



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 6, 2026 – 10:27 AM UTC

PDB ID : 4JEQ / pdb_00004jeq
Title : Different Contribution of Conserved Amino Acids to the Global Properties of Homologous Enzymes
Authors : Hernandez-Santoyo, A.; Aguirre-Fuentes, Y.; Torres-Larios, A.; Gomez-Puyou, A.; De Gomez-Puyou, M.T.
Deposited on : 2013-02-27
Resolution : 2.30 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

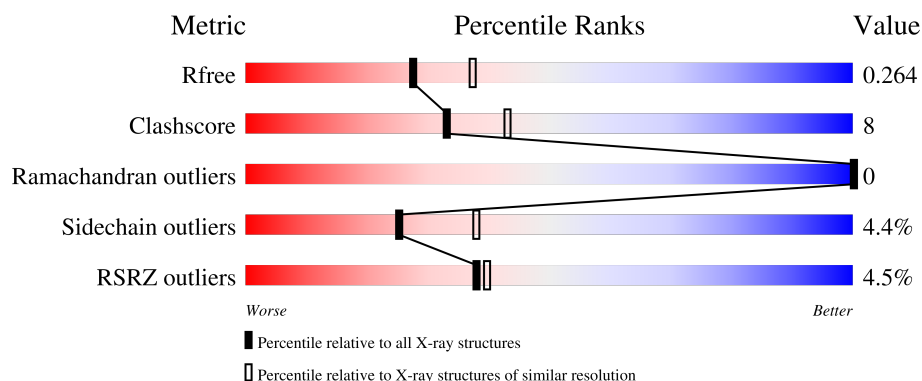
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

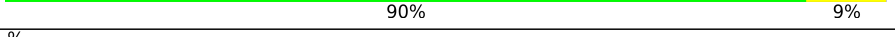
The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	250	 90% 10%
1	B	250	 86% 11% ..
1	C	250	 82% 16% ..
1	D	250	 90% 9%
1	E	250	 90% 9%

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Mol	Chain	Length	Quality of chain
1	F	250	
1	G	250	
1	H	250	
1	I	250	
1	J	250	
1	K	250	
1	L	250	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	PEG	B	301	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 23118 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 TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	250	Total	C	N	O	S	0	0	0
			1890	1201	332	351	6			
1	B	245	Total	C	N	O	S	0	0	0
			1858	1182	326	344	6			
1	C	248	Total	C	N	O	S	0	0	0
			1879	1195	330	348	6			
1	D	250	Total	C	N	O	S	0	0	0
			1889	1201	332	350	6			
1	E	250	Total	C	N	O	S	0	0	0
			1885	1197	331	351	6			
1	F	249	Total	C	N	O	S	0	0	0
			1883	1197	331	349	6			
1	G	245	Total	C	N	O	S	0	0	0
			1856	1179	326	345	6			
1	H	243	Total	C	N	O	S	0	0	0
			1841	1171	324	341	5			
1	I	247	Total	C	N	O	S	0	0	0
			1870	1189	329	346	6			
1	J	249	Total	C	N	O	S	0	0	0
			1882	1197	331	348	6			
1	K	246	Total	C	N	O	S	0	0	0
			1865	1187	327	345	6			
1	L	246	Total	C	N	O	S	0	0	0
			1866	1187	328	345	6			

There are 12 discrepancies between the modelled and reference sequences:

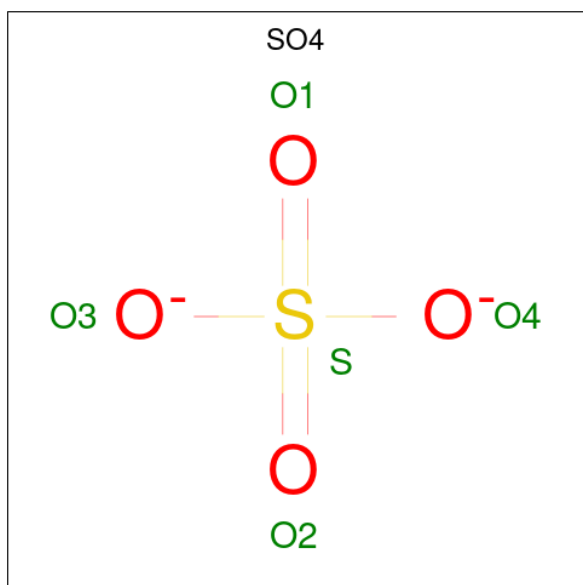
Chain	Residue	Modelled	Actual	Comment	Reference
A	104	ASP	GLU	engineered mutation	UNP P04789
B	104	ASP	GLU	engineered mutation	UNP P04789
C	104	ASP	GLU	engineered mutation	UNP P04789
D	104	ASP	GLU	engineered mutation	UNP P04789
E	104	ASP	GLU	engineered mutation	UNP P04789

