



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 9, 2024 – 02:28 PM EST

PDB ID : 8V50  
Title : Crystal structure of a HLA-B\*35:01-NP6 with D1 TCR  
Authors : Littler, D.R.; Rossjohn, J.; Gras, S.  
Deposited on : 2023-11-30  
Resolution : 2.65 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](mailto: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>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Xtrriage (Phenix) : 1.21  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.004 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

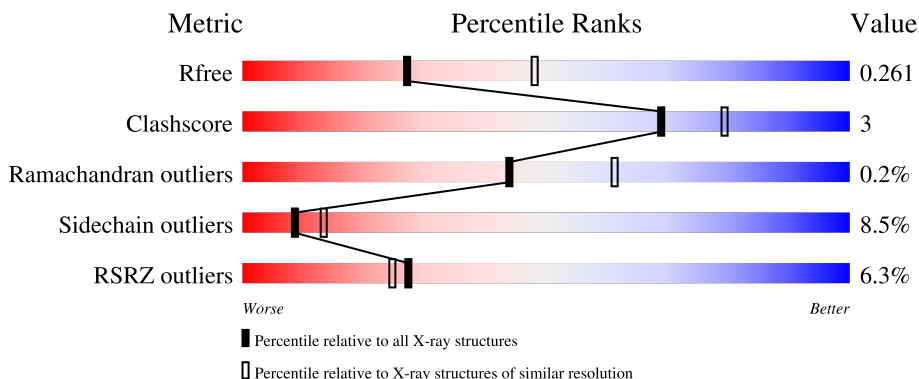
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.65 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))
$R_{free}$	164625	1003 (2.66-2.66)
Clashscore	180529	1063 (2.66-2.66)
Ramachandran outliers	177936	1052 (2.66-2.66)
Sidechain outliers	177891	1052 (2.66-2.66)
RSRZ outliers	164620	1003 (2.66-2.66)

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  $\geq 3$ , 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	274	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 81%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 16%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">81% 16% .</p>
1	F	274	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 83%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 15%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">5% 83% 15% .</p>
1	K	274	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 80%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 19%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">4% 80% 19% .</p>
1	P	274	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 86%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">3% 86% 12% ..</p>
2	B	100	<div style="display: flex; align-items: center;"> <div style="width: 0%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 71%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 20%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 8%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="text-align: center;">% 71% 20% 8% .</p>

*Continued on next page...*

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Mol	Chain	Length	Quality of chain
2	G	100	 12% 78% 20% ..
2	L	100	 8% 75% 22% ..
2	Q	100	 2% 67% 27% 5% .
3	C	9	 78% 22%
3	H	9	 89% 11%
3	M	9	 78% 22%
3	R	9	 89% 11%
4	D	197	 9% 86% 13% .
4	I	197	 18% 91% 9% .
4	N	197	 11% 91% 8% .
4	S	197	 15% 90% 10% .
5	E	242	 2% 90% 10%
5	J	242	 6% 88% 12%
5	O	242	 3% 88% 12%
5	T	242	 5% 90% 10%

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 27419 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 HLA-B35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	273	Total 2241	C 1397	N 409	O 428	S 7	0	1	0
1	F	273	Total 2241	C 1397	N 409	O 428	S 7	0	1	0
1	K	273	Total 2233	C 1393	N 408	O 425	S 7	0	0	0
1	P	271	Total 2221	C 1386	N 406	O 422	S 7	0	0	0

- Molecule 2 is a protein called Beta-2-microglobulin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	99	Total 829	C 528	N 140	O 158	S 3	0	0	0
2	G	99	Total 829	C 528	N 140	O 158	S 3	0	0	0
2	L	99	Total 829	C 528	N 140	O 158	S 3	0	0	0
2	Q	99	Total 829	C 528	N 140	O 158	S 3	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	0	MET	-	initiating methionine	UNP P61769
G	0	MET	-	initiating methionine	UNP P61769
L	0	MET	-	initiating methionine	UNP P61769
Q	0	MET	-	initiating methionine	UNP P61769

- Molecule 3 is a protein called NP6 epitope H1N1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	9	Total	C	N	O	S	0	0	0
			72	47	10	14	1			
3	H	9	Total	C	N	O	S	0	0	0
			72	47	10	14	1			
3	M	9	Total	C	N	O	S	0	0	0
			72	47	10	14	1			
3	R	9	Total	C	N	O	S	0	0	0
			72	47	10	14	1			

- Molecule 4 is a protein called D1 TCR alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	197	Total	C	N	O	S	0	2	0
			1546	970	249	317	10			
4	I	197	Total	C	N	O	S	0	2	0
			1546	970	249	317	10			
4	N	197	Total	C	N	O	S	0	2	0
			1546	970	249	317	10			
4	S	197	Total	C	N	O	S	0	2	0
			1546	970	249	317	10			

- Molecule 5 is a protein called D1 TCR beta chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	242	Total	C	N	O	S	0	2	0
			1933	1216	338	372	7			
5	J	242	Total	C	N	O	S	0	3	0
			1942	1221	339	375	7			
5	O	242	Total	C	N	O	S	0	3	0
			1942	1221	339	375	7			
5	T	242	Total	C	N	O	S	0	3	0
			1942	1221	339	375	7			

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	61	Total	O	0	0
			61	61		
6	B	29	Total	O	0	0
			29	29		
6	C	1	Total	O	0	0
			1	1		

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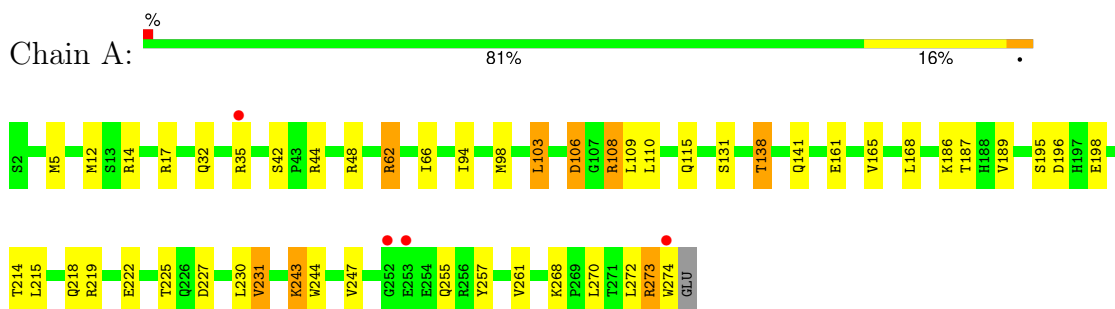
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	D	44	Total O 44 44	0	0
6	E	50	Total O 50 50	0	0
6	F	83	Total O 83 83	0	0
6	G	22	Total O 22 22	0	0
6	H	6	Total O 6 6	0	0
6	I	65	Total O 65 65	0	0
6	J	73	Total O 73 73	0	0
6	K	86	Total O 86 86	0	0
6	L	14	Total O 14 14	0	0
6	M	5	Total O 5 5	0	0
6	N	58	Total O 58 58	0	0
6	O	73	Total O 73 73	0	0
6	P	89	Total O 89 89	0	0
6	Q	31	Total O 31 31	0	0
6	R	6	Total O 6 6	0	0
6	S	54	Total O 54 54	0	0
6	T	86	Total O 86 86	0	0

