



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 07:04 AM UTC

PDB ID : 1FVE / pdb\_00001fve  
Title : X-RAY STRUCTURES OF THE ANTIGEN-BINDING DOMAINS FROM THREE VARIANTS OF HUMANIZED ANTI-P185-HER2 ANTIBODY 4D5 AND COMPARISON WITH MOLECULAR MODELING  
Authors : Eigenbrot, C.; Randal, M.; Presta, L.; Kossiakoff, A.A.  
Deposited on : 1992-10-20  
Resolution : 2.70 Å(reported)

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

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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 : 4-5-2 with Phenix2.0  
Xtrriage (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

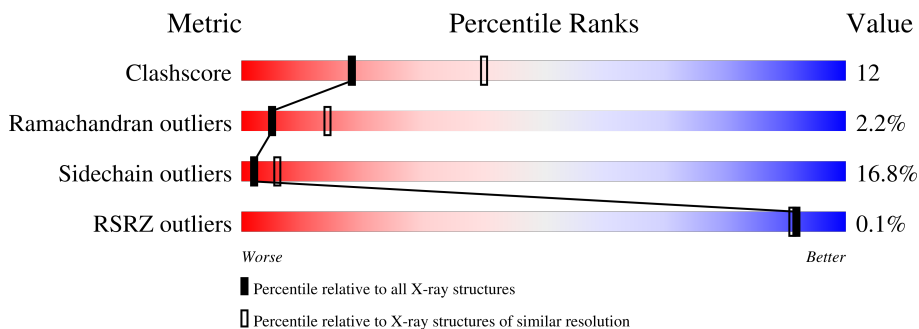
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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))
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

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	214	 49% 36% 12% .
1	C	214	 50% 35% 12% .
2	B	223	 52% 38% 8% .
2	D	223	 53% 33% 13% .

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 6687 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 IGG1-KAPPA 4D5 FAB (LIGHT CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	214	1647	1028	277	336	6	19	0	0
1	C	214	1647	1028	277	336	6	20	0	0

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	14	SER	PHE	conflict	EMBL X95750
A	28	ASP	SER	conflict	EMBL X95750
A	29	VAL	ILE	conflict	EMBL X95750
A	30	ASN	SER	conflict	EMBL X95750
A	31	THR	SER	conflict	EMBL X95750
A	32	ALA	TYR	conflict	EMBL X95750
A	33	VAL	LEU	conflict	EMBL X95750
A	34	ALA	ASN	conflict	EMBL X95750
A	50	SER	ALA	conflict	EMBL X95750
A	53	PHE	SER	conflict	EMBL X95750
A	55	GLU	GLN	conflict	EMBL X95750
A	66	ARG	GLY	conflict	EMBL X95750
A	91	HIS	SER	conflict	EMBL X95750
A	92	TYR	HIS	conflict	EMBL X95750
A	93	THR	SER	conflict	EMBL X95750
A	96	PRO	TYR	conflict	EMBL X95750
A	103	LYS	ASN	conflict	EMBL X95750
A	104	VAL	LEU	conflict	EMBL X95750
C	14	SER	PHE	conflict	EMBL X95750
C	28	ASP	SER	conflict	EMBL X95750
C	29	VAL	ILE	conflict	EMBL X95750
C	30	ASN	SER	conflict	EMBL X95750
C	31	THR	SER	conflict	EMBL X95750
C	32	ALA	TYR	conflict	EMBL X95750
C	33	VAL	LEU	conflict	EMBL X95750

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Chain	Residue	Modelled	Actual	Comment	Reference
C	34	ALA	ASN	conflict	EMBL X95750
C	50	SER	ALA	conflict	EMBL X95750
C	53	PHE	SER	conflict	EMBL X95750
C	55	GLU	GLN	conflict	EMBL X95750
C	66	ARG	GLY	conflict	EMBL X95750
C	91	HIS	SER	conflict	EMBL X95750
C	92	TYR	HIS	conflict	EMBL X95750
C	93	THR	SER	conflict	EMBL X95750
C	96	PRO	TYR	conflict	EMBL X95750
C	103	LYS	ASN	conflict	EMBL X95750
C	104	VAL	LEU	conflict	EMBL X95750

- Molecule 2 is a protein called IGG1-KAPPA 4D5 FAB (HEAVY CHAIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	223	Total 1671	C 1054	N 282	O 328	S 7	44	0	0
2	D	223	Total 1671	C 1054	N 282	O 328	S 7	44	0	0

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	28	ASN	ALA	conflict	EMBL Y14735
B	29	ILE	TYR	conflict	EMBL Y14735
B	30	LYS	SER	conflict	EMBL Y14735
B	31	ASP	SER	conflict	EMBL Y14735
B	32	THR	PHE	conflict	EMBL Y14735
B	33	TYR	TRP	conflict	EMBL Y14735
B	34	ILE	MET	conflict	EMBL Y14735
B	43	LYS	ARG	conflict	EMBL Y14735
B	46	GLU	VAL	conflict	EMBL Y14735
B	49	ALA	SER	conflict	EMBL Y14735
B	52	TYR	ASN	conflict	EMBL Y14735
B	54	THR	ASP	conflict	EMBL Y14735
B	55	ASN	GLY	conflict	EMBL Y14735
B	56	GLY	ARG	conflict	EMBL Y14735
B	57	TYR	ILE	conflict	EMBL Y14735
B	59	ARG	VAL	conflict	EMBL Y14735
B	63	SER	ALA	conflict	EMBL Y14735
B	72	ALA	ARG	conflict	EMBL Y14735
B	74	THR	ASN	conflict	EMBL Y14735