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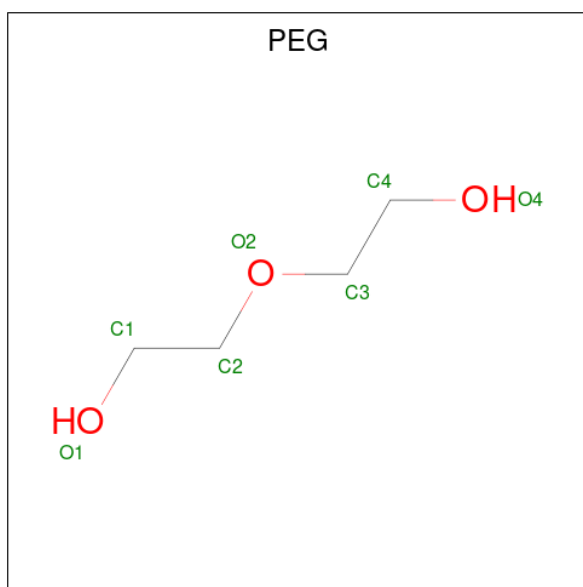
Chain	Residue	Modelled	Actual	Comment	Reference
F	104	ASP	GLU	engineered mutation	UNP P04789
G	104	ASP	GLU	engineered mutation	UNP P04789
H	104	ASP	GLU	engineered mutation	UNP P04789
I	104	ASP	GLU	engineered mutation	UNP P04789
J	104	ASP	GLU	engineered mutation	UNP P04789
K	104	ASP	GLU	engineered mutation	UNP P04789
L	104	ASP	GLU	engineered mutation	UNP P04789

- 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	D	1	Total	O	S	0	0
			5	4	1		
2	D	1	Total	O	S	0	0
			5	4	1		
2	H	1	Total	O	S	0	0
			5	4	1		
2	K	1	Total	O	S	0	0
			5	4	1		

- Molecule 3 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: C₄H₁₀O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			7	4	3		
3	B	1	Total	C	O	0	0
			7	4	3		
3	B	1	Total	C	O	0	0
			7	4	3		
3	C	1	Total	C	O	0	0
			7	4	3		
3	E	1	Total	C	O	0	0
			7	4	3		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	139	Total	O	0	0
			139	139		
4	B	85	Total	O	0	0
			85	85		
4	C	65	Total	O	0	0
			65	65		
4	D	84	Total	O	0	0
			84	84		
4	E	72	Total	O	0	0
			72	72		
4	F	43	Total	O	0	0
			43	43		
4	G	27	Total	O	0	0
			27	27		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	H	22	Total 22	O 22	0	0
4	I	18	Total 18	O 18	0	0
4	J	12	Total 12	O 12	0	0
4	K	14	Total 14	O 14	0	0
4	L	13	Total 13	O 13	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.

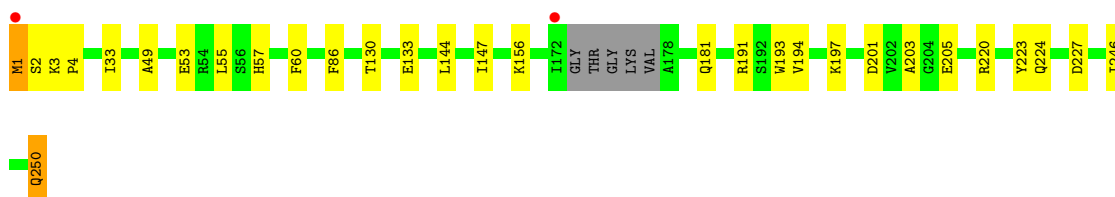
- Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

Chain A: 



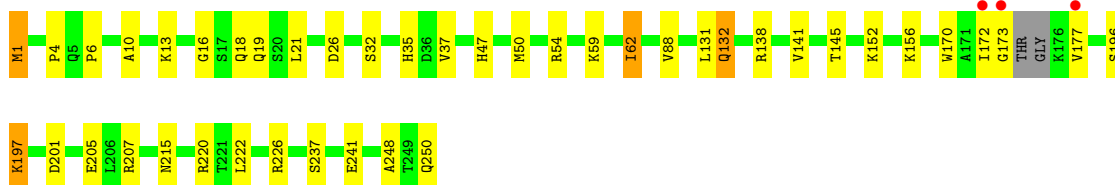
- Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

