



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 04:38 PM UTC

PDB ID : 4J23 / pdb_00004j23
Title : Low resolution crystal structure of the FGFR2D2D3/FGF1/SR128545 complex
Authors : Kudlinzki, D.; Saxena, K.; Sreeramulu, S.; Schieborr, U.; Dreyer, M.; Schreuder, H.; Schwalbe, H.
Deposited on : 2013-02-04
Resolution : 3.88 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
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

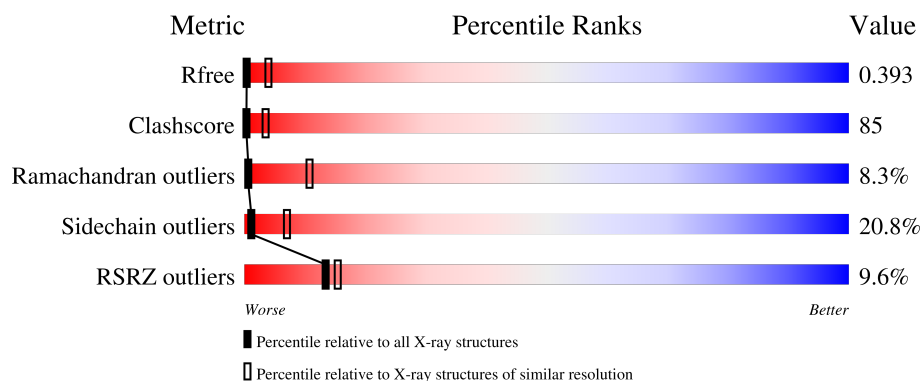
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.88 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	1186 (4.06-3.70)
Clashscore	190562	1012 (4.04-3.72)
Ramachandran outliers	187476	1167 (4.06-3.70)
Sidechain outliers	187428	1160 (4.06-3.70)
RSRZ outliers	180081	1185 (4.06-3.70)

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 ≥ 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	223	10% 13% 44% 26% 6% 11%
2	B	138	7% 20% 54% 18% 5% .

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 2642 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 Fibroblast growth factor receptor 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	198	Total	C	N	O	S	0	0	0
			1571	1001	276	286	8			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	146	MET	-	expression tag	UNP P21802
A	367	LEU	-	expression tag	UNP P21802
A	368	GLU	-	expression tag	UNP P21802

- Molecule 2 is a protein called Fibroblast growth factor 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	134	Total	C	N	O	S	0	0	0
			1071	675	187	205	4			

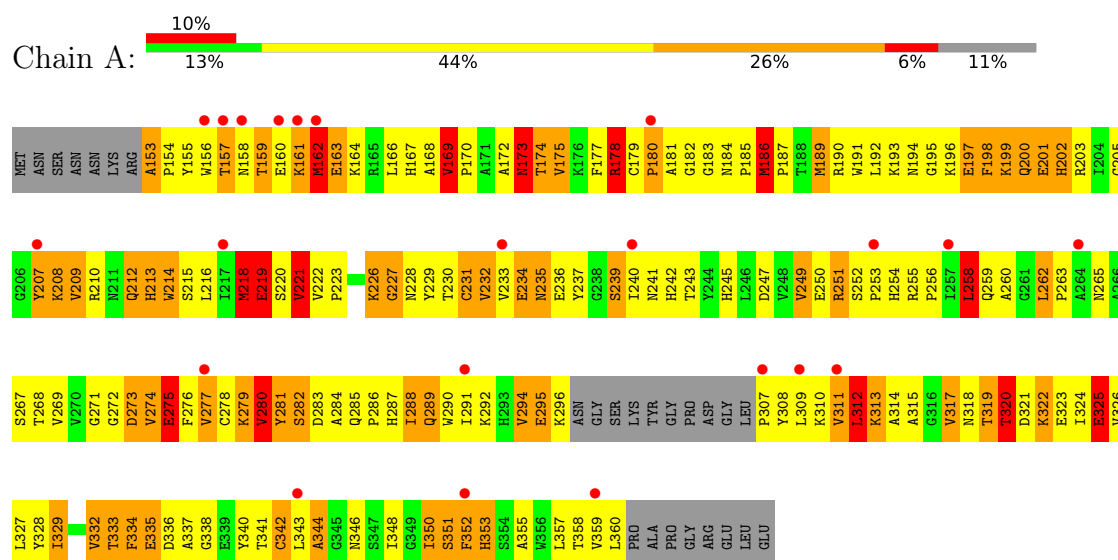
There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	18	GLY	-	expression tag	UNP P05230
B	19	HIS	-	expression tag	UNP P05230
B	20	MET	-	expression tag	UNP P05230