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Chain	Residue	Modelled	Actual	Comment	Reference
B	75	SER	ALA	conflict	EMBL Y14735
B	79	ALA	LEU	conflict	EMBL Y14735
B	85	SER	ASN	conflict	EMBL Y14735
B	97	SER	ALA	conflict	EMBL Y14735
B	99	TRP	-	insertion	EMBL Y14735
B	100	GLY	-	insertion	EMBL Y14735
B	102	ASP	THR	conflict	EMBL Y14735
B	103	GLY	ARG	conflict	EMBL Y14735
B	?	-	LEU	deletion	EMBL Y14735
B	?	-	GLU	deletion	EMBL Y14735
B	?	-	LEU	deletion	EMBL Y14735
B	?	-	THR	deletion	EMBL Y14735
B	?	-	SER	deletion	EMBL Y14735
B	?	-	ARG	deletion	EMBL Y14735
B	105	TYR	GLY	conflict	EMBL Y14735
B	106	ALA	GLN	conflict	EMBL Y14735
B	109	TYR	GLN	conflict	EMBL Y14735
D	28	ASN	ALA	conflict	EMBL Y14735
D	29	ILE	TYR	conflict	EMBL Y14735
D	30	LYS	SER	conflict	EMBL Y14735
D	31	ASP	SER	conflict	EMBL Y14735
D	32	THR	PHE	conflict	EMBL Y14735
D	33	TYR	TRP	conflict	EMBL Y14735
D	34	ILE	MET	conflict	EMBL Y14735
D	43	LYS	ARG	conflict	EMBL Y14735
D	46	GLU	VAL	conflict	EMBL Y14735
D	49	ALA	SER	conflict	EMBL Y14735
D	52	TYR	ASN	conflict	EMBL Y14735
D	54	THR	ASP	conflict	EMBL Y14735
D	55	ASN	GLY	conflict	EMBL Y14735
D	56	GLY	ARG	conflict	EMBL Y14735
D	57	TYR	ILE	conflict	EMBL Y14735
D	59	ARG	VAL	conflict	EMBL Y14735
D	63	SER	ALA	conflict	EMBL Y14735
D	72	ALA	ARG	conflict	EMBL Y14735
D	74	THR	ASN	conflict	EMBL Y14735
D	75	SER	ALA	conflict	EMBL Y14735
D	79	ALA	LEU	conflict	EMBL Y14735
D	85	SER	ASN	conflict	EMBL Y14735
D	97	SER	ALA	conflict	EMBL Y14735
D	99	TRP	-	insertion	EMBL Y14735
D	100	GLY	-	insertion	EMBL Y14735

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Chain	Residue	Modelled	Actual	Comment	Reference
D	102	ASP	THR	conflict	EMBL Y14735
D	103	GLY	ARG	conflict	EMBL Y14735
D	?	-	LEU	deletion	EMBL Y14735
D	?	-	GLU	deletion	EMBL Y14735
D	?	-	LEU	deletion	EMBL Y14735
D	?	-	THR	deletion	EMBL Y14735
D	?	-	SER	deletion	EMBL Y14735
D	?	-	ARG	deletion	EMBL Y14735
D	105	TYR	GLY	conflict	EMBL Y14735
D	106	ALA	GLN	conflict	EMBL Y14735
D	109	TYR	GLN	conflict	EMBL Y14735

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	11	Total O 11 11	0	0
3	B	12	Total O 12 12	0	0
3	C	10	Total O 10 10	0	0
3	D	18	Total O 18 18	0	0

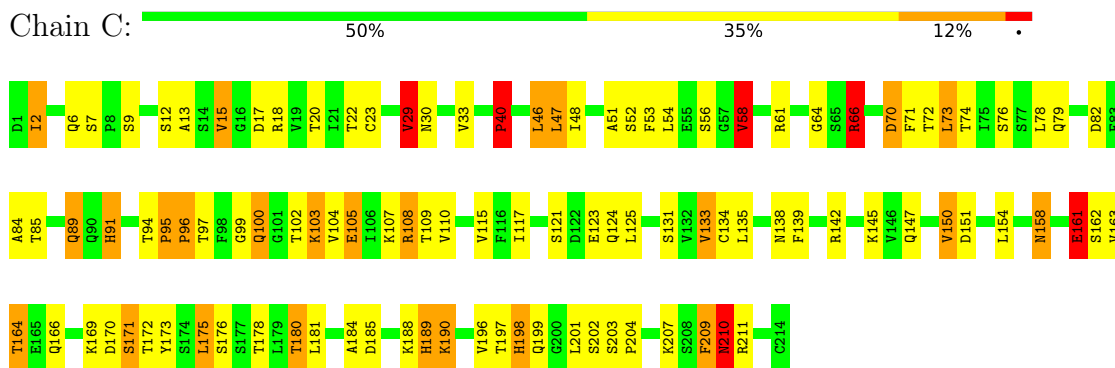
### 3 Residue-property plots [i](#)

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.

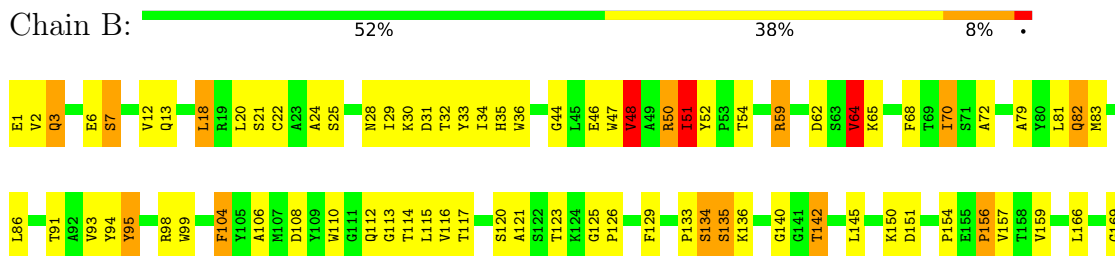
- Molecule 1: IGG1-KAPPA 4D5 FAB (LIGHT CHAIN)

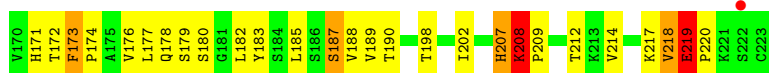


- Molecule 1: IGG1-KAPPA 4D5 FAB (LIGHT CHAIN)



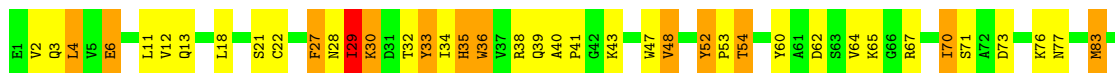
- Molecule 2: IGG1-KAPPA 4D5 FAB (HEAVY CHAIN)





• Molecule 2: IGG1-KAPPA 4D5 FAB (HEAVY CHAIN)

Chain D: 53% 33% 13%



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	39.20Å 80.20Å 86.10Å 113.10° 92.70° 102.60°	Depositor
Resolution (Å)	10.00 – 2.70 10.00 – 2.70	Depositor EDS
% Data completeness (in resolution range)	(Not available) (10.00-2.70) 74.9 (10.00-2.70)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$	-	Xtrriage
Refinement program	X-PLOR	Depositor
R, $R_{free}$	0.171 , (Not available) 0.163 , (Not available)	Depositor DCC
$R_{free}$ test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	27.0	Xtrriage
Anisotropy	0.564	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.23 , 61.9	EDS
L-test for twinning <sup>1</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.026 for h,-h-k,-l	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	6687	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	16.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.12% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</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	1.21	7/1683 (0.4%)	2.06	54/2286 (2.4%)
1	C	1.26	8/1683 (0.5%)	2.09	56/2286 (2.4%)
2	B	1.30	6/1713 (0.4%)	2.15	71/2333 (3.0%)
2	D	1.30	8/1713 (0.5%)	2.08	55/2333 (2.4%)
All	All	1.27	29/6792 (0.4%)	2.10	236/9238 (2.6%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
2	D	0	1
All	All	0	3