Chain B: 



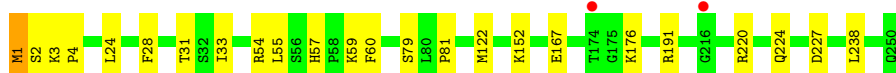
- Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

Chain C: 



- Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

Chain D: 

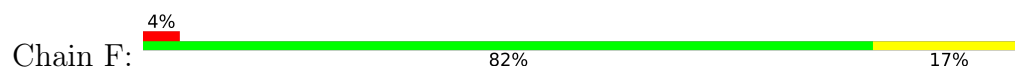


- Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

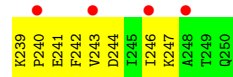
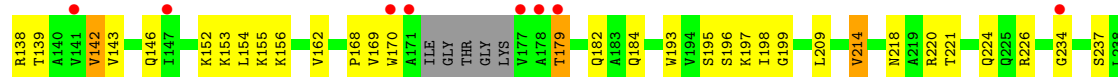
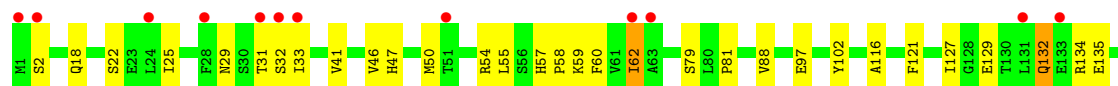
Chain E: 



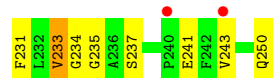
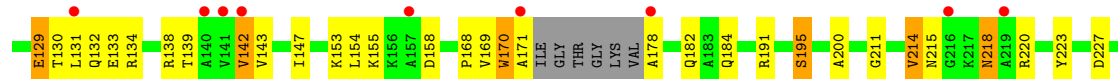
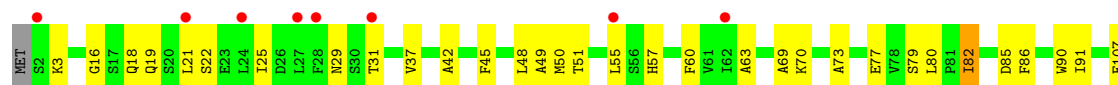
● Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL



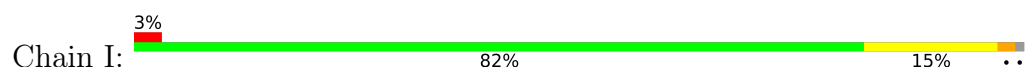
● Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL



● Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

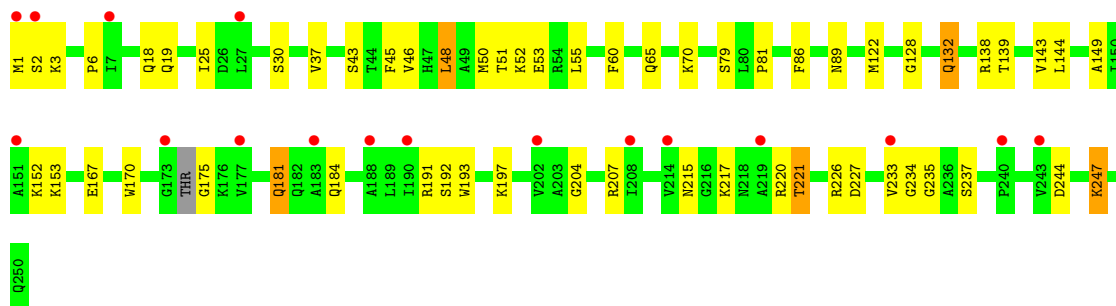
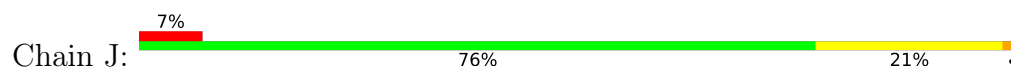


● Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL

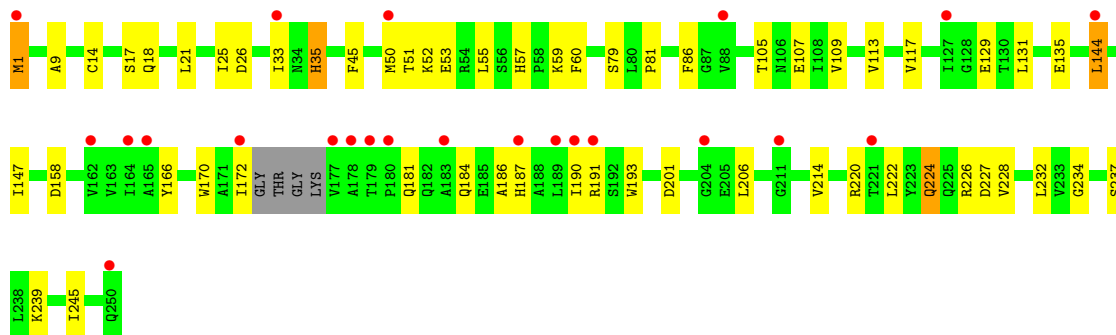
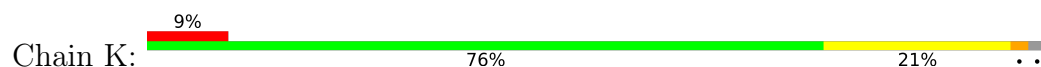




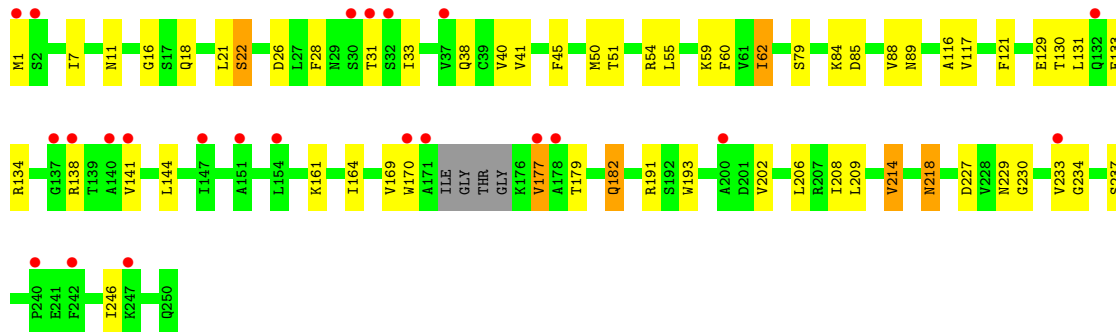
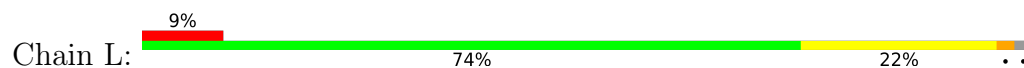
• Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL



• Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL



• Molecule 1: TRIOSEPHOSPHATE ISOMERASE, GLYCOSOMAL



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	88.09Å 89.78Å 181.72Å 90.00° 101.61° 90.00°	Depositor
Resolution (Å)	61.58 – 2.30 61.58 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.4 (61.58-2.30) 95.6 (61.58-2.30)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.89 (at 2.29Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.2_1307)	Depositor
R, R_{free}	0.207 , 0.261 0.209 , 0.264	Depositor DCC
R_{free} test set	6152 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	34.4	Xtriage
Anisotropy	0.422	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 33.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.026 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	23118	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.76% 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](#)

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

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	0.61	0/1924	0.88	1/2608 (0.0%)
1	B	0.58	0/1891	0.86	1/2564 (0.0%)
1	C	0.55	0/1912	0.86	0/2590
1	D	0.59	0/1923	0.84	2/2608 (0.1%)
1	E	0.63	1/1919 (0.1%)	0.90	2/2602 (0.1%)
1	F	0.58	1/1916 (0.1%)	0.87	2/2595 (0.1%)
1	G	0.51	0/1889	0.87	0/2560
1	H	0.59	1/1874 (0.1%)	0.85	1/2542 (0.0%)
1	I	0.57	1/1903 (0.1%)	0.83	2/2579 (0.1%)
1	J	0.51	0/1915	0.85	1/2595 (0.0%)
1	K	0.44	0/1898	0.81	0/2574
1	L	0.45	0/1899	0.84	0/2574
All	All	0.55	4/22863 (0.0%)	0.85	12/30991 (0.0%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	211	GLY	C-O	-6.62	1.19	1.24
1	H	170	TRP	CA-C	-6.27	1.44	1.52
1	E	170	TRP	NE1-CE2	-6.11	1.30	1.37
1	I	211	GLY	C-O	-5.60	1.16	1.23