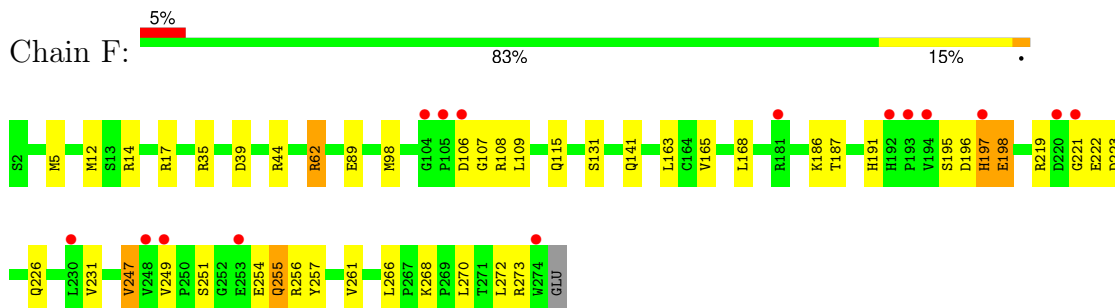
### 3 Residue-property plots [i](#)

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.

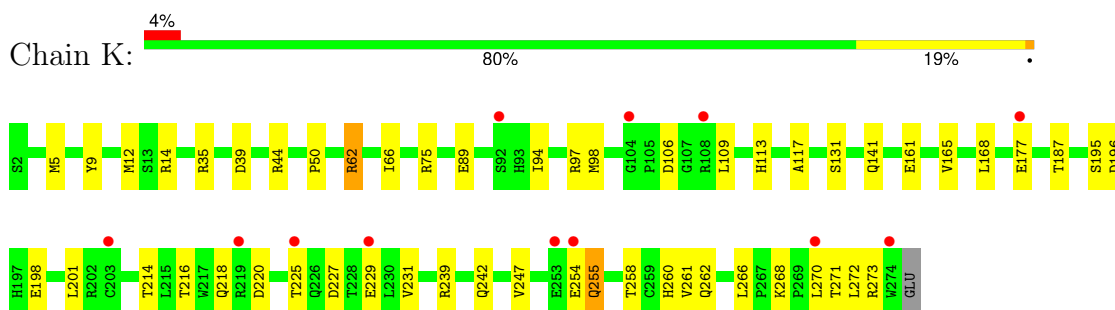
- Molecule 1: HLA-B35



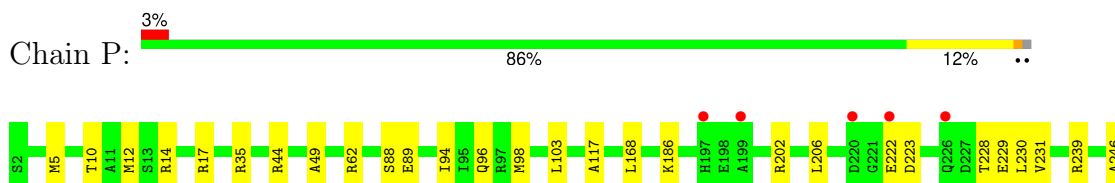
- Molecule 1: HLA-B35

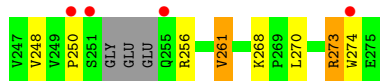


- Molecule 1: HLA-B35

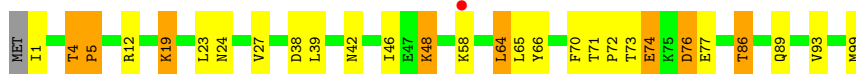


- Molecule 1: HLA-B35

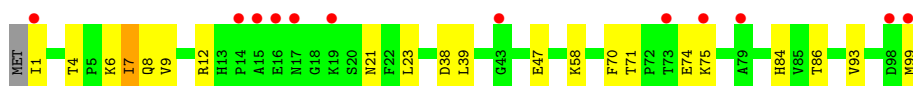
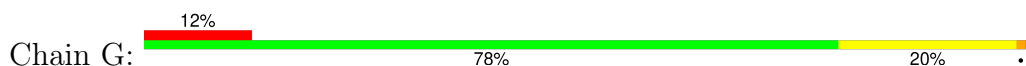




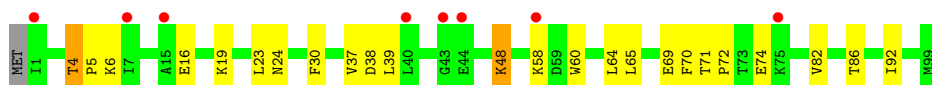
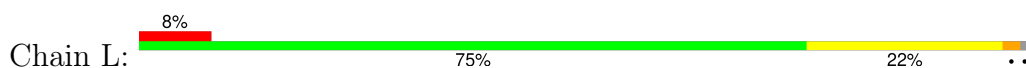
- Molecule 2: Beta-2-microglobulin



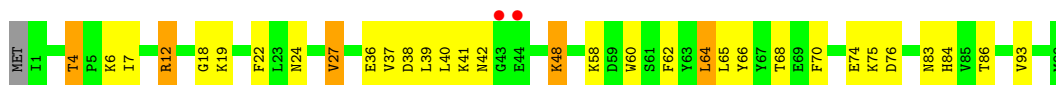
- Molecule 2: Beta-2-microglobulin



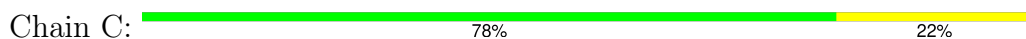
- Molecule 2: Beta-2-microglobulin



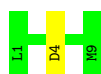
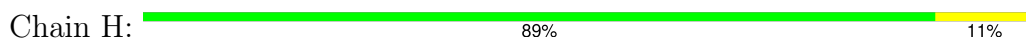
- Molecule 2: Beta-2-microglobulin