All (29) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	35	HIS	CD2-NE2	-7.90	1.29	1.37
2	D	207	HIS	CD2-NE2	-7.58	1.29	1.37
2	D	99	TRP	CA-CB	-7.36	1.41	1.53
1	A	33	VAL	CA-CB	7.26	1.64	1.54
2	D	35	HIS	CD2-NE2	-7.25	1.29	1.37
2	B	171	HIS	CD2-NE2	-7.09	1.30	1.37
1	C	133	VAL	CA-CB	7.05	1.64	1.54
2	D	171	HIS	CD2-NE2	-6.73	1.30	1.37
1	C	198	HIS	CD2-NE2	-6.72	1.30	1.37
2	B	207	HIS	CD2-NE2	-6.56	1.30	1.37
1	C	150	VAL	CA-CB	6.50	1.62	1.54
1	C	15	VAL	CA-CB	6.49	1.61	1.53
1	A	198	HIS	CD2-NE2	-6.43	1.30	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	99	TRP	CG-CD2	-6.41	1.32	1.43
1	A	91	HIS	CD2-NE2	-6.37	1.30	1.37
1	C	189	HIS	CD2-NE2	-6.29	1.30	1.37
1	A	21	ILE	CA-CB	6.18	1.61	1.54
1	A	189	HIS	CD2-NE2	-6.02	1.31	1.37
1	A	198	HIS	CG-ND1	-5.88	1.31	1.38
1	C	198	HIS	CG-ND1	-5.80	1.31	1.38
2	B	214	VAL	CA-CB	-5.71	1.47	1.54
2	B	70	ILE	CA-CB	5.69	1.61	1.54
1	A	91	HIS	CG-ND1	-5.58	1.32	1.38
2	D	36	TRP	CA-CB	5.43	1.62	1.53
1	C	33	VAL	CA-CB	5.39	1.61	1.54
2	D	149	VAL	CA-CB	5.37	1.59	1.53
1	C	7	SER	CA-CB	-5.34	1.46	1.53
2	D	35	HIS	CG-ND1	-5.33	1.32	1.38
2	B	95	TYR	CA-C	-5.20	1.46	1.52

All (236) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	64	VAL	CB-CA-C	10.27	120.09	111.06
1	A	91	HIS	CA-CB-CG	10.19	123.99	113.80
2	B	108	ASP	CA-CB-CG	8.88	121.48	112.60
1	C	29	VAL	N-CA-CB	-8.71	100.69	112.28
1	A	152	ASN	CA-CB-CG	-8.55	104.05	112.60
1	A	29	VAL	N-CA-CB	-8.46	100.94	111.94
2	B	104	PHE	N-CA-C	8.42	122.19	108.55
1	C	30	ASN	CA-CB-CG	8.28	120.88	112.60
2	B	176	VAL	O-C-N	-8.25	114.46	123.20
2	B	64	VAL	N-CA-CB	-8.23	96.30	112.75
1	A	33	VAL	CG1-CB-CG2	-8.20	92.77	110.80
1	C	91	HIS	CA-CB-CG	8.20	122.00	113.80
1	C	171	SER	N-CA-C	8.11	128.06	110.80
1	C	170	ASP	CA-CB-CG	8.07	120.67	112.60
2	B	171	HIS	CB-CG-CD2	-8.06	120.72	131.20
1	C	202	SER	O-C-N	8.04	130.39	122.03
1	A	155	GLN	N-CA-C	8.02	123.08	110.17
2	D	39	GLN	OE1-CD-NE2	7.96	130.56	122.60
1	A	140	TYR	O-C-N	-7.93	115.65	121.84
2	D	93	VAL	N-CA-C	-7.84	97.15	108.36
2	D	198	THR	CA-CB-OG1	-7.78	97.93	109.60
1	A	58	VAL	CA-C-N	7.78	128.25	119.93

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	58	VAL	C-N-CA	7.78	128.25	119.93
2	D	220	PRO	N-CA-C	7.73	128.40	112.47
2	D	27	PHE	O-C-N	-7.60	115.28	123.42
2	D	99	TRP	CE2-CD2-CE3	7.58	126.38	118.80
1	C	164	THR	CA-CB-OG1	-7.53	98.31	109.60
1	C	190	LYS	N-CA-C	7.52	123.03	113.55
1	A	170	ASP	CA-CB-CG	7.46	120.06	112.60
1	C	210	ASN	N-CA-C	7.44	122.53	113.38
2	D	29	ILE	N-CA-CB	-7.44	98.96	111.23
2	D	219	GLU	CA-C-N	7.35	129.03	119.84
2	D	219	GLU	C-N-CA	7.35	129.03	119.84
1	A	165	GLU	CA-C-O	-7.35	113.02	121.47
2	D	207	HIS	CB-CG-CD2	-7.25	121.78	131.20
2	B	173	PHE	CA-C-N	7.21	127.25	119.89
2	B	173	PHE	C-N-CA	7.21	127.25	119.89
2	B	220	PRO	N-CA-C	7.10	121.17	111.22
2	B	65	LYS	CA-C-O	-7.09	113.15	120.80
2	D	198	THR	N-CA-C	-7.07	101.85	112.04
2	B	176	VAL	N-CA-CB	-7.04	102.50	111.64
2	B	35	HIS	CA-CB-CG	7.00	120.80	113.80
1	C	73	LEU	N-CA-C	-6.97	98.36	109.59
2	B	48	VAL	N-CA-C	6.93	117.51	111.90
2	D	173	PHE	CA-CB-CG	-6.90	106.90	113.80
2	D	39	GLN	CG-CD-NE2	-6.87	106.09	116.40
2	B	70	ILE	N-CA-C	-6.86	98.57	108.17
1	C	53	PHE	N-CA-C	6.84	120.64	109.76
2	B	3	GLN	N-CA-CB	-6.84	99.39	111.08
1	C	142	ARG	CA-CB-CG	6.77	127.64	114.10
1	C	210	ASN	CA-CB-CG	-6.77	105.83	112.60
2	D	52	TYR	CA-C-O	-6.76	114.24	119.71
1	A	91	HIS	CB-CG-CD2	-6.74	122.44	131.20
2	D	35	HIS	CA-CB-CG	6.72	120.52	113.80
2	D	108	ASP	CA-CB-CG	6.72	119.32	112.60
1	A	171	SER	N-CA-C	6.71	125.08	110.80
1	A	138	ASN	N-CA-C	6.70	125.07	110.80
1	C	99	GLY	N-CA-C	-6.67	102.41	113.02
2	B	134	SER	N-CA-C	6.66	124.98	110.80
2	B	129	PHE	CA-C-N	6.64	126.61	119.78
2	B	129	PHE	C-N-CA	6.64	126.61	119.78
1	C	158	ASN	N-CA-C	6.58	124.83	110.80
2	B	157	VAL	O-C-N	-6.58	116.12	123.03
1	A	104	VAL	O-C-N	6.57	129.40	123.03

