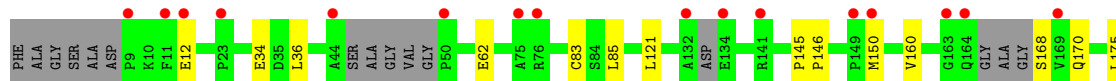
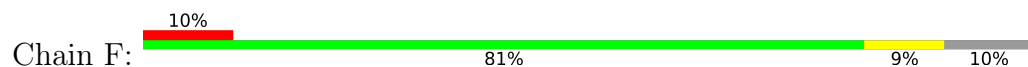
- Molecule 2: Diabody 305 VL domain



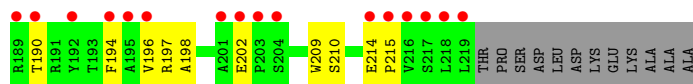
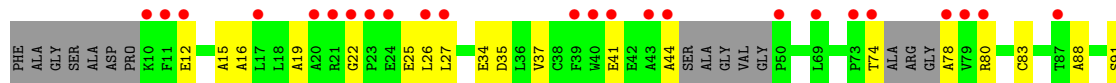
• Molecule 3: Erythropoietin receptor



• Molecule 3: Erythropoietin receptor



• Molecule 3: Erythropoietin receptor



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	125.73Å 215.02Å 171.91Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.58 – 2.60 45.58 – 2.60	Depositor EDS
% Data completeness (in resolution range)	95.8 (45.58-2.60) 95.8 (45.58-2.60)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.37 (at 2.61Å)	Xtriage
Refinement program	PHENIX (phenix.refine: dev_1839)	Depositor
R, R_{free}	0.187 , 0.229 0.187 , 0.229	Depositor DCC
R_{free} test set	3460 reflections (4.85%)	wwPDB-VP
Wilson B-factor (Å ²)	44.0	Xtriage
Anisotropy	0.971	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 68.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.207 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.147 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	10298	wwPDB-VP
Average B, all atoms (Å ²)	64.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.70% 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: PGE, PEG, GOL

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	0.25	0/948	0.68	0/1281
1	D	0.25	0/958	0.67	0/1294
1	G	0.25	0/940	0.67	0/1271
2	B	0.25	0/839	0.67	0/1141
2	E	0.24	0/840	0.65	0/1143
2	H	0.25	0/844	0.65	0/1148
3	C	0.27	0/1642	0.68	0/2237
3	F	0.27	0/1635	0.70	0/2231
3	I	0.29	0/1483	0.75	2/2025 (0.1%)
All	All	0.26	0/10129	0.69	2/13771 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	I	22	GLY	CA-C-N	5.49	125.10	119.56
3	I	22	GLY	C-N-CA	5.49	125.10	119.56