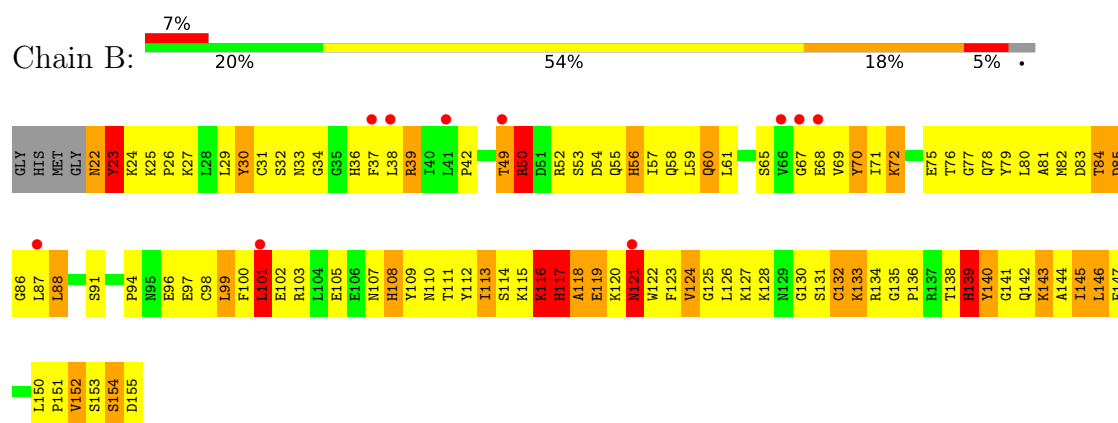
3 Residue-property plots

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: Fibroblast growth factor receptor 2



• Molecule 2: Fibroblast growth factor 1



4 Data and refinement statistics

Property	Value	Source
Space group	P 62 2 2	Depositor
Cell constants a, b, c, α , β , γ	210.67Å 210.67Å 72.51Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	39.81 – 3.88 39.81 – 3.88	Depositor EDS
% Data completeness (in resolution range)	99.8 (39.81-3.88) 99.8 (39.81-3.88)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	0.12	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.76 (at 3.89Å)	Xtriage
Refinement program	PHENIX 1.8.4_1496, REFMAC 5.5.0102	Depositor
R, R_{free}	0.321 , 0.384 0.337 , 0.393	Depositor DCC
R_{free} test set	438 reflections (4.76%)	wwPDB-VP
Wilson B-factor (Å ²)	175.0	Xtriage
Anisotropy	0.238	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 425.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	2642	wwPDB-VP
Average B, all atoms (Å ²)	284.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.55% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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	1.25	9/1613 (0.6%)	1.86	44/2191 (2.0%)
2	B	1.06	0/1095	1.54	15/1477 (1.0%)
All	All	1.17	9/2708 (0.3%)	1.74	59/3668 (1.6%)

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	6
2	B	0	4
All	All	0	10

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	344	ALA	CA-CB	-7.68	1.41	1.53
1	A	196	LYS	CA-C	6.54	1.58	1.52
1	A	178	ARG	CA-C	6.46	1.60	1.52
1	A	232	VAL	C-O	-5.91	1.18	1.24
1	A	351	SER	CA-C	5.57	1.59	1.52
1	A	189	MET	C-O	-5.56	1.17	1.24
1	A	351	SER	N-CA	5.34	1.52	1.46
1	A	312	LEU	C-O	-5.28	1.18	1.24
1	A	274	VAL	CA-C	5.10	1.58	1.52