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	134	CYS	CA-CB-SG	6.55	129.46	114.40
2	B	44	GLY	O-C-N	6.54	128.43	122.81
1	C	17	ASP	N-CA-C	6.53	119.70	110.23
1	C	47	LEU	N-CA-C	-6.51	104.98	113.12
2	B	129	PHE	CA-C-O	-6.46	113.35	119.55
1	C	58	VAL	N-CA-C	-6.46	100.43	108.05
1	A	105	GLU	CB-CG-CD	6.44	123.55	112.60
1	A	166	GLN	N-CA-C	6.39	119.74	110.28
2	D	35	HIS	CB-CG-CD2	-6.39	122.89	131.20
1	A	196	VAL	N-CA-C	6.39	118.00	108.23
1	C	209	PHE	CA-CB-CG	6.37	120.17	113.80
2	D	29	ILE	CA-CB-CG1	-6.35	99.60	110.40
1	A	170	ASP	N-CA-C	6.31	120.29	112.59
2	B	31	ASP	CA-CB-CG	6.31	118.91	112.60
1	A	69	THR	CA-CB-OG1	-6.31	100.14	109.60
2	D	161	TRP	CE2-CD2-CE3	6.29	125.09	118.80
2	D	48	VAL	N-CA-C	6.29	117.64	111.67
2	B	182	LEU	O-C-N	-6.28	115.88	123.10
2	D	198	THR	CA-CB-CG2	6.28	121.17	110.50
2	D	218	VAL	CA-C-O	6.26	128.37	121.04
2	B	135	SER	N-CA-C	6.24	120.62	113.19
2	B	54	THR	CA-CB-OG1	-6.21	100.28	109.60
2	D	171	HIS	CB-CG-CD2	-6.21	123.13	131.20
2	B	2	VAL	CA-C-O	6.20	128.50	120.69
2	D	129	PHE	CA-C-N	6.17	126.14	119.78
2	D	129	PHE	C-N-CA	6.17	126.14	119.78
2	B	50	ARG	CB-CG-CD	-6.16	97.14	111.30
2	B	125	GLY	CA-C-N	6.15	126.47	119.83
2	B	125	GLY	C-N-CA	6.15	126.47	119.83
1	C	33	VAL	CG1-CB-CG2	-6.12	97.34	110.80
2	D	168	SER	N-CA-C	6.12	119.79	109.76
1	C	100	GLN	N-CA-C	6.11	120.20	112.87
1	C	164	THR	CA-CB-CG2	6.08	120.83	110.50
2	B	93	VAL	N-CA-C	-6.07	99.67	108.71
2	B	35	HIS	CB-CG-CD2	-6.04	123.34	131.20
2	B	62	ASP	N-CA-C	6.04	118.64	111.33
1	C	151	ASP	CA-CB-CG	6.04	118.64	112.60
2	D	149	VAL	CA-C-O	6.04	128.16	120.97
1	C	104	VAL	O-C-N	6.03	128.40	122.97
1	C	172	THR	N-CA-C	6.02	118.62	109.95
1	C	66	ARG	NE-CZ-NH2	-6.02	113.78	119.20
1	C	124	GLN	CG-CD-NE2	-5.99	107.42	116.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	56	SER	CA-C-O	5.99	127.58	120.70
1	C	124	GLN	OE1-CD-NE2	5.97	128.57	122.60
1	C	46	LEU	CB-CA-C	-5.96	100.35	109.89
2	B	178	GLN	N-CA-C	5.95	118.23	110.43
2	B	21	SER	N-CA-CB	-5.95	101.97	111.43
1	A	198	HIS	CA-CB-CG	5.94	119.74	113.80
1	A	79	GLN	CA-C-N	5.93	125.61	119.56
1	A	79	GLN	C-N-CA	5.93	125.61	119.56
1	A	5	THR	O-C-N	-5.93	116.10	123.04
1	A	150	VAL	N-CA-CB	-5.93	104.97	112.15
1	A	69	THR	N-CA-CB	-5.92	99.83	111.60
1	C	66	ARG	NE-CZ-NH1	5.89	127.39	121.50
1	C	164	THR	N-CA-CB	-5.88	100.54	110.49
2	D	13	GLN	N-CA-C	-5.84	101.62	110.39
1	A	190	LYS	CA-C-N	-5.82	115.98	123.19
1	A	190	LYS	C-N-CA	-5.82	115.98	123.19
2	B	7	SER	N-CA-C	5.82	117.69	108.79
1	C	107	LYS	O-C-N	5.80	129.98	123.19
2	B	95	TYR	CA-C-N	-5.75	112.71	122.67
2	B	95	TYR	C-N-CA	-5.75	112.71	122.67
2	D	197	GLY	CA-C-O	5.75	125.08	119.27
1	C	105	GLU	N-CA-CB	-5.71	101.50	110.69
2	D	99	TRP	CB-CG-CD2	-5.71	118.81	126.80
1	A	63	SER	N-CA-C	5.69	117.74	108.76
1	C	94	THR	N-CA-C	-5.68	102.47	110.31
2	B	120	SER	CA-C-N	5.66	128.88	120.95
2	B	120	SER	C-N-CA	5.66	128.88	120.95
1	A	31	THR	N-CA-CB	-5.63	101.92	111.27
2	B	123	THR	OG1-CB-CG2	-5.63	98.05	109.30
2	D	90	ASP	N-CA-C	-5.60	106.03	112.92
2	D	73	ASP	CA-CB-CG	5.59	118.19	112.60
1	A	158	ASN	CA-CB-CG	5.58	118.18	112.60
1	C	85	THR	N-CA-C	-5.57	100.62	109.59
1	A	51	ALA	N-CA-C	5.57	122.65	110.80
2	B	151	ASP	N-CA-C	5.56	119.31	111.52
1	A	123	GLU	N-CA-C	-5.55	105.38	111.82
2	D	134	SER	N-CA-C	5.55	118.58	109.76
1	C	58	VAL	CB-CA-C	5.54	116.40	110.53
1	A	131	SER	CA-C-O	5.54	126.39	120.46
1	A	99	GLY	N-CA-C	-5.51	103.99	112.85
1	A	29	VAL	N-CA-C	-5.50	106.05	111.88
1	A	40	PRO	N-CA-C	5.49	120.22	111.26