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	928	0	892	9	0
1	D	938	0	899	14	0
1	G	920	0	886	10	0
2	B	821	0	788	5	0
2	E	822	0	787	10	0
2	H	826	0	793	6	0
3	C	1599	0	1554	16	0
3	F	1592	0	1536	14	0
3	I	1444	0	1329	22	0
4	A	6	0	8	0	0
4	B	18	0	24	2	0
4	D	12	0	16	0	0
4	E	18	0	24	3	0
4	F	6	0	8	0	0
4	G	12	0	16	0	0
4	H	18	0	24	1	0
5	D	10	0	14	1	0
6	D	7	0	9	0	0
7	A	50	0	0	0	0
7	B	35	0	0	0	0
7	C	31	0	0	0	0
7	D	47	0	0	0	0
7	E	17	0	0	0	0
7	F	29	0	0	0	0
7	G	48	0	0	2	0
7	H	34	0	0	0	0
7	I	10	0	0	0	0
All	All	10298	0	9607	94	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (94) 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:E:32:TYR:O	2:E:68:LYS:NZ	2.14	0.80
2:B:32:TYR:O	2:B:68:LYS:NZ	2.22	0.73
2:E:82:ALA:HA	2:E:109:VAL:HG21	1.70	0.71
3:F:160:VAL:HB	3:F:170:GLN:HB3	1.72	0.71
3:I:160:VAL:HG13	3:I:194:PHE:HE1	1.61	0.66
2:H:32:TYR:O	2:H:68:LYS:NZ	2.28	0.66
3:C:175:LEU:HD12	3:C:178:ARG:NH1	2.11	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:121:LEU:HD21	3:F:200:MET:HE2	1.77	0.65
3:C:121:LEU:HD21	3:C:200:MET:HE2	1.79	0.65
3:C:160:VAL:HB	3:C:170:GLN:HB3	1.79	0.65
2:E:85:GLU:HG3	2:E:109:VAL:HG22	1.80	0.64
1:D:64:VAL:HG13	1:D:68:PHE:HB2	1.79	0.63
3:I:26:LEU:O	3:I:111:ARG:NH1	2.29	0.63
3:I:44:ALA:HB2	3:I:78:ALA:HA	1.81	0.62
1:A:101:ARG:NH2	3:C:88:ALA:O	2.32	0.62
1:G:101:ARG:NH2	3:I:88:ALA:O	2.32	0.62
3:C:132:ALA:HB3	3:C:135:SER:HB3	1.80	0.62
3:I:12:GLU:O	3:I:16:ALA:N	2.28	0.60
2:B:52:ASP:OD2	4:B:202:GOL:H12	2.00	0.60
3:C:135:SER:HG	3:C:137:HIS:HD1	1.49	0.59
1:G:52:LYS:NZ	7:G:301:HOH:O	2.33	0.58
3:C:135:SER:OG	3:C:137:HIS:ND1	2.31	0.58
2:E:33:ILE:HG21	3:F:34:GLU:OE2	2.04	0.58
1:D:18:LEU:HB3	1:D:83:MET:HE3	1.87	0.57
2:H:82:ALA:HA	2:H:109:VAL:HG21	1.86	0.57
2:E:55:ARG:HE	4:E:202:GOL:H11	1.69	0.56
2:H:33:ILE:HD13	3:I:34:GLU:HG2	1.87	0.56
1:D:0:SER:OG	1:D:1:GLU:OE1	2.21	0.56
3:F:178:ARG:NH2	2:H:5:THR:OG1	2.39	0.56
3:I:41:GLU:HG3	3:I:80:ARG:HE	1.70	0.56
1:G:83:MET:HB3	1:G:86:LEU:HD21	1.87	0.55
1:D:58:LYS:HZ2	5:D:203:PGE:H3	1.70	0.55
2:E:55:ARG:HH21	4:E:202:GOL:H31	1.71	0.55
1:G:52:LYS:HG2	1:G:53:PRO:HD2	1.88	0.55
1:A:83:MET:HE2	1:A:86:LEU:HD21	1.89	0.54
1:D:33:TRP:HB2	1:D:99:VAL:HB	1.90	0.54
1:A:52:LYS:HG2	1:A:53:PRO:HD2	1.88	0.54
2:E:2:SER:HB3	3:I:175:LEU:HD13	1.90	0.54
1:A:33:TRP:HB2	1:A:99:VAL:HB	1.91	0.53
1:D:52:LYS:HG2	1:D:53:PRO:HD2	1.90	0.53
1:A:83:MET:HB3	1:A:86:LEU:HD21	1.92	0.52
1:G:83:MET:HE2	1:G:86:LEU:HD21	1.92	0.52
3:C:189:ARG:HG3	3:C:222:SER:HB3	1.92	0.51
2:B:33:ILE:HD13	3:C:34:GLU:HG2	1.91	0.51
3:I:197:ARG:HD2	3:I:209:TRP:HB3	1.93	0.51
3:C:75:ALA:HA	3:C:77:GLY:HA2	1.93	0.51
3:I:160:VAL:HG13	3:I:194:PHE:CE1	2.44	0.51
3:I:145:PRO:O	3:I:148:THR:HG22	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:43:GLY:H	4:H:201:GOL:H12	1.77	0.50
3:I:127:LEU:HD12	3:I:196:VAL:HG12	1.94	0.50