All (59) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	169	VAL	CA-C-N	12.74	135.76	119.84
1	A	169	VAL	C-N-CA	12.74	135.76	119.84
1	A	342	CYS	CA-CB-SG	12.62	143.42	114.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	154	SER	N-CA-C	-10.27	100.97	112.57
1	A	351	SER	N-CA-C	10.13	123.91	108.52
1	A	342	CYS	N-CA-C	9.92	124.85	108.49
1	A	186	MET	CA-C-N	9.72	133.43	120.79
1	A	186	MET	C-N-CA	9.72	133.43	120.79
1	A	162	MET	N-CA-C	-9.54	101.32	113.72
2	B	68	GLU	N-CA-C	8.88	122.65	109.24
1	A	157	THR	N-CA-C	8.65	123.93	113.12
2	B	101	LEU	N-CA-C	8.06	121.77	108.96
1	A	205	GLY	N-CA-C	-8.06	103.91	115.27
1	A	325	GLU	CA-C-N	8.03	136.15	121.70
1	A	325	GLU	C-N-CA	8.03	136.15	121.70
1	A	341	THR	CA-C-N	-7.90	112.44	123.03
1	A	341	THR	C-N-CA	-7.90	112.44	123.03
1	A	189	MET	N-CA-C	7.81	122.59	112.12
1	A	153	ALA	CA-C-N	7.68	127.61	119.85
1	A	153	ALA	C-N-CA	7.68	127.61	119.85
1	A	320	THR	N-CA-C	7.65	127.10	110.80
1	A	317	VAL	N-CA-C	-7.57	105.17	111.91
1	A	314	ALA	N-CA-C	7.56	119.56	110.19
1	A	227	GLY	N-CA-C	7.55	121.63	110.60
2	B	121	ASN	N-CA-CB	-7.22	98.28	110.49
1	A	258	LEU	N-CA-C	7.20	120.67	109.07
1	A	234	GLU	N-CA-C	7.07	121.03	109.72
2	B	139	HIS	N-CA-C	-6.97	95.95	110.80
1	A	271	GLY	N-CA-C	-6.93	105.23	114.25
1	A	207	TYR	CA-CB-CG	6.68	125.92	113.90
1	A	277	VAL	N-CA-C	6.61	118.30	108.46
2	B	132	CYS	CA-C-N	6.54	134.04	121.54
2	B	132	CYS	C-N-CA	6.54	134.04	121.54
2	B	30	TYR	CA-C-N	-6.52	114.00	123.00
2	B	30	TYR	C-N-CA	-6.52	114.00	123.00
2	B	53	SER	N-CA-C	-6.40	106.01	113.88
1	A	308	TYR	N-CA-C	6.38	117.85	108.86
1	A	231	CYS	CA-C-O	-6.20	114.33	121.15
2	B	116	LYS	N-CA-C	-6.18	105.45	112.87
1	A	219	GLU	N-CA-C	-6.17	97.66	110.80
1	A	218	MET	CA-C-N	6.10	133.19	121.54
1	A	218	MET	C-N-CA	6.10	133.19	121.54
2	B	50	ARG	N-CA-C	6.00	119.07	111.69
1	A	312	LEU	N-CA-C	5.96	117.65	111.03
1	A	288	ILE	N-CA-C	5.77	116.78	108.48

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	196	LYS	N-CA-C	5.76	120.03	112.13
1	A	352	PHE	CA-C-N	-5.73	111.98	123.09
1	A	352	PHE	C-N-CA	-5.73	111.98	123.09
1	A	163	GLU	N-CA-C	-5.55	106.28	113.16
1	A	218	MET	CB-CG-SD	-5.53	96.12	112.70
1	A	219	GLU	N-CA-CB	5.42	119.64	110.49
1	A	311	VAL	N-CA-C	5.24	116.34	109.58
1	A	275	GLU	N-CA-C	5.22	118.25	110.52
2	B	67	GLY	N-CA-C	-5.19	100.89	113.18
2	B	117	HIS	N-CA-C	5.18	121.84	110.80
1	A	232	VAL	N-CA-C	5.16	115.47	107.78
1	A	342	CYS	N-CA-CB	-5.11	103.42	111.23
1	A	221	VAL	N-CA-C	5.05	119.84	109.34
2	B	143	LYS	N-CA-C	-5.04	106.91	113.16

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	173	ASN	Peptide
1	A	197	GLU	Peptide
1	A	198	PHE	Peptide
1	A	199	LYS	Peptide
1	A	218	MET	Peptide
1	A	334	PHE	Peptide
2	B	117	HIS	Peptide
2	B	121	ASN	Peptide
2	B	23	TYR	Peptide
2	B	84	THR	Peptide

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	1571	0	1541	273	0
2	B	1071	0	1049	187	0
All	All	2642	0	2590	443	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 85.