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	54	THR	O-C-N	-5.46	116.35	122.03
2	D	127	SER	N-CA-C	-5.45	100.29	108.96
1	A	164	THR	CA-CB-CG2	5.45	119.76	110.50
1	A	82	ASP	N-CA-C	-5.44	105.95	112.59
2	B	120	SER	CA-CB-OG	5.44	121.98	111.10
2	B	151	ASP	CA-CB-CG	5.43	118.03	112.60
1	C	166	GLN	O-C-N	-5.43	116.27	122.89
2	D	41	PRO	O-C-N	5.40	126.56	122.73
2	B	21	SER	O-C-N	-5.39	115.55	122.94
2	D	70	ILE	N-CA-C	-5.39	101.96	109.45
2	B	46	GLU	O-C-N	-5.39	117.18	123.27
2	B	54	THR	CA-C-O	-5.38	115.36	121.00
1	A	151	ASP	CA-CB-CG	5.37	117.97	112.60
2	D	4	LEU	N-CA-C	-5.37	100.64	109.40
1	C	180	THR	N-CA-C	5.37	118.19	107.62
2	B	126	PRO	N-CA-C	5.36	119.28	111.03
1	C	117	ILE	O-C-N	-5.36	117.56	123.18
1	C	185	ASP	N-CA-C	-5.36	105.48	112.23
2	D	207	HIS	CB-CG-ND1	5.35	130.73	122.70
2	D	33	TYR	CA-C-O	-5.33	114.84	120.92
1	A	66	ARG	O-C-N	-5.32	116.31	123.23
2	D	175	ALA	O-C-N	5.32	129.01	123.06
2	D	6	GLU	CA-CB-CG	5.31	124.72	114.10
2	D	77	ASN	CB-CG-ND2	-5.31	108.43	116.40
2	D	54	THR	CA-CB-OG1	-5.31	101.64	109.60
2	B	171	HIS	CB-CG-ND1	5.30	130.66	122.70
2	B	214	VAL	CB-CA-C	-5.30	103.50	110.98
1	A	193	ALA	N-CA-C	5.30	118.09	109.24
2	B	22	CYS	CA-CB-SG	5.29	126.58	114.40
2	B	95	TYR	CA-C-O	-5.29	114.65	120.36
2	B	142	THR	CA-CB-OG1	-5.29	101.67	109.60
2	D	125	GLY	CA-C-N	5.29	125.70	119.99
2	D	125	GLY	C-N-CA	5.29	125.70	119.99
2	D	158	THR	CA-CB-OG1	-5.28	101.68	109.60
1	C	89	GLN	CA-C-O	-5.27	113.10	120.21
1	A	27	GLN	N-CA-C	-5.26	101.07	109.07
2	D	204	ASN	CA-CB-CG	5.26	117.86	112.60
2	B	51	ILE	O-C-N	-5.25	117.48	123.10
2	B	48	VAL	CA-CB-CG1	-5.25	101.48	110.40
1	A	207	LYS	CA-CB-CG	-5.24	103.62	114.10
2	B	121	ALA	N-CA-C	5.24	117.82	109.96
1	C	91	HIS	CB-CG-CD2	-5.23	124.40	131.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	218	VAL	CA-CB-CG1	-5.22	101.52	110.40
1	C	102	THR	CA-CB-OG1	-5.21	101.78	109.60
1	A	174	SER	CA-C-O	-5.21	115.37	121.46
1	A	175	LEU	CA-CB-CG	5.20	134.49	116.30
2	B	187	SER	N-CA-C	-5.20	99.98	108.76
1	C	70	ASP	N-CA-C	5.19	116.99	108.52
2	B	159	VAL	CB-CA-C	-5.18	103.79	110.84
1	C	2	ILE	N-CA-C	5.18	116.21	108.54
1	A	25	ALA	O-C-N	-5.17	116.54	122.95
1	C	161	GLU	CA-CB-CG	-5.17	103.76	114.10
1	C	189	HIS	CB-CG-CD2	-5.17	124.49	131.20
2	D	114	THR	N-CA-CB	5.15	119.46	110.81
1	A	211	ARG	O-C-N	5.15	129.24	123.06
1	C	22	THR	CA-CB-OG1	-5.14	101.89	109.60
2	B	219	GLU	CA-C-N	5.14	125.14	120.21
2	B	219	GLU	C-N-CA	5.14	125.14	120.21
1	C	103	LYS	CB-CG-CD	5.13	123.10	111.30
1	C	95	PRO	CA-C-N	5.13	126.25	119.84
1	C	95	PRO	C-N-CA	5.13	126.25	119.84
2	D	200	THR	N-CA-CB	5.12	119.05	110.85
1	C	66	ARG	N-CA-CB	-5.12	102.66	110.85
2	B	208	LYS	CB-CG-CD	5.12	123.07	111.30
2	D	176	VAL	CB-CA-C	5.11	117.78	110.33
1	A	165	GLU	O-C-N	-5.10	117.20	122.96
2	B	212	THR	CA-CB-OG1	-5.09	101.96	109.60
2	D	131	LEU	N-CA-C	-5.09	96.83	107.37
2	B	108	ASP	CA-C-O	-5.09	115.66	120.90
2	B	82	GLN	CB-CG-CD	5.08	121.24	112.60
1	A	80	PRO	N-CA-C	5.08	120.44	113.84
1	A	92	TYR	N-CA-CB	-5.07	102.34	110.19
2	B	81	LEU	CA-C-N	5.06	129.50	122.77
2	B	81	LEU	C-N-CA	5.06	129.50	122.77
1	C	33	VAL	O-C-N	-5.06	117.73	123.20
2	B	48	VAL	CA-CB-CG2	5.05	118.99	110.40
2	D	198	THR	N-CA-CB	-5.05	102.36	110.19
2	D	208	LYS	CG-CD-CE	5.05	122.92	111.30
1	A	50	SER	O-C-N	5.04	129.29	122.59
1	C	139	PHE	CA-CB-CG	5.03	118.83	113.80
2	B	110	TRP	CE2-CD2-CE3	5.03	123.83	118.80
2	B	81	LEU	O-C-N	5.03	129.71	123.28
2	D	129	PHE	CA-C-O	-5.03	114.15	120.23
1	A	148	TRP	CE2-CD2-CG	-5.02	101.18	107.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	206	THR	CA-CB-OG1	-5.01	102.08	109.60
1	A	137	ASN	N-CA-CB	-5.01	102.24	110.41
2	B	24	ALA	CB-CA-C	-5.01	102.07	110.29
2	D	76	LYS	N-CA-C	-5.00	107.18	113.28

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	140	TYR	Sidechain
1	C	95	PRO	Peptide
2	D	33	TYR	Sidechain

## 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	1647	0	1596	41	0
1	C	1647	0	1596	34	0
2	B	1671	0	1628	43	0
2	D	1671	0	1628	42	0
3	A	11	0	0	0	0
3	B	12	0	0	1	0
3	C	10	0	0	0	0
3	D	18	0	0	0	0
All	All	6687	0	6448	155	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 12.