3:C:26:LEU:O	3:C:111:ARG:NH1	2.45	0.50
1:D:100:SER:OG	1:D:101:ARG:N	2.43	0.50
1:G:100:SER:OG	1:G:101:ARG:N	2.44	0.49
3:F:197:ARG:HD2	3:F:209:TRP:HB3	1.94	0.48
1:A:100:SER:OG	1:A:101:ARG:N	2.44	0.48
3:C:36:LEU:HD23	3:C:85:LEU:HD12	1.96	0.47
3:I:153:HIS:HB3	3:I:202:GLU:HB2	1.97	0.47
3:I:175:LEU:HD12	3:I:178:ARG:NH1	2.30	0.47
3:F:175:LEU:HD13	2:H:2:SER:HB3	1.96	0.46
1:G:19:ARG:NH2	7:G:303:HOH:O	2.48	0.46
3:I:15:ALA:O	3:I:19:ALA:N	2.48	0.45
1:A:53:PRO:HA	1:A:72:ARG:NH1	2.31	0.45
3:I:19:ALA:HB2	3:I:80:ARG:HH22	1.82	0.44
1:A:91:THR:HG23	1:A:115:THR:HA	2.00	0.44
2:B:32:TYR:CZ	3:C:150:MET:HG3	2.52	0.44
3:F:168:SER:O	3:F:168:SER:OG	2.35	0.44
3:C:197:ARG:HD2	3:C:209:TRP:HB3	1.99	0.43
1:G:33:TRP:HB2	1:G:99:VAL:HG22	2.00	0.43
2:B:37:TRP:CD2	2:B:75:LEU:HB2	2.54	0.43
2:E:43:GLY:H	4:E:201:GOL:H31	1.82	0.43
2:E:33:ILE:HD13	3:F:34:GLU:HG2	1.99	0.43
3:C:153:HIS:HB3	3:C:202:GLU:HB2	2.01	0.43
1:D:101:ARG:HH21	3:F:62:GLU:HG3	1.84	0.42
2:E:32:TYR:CZ	3:F:150:MET:HG3	2.55	0.42
1:D:53:PRO:HA	1:D:72:ARG:NH1	2.34	0.42
1:D:12:VAL:HG12	1:D:13:GLN:O	2.19	0.42
3:I:91:SER:O	3:I:115:ILE:HD13	2.19	0.42
1:D:83:MET:HB3	1:D:86:LEU:HD21	2.02	0.42
1:G:53:PRO:HA	1:G:72:ARG:NH1	2.35	0.41
3:I:198:ALA:H	3:I:210:SER:HB3	1.85	0.41
1:A:33:TRP:CZ2	1:A:52:LYS:HG3	2.56	0.41
3:I:74:THR:N	3:I:78:ALA:O	2.35	0.41
1:D:91:THR:HG23	1:D:115:THR:HA	2.03	0.41
4:B:202:GOL:O2	3:C:90:THR:OG1	2.32	0.41
3:F:36:LEU:HD23	3:F:85:LEU:HD12	2.03	0.41
1:D:6:GLU:OE2	1:D:109:GLY:HA3	2.20	0.41
3:F:160:VAL:O	3:F:170:GLN:N	2.53	0.41
3:I:145:PRO:HG2	3:I:148:THR:HG21	2.03	0.40
1:D:67:ARG:NH1	1:D:87[B]:ARG:HG3	2.35	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:193:THR:HG22	3:F:217:SER:OG	2.22	0.40
3:I:35:ASP:OD1	3:I:35:ASP:N	2.54	0.40
3:I:214:GLU:HA	3:I:215:PRO:HD3	1.86	0.40
3:F:145:PRO:HA	3:F:146:PRO:HD3	1.83	0.40
1:G:6:GLU:OE2	1:G:109:GLY:HA3	2.21	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	120/130 (92%)	119 (99%)	1 (1%)	0	100	100
1	D	122/130 (94%)	120 (98%)	2 (2%)	0	100	100
1	G	118/130 (91%)	117 (99%)	1 (1%)	0	100	100
2	B	109/117 (93%)	106 (97%)	3 (3%)	0	100	100
2	E	110/117 (94%)	107 (97%)	3 (3%)	0	100	100
2	H	110/117 (94%)	107 (97%)	3 (3%)	0	100	100
3	C	198/229 (86%)	192 (97%)	6 (3%)	0	100	100
3	F	198/229 (86%)	191 (96%)	7 (4%)	0	100	100
3	I	179/229 (78%)	172 (96%)	7 (4%)	0	100	100
All	All	1264/1428 (88%)	1231 (97%)	33 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	98/101 (97%)	97 (99%)	1 (1%)	68	86
1	D	99/101 (98%)	98 (99%)	1 (1%)	68	86
1	G	98/101 (97%)	97 (99%)	1 (1%)	68	86
2	B	92/92 (100%)	91 (99%)	1 (1%)	65	84
2	E	91/92 (99%)	90 (99%)	1 (1%)	65	84
2	H	92/92 (100%)	91 (99%)	1 (1%)	65	84
3	C	168/185 (91%)	165 (98%)	3 (2%)	51	76
3	F	167/185 (90%)	164 (98%)	3 (2%)	51	76
3	I	141/185 (76%)	136 (96%)	5 (4%)	32	59
All	All	1046/1134 (92%)	1029 (98%)	17 (2%)	55	79