All (443) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:156:TRP:CH2	1:A:233:VAL:HG21	1.20	1.62
1:A:156:TRP:CD1	1:A:240:ILE:CG2	1.77	1.58
1:A:156:TRP:NE1	1:A:240:ILE:CG2	1.71	1.49
1:A:156:TRP:CD1	1:A:240:ILE:HG21	0.94	1.46
1:A:156:TRP:CZ2	1:A:233:VAL:HG21	1.50	1.46
1:A:156:TRP:CZ2	1:A:233:VAL:CG2	2.06	1.39
1:A:156:TRP:HE1	1:A:240:ILE:CB	1.35	1.38
1:A:156:TRP:CH2	1:A:233:VAL:CG2	2.13	1.31
1:A:156:TRP:CE3	1:A:181:ALA:HB2	1.65	1.30
1:A:156:TRP:HE1	1:A:240:ILE:HB	1.07	1.15
1:A:156:TRP:NE1	1:A:240:ILE:CB	2.01	1.13
2:B:113:ILE:HG22	2:B:123:PHE:HB3	1.31	1.11
1:A:156:TRP:HE1	1:A:240:ILE:CG2	1.43	1.09
1:A:156:TRP:NE1	1:A:240:ILE:HB	1.65	1.09
1:A:320:THR:O	1:A:324:ILE:HD11	1.50	1.08
1:A:280:VAL:HG11	2:B:23:TYR:CD2	1.88	1.08
2:B:96:GLU:HA	2:B:115:LYS:HZ3	0.98	1.08
2:B:128:LYS:H	2:B:128:LYS:HD2	1.22	1.05
1:A:156:TRP:NE1	1:A:240:ILE:HG21	1.51	1.03
1:A:180:PRO:O	1:A:214:TRP:NE1	1.91	1.03
1:A:156:TRP:NE1	1:A:240:ILE:HG22	1.72	1.00
1:A:337:ALA:HA	1:A:357:LEU:HD11	1.42	1.00
1:A:273:ASP:HB2	1:A:329:ILE:HD13	1.44	0.98
1:A:322:LYS:HG2	1:A:323:GLU:H	1.28	0.97
1:A:156:TRP:HZ2	1:A:233:VAL:CG2	1.64	0.96
1:A:158:ASN:O	1:A:160:GLU:N	2.00	0.95
2:B:99:LEU:H	2:B:115:LYS:HD2	1.31	0.95
1:A:156:TRP:CD1	1:A:240:ILE:HG22	2.01	0.94
2:B:39:ARG:HH22	2:B:57:ILE:HG12	1.33	0.94
2:B:96:GLU:HA	2:B:115:LYS:NZ	1.83	0.94
1:A:167:HIS:HD1	1:A:177:PHE:HE1	1.17	0.92
1:A:156:TRP:CD2	1:A:181:ALA:HB2	2.04	0.91
1:A:200:GLN:HG2	1:A:207:TYR:HB2	1.52	0.91
1:A:282:SER:O	2:B:22:ASN:HA	1.70	0.91
1:A:290:TRP:HB2	1:A:312:LEU:HG	1.53	0.91
2:B:96:GLU:CA	2:B:115:LYS:HZ3	1.83	0.90
1:A:295:GLU:OE2	1:A:296:LYS:HE2	1.73	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:156:TRP:CZ2	1:A:233:VAL:HG23	2.08	0.87
1:A:259:GLN:HB2	1:A:279:LYS:HD3	1.57	0.85
2:B:117:HIS:HB2	2:B:119:GLU:HB3	1.59	0.84
1:A:156:TRP:HZ2	1:A:233:VAL:HG23	1.39	0.84
1:A:156:TRP:CE3	1:A:181:ALA:CB	2.56	0.84
1:A:207:TYR:HA	1:A:218:MET:SD	2.19	0.83
1:A:251:ARG:NH1	2:B:110:ASN:OD1	2.10	0.83
1:A:156:TRP:HH2	1:A:233:VAL:HG21	1.02	0.83
2:B:127:LYS:HD2	2:B:128:LYS:HZ2	1.44	0.82