All (155) 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:B:91:THR:HG23	2:B:117:THR:HA	1.51	0.92
2:D:133:PRO:HG3	2:D:145:LEU:HD12	1.60	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:133:PRO:HD3	2:D:145:LEU:HB3	1.72	0.71
2:B:104:PHE:HD2	2:B:106:ALA:HB3	1.56	0.70
2:D:128:VAL:HG21	2:D:205:VAL:HG21	1.74	0.70
2:D:91:THR:HG23	2:D:117:THR:HA	1.75	0.69
1:A:89:GLN:NE2	1:A:96:PRO:HB3	2.08	0.69
2:B:172:THR:HG22	2:B:187:SER:OG	1.93	0.68
1:A:191:VAL:HG22	1:A:210:ASN:HD22	1.59	0.67
2:D:60:TYR:HB2	2:D:65:LYS:HB3	1.75	0.66
1:A:66:ARG:HG2	1:A:71:PHE:CE2	2.30	0.66
2:D:125:GLY:HA2	2:D:207:HIS:CD2	2.30	0.66
2:D:35:HIS:HD2	2:D:47:TRP:HE1	1.42	0.66
2:B:68:PHE:CE2	2:B:83:MET:HG2	2.32	0.65
1:C:13:ALA:HB3	1:C:78:LEU:HD22	1.79	0.64
1:C:115:VAL:HG21	1:C:196:VAL:HG21	1.78	0.64
2:B:83:MET:HE1	2:B:116:VAL:HG11	1.78	0.64
2:B:47:TRP:HZ2	2:B:50:ARG:HB3	1.64	0.62
2:B:12:VAL:HG11	2:B:86:LEU:HD12	1.82	0.62
2:B:12:VAL:CG2	2:B:18:LEU:HG	2.31	0.61
2:D:83:MET:HE1	2:D:116:VAL:HG11	1.82	0.60
2:B:20:LEU:HD23	2:B:83:MET:SD	2.41	0.59
1:A:79:GLN:HB3	1:A:81:GLU:OE1	2.02	0.59
1:C:40:PRO:HD3	1:C:84:ALA:HA	1.84	0.59
1:C:89:GLN:NE2	1:C:96:PRO:HB3	2.20	0.57
2:D:40:ALA:HB3	2:D:43:LYS:HB2	1.87	0.57
2:B:12:VAL:HG21	2:B:18:LEU:HG	1.87	0.56
1:A:185:ASP:HA	1:A:188:LYS:HD2	1.87	0.56
2:D:29:ILE:HG12	2:D:34:ILE:HD11	1.86	0.56
2:B:94:TYR:O	2:B:113:GLY:HA2	2.05	0.55
2:B:156:PRO:HG2	2:B:208:LYS:HZ3	1.71	0.55
2:B:172:THR:HA	2:B:187:SER:HA	1.87	0.55
2:B:104:PHE:CD2	2:B:106:ALA:HB3	2.41	0.55
1:A:108:ARG:HG2	1:A:171:SER:HB2	1.88	0.55
1:C:64:GLY:HA2	1:C:72:THR:O	2.07	0.55
2:D:6:GLU:HA	2:D:21:SER:O	2.06	0.54
2:D:170:VAL:HG22	2:D:189:VAL:HG13	1.88	0.54
1:A:119:PRO:HG2	2:B:135:SER:HB2	1.89	0.54
1:A:47:LEU:HA	1:A:58:VAL:HG21	1.90	0.54
2:B:18:LEU:HD22	3:B:227:HOH:O	2.08	0.54
1:A:6:GLN:HB2	1:A:23:CYS:SG	2.47	0.54
2:B:36:TRP:HD1	2:B:70:ILE:HD12	1.72	0.54
1:A:145:LYS:HB2	1:A:197:THR:HB	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:201:LEU:HD13	1:A:205:VAL:HG23	1.91	0.53
1:C:108:ARG:HD3	1:C:109:THR:O	2.08	0.53
1:C:79:GLN:O	1:C:82:ASP:HB2	2.09	0.52
1:A:61:ARG:CZ	1:A:79:GLN:HG3	2.38	0.52
1:C:189:HIS:O	1:C:211:ARG:HD3	2.08	0.52
2:D:145:LEU:HD13	2:D:145:LEU:N	2.24	0.52
2:D:154:PRO:O	2:D:207:HIS:HE1	1.93	0.52
2:B:83:MET:HE3	2:B:86:LEU:HD21	1.92	0.52
2:B:20:LEU:CD2	2:B:83:MET:SD	2.98	0.51
1:A:175:LEU:HA	2:B:173:PHE:HE2	1.74	0.51
2:D:178:GLN:HB2	2:D:182:LEU:O	2.10	0.51
2:D:28:ASN:HB3	2:D:30:LYS:HZ3	1.75	0.51
2:D:11:LEU:HD21	2:D:119:SER:HB3	1.93	0.51
1:C:66:ARG:HH11	1:C:66:ARG:HG2	1.75	0.51
1:C:12:SER:HA	1:C:105:GLU:O	2.11	0.50
1:C:184:ALA:O	1:C:188:LYS:HG2	2.10	0.50
1:C:2:ILE:HD13	1:C:29:VAL:HG23	1.93	0.50
1:A:191:VAL:HG22	1:A:210:ASN:ND2	2.26	0.50
2:B:48:VAL:HG12	2:B:64:VAL:HG21	1.94	0.50
2:B:36:TRP:O	2:B:48:VAL:HG23	2.12	0.50
1:C:47:LEU:HA	1:C:58:VAL:HG21	1.94	0.49
1:C:13:ALA:HB3	1:C:78:LEU:CD2	2.42	0.49
1:A:61:ARG:O	1:A:75:ILE:HA	2.13	0.49
1:C:162:SER:OG	2:D:173:PHE:HB3	2.13	0.49
2:B:202:ILE:HG12	2:B:217:LYS:HG3	1.95	0.49
1:A:18:ARG:HA	1:A:76:SER:O	2.12	0.49
1:A:164:THR:HB	1:A:174:SER:H	1.77	0.49
2:D:83:MET:HB2	2:D:86:LEU:HD21	1.95	0.49
2:B:72:ALA:HA	2:B:79:ALA:HA	1.95	0.48
1:A:110:VAL:HG21	1:A:199:GLN:NE2	2.28	0.48
2:D:203:CYS:O	2:D:203:CYS:SG	2.71	0.48
2:D:36:TRP:HD1	2:D:70:ILE:HD12	1.79	0.48
2:D:202:ILE:HA	2:D:216:LYS:O	2.14	0.48
1:A:161:GLU:HA	1:A:176:SER:O	2.14	0.47
2:D:145:LEU:HD22	2:D:189:VAL:HG23	1.94	0.47
1:A:21:ILE:HD12	1:A:73:LEU:HD12	1.96	0.47
1:A:148:TRP:O	1:A:154:LEU:HA	2.14	0.47