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	118	SER
2	B	28	ASP
3	C	37	VAL
3	C	83	CYS
3	C	223	ASP
1	D	64	VAL
2	E	28	ASP
3	F	12	GLU
3	F	83	CYS
3	F	223	ASP
1	G	99	VAL
2	H	28	ASP
3	I	25	GLU
3	I	27	LEU
3	I	37	VAL
3	I	83	CYS
3	I	190	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	39	GLN

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Mol	Chain	Res	Type
1	G	39	GLN
2	H	40	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

17 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	$\# Z > 2$
4	GOL	B	201	-	5,5,5	0.37	0	5,5,5	0.34	0
4	GOL	D	202	-	5,5,5	0.37	0	5,5,5	0.30	0
4	GOL	G	201	-	5,5,5	0.37	0	5,5,5	0.31	0
4	GOL	A	201	-	5,5,5	0.34	0	5,5,5	0.34	0
4	GOL	E	201	-	5,5,5	0.38	0	5,5,5	0.29	0
4	GOL	G	202	-	5,5,5	0.37	0	5,5,5	0.36	0
4	GOL	B	202	-	5,5,5	0.38	0	5,5,5	0.17	0
4	GOL	D	201	-	5,5,5	0.36	0	5,5,5	0.36	0
4	GOL	E	202	-	5,5,5	0.39	0	5,5,5	0.26	0
4	GOL	F	301	-	5,5,5	0.36	0	5,5,5	0.28	0
4	GOL	H	202	-	5,5,5	0.38	0	5,5,5	0.30	0
4	GOL	H	203	-	5,5,5	0.36	0	5,5,5	0.32	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	PGE	D	203	-	9,9,9	0.33	0	8,8,8	0.20	0
6	PEG	D	204	-	6,6,6	0.61	0	5,5,5	0.25	0
4	GOL	H	201	-	5,5,5	0.37	0	5,5,5	0.32	0
4	GOL	E	203	-	5,5,5	0.38	0	5,5,5	0.34	0
4	GOL	B	203	-	5,5,5	0.38	0	5,5,5	0.32	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
4	GOL	B	201	-	-	2/4/4/4	-
4	GOL	D	202	-	-	2/4/4/4	-
4	GOL	G	201	-	-	2/4/4/4	-
4	GOL	A	201	-	-	1/4/4/4	-
4	GOL	E	201	-	-	3/4/4/4	-
4	GOL	G	202	-	-	0/4/4/4	-
4	GOL	B	202	-	-	2/4/4/4	-
4	GOL	D	201	-	-	2/4/4/4	-
4	GOL	E	202	-	-	2/4/4/4	-
4	GOL	F	301	-	-	2/4/4/4	-
4	GOL	H	202	-	-	2/4/4/4	-
4	GOL	H	203	-	-	2/4/4/4	-
5	PGE	D	203	-	-	3/7/7/7	-
6	PEG	D	204	-	-	0/4/4/4	-
4	GOL	H	201	-	-	2/4/4/4	-
4	GOL	E	203	-	-	2/4/4/4	-
4	GOL	B	203	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (31) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	201	GOL	O1-C1-C2-C3
4	B	202	GOL	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
4	B	202	GOL	O1-C1-C2-C3
4	B	203	GOL	O1-C1-C2-C3
4	D	202	GOL	O1-C1-C2-C3
4	E	202	GOL	O1-C1-C2-C3
4	F	301	GOL	O1-C1-C2-C3
4	G	201	GOL	O1-C1-C2-C3
4	H	203	GOL	O1-C1-C2-C3
4	B	203	GOL	O1-C1-C2-O2
4	D	202	GOL	O1-C1-C2-O2
4	E	202	GOL	O1-C1-C2-O2
4	E	203	GOL	O1-C1-C2-O2
4	H	203	GOL	O1-C1-C2-O2
4	D	201	GOL	O1-C1-C2-C3
4	E	201	GOL	C1-C2-C3-O3
4	E	203	GOL	O1-C1-C2-C3
4	H	201	GOL	O1-C1-C2-C3
4	H	202	GOL	O1-C1-C2-C3
5	D	203	PGE	O3-C5-C6-O4
4	B	201	GOL	O1-C1-C2-O2
4	D	201	GOL	O1-C1-C2-O2
4	F	301	GOL	O1-C1-C2-O2
4	G	201	GOL	O1-C1-C2-O2
4	H	201	GOL	O1-C1-C2-O2
4	H	202	GOL	O1-C1-C2-O2
4	E	201	GOL	O2-C2-C3-O3
5	D	203	PGE	O1-C1-C2-O2
4	E	201	GOL	O1-C1-C2-O2
5	D	203	PGE	C6-C5-O3-C4
4	A	201	GOL	O1-C1-C2-O2