1:A:280:VAL:HG11	2:B:23:TYR:CG	2.15	0.81
1:A:329:ILE:HD12	1:A:329:ILE:H	1.46	0.81
2:B:83:ASP:OD1	2:B:84:THR:N	2.14	0.81
2:B:25:LYS:NZ	2:B:152:VAL:HG22	1.95	0.80
1:A:322:LYS:HG2	1:A:323:GLU:N	1.95	0.80
1:A:320:THR:O	1:A:324:ILE:CD1	2.30	0.80
1:A:234:GLU:HB3	1:A:239:SER:HB2	1.64	0.79
2:B:39:ARG:NH2	2:B:57:ILE:HG12	1.96	0.79
2:B:86:GLY:HA2	2:B:122:TRP:HZ3	1.48	0.79
1:A:263:PRO:HB2	1:A:276:PHE:HB3	1.65	0.78
2:B:123:PHE:CE1	2:B:138:THR:HB	2.19	0.78
1:A:279:LYS:NZ	1:A:281:TYR:CD2	2.52	0.78
1:A:170:PRO:HB3	2:B:108:HIS:CG	2.19	0.78
2:B:85:ASP:HB3	2:B:87:LEU:HG	1.67	0.77
2:B:25:LYS:HZ1	2:B:152:VAL:HG22	1.49	0.77
2:B:39:ARG:NH2	2:B:57:ILE:H	1.83	0.76
1:A:290:TRP:H	1:A:312:LEU:HD11	1.49	0.76
1:A:156:TRP:CZ2	1:A:233:VAL:CB	2.68	0.75
1:A:210:ARG:CZ	1:A:215:SER:HB2	2.17	0.75
2:B:39:ARG:NH1	2:B:54:ASP:HB3	2.01	0.75
2:B:39:ARG:CZ	2:B:54:ASP:HB3	2.17	0.74
1:A:231:CYS:O	1:A:241:ASN:HB2	1.87	0.74
1:A:191:TRP:O	1:A:192:LEU:HD23	1.88	0.73
1:A:200:GLN:CG	1:A:207:TYR:HB2	2.18	0.73
2:B:39:ARG:CZ	2:B:57:ILE:HG23	2.19	0.73
1:A:235:ASN:OD1	1:A:235:ASN:N	2.18	0.72
2:B:36:HIS:HD2	2:B:49:THR:HA	1.53	0.72
1:A:156:TRP:HH2	1:A:233:VAL:CG2	1.76	0.72
2:B:103:ARG:NE	2:B:111:THR:OG1	2.24	0.71
1:A:262:LEU:HD13	1:A:277:VAL:O	1.91	0.71
1:A:291:ILE:HG13	1:A:309:LEU:HD22	1.74	0.70
1:A:290:TRP:H	1:A:312:LEU:CD1	2.05	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:36:HIS:ND1	2:B:126:LEU:HD11	2.06	0.70
2:B:123:PHE:HB2	2:B:145:ILE:HD13	1.74	0.70
2:B:39:ARG:HH21	2:B:56:HIS:N	1.90	0.69
1:A:289:GLN:CD	1:A:343:LEU:HD22	2.16	0.69
2:B:99:LEU:O	2:B:115:LYS:HB3	1.93	0.69
1:A:218:MET:HA	1:A:219:GLU:HB3	1.75	0.69
1:A:210:ARG:O	1:A:214:TRP:HA	1.93	0.69
1:A:160:GLU:OE2	1:A:178:ARG:HD3	1.94	0.68
2:B:37:PHE:HE2	2:B:52:ARG:HB3	1.59	0.68
1:A:255:ARG:HA	1:A:346:ASN:HD21	1.59	0.68
1:A:284:ALA:HB3	1:A:346:ASN:HD22	1.57	0.68
2:B:105:GLU:O	2:B:108:HIS:N	2.26	0.68
2:B:113:ILE:CG2	2:B:123:PHE:HB3	2.16	0.67
1:A:272:GLY:O	1:A:332:VAL:HG12	1.95	0.66
1:A:156:TRP:HE1	1:A:240:ILE:HG22	1.41	0.66
2:B:70:TYR:CE1	2:B:99:LEU:HG	2.31	0.66
1:A:161:LYS:HB3	1:A:164:LYS:HD3	1.78	0.66