- Molecule 3: NP6 epitope H1N1




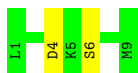
- Molecule 3: NP6 epitope H1N1




- Molecule 3: NP6 epitope H1N1

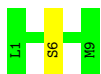


Chain M:  78% 22%




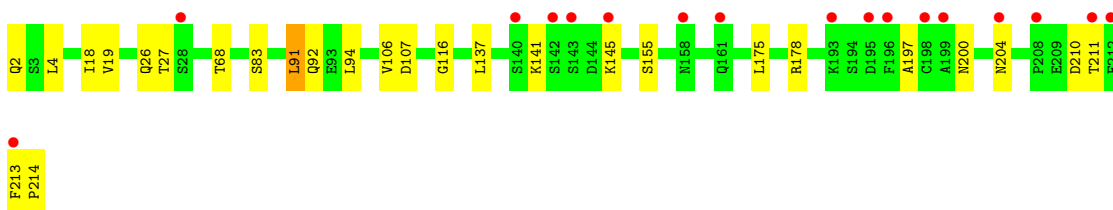
- Molecule 3: NP6 epitope H1N1

Chain R:  89% 11%




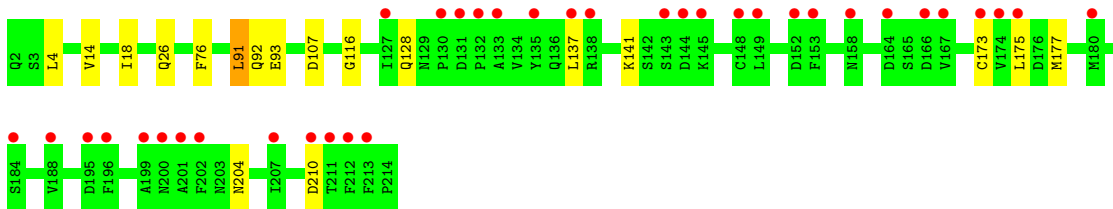
- Molecule 4: D1 TCR alpha chain

Chain D:  9% 86% 13%



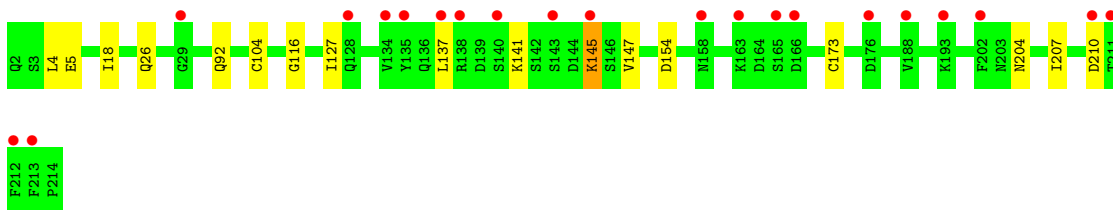
- Molecule 4: D1 TCR alpha chain

Chain I:  18% 91% 9%




- Molecule 4: D1 TCR alpha chain

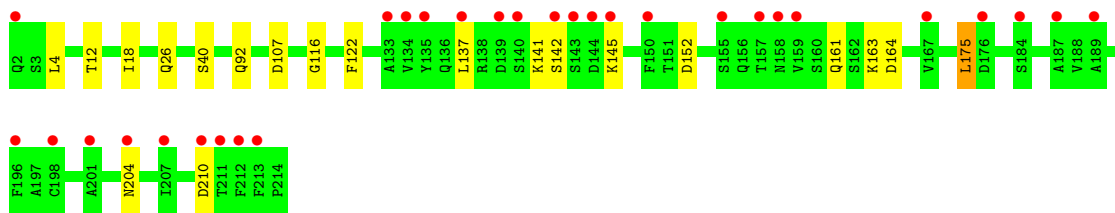
Chain N:  11% 91% 8%



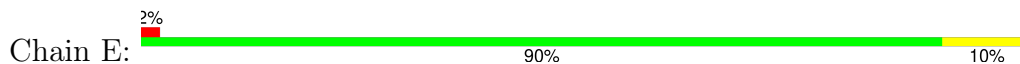
- Molecule 4: D1 TCR alpha chain

Chain S:  15% 90% 10%

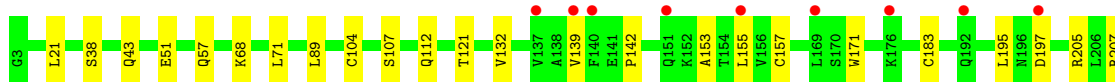
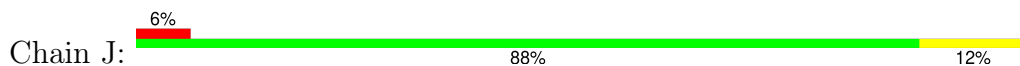




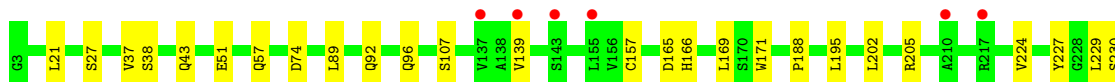
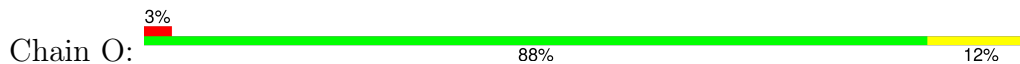
● Molecule 5: D1 TCR beta chain



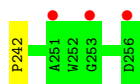
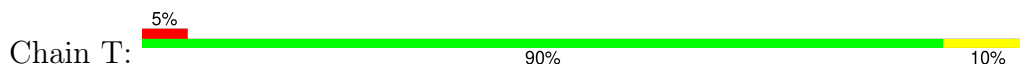
● Molecule 5: D1 TCR beta chain



● Molecule 5: D1 TCR beta chain



● Molecule 5: D1 TCR beta chain



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	78.58Å 192.16Å 252.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.59 – 2.65 38.59 – 2.65	Depositor EDS
% Data completeness (in resolution range)	99.8 (38.59-2.65) 99.9 (38.59-2.65)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.75 (at 2.65Å)	Xtrriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, $R_{free}$	0.218 , 0.265 0.215 , 0.261	Depositor DCC
$R_{free}$ test set	5640 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	35.0	Xtrriage
Anisotropy	0.644	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 40.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	27419	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	48.0	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 52.27 % 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 4.9819e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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	0.37	0/2303	0.61	0/3132
1	F	0.40	0/2303	0.64	0/3132
1	K	0.39	0/2295	0.62	0/3121
1	P	0.37	0/2282	0.61	0/3101
2	B	0.38	0/852	0.67	0/1152
2	G	0.39	0/852	0.66	0/1152
2	L	0.38	0/852	0.63	0/1152
2	Q	0.38	0/852	0.66	0/1152
3	C	0.57	0/73	0.53	0/96
3	H	0.38	0/73	0.55	0/96
3	M	0.55	0/73	0.58	0/96
3	R	0.39	0/73	0.55	0/96
4	D	0.38	0/1580	0.59	0/2139
4	I	0.37	0/1580	0.59	0/2139
4	N	0.38	0/1580	0.62	0/2139
4	S	0.37	0/1580	0.60	0/2139
5	E	0.36	0/1985	0.58	0/2700
5	J	0.35	0/1994	0.59	0/2712
5	O	0.36	0/1994	0.60	0/2712
5	T	0.35	0/1994	0.60	0/2712
All	All	0.37	0/27170	0.61	0/36870

There are no bond length outliers.

There are no bond angle outliers.