There are no ring outliers.

5 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	201	GOL	1	0
4	B	202	GOL	2	0
4	E	202	GOL	2	0
5	D	203	PGE	1	0
4	H	201	GOL	1	0

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	121/130 (93%)	-0.07	3 (2%) 58 52	22, 42, 64, 117	1 (0%)
1	D	122/130 (93%)	-0.05	4 (3%) 49 43	19, 44, 65, 122	2 (1%)
1	G	119/130 (91%)	-0.13	2 (1%) 69 64	21, 45, 67, 114	1 (0%)
2	B	111/117 (94%)	-0.06	2 (1%) 67 63	36, 51, 80, 95	0
2	E	112/117 (95%)	0.15	5 (4%) 38 32	37, 60, 85, 110	0
2	H	112/117 (95%)	0.09	3 (2%) 56 50	40, 56, 79, 100	0
3	C	206/229 (89%)	0.70	30 (14%) 6 4	42, 67, 106, 136	0
3	F	206/229 (89%)	0.71	22 (10%) 11 9	44, 66, 119, 164	0
3	I	191/229 (83%)	1.58	61 (31%) 1 1	54, 99, 141, 160	0
All	All	1300/1428 (91%)	0.45	132 (10%) 12 9	19, 60, 118, 164	4 (0%)

All (132) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	9	PRO	6.1
1	A	120	GLY	5.6
3	C	75	ALA	5.2
3	F	9	PRO	5.2
3	I	50	PRO	4.9
3	F	203	PRO	4.9
3	C	50	PRO	4.8
3	I	23	PRO	4.8
3	F	50	PRO	4.5
3	C	164	GLN	4.3
3	C	165	GLY	4.2
3	F	44	ALA	4.2
3	I	169	VAL	4.2
3	I	22	GLY	4.2
2	E	111	ALA	4.1

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Mol	Chain	Res	Type	RSRZ
3	I	185	ASN	4.1
3	I	135	SER	4.1
3	I	39	PHE	4.1
3	C	133	ASP	4.0
1	A	119	GLY	3.9
3	I	131	LEU	3.9
3	I	17	LEU	3.9
3	F	134	GLU	3.9
3	I	214	GLU	3.7
3	I	219	LEU	3.7
3	I	136	GLY	3.7
3	F	132	ALA	3.7
3	F	23	PRO	3.7
3	C	223	ASP	3.6
3	I	27	LEU	3.6
3	I	190	THR	3.5
3	I	44	ALA	3.5
3	C	77	GLY	3.4
3	I	40	TRP	3.4
3	I	43	ALA	3.4
3	I	10	LYS	3.3
3	I	181	CYS	3.3
1	D	121	GLY	3.3
1	D	120	GLY	3.2
3	C	168	SER	3.2
2	E	110	LEU	3.2
3	I	188	GLY	3.2
3	F	11	PHE	3.2
3	I	120	LEU	3.1
3	I	194	PHE	3.1
3	I	11	PHE	3.0
3	F	12	GLU	3.0
3	I	80	ARG	3.0
3	I	24	GLU	3.0
3	I	21	ARG	3.0
3	I	218	LEU	2.9
3	F	223	ASP	2.9
3	I	78	ALA	2.9
3	I	12	GLU	2.9
1	D	0	SER	2.9
3	F	163	GLY	2.9
3	I	123	ALA	2.9