2:B:217:LYS:NZ	2:B:219:GLU:HG2	2.29	0.47
1:A:11:LEU:HG	1:A:104:VAL:HG22	1.96	0.47
2:B:32:THR:HG21	2:B:98:ARG:HD2	1.97	0.47
2:D:83:MET:HE3	2:D:86:LEU:HD21	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:209:PHE:HD1	1:C:211:ARG:H	1.63	0.47
2:B:154:PRO:O	2:B:207:HIS:HE1	1.98	0.46
2:B:33:TYR:HD2	2:B:50:ARG:HD2	1.80	0.46
2:D:149:VAL:HG21	2:D:157:VAL:HG21	1.97	0.46
1:C:6:GLN:HB3	1:C:100:GLN:HG3	1.97	0.46
2:B:28:ASN:ND2	2:B:30:LYS:HB2	2.32	0.45
1:A:113:PRO:HD3	1:A:198:HIS:HD2	1.79	0.45
1:C:115:VAL:O	1:C:207:LYS:HE2	2.16	0.45
2:D:126:PRO:HB3	2:D:149:VAL:HG23	1.99	0.45
1:A:46:LEU:HD23	1:A:55:GLU:HG3	1.98	0.45
2:B:32:THR:HG22	2:B:33:TYR:O	2.16	0.45
2:D:216:LYS:HD3	2:D:216:LYS:HA	1.77	0.44
2:B:29:ILE:HG22	2:B:34:ILE:HD11	2.00	0.44
1:A:33:VAL:HA	1:A:89:GLN:O	2.17	0.44
1:C:61:ARG:HH11	1:C:61:ARG:HG2	1.82	0.44
1:C:161:GLU:HG2	1:C:175:LEU:CD1	2.47	0.44
2:D:28:ASN:HB3	2:D:30:LYS:NZ	2.31	0.44
2:D:191:VAL:HG11	2:D:201:TYR:CE1	2.52	0.44
2:D:4:LEU:HD12	2:D:22:CYS:SG	2.58	0.44
1:A:154:LEU:HD23	1:A:154:LEU:H	1.82	0.44
1:A:187:GLU:HA	1:A:211:ARG:HD2	2.00	0.44
2:B:32:THR:HG23	2:B:99:TRP:O	2.18	0.44
1:C:210:ASN:O	1:C:211:ARG:HB3	2.17	0.44
1:C:197:THR:CG2	1:C:204:PRO:HB3	2.48	0.44
2:B:217:LYS:HZ1	2:B:219:GLU:HG2	1.83	0.43
2:D:2:VAL:HG13	2:D:27:PHE:CD1	2.52	0.43
2:D:135:SER:HA	2:D:220:PRO:HB3	2.00	0.43
2:B:169:GLY:O	2:B:189:VAL:HA	2.19	0.43
1:A:170:ASP:O	1:A:172:THR:HG23	2.19	0.43
1:C:161:GLU:HA	1:C:176:SER:O	2.18	0.43
2:D:214:VAL:HG12	2:D:215:ASP:N	2.34	0.43
1:A:155:GLN:HB3	1:A:158:ASN:HD21	1.83	0.43
1:A:125:LEU:HA	1:A:129:THR:O	2.19	0.43
2:B:51:ILE:HG13	2:B:52:TYR:N	2.32	0.43
1:C:18:ARG:HA	1:C:76:SER:O	2.18	0.43
2:D:195:SER:O	2:D:198:THR:HB	2.19	0.43
2:D:169:GLY:O	2:D:189:VAL:HA	2.19	0.42
1:A:181:LEU:HD13	1:A:186:TYR:HB2	2.01	0.42
1:C:198:HIS:H	1:C:201:LEU:HD12	1.83	0.42
1:C:46:LEU:HD11	2:D:105:TYR:O	2.20	0.42
1:C:197:THR:HG22	1:C:204:PRO:HB3	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:134:CYS:O	1:A:176:SER:HA	2.18	0.42
1:A:39:LYS:O	1:A:42:LYS:HB2	2.19	0.42
1:C:147:GLN:OE1	1:C:154:LEU:HD21	2.20	0.42
1:A:110:VAL:HG13	1:A:141:PRO:HD2	2.02	0.42
2:D:143:ALA:HB3	2:D:196:LEU:HD21	2.01	0.42
1:C:66:ARG:HD3	1:C:71:PHE:CE2	2.55	0.42
1:C:201:LEU:HB3	1:C:203:SER:O	2.19	0.42
1:A:113:PRO:HD2	1:A:201:LEU:HD21	2.02	0.42
2:D:143:ALA:CB	2:D:196:LEU:HD21	2.51	0.41
1:A:64:GLY:HA2	1:A:72:THR:O	2.20	0.41
1:A:140:TYR:CD1	1:A:141:PRO:HA	2.56	0.41
2:B:202:ILE:CG1	2:B:217:LYS:HG3	2.50	0.41
2:B:33:TYR:HE2	2:B:59:ARG:NH2	2.19	0.41
2:D:52:TYR:HD1	2:D:52:TYR:HA	1.75	0.41
2:D:139:SER:HB3	2:D:142:THR:O	2.21	0.41
2:B:7:SER:HA	2:B:114:THR:HG21	2.01	0.41
1:A:113:PRO:HD3	1:A:198:HIS:CD2	2.55	0.41
2:B:12:VAL:HG12	2:B:13:GLN:O	2.21	0.41
2:B:68:PHE:HA	2:B:82:GLN:O	2.20	0.41
1:C:163:VAL:HB	1:C:175:LEU:HB2	2.03	0.41
1:C:110:VAL:HG21	1:C:199:GLN:OE1	2.21	0.41
2:B:177:LEU:HD23	2:B:183:TYR:CZ	2.56	0.41
1:C:198:HIS:O	1:C:201:LEU:HB2	2.20	0.41
2:D:125:GLY:HA2	2:D:207:HIS:HD2	1.80	0.41
1:A:89:GLN:HG2	1:A:97:THR:O	2.21	0.40
1:A:110:VAL:HG22	1:A:141:PRO:HD3	2.03	0.40
1:A:175:LEU:CA	2:B:173:PHE:HE2	2.35	0.40
2:B:6:GLU:OE2	2:B:95:TYR:HA	2.21	0.40
2:D:67:ARG:HH11	2:D:67:ARG:HD2	1.78	0.40
1:C:105:GLU:HG3	1:C:173:TYR:OH	2.22	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	212/214 (99%)	188 (89%)	19 (9%)	5 (2%)	4	12
1	C	212/214 (99%)	190 (90%)	16 (8%)	6 (3%)	4	9
2	B	221/223 (99%)	203 (92%)	14 (6%)	4 (2%)	6	18
2	D	221/223 (99%)	200 (90%)	17 (8%)	4 (2%)	6	18
All	All	866/874 (99%)	781 (90%)	66 (8%)	19 (2%)	5	14