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	2241	0	2101	21	0
1	F	2241	0	2103	16	0
1	K	2233	0	2100	24	0
1	P	2221	0	2090	11	0
2	B	829	0	794	11	0
2	G	829	0	794	5	0
2	L	829	0	794	8	0
2	Q	829	0	794	17	0
3	C	72	0	76	2	0
3	H	72	0	76	1	0
3	M	72	0	76	1	0
3	R	72	0	76	0	0
4	D	1546	0	1437	10	0
4	I	1546	0	1437	9	0
4	N	1546	0	1437	7	0
4	S	1546	0	1437	7	0
5	E	1933	0	1832	9	0
5	J	1942	0	1837	16	0
5	O	1942	0	1837	9	0
5	T	1942	0	1837	13	0
6	A	61	0	0	0	0
6	B	29	0	0	0	0
6	C	1	0	0	0	0
6	D	44	0	0	0	0
6	E	50	0	0	0	0
6	F	83	0	0	0	0
6	G	22	0	0	0	0
6	H	6	0	0	0	0
6	I	65	0	0	0	0
6	J	73	0	0	0	0
6	K	86	0	0	1	0
6	L	14	0	0	0	0
6	M	5	0	0	0	0
6	N	58	0	0	0	0
6	O	73	0	0	0	0
6	P	89	0	0	0	0
6	Q	31	0	0	0	0
6	R	6	0	0	0	0
6	S	54	0	0	0	0
6	T	86	0	0	0	0
All	All	27419	0	24965	173	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 3.