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Mol	Chain	Res	Type	RSRZ
3	I	203	PRO	2.9
3	I	160	VAL	2.9
1	G	1	GLU	2.8
3	F	150	MET	2.8
3	F	169	VAL	2.8
2	E	0	SER	2.8
1	D	1	GLU	2.8
3	F	75	ALA	2.8
3	I	202	GLU	2.8
3	F	76	ARG	2.8
3	I	192	TYR	2.8
3	I	26	LEU	2.7
1	A	0	SER	2.7
2	B	69	SER	2.7
3	I	79	VAL	2.7
3	I	87	THR	2.7
3	I	215	PRO	2.7
3	C	141	ARG	2.6
3	C	163	GLY	2.6
3	F	221	PRO	2.6
3	C	11	PHE	2.6
3	I	217	SER	2.6
3	I	122	ASP	2.6
3	C	74	THR	2.5
3	I	204	SER	2.5
3	C	61	ASP	2.5
3	I	139	VAL	2.5
2	H	111	ALA	2.5
3	F	164	GLN	2.5
3	I	20	ALA	2.5
2	E	69	SER	2.5
2	H	69	SER	2.5
3	I	147	GLU	2.5
3	C	22	GLY	2.5
3	C	149	PRO	2.4
2	E	1	GLN	2.4
2	B	110	LEU	2.4
3	I	73	PRO	2.4
3	I	128	VAL	2.4
3	I	195	ALA	2.4
3	C	150	MET	2.4
3	C	130	ARG	2.4

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Mol	Chain	Res	Type	RSRZ
3	F	141	ARG	2.4
3	C	43	ALA	2.4
3	C	134	GLU	2.3
1	G	0	SER	2.3
3	C	222	SER	2.3
3	I	216	VAL	2.3
3	C	132	ALA	2.3
3	I	74	THR	2.3
3	F	149	PRO	2.3
3	I	196	VAL	2.3
3	I	141	ARG	2.3
3	I	189	ARG	2.3
3	C	147	GLU	2.3
3	I	149	PRO	2.3
3	C	137	HIS	2.2
3	C	10	LYS	2.2
3	F	184	SER	2.2
3	F	202	GLU	2.2
2	H	58	SER	2.2
3	I	201	ALA	2.1
3	I	69	LEU	2.1
3	I	107	PRO	2.1
3	C	184	SER	2.1
3	F	193	THR	2.1
3	I	121	LEU	2.1
3	I	183	LEU	2.1
3	C	21	ARG	2.0
3	I	41	GLU	2.0
3	C	135	SER	2.0
3	I	151	THR	2.0
3	C	170	GLN	2.0
3	C	187	ARG	2.0
3	I	138	VAL	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

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
5	PGE	D	203	10/10	0.68	0.31	60,82,99,100	0
4	GOL	G	201	6/6	0.80	0.21	70,85,87,91	0
4	GOL	H	201	6/6	0.81	0.23	63,77,86,92	0
4	GOL	A	201	6/6	0.81	0.20	84,86,87,94	0
4	GOL	E	202	6/6	0.82	0.19	67,71,75,83	0
4	GOL	B	201	6/6	0.84	0.18	66,80,83,88	0
4	GOL	D	201	6/6	0.85	0.21	78,91,99,110	0
4	GOL	G	202	6/6	0.86	0.17	73,79,92,95	0
4	GOL	B	202	6/6	0.87	0.18	63,69,74,87	0
4	GOL	H	203	6/6	0.87	0.21	84,91,94,97	0
4	GOL	B	203	6/6	0.87	0.20	84,87,95,106	0
4	GOL	F	301	6/6	0.88	0.16	83,88,94,98	0
4	GOL	E	201	6/6	0.89	0.15	67,71,78,80	0
4	GOL	E	203	6/6	0.91	0.18	70,78,90,96	0
4	GOL	D	202	6/6	0.92	0.12	33,61,72,76	0
6	PEG	D	204	7/7	0.92	0.17	29,62,79,81	0
4	GOL	H	202	6/6	0.94	0.13	83,87,92,100	0

6.5 Other polymers

There are no such residues in this entry.