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	133	PRO
2	B	134	SER
1	C	158	ASN
1	C	171	SER
1	A	110	VAL
1	A	156	SER
1	A	171	SER
1	A	212	GLY
1	C	125	LEU
1	C	138	ASN
2	D	54	THR
1	A	51	ALA
1	C	40	PRO
1	C	51	ALA
2	B	136	LYS
2	D	135	SER
2	D	180	SER
2	B	140	GLY
2	D	220	PRO

### 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	189/189 (100%)	156 (82%)	33 (18%)	2	5
1	C	189/189 (100%)	154 (82%)	35 (18%)	1	4
2	B	184/184 (100%)	158 (86%)	26 (14%)	3	9
2	D	184/184 (100%)	153 (83%)	31 (17%)	2	6
All	All	746/746 (100%)	621 (83%)	125 (17%)	2	6

All (125) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	GLN
1	A	5	THR
1	A	22	THR
1	A	23	CYS
1	A	27	GLN
1	A	38	GLN
1	A	40	PRO
1	A	48	ILE
1	A	52	SER
1	A	55	GLU
1	A	66	ARG
1	A	69	THR
1	A	70	ASP
1	A	76	SER
1	A	88	CYS
1	A	89	GLN
1	A	108	ARG
1	A	114	SER
1	A	123	GLU
1	A	135	LEU
1	A	147	GLN
1	A	154	LEU
1	A	158	ASN
1	A	164	THR
1	A	169	LYS
1	A	174	SER
1	A	175	LEU
1	A	179	LEU
1	A	181	LEU
1	A	183	LYS
1	A	190	LYS
1	A	203	SER
1	A	214	CYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	1	GLU
2	B	3	GLN
2	B	18	LEU
2	B	25	SER
2	B	48	VAL
2	B	51	ILE
2	B	59	ARG
2	B	64	VAL
2	B	112	GLN
2	B	115	LEU
2	B	142	THR
2	B	145	LEU
2	B	150	LYS
2	B	156	PRO
2	B	166	LEU
2	B	174	PRO
2	B	179	SER
2	B	180	SER
2	B	185	LEU
2	B	188	VAL
2	B	190	THR
2	B	198	THR
2	B	208	LYS
2	B	209	PRO
2	B	218	VAL
2	B	219	GLU
1	C	9	SER
1	C	15	VAL
1	C	20	THR
1	C	23	CYS
1	C	29	VAL
1	C	40	PRO
1	C	48	ILE
1	C	52	SER
1	C	54	LEU
1	C	58	VAL
1	C	66	ARG
1	C	70	ASP
1	C	73	LEU
1	C	74	THR
1	C	91	HIS
1	C	96	PRO

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	97	THR
1	C	103	LYS
1	C	108	ARG
1	C	121	SER
1	C	123	GLU
1	C	131	SER
1	C	133	VAL
1	C	135	LEU
1	C	145	LYS
1	C	150	VAL
1	C	161	GLU
1	C	164	THR
1	C	169	LYS
1	C	175	LEU
1	C	178	THR
1	C	180	THR
1	C	181	LEU
1	C	190	LYS
1	C	210	ASN
2	D	3	GLN
2	D	12	VAL
2	D	18	LEU
2	D	29	ILE
2	D	30	LYS
2	D	32	THR
2	D	38	ARG
2	D	48	VAL
2	D	53	PRO
2	D	62	ASP
2	D	64	VAL
2	D	71	SER
2	D	83	MET
2	D	99	TRP
2	D	114	THR
2	D	127	SER
2	D	145	LEU
2	D	149	VAL
2	D	157	VAL
2	D	158	THR
2	D	166	LEU
2	D	167	THR
2	D	176	VAL

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Mol	Chain	Res	Type
2	D	177	LEU
2	D	182	LEU
2	D	185	LEU
2	D	189	VAL
2	D	190	THR
2	D	195	SER
2	D	208	LYS
2	D	220	PRO

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	38	GLN
1	A	89	GLN
1	A	91	HIS
1	A	138	ASN
1	A	189	HIS
1	A	199	GLN
1	A	210	ASN
2	B	39	GLN
2	B	82	GLN
2	B	171	HIS
2	B	178	GLN
2	B	207	HIS
1	C	3	GLN
1	C	38	GLN
1	C	89	GLN
1	C	100	GLN
1	C	160	GLN
2	D	35	HIS
2	D	207	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](#)

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	212/214 (99%)	-0.81	0 <a href="#">100</a>   <a href="#">100</a>	3, 18, 37, 49	1 (0%)
1	C	211/214 (98%)	-0.82	0 <a href="#">100</a>   <a href="#">100</a>	2, 17, 38, 46	0
2	B	216/223 (96%)	-0.83	1 (0%) <a href="#">87</a>   <a href="#">86</a>	2, 10, 40, 59	0
2	D	217/223 (97%)	-0.82	0 <a href="#">100</a>   <a href="#">100</a>	2, 11, 39, 61	0
All	All	856/874 (97%)	-0.82	1 (0%) <a href="#">92</a>   <a href="#">91</a>	2, 14, 38, 61	1 (0%)

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	222	SER	2.4

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

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

### 6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 6.4 Ligands [i](#)

There are no ligands in this entry.

### 6.5 Other polymers [i](#)

There are no such residues in this entry.