All (173) 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:Q:42:ASN:HD21	2:Q:76:ASP:HB2	1.20	1.05
2:Q:42:ASN:HD21	2:Q:76:ASP:CB	1.71	1.03
2:Q:42:ASN:ND2	2:Q:76:ASP:HB2	1.82	0.92
1:A:255:GLN:HG3	1:K:255:GLN:HG2	1.53	0.86
2:G:4:THR:HA	2:G:86:THR:HG21	1.60	0.84
2:L:4:THR:HA	2:L:86:THR:HG21	1.60	0.82
1:F:251:SER:HA	1:F:254:GLU:OE2	1.80	0.80
1:F:62:ARG:NH1	3:H:4:ASP:OD2	2.16	0.79
2:Q:4:THR:HA	2:Q:86:THR:HG21	1.65	0.78
2:B:4:THR:HA	2:B:86:THR:HG21	1.67	0.77
1:K:201:LEU:HD11	1:K:254:GLU:HG3	1.67	0.76
1:A:62:ARG:NH2	3:C:4:ASP:OD2	2.21	0.73
1:K:62:ARG:HG2	1:K:62:ARG:HH11	1.52	0.73
1:A:273:ARG:HH11	1:A:273:ARG:HG3	1.55	0.71
1:A:255:GLN:HG3	1:K:255:GLN:CG	2.21	0.70
5:T:21:LEU:HD22	5:T:121:THR:HG21	1.75	0.69
1:F:195:SER:HB3	1:F:198:GLU:HB3	1.75	0.69
2:Q:42:ASN:HD21	2:Q:76:ASP:HB3	1.58	0.68
1:K:255:GLN:H	1:K:255:GLN:CD	1.96	0.67
1:K:113:HIS:HD2	6:K:301:HOH:O	1.79	0.65
5:J:132:VAL:HG23	5:J:242:PRO:HG2	1.81	0.63
1:K:62:ARG:HH11	1:K:62:ARG:CG	2.12	0.62
1:P:49:ALA:HA	1:P:239:ARG:HH12	1.64	0.62
5:J:21:LEU:HD22	5:J:121:THR:HG21	1.82	0.61
1:P:261:VAL:HG13	1:P:270:LEU:HB3	1.82	0.61
4:S:175:LEU:HB3	5:T:183[A]:CYS:HB2	1.83	0.60
1:F:221:GLY:HA3	1:K:258:THR:HG21	1.84	0.60
2:Q:27:VAL:HG21	2:Q:37:VAL:HG21	1.83	0.60
4:S:175:LEU:HB3	5:T:183[B]:CYS:HB2	1.83	0.60
2:B:24:ASN:HB3	2:B:65:LEU:HD11	1.84	0.59
1:A:195:SER:HB3	1:A:198:GLU:HB2	1.85	0.59
1:P:202:ARG:HD3	1:P:246:ALA:HB2	1.85	0.58
1:K:187:THR:HG21	1:K:261:VAL:HG11	1.85	0.58
1:K:50:PRO:HD3	1:K:239:ARG:HH12	1.68	0.57
1:A:12:MET:HG3	1:A:94:ILE:HG12	1.86	0.57
4:D:175:LEU:HB3	5:E:183[A]:CYS:HB2	1.85	0.57
4:D:175:LEU:HB3	5:E:183[B]:CYS:HB2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:62:ARG:HG2	1:K:62:ARG:NH1	2.19	0.56
5:T:132:VAL:HG23	5:T:242:PRO:HG2	1.86	0.56
1:A:5:MET:HB2	1:A:168:LEU:HD13	1.87	0.56
1:F:222:GLU:HB3	1:K:271:THR:HG21	1.88	0.56
1:A:187:THR:HG21	1:A:261:VAL:HG11	1.88	0.55
2:L:24:ASN:HB3	2:L:65:LEU:HD11	1.89	0.55
1:F:5:MET:HB2	1:F:168:LEU:HD13	1.88	0.55
1:P:5:MET:HB2	1:P:168:LEU:HD13	1.89	0.55
4:I:4:LEU:HD11	4:I:116:GLY:HA3	1.90	0.54
5:O:157:CYS:HB2	5:O:171:TRP:CZ2	2.42	0.54
5:J:157:CYS:HB2	5:J:171:TRP:CZ2	2.43	0.54
1:F:255:GLN:H	1:F:255:GLN:CD	2.11	0.54
2:Q:64:LEU:HD13	2:Q:66:TYR:HE1	1.72	0.54
4:S:18:ILE:HG13	4:S:92:GLN:HA	1.90	0.53
1:A:109:LEU:HD22	1:A:161:GLU:HA	1.90	0.53
2:Q:24:ASN:HB3	2:Q:65:LEU:HD11	1.90	0.53
2:L:5:PRO:HB3	2:L:30:PHE:HB3	1.89	0.53
1:A:66:ILE:HG12	3:C:4:ASP:OD1	2.08	0.53
1:A:255:GLN:HG3	1:K:255:GLN:CD	2.28	0.53
4:I:137:LEU:HD22	5:J:142:PRO:HA	1.90	0.52
5:T:14:LYS:HG3	5:T:128:ASP:HA	1.90	0.52
2:Q:39:LEU:HD23	2:Q:68:THR:HG22	1.92	0.52
4:N:4:LEU:HD11	4:N:116:GLY:CA	2.40	0.52
1:F:197:HIS:HA	1:F:251:SER:HB3	1.92	0.51
4:N:4:LEU:HD11	4:N:116:GLY:HA3	1.91	0.51
4:I:4:LEU:HD11	4:I:116:GLY:CA	2.41	0.51
1:F:187:THR:HG21	1:F:261:VAL:HG11	1.93	0.51
1:A:261:VAL:HG13	1:A:270:LEU:HB3	1.93	0.50
5:J:239:ARG:HH12	5:J:242:PRO:HG3	1.77	0.50
2:B:73:THR:HB	2:B:76:ASP:OD1	2.11	0.50
1:K:5:MET:HB2	1:K:168:LEU:HD13	1.94	0.50
4:N:4:LEU:HD13	4:N:104[A]:CYS:SG	2.51	0.50
2:Q:12:ARG:HB2	2:Q:22:PHE:HB2	1.93	0.50
4:S:12:THR:HG23	4:S:122:PHE:HB2	1.92	0.50
4:D:107:ASP:HB3	5:E:112:GLN:OE1	2.12	0.49
4:N:18:ILE:HG22	4:N:92:GLN:HA	1.94	0.49
1:F:109:LEU:HB2	1:F:165:VAL:HG21	1.95	0.49
1:F:249:VAL:HG11	1:F:257:TYR:CE2	2.47	0.49
1:P:12:MET:HG3	1:P:94:ILE:HG12	1.94	0.49
1:K:218:GLN:HB2	1:K:260:HIS:HE1	1.78	0.49
1:K:12:MET:HG3	1:K:94:ILE:HG12	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:91:LEU:HD12	4:D:94:LEU:HD21	1.95	0.48
5:O:188:PRO:HB3	5:O:202:LEU:HB2	1.96	0.48
5:O:43:GLN:O	5:O:51[A]:GLU:HG2	2.14	0.48
1:A:14:ARG:HB2	1:A:17:ARG:HB2	1.96	0.48
4:I:175:LEU:HB3	5:J:183[A]:CYS:HB2	1.96	0.48
4:I:175:LEU:HB3	5:J:183[B]:CYS:HB2	1.96	0.48
2:Q:84:HIS:HB3	2:Q:86:THR:HG22	1.96	0.48
4:D:4:LEU:HD11	4:D:116:GLY:CA	2.44	0.48
1:P:14:ARG:HB2	1:P:17:ARG:HB2	1.97	0.47
5:J:68:LYS:HB2	5:J:71:LEU:HD12	1.96	0.47
4:S:137:LEU:HD22	5:T:142:PRO:HA	1.96	0.47
5:T:10:TYR:HB3	5:T:166:HIS:CD2	2.50	0.47
2:B:64:LEU:HD13	2:B:66:TYR:HE1	1.78	0.47
2:G:9:VAL:HG12	2:G:93:VAL:HG12	1.96	0.47
4:I:177:MET:HE3	5:J:207:ARG:HG2	1.97	0.47
2:Q:48:LYS:HD3	2:Q:48:LYS:HA	1.45	0.47
1:F:247:VAL:HB	1:F:249:VAL:HG13	1.95	0.47
1:K:117:ALA:HB2	2:L:60:TRP:CE2	2.50	0.47
2:L:19:LYS:O	2:L:72:PRO:HD2	2.15	0.47
2:B:5:PRO:HD3	2:B:86:THR:HG21	1.97	0.47
1:K:195:SER:HB3	1:K:198:GLU:HB2	1.97	0.46
2:L:37:VAL:HG22	2:L:82:VAL:HG22	1.96	0.46
2:L:48:LYS:HA	2:L:48:LYS:HD3	1.49	0.46
4:N:137:LEU:HD12	4:N:147:VAL:HG12	1.98	0.46
5:J:38:SER:HB2	5:J:107:SER:HB2	1.98	0.46
1:F:191:HIS:CD2	1:F:254:GLU:HG2	2.51	0.46
5:T:239:ARG:HH12	5:T:242:PRO:HG3	1.80	0.46
1:A:103:LEU:HD11	1:A:165:VAL:HG13	1.97	0.46
5:E:21:LEU:HD12	5:E:89:LEU:HD23	1.99	0.45
1:K:266:LEU:HD22	1:K:270:LEU:HD13	1.98	0.45
2:G:23:LEU:HD23	2:G:39:LEU:HD23	1.99	0.45
5:T:229:LEU:HD22	5:T:242:PRO:HD2	1.97	0.45
5:E:157:CYS:HB2	5:E:171:TRP:CZ2	2.52	0.45
5:J:142:PRO:HD3	5:J:155:LEU:HG	1.98	0.45
1:P:273:ARG:HG2	1:P:273:ARG:O	2.15	0.45
1:P:103:LEU:HD13	1:P:168:LEU:HD23	1.99	0.45
5:E:192:GLN:HE21	5:E:195:LEU:HD22	1.81	0.45
1:F:14:ARG:HB2	1:F:17:ARG:HB2	1.99	0.45
4:S:107:ASP:HB3	5:T:112:GLN:OE1	2.17	0.45
5:T:142:PRO:HG2	5:T:153:ALA:HB1	1.99	0.45
5:E:68:LYS:HB2	5:E:71:LEU:HD12	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:48:LYS:HD3	2:B:48:LYS:HA	1.44	0.44
1:K:66:ILE:HG12	3:M:4:ASP:OD1	2.18	0.44
1:P:10:THR:HG21	2:Q:62:PHE:HE1	1.83	0.44
4:I:18:ILE:HG22	4:I:92:GLN:HA	2.00	0.44
4:I:107:ASP:HB3	5:J:112:GLN:OE1	2.18	0.44
4:D:4:LEU:HD23	4:D:106:VAL:HG12	1.99	0.43
5:E:14:LYS:HG3	5:E:128:ASP:HA	2.00	0.43
4:I:76:PHE:CD2	4:I:91:LEU:HD22	2.53	0.43
1:P:10:THR:HG22	1:P:96:GLN:HG2	2.00	0.43
1:F:266:LEU:HD22	1:F:270:LEU:HD13	1.98	0.43
4:D:4:LEU:HD11	4:D:116:GLY:HA3	2.00	0.43
5:O:38:SER:HB2	5:O:107:SER:HB2	2.01	0.43
2:Q:36:GLU:HB2	2:Q:83:ASN:HB3	2.01	0.43
5:T:134:PRO:HD3	5:T:242:PRO:HB3	2.00	0.43
1:A:218:GLN:HA	1:A:222:GLU:O	2.19	0.43
1:K:9:TYR:HB2	1:K:97:ARG:HB3	2.01	0.43
2:Q:42:ASN:ND2	2:Q:76:ASP:CB	2.52	0.43
2:B:39:LEU:HB3	2:B:46:ILE:HD12	2.01	0.42
4:N:145:LYS:HD3	4:N:145:LYS:H	1.84	0.42
1:A:219:ARG:HG3	1:A:257:TYR:CZ	2.53	0.42
1:A:106:ASP:HB2	1:A:108:ARG:HG2	2.02	0.42
5:O:229:LEU:HD13	5:O:242:PRO:HG2	2.00	0.42
2:G:7:ILE:HG13	2:G:8:GLN:N	2.34	0.42
5:O:21:LEU:HD12	5:O:89:LEU:HD23	2.02	0.42
5:T:43:GLN:O	5:T:51[A]:GLU:HG2	2.20	0.42
2:B:19:LYS:O	2:B:72:PRO:HD2	2.20	0.42
4:D:2:GLN:HA	4:D:27:THR:HG22	2.02	0.42
5:E:192:GLN:HB3	5:E:195:LEU:HD13	2.01	0.42
4:N:127:ILE:HD13	4:N:154:ASP:HA	2.02	0.42
1:A:215:LEU:HD12	1:A:243:LYS:HD2	2.02	0.42
2:B:74:GLU:H	2:B:74:GLU:HG3	1.69	0.41
4:D:197:ALA:HB3	4:D:200:ASN:HD21	1.85	0.41
5:J:153:ALA:O	5:J:207:ARG:HA	2.19	0.41
1:K:109:LEU:HB2	1:K:165:VAL:HG21	2.00	0.41
1:K:255:GLN:CD	1:K:255:GLN:N	2.69	0.41
5:J:43:GLN:HB3	5:J:51[A]:GLU:HG3	2.02	0.41
1:A:138:THR:HA	1:A:141:GLN:HG3	2.02	0.41
2:B:23:LEU:HD23	2:B:39:LEU:HD23	2.01	0.41
5:O:169:LEU:HG	5:O:224:VAL:HG22	2.02	0.41
2:B:42:ASN:HA	2:B:77:GLU:HG3	2.01	0.41
2:G:84:HIS:ND1	2:G:86:THR:HG22	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:103:LEU:HD13	1:A:168:LEU:HD23	2.02	0.41
4:D:213:PHE:HA	4:D:214:PRO:HD3	1.92	0.41
1:P:117:ALA:HB2	2:Q:60:TRP:CE2	2.56	0.41
1:A:231:VAL:HG12	1:A:244:TRP:H	1.86	0.41
1:K:109:LEU:HD22	1:K:161:GLU:HA	2.01	0.41
2:L:23:LEU:HD23	2:L:39:LEU:HD23	2.03	0.41
5:O:37:VAL:HG12	5:O:57:GLN:HG2	2.02	0.41
4:S:4:LEU:HD11	4:S:116:GLY:CA	2.50	0.41
2:Q:7:ILE:CG2	2:Q:93:VAL:HG11	2.50	0.41
5:J:21:LEU:HD12	5:J:89:LEU:HD23	2.03	0.40
5:O:166:HIS:HB3	5:O:227:TYR:HB2	2.03	0.40
1:F:197:HIS:CA	1:F:251:SER:HB3	2.51	0.40
5:J:132:VAL:HG21	5:J:229:LEU:CD1	2.51	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	272/274 (99%)	266 (98%)	6 (2%)	0	100	100
1	F	272/274 (99%)	262 (96%)	8 (3%)	2 (1%)	19	31
1	K	271/274 (99%)	259 (96%)	12 (4%)	0	100	100
1	P	267/274 (97%)	255 (96%)	10 (4%)	2 (1%)	19	31
2	B	97/100 (97%)	93 (96%)	4 (4%)	0	100	100
2	G	97/100 (97%)	91 (94%)	6 (6%)	0	100	100
2	L	97/100 (97%)	93 (96%)	4 (4%)	0	100	100
2	Q	97/100 (97%)	92 (95%)	4 (4%)	1 (1%)	13	21
3	C	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
3	H	7/9 (78%)	6 (86%)	1 (14%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	M	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
3	R	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
4	D	197/197 (100%)	187 (95%)	10 (5%)	0	100	100
4	I	197/197 (100%)	185 (94%)	12 (6%)	0	100	100
4	N	197/197 (100%)	182 (92%)	15 (8%)	0	100	100
4	S	197/197 (100%)	183 (93%)	13 (7%)	1 (0%)	25	40
5	E	242/242 (100%)	228 (94%)	14 (6%)	0	100	100
5	J	243/242 (100%)	234 (96%)	9 (4%)	0	100	100
5	O	243/242 (100%)	234 (96%)	8 (3%)	1 (0%)	30	46
5	T	243/242 (100%)	233 (96%)	10 (4%)	0	100	100
All	All	3257/3288 (99%)	3101 (95%)	149 (5%)	7 (0%)	44	61