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2	SER	N-CA-C	-7.99	100.28	110.19
1	E	173	GLY	N-CA-C	-7.98	100.23	112.84
1	B	2	SER	N-CA-C	6.06	118.59	110.35
1	D	57	HIS	CA-C-N	5.68	125.35	119.56
1	D	57	HIS	C-N-CA	5.68	125.35	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	1890	0	1927	17	0
1	B	1858	0	1891	29	0
1	C	1879	0	1916	30	0
1	D	1889	0	1927	12	0
1	E	1885	0	1915	12	0
1	F	1883	0	1919	22	0
1	G	1856	0	1882	54	0
1	H	1841	0	1865	54	0
1	I	1870	0	1905	37	0
1	J	1882	0	1919	38	0
1	K	1865	0	1900	37	0
1	L	1866	0	1902	36	0
2	A	5	0	0	0	0
2	D	10	0	0	0	0
2	H	5	0	0	1	0
2	K	5	0	0	0	0
3	A	7	0	10	3	0
3	B	14	0	20	6	0
3	C	7	0	9	3	0
3	E	7	0	9	0	0
4	A	139	0	0	3	0
4	B	85	0	0	0	0
4	C	65	0	0	3	0
4	D	84	0	0	2	0
4	E	72	0	0	0	0
4	F	43	0	0	1	0
4	G	27	0	0	3	0
4	H	22	0	0	1	0
4	I	18	0	0	0	0
4	J	12	0	0	1	0
4	K	14	0	0	2	0
4	L	13	0	0	0	0
All	All	23118	0	22916	353	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.

The worst 5 of 353 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:B:205:GLU:CG	1:I:1:MET:HB3	1.70	1.20
1:J:234:GLY:O	1:J:237:SER:HB3	1.43	1.17
1:B:205:GLU:HG2	1:I:1:MET:HB3	1.16	1.12
1:B:205:GLU:HG2	1:I:1:MET:CB	1.86	1.05
1:C:6:PRO:HG2	1:C:37:VAL:HG22	1.45	0.96

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	248/250 (99%)	243 (98%)	5 (2%)	0	100	100
1	B	241/250 (96%)	237 (98%)	4 (2%)	0	100	100
1	C	244/250 (98%)	237 (97%)	7 (3%)	0	100	100
1	D	248/250 (99%)	245 (99%)	3 (1%)	0	100	100
1	E	248/250 (99%)	240 (97%)	8 (3%)	0	100	100
1	F	245/250 (98%)	240 (98%)	5 (2%)	0	100	100
1	G	241/250 (96%)	231 (96%)	10 (4%)	0	100	100
1	H	239/250 (96%)	228 (95%)	11 (5%)	0	100	100
1	I	243/250 (97%)	231 (95%)	12 (5%)	0	100	100
1	J	245/250 (98%)	237 (97%)	8 (3%)	0	100	100
1	K	242/250 (97%)	232 (96%)	10 (4%)	0	100	100
1	L	242/250 (97%)	236 (98%)	6 (2%)	0	100	100
All	All	2926/3000 (98%)	2837 (97%)	89 (3%)	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	197/197 (100%)	193 (98%)	4 (2%)	48	67
1	B	194/197 (98%)	192 (99%)	2 (1%)	68	82
1	C	196/197 (100%)	186 (95%)	10 (5%)	21	32
1	D	197/197 (100%)	193 (98%)	4 (2%)	48	67
1	E	196/197 (100%)	193 (98%)	3 (2%)	57	75
1	F	196/197 (100%)	188 (96%)	8 (4%)	27	41
1	G	193/197 (98%)	179 (93%)	14 (7%)	13	18
1	H	191/197 (97%)	175 (92%)	16 (8%)	10	14
1	I	195/197 (99%)	191 (98%)	4 (2%)	47	66
1	J	196/197 (100%)	183 (93%)	13 (7%)	15	21
1	K	195/197 (99%)	184 (94%)	11 (6%)	19	28
1	L	195/197 (99%)	181 (93%)	14 (7%)	13	18
All	All	2341/2364 (99%)	2238 (96%)	103 (4%)	25	38