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	P	274	TRP
1	P	250	PRO
2	Q	18	GLY
4	S	142	SER
5	O	165	ASP
1	F	196	ASP
1	F	107	GLY

### 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	233/233 (100%)	205 (88%)	28 (12%)	4	6
1	F	233/233 (100%)	207 (89%)	26 (11%)	5	8
1	K	232/233 (100%)	205 (88%)	27 (12%)	4	6
1	P	231/233 (99%)	212 (92%)	19 (8%)	9	15

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	94/95 (99%)	76 (81%)	18 (19%)	1	1
2	G	94/95 (99%)	81 (86%)	13 (14%)	3	4
2	L	94/95 (99%)	82 (87%)	12 (13%)	3	5
2	Q	94/95 (99%)	80 (85%)	14 (15%)	2	3
3	C	9/9 (100%)	8 (89%)	1 (11%)	5	8
3	H	9/9 (100%)	9 (100%)	0	100	100
3	M	9/9 (100%)	8 (89%)	1 (11%)	5	8
3	R	9/9 (100%)	8 (89%)	1 (11%)	5	8
4	D	173/171 (101%)	158 (91%)	15 (9%)	8	13
4	I	173/171 (101%)	164 (95%)	9 (5%)	19	33
4	N	173/171 (101%)	165 (95%)	8 (5%)	23	38
4	S	173/171 (101%)	162 (94%)	11 (6%)	14	25
5	E	210/208 (101%)	195 (93%)	15 (7%)	12	20
5	J	211/208 (101%)	201 (95%)	10 (5%)	22	37
5	O	211/208 (101%)	202 (96%)	9 (4%)	25	41
5	T	211/208 (101%)	202 (96%)	9 (4%)	25	41
All	All	2876/2864 (100%)	2630 (91%)	246 (9%)	8	13

All (246) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	32	GLN
1	A	35	ARG
1	A	42	SER
1	A	44	ARG
1	A	48	ARG
1	A	62	ARG
1	A	98	MET
1	A	103	LEU
1	A	106	ASP
1	A	108	ARG
1	A	110	LEU
1	A	115	GLN
1	A	131	SER
1	A	138	THR
1	A	186	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	189	VAL
1	A	196	ASP
1	A	214	THR
1	A	225	THR
1	A	227	ASP
1	A	230	LEU
1	A	231	VAL
1	A	243	LYS
1	A	247	VAL
1	A	268	LYS
1	A	272	LEU
1	A	273	ARG
1	A	274	TRP
2	B	1	ILE
2	B	4	THR
2	B	5	PRO
2	B	12	ARG
2	B	19	LYS
2	B	27	VAL
2	B	38	ASP
2	B	48	LYS
2	B	58	LYS
2	B	64	LEU
2	B	70	PHE
2	B	71	THR
2	B	74	GLU
2	B	76	ASP
2	B	86	THR
2	B	89	GLN
2	B	93	VAL
2	B	99	MET
3	C	6	SER
4	D	18	ILE
4	D	19	VAL
4	D	26	GLN
4	D	68	THR
4	D	83	SER
4	D	91	LEU
4	D	92	GLN
4	D	137	LEU
4	D	141	LYS
4	D	145	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
4	D	155	SER
4	D	178	ARG
4	D	204	ASN
4	D	210	ASP
4	D	211	THR
5	E	74	ASP
5	E	83	GLU
5	E	92	GLN
5	E	96	GLN
5	E	104[A]	CYS
5	E	104[B]	CYS
5	E	131	ASN
5	E	158	LEU
5	E	160	THR
5	E	192	GLN
5	E	203	SER
5	E	205	ARG
5	E	217	ARG
5	E	223	GLN
5	E	254	ARG
1	F	12	MET
1	F	35	ARG
1	F	39	ASP
1	F	44	ARG
1	F	62	ARG
1	F	89	GLU
1	F	98	MET
1	F	106	ASP
1	F	108	ARG
1	F	115	GLN
1	F	131	SER
1	F	141	GLN
1	F	163	LEU
1	F	186	LYS
1	F	197	HIS
1	F	198	GLU
1	F	219	ARG
1	F	223	ASP
1	F	226	GLN
1	F	231	VAL
1	F	247	VAL
1	F	255	GLN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	F	256	ARG
1	F	268	LYS
1	F	272	LEU
1	F	273	ARG
2	G	1	ILE
2	G	6	LYS
2	G	7	ILE
2	G	12	ARG
2	G	21	ASN
2	G	38	ASP
2	G	47	GLU
2	G	58	LYS
2	G	70	PHE
2	G	71	THR
2	G	74	GLU
2	G	75	LYS
2	G	99	MET
4	I	14	VAL
4	I	26	GLN
4	I	91	LEU
4	I	93	GLU
4	I	128	GLN
4	I	141	LYS
4	I	173	CYS
4	I	204	ASN
4	I	210	ASP
5	J	57	GLN
5	J	104[A]	CYS
5	J	104[B]	CYS
5	J	139	VAL
5	J	195	LEU
5	J	197	ASP
5	J	205	ARG
5	J	217	ARG
5	J	232	ASN
5	J	234	GLU
1	K	14	ARG
1	K	35	ARG
1	K	39	ASP
1	K	44	ARG
1	K	62	ARG
1	K	75	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	K	89	GLU
1	K	98	MET
1	K	106	ASP
1	K	131	SER
1	K	141	GLN
1	K	177	GLU
1	K	196	ASP
1	K	214	THR
1	K	216	THR
1	K	220	ASP
1	K	225	THR
1	K	227	ASP
1	K	229	GLU
1	K	231	VAL
1	K	242	GLN
1	K	247	VAL
1	K	255	GLN
1	K	262	GLN
1	K	268	LYS
1	K	272	LEU
1	K	273	ARG
2	L	4	THR
2	L	6	LYS
2	L	16	GLU
2	L	38	ASP
2	L	48	LYS
2	L	58	LYS
2	L	64	LEU
2	L	69	GLU
2	L	70	PHE
2	L	71	THR
2	L	74	GLU
2	L	92	ILE
3	M	6	SER
4	N	5	GLU
4	N	26	GLN
4	N	141	LYS
4	N	145	LYS
4	N	173	CYS
4	N	204	ASN
4	N	207	ILE
4	N	210	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
5	O	27	SER
5	O	74	ASP
5	O	92	GLN
5	O	96	GLN
5	O	139	VAL
5	O	195	LEU
5	O	205	ARG
5	O	230	SER
5	O	254	ARG
1	P	35	ARG
1	P	44	ARG
1	P	62	ARG
1	P	88	SER
1	P	89	GLU
1	P	98	MET
1	P	186	LYS
1	P	206	LEU
1	P	222	GLU
1	P	223	ASP
1	P	228	THR
1	P	229	GLU
1	P	230	LEU
1	P	231	VAL
1	P	248	VAL
1	P	256	ARG
1	P	261	VAL
1	P	268	LYS
1	P	273	ARG
2	Q	4	THR
2	Q	6	LYS
2	Q	12	ARG
2	Q	19	LYS
2	Q	27	VAL
2	Q	38	ASP
2	Q	40	LEU
2	Q	41	LYS
2	Q	48	LYS
2	Q	58	LYS
2	Q	64	LEU
2	Q	70	PHE
2	Q	74	GLU
2	Q	75	LYS

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Mol	Chain	Res	Type
3	R	6	SER
4	S	26	GLN
4	S	40	SER
4	S	141	LYS
4	S	145	LYS
4	S	152	ASP
4	S	161	GLN
4	S	163	LYS
4	S	164	ASP
4	S	175	LEU
4	S	204	ASN
4	S	210	ASP
5	T	40	PHE
5	T	74	ASP
5	T	93	ARG
5	T	166	HIS
5	T	189	LEU
5	T	192	GLN
5	T	195	LEU
5	T	217	ARG
5	T	234	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
4	D	26	GLN
5	E	192	GLN
4	I	2	GLN
1	K	113	HIS
1	K	260	HIS
5	O	58	ASN
5	O	166	HIS
2	Q	42	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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	273/274 (99%)	0.13	4 (1%) 71 69	19, 39, 74, 110	2 (0%)
1	F	273/274 (99%)	0.22	15 (5%) 32 29	18, 36, 89, 123	3 (1%)
1	K	273/274 (99%)	0.31	12 (4%) 39 36	20, 38, 90, 114	2 (0%)
1	P	271/274 (98%)	0.05	9 (3%) 49 46	20, 33, 77, 108	1 (0%)
2	B	99/100 (99%)	0.07	1 (1%) 79 77	25, 41, 70, 80	0
2	G	99/100 (99%)	0.67	12 (12%) 10 10	21, 48, 84, 97	0
2	L	99/100 (99%)	0.62	8 (8%) 19 18	23, 54, 95, 104	0
2	Q	99/100 (99%)	0.13	2 (2%) 64 62	21, 38, 76, 84	0
3	C	9/9 (100%)	-0.15	0 100 100	24, 26, 31, 33	0
3	H	9/9 (100%)	-0.24	0 100 100	20, 21, 23, 27	0
3	M	9/9 (100%)	-0.15	0 100 100	22, 23, 26, 29	0
3	R	9/9 (100%)	-0.31	0 100 100	21, 21, 26, 29	0
4	D	197/197 (100%)	0.41	17 (8%) 18 16	11, 39, 117, 136	2 (1%)
4	I	197/197 (100%)	0.71	36 (18%) 4 4	11, 39, 128, 149	2 (1%)
4	N	197/197 (100%)	0.53	21 (10%) 12 12	11, 39, 120, 146	2 (1%)
4	S	197/197 (100%)	0.68	30 (15%) 6 6	11, 40, 129, 157	2 (1%)
5	E	242/242 (100%)	0.11	5 (2%) 63 61	13, 41, 78, 118	2 (0%)
5	J	242/242 (100%)	0.43	14 (5%) 30 28	12, 51, 102, 149	3 (1%)
5	O	242/242 (100%)	0.22	8 (3%) 49 46	12, 45, 88, 134	3 (1%)
5	T	242/242 (100%)	0.23	12 (4%) 35 33	11, 41, 96, 137	3 (1%)
All	All	3278/3288 (99%)	0.32	206 (6%) 27 25	11, 40, 105, 157	27 (0%)