5 of 103 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	218	ASN
1	J	132	GLN
1	L	202	VAL
1	H	241	GLU
1	J	19	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 45 such sidechains are listed below:

Mol	Chain	Res	Type
1	H	34	ASN

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Mol	Chain	Res	Type
1	J	250	GLN
1	H	218	ASN
1	J	38	GLN
1	K	57	HIS

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](#)

10 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	D	302	-	4,4,4	0.29	0	6,6,6	0.13	0
3	PEG	E	301	-	6,6,6	0.65	0	5,5,5	0.37	0
2	SO4	D	301	-	4,4,4	0.33	0	6,6,6	0.15	0
3	PEG	B	302	-	6,6,6	0.62	0	5,5,5	0.33	0
3	PEG	B	301	-	6,6,6	0.61	0	5,5,5	0.43	0
2	SO4	H	301	-	4,4,4	0.29	0	6,6,6	0.27	0
2	SO4	K	301	-	4,4,4	0.30	0	6,6,6	0.15	0
3	PEG	A	302	-	6,6,6	0.61	0	5,5,5	0.40	0
2	SO4	A	301	-	4,4,4	0.37	0	6,6,6	0.17	0
3	PEG	C	301	-	6,6,6	0.66	0	5,5,5	0.38	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	PEG	E	301	-	-	2/4/4/4	-
3	PEG	B	302	-	-	2/4/4/4	-
3	PEG	B	301	-	-	3/4/4/4	-
3	PEG	C	301	-	-	2/4/4/4	-
3	PEG	A	302	-	-	3/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 12 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	302	PEG	C4-C3-O2-C2
3	E	301	PEG	C1-C2-O2-C3
3	B	302	PEG	C4-C3-O2-C2
3	A	302	PEG	O1-C1-C2-O2
3	C	301	PEG	O2-C3-C4-O4

There are no ring outliers.

5 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	302	PEG	1	0
3	B	301	PEG	5	0
2	H	301	SO4	1	0
3	A	302	PEG	3	0
3	C	301	PEG	3	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	250/250 (100%)	-0.36	0 100 100	8, 17, 33, 42	0
1	B	245/250 (98%)	-0.24	2 (0%) 82 83	9, 20, 38, 55	0
1	C	248/250 (99%)	-0.01	3 (1%) 76 77	14, 27, 48, 64	0
1	D	250/250 (100%)	-0.22	2 (0%) 82 83	11, 22, 38, 49	0
1	E	250/250 (100%)	-0.15	3 (1%) 76 77	13, 23, 38, 67	0
1	F	249/250 (99%)	0.32	9 (3%) 46 48	19, 34, 51, 71	0
1	G	245/250 (98%)	0.80	24 (9%) 13 14	17, 40, 64, 70	0
1	H	243/250 (97%)	0.75	19 (7%) 19 21	18, 41, 61, 68	0
1	I	247/250 (98%)	0.31	8 (3%) 50 52	19, 34, 66, 72	0
1	J	249/250 (99%)	0.87	17 (6%) 23 25	25, 48, 64, 75	0
1	K	246/250 (98%)	0.96	23 (9%) 14 16	31, 55, 69, 83	0
1	L	246/250 (98%)	0.84	23 (9%) 14 16	31, 48, 69, 76	0
All	All	2968/3000 (98%)	0.32	133 (4%) 38 40	8, 34, 62, 83	0

The worst 5 of 133 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	K	177	VAL	5.0
1	K	190	ILE	4.8
1	G	240	PRO	4.1
1	J	1	MET	4.0
1	H	2	SER	3.9

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

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

6.3 Carbohydrates [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
2	SO4	K	301	5/5	0.68	0.17	47,52,60,69	0
2	SO4	H	301	5/5	0.69	0.12	59,61,62,62	0
3	PEG	C	301	7/7	0.77	0.14	27,31,40,42	0
3	PEG	B	301	7/7	0.79	0.22	24,25,34,37	0
2	SO4	D	301	5/5	0.81	0.18	43,45,54,69	0
3	PEG	E	301	7/7	0.81	0.14	24,36,37,41	0
3	PEG	B	302	7/7	0.82	0.15	25,28,32,37	0
3	PEG	A	302	7/7	0.85	0.15	25,27,30,34	0
2	SO4	A	301	5/5	0.92	0.15	25,30,40,42	0
2	SO4	D	302	5/5	0.94	0.12	31,31,34,39	0

6.5 Other polymers [i](#)

There are no such residues in this entry.