All (206) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	S	211	THR	4.2
5	E	143	SER	4.0
1	K	254	GLU	4.0
1	F	274	TRP	3.8
4	I	211	THR	3.8
1	P	255	GLN	3.7
1	K	225	THR	3.6
4	I	210	ASP	3.6
5	J	255	ALA	3.6
4	I	143	SER	3.5
4	D	213	PHE	3.5
2	G	16	GLU	3.4
5	J	137	VAL	3.4
1	K	253	GLU	3.4
1	K	104	GLY	3.4
4	S	204	ASN	3.3
4	N	137	LEU	3.3
4	S	143	SER	3.2
4	S	210	ASP	3.2
5	J	197	ASP	3.2
1	A	274	TRP	3.2
1	A	253	GLU	3.1
4	S	137	LEU	3.1
4	N	145	LYS	3.1
4	D	143	SER	3.1
4	N	143	SER	3.1
1	K	274	TRP	3.1
4	D	199	ALA	3.0
1	P	251	SER	3.0
4	I	145	LYS	3.0
4	N	213	PHE	3.0
4	S	134	VAL	3.0
5	J	192	GLN	3.0
4	S	176	ASP	3.0
4	N	158	ASN	2.9
4	N	140	SER	2.9
4	D	195	ASP	2.9
4	N	210	ASP	2.9
4	S	133	ALA	2.8
1	F	221	GLY	2.8
1	F	181	ARG	2.8
2	L	7	ILE	2.8
4	D	193	LYS	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	F	253	GLU	2.8
4	I	133	ALA	2.8
4	I	201	ALA	2.8
5	O	253	GLY	2.8
2	Q	44	GLU	2.8
4	I	148	CYS	2.8
4	S	207	ILE	2.7
4	I	167	VAL	2.7
5	O	255	ALA	2.7
4	I	212	PHE	2.7
4	S	213	PHE	2.7
5	J	155	LEU	2.7
2	G	17	ASN	2.7
4	I	202	PHE	2.7
4	N	211	THR	2.7
4	S	142	SER	2.7
4	S	155	SER	2.7
4	S	144	ASP	2.7
4	I	158	ASN	2.7
4	D	198	CYS	2.7
1	K	108	ARG	2.7
1	P	274	TRP	2.7
4	I	164	ASP	2.6
4	N	188	VAL	2.6
5	O	210	ALA	2.6
5	J	211	THR	2.6
2	Q	43	GLY	2.6
2	L	44	GLU	2.6
4	I	213	PHE	2.6
4	N	138	ARG	2.6
4	S	196	PHE	2.6
5	O	217	ARG	2.5
4	D	145	LYS	2.5
4	D	211	THR	2.5
4	I	195	ASP	2.5
1	F	197	HIS	2.5
1	P	199	ALA	2.5
4	I	199	ALA	2.5
2	G	99	MET	2.5
5	J	176	LYS	2.5
1	F	230	LEU	2.5
1	K	270	LEU	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
4	S	2	GLN	2.5
1	F	106	ASP	2.5
2	B	58	LYS	2.5
2	G	73	THR	2.5
4	I	137	LEU	2.4
4	S	140	SER	2.4
5	E	192	GLN	2.4
5	J	151	GLN	2.4
2	L	58	LYS	2.4
4	I	144	ASP	2.4
5	O	155	LEU	2.4
1	F	194	VAL	2.4
4	N	163	LYS	2.4
5	T	192	GLN	2.4
4	S	198	CYS	2.4
4	I	200	ASN	2.4
5	J	217	ARG	2.4
1	P	250	PRO	2.4
4	D	28	SER	2.4
4	N	135	TYR	2.4
2	L	43	GLY	2.4
4	D	204	ASN	2.4
2	G	14	PRO	2.4
4	I	196	PHE	2.4
4	N	128	GLN	2.4
4	N	212	PHE	2.4
2	L	1	ILE	2.4
4	S	201	ALA	2.4
5	T	251	ALA	2.4
2	G	98	ASP	2.4
4	S	139	ASP	2.4
5	T	197	ASP	2.4
4	I	149	LEU	2.3
1	F	192	HIS	2.3
1	F	249	VAL	2.3
1	P	226	GLN	2.3
5	J	139	VAL	2.3
4	S	158	ASN	2.3
1	F	248	VAL	2.3
4	I	188	VAL	2.3
2	L	15	ALA	2.3
4	D	140	SER	2.3

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	P	222	GLU	2.3
2	G	75	LYS	2.3
1	F	105	PRO	2.3
4	I	130	PRO	2.3
4	D	196	PHE	2.3
2	G	79	ALA	2.3
2	G	19	LYS	2.3
1	F	220	ASP	2.3
4	I	132	PRO	2.3
5	E	92	GLN	2.3
2	G	15	ALA	2.3
1	K	203	CYS	2.2
2	G	1	ILE	2.2
4	I	153	PHE	2.2
1	K	219	ARG	2.2
4	N	165	SER	2.2
4	I	166	ASP	2.2
4	I	127	ILE	2.2
4	S	150	PHE	2.2
4	S	145	LYS	2.2
4	I	138	ARG	2.2
1	K	229	GLU	2.2
5	T	211	THR	2.2
4	I	135	TYR	2.2
4	N	166	ASP	2.2
5	J	214	GLN	2.2
5	O	137	VAL	2.2
5	O	139	VAL	2.2
4	I	180	MET	2.2
4	S	189	ALA	2.2
5	E	251	ALA	2.2
4	I	175	LEU	2.2
5	J	169	LEU	2.2
5	T	195	LEU	2.2
4	N	29	GLY	2.2
1	F	193	PRO	2.2
4	S	157	THR	2.2
4	D	161	GLN	2.2
4	I	207	ILE	2.2
4	S	187	ALA	2.2
1	A	35	ARG	2.2
4	S	184	SER	2.1

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Mol	Chain	Res	Type	RSRZ
4	N	176	ASP	2.1
4	D	212	PHE	2.1
4	I	174	VAL	2.1
4	N	202	PHE	2.1
4	S	167	VAL	2.1
4	I	173	CYS	2.1
5	T	194	ALA	2.1
5	J	254	ARG	2.1
1	K	177	GLU	2.1
1	P	197	HIS	2.1
5	J	140	PHE	2.1
2	L	40	LEU	2.1
1	A	252	GLY	2.1
2	G	43	GLY	2.1
4	D	208	PRO	2.1
4	D	142	SER	2.1
4	I	184	SER	2.1
5	O	143	SER	2.1
4	S	212	PHE	2.1
1	P	220	ASP	2.1
5	T	256	ASP	2.1
5	T	145	ALA	2.1
5	T	217	ARG	2.1
5	T	216	PRO	2.1
4	N	193	LYS	2.1
4	N	134	VAL	2.1
5	E	151	GLN	2.1
4	D	158	ASN	2.1
1	F	104	GLY	2.1
2	L	75	LYS	2.0
4	S	159	VAL	2.0
4	I	131	ASP	2.0
4	S	135	TYR	2.0
5	T	253	GLY	2.0
1	K	92	SER	2.0
5	T	232	ASN	2.0
4	I	152	ASP	2.0

## 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 monosaccharides 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.