2:B:61:LEU:HD11	2:B:71:ILE:HG23	1.76	0.66
1:A:156:TRP:HD1	1:A:240:ILE:CG2	1.55	0.66
1:A:192:LEU:O	1:A:230:THR:N	2.28	0.66
1:A:208:LYS:H	1:A:218:MET:HE2	1.60	0.66
1:A:262:LEU:HD21	1:A:279:LYS:HG2	1.78	0.66
2:B:22:ASN:N	2:B:27:LYS:HE2	2.11	0.66
2:B:39:ARG:NH1	2:B:57:ILE:HG23	2.11	0.65
1:A:160:GLU:OE2	1:A:178:ARG:NH1	2.22	0.65
2:B:116:LYS:NZ	2:B:117:HIS:HB3	2.10	0.65
1:A:342:CYS:SG	1:A:352:PHE:HD2	2.20	0.65
2:B:122:TRP:CE3	2:B:135:GLY:HA3	2.32	0.64
1:A:265:ASN:HD21	1:A:355:ALA:HA	1.61	0.64
1:A:190:ARG:O	1:A:191:TRP:CD1	2.50	0.64
2:B:142:GLN:HB3	2:B:144:ALA:H	1.62	0.64
2:B:52:ARG:NH2	2:B:153:SER:O	2.30	0.64
1:A:251:ARG:HE	1:A:283:ASP:CG	2.06	0.64
2:B:81:ALA:HB1	2:B:97:GLU:CB	2.27	0.64
2:B:25:LYS:HG2	2:B:26:PRO:O	1.98	0.64
1:A:230:THR:OG1	1:A:243:THR:HG22	1.97	0.64
1:A:256:PRO:HD3	1:A:346:ASN:ND2	2.13	0.64
1:A:210:ARG:HB2	1:A:212:GLN:HG3	1.80	0.63
2:B:110:ASN:O	2:B:111:THR:HG23	1.97	0.63
2:B:34:GLY:H	2:B:126:LEU:HD21	1.63	0.63
1:A:333:THR:OG1	1:A:334:PHE:N	2.28	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:340:TYR:O	1:A:355:ALA:N	2.30	0.63
2:B:99:LEU:HD22	2:B:115:LYS:HZ1	1.63	0.63
2:B:39:ARG:HH21	2:B:56:HIS:H	1.46	0.63
1:A:222:VAL:HB	1:A:223:PRO:HD2	1.81	0.62
2:B:52:ARG:HH12	2:B:154:SER:HA	1.64	0.62
1:A:281:TYR:HA	1:A:282:SER:HB3	1.81	0.62
1:A:258:LEU:HG	1:A:352:PHE:CE2	2.33	0.62
2:B:25:LYS:HZ1	2:B:151:PRO:HB2	1.64	0.62
1:A:265:ASN:HA	1:A:276:PHE:CE2	2.35	0.62
2:B:105:GLU:CD	2:B:105:GLU:N	2.57	0.62
2:B:103:ARG:HE	2:B:105:GLU:CD	2.08	0.62
1:A:160:GLU:CD	1:A:178:ARG:HD3	2.25	0.61
2:B:36:HIS:CD2	2:B:49:THR:HA	2.33	0.61
1:A:251:ARG:HH22	2:B:110:ASN:ND2	1.98	0.61
2:B:103:ARG:HB3	2:B:111:THR:OG1	2.00	0.61
1:A:324:ILE:O	1:A:324:ILE:HG22	2.01	0.61
2:B:111:THR:HG22	2:B:145:ILE:O	2.01	0.61
1:A:322:LYS:HG2	1:A:323:GLU:HG3	1.83	0.60
1:A:262:LEU:HD13	1:A:278:CYS:HA	1.83	0.60
1:A:200:GLN:OE1	1:A:201:GLU:N	2.35	0.59
1:A:170:PRO:HA	1:A:249:VAL:HG23	1.82	0.59
1:A:351:SER:C	1:A:352:PHE:HD1	2.10	0.59
1:A:156:TRP:CZ2	1:A:233:VAL:HB	2.37	0.59
1:A:154:PRO:HA	1:A:183:GLY:HA3	1.83	0.59
1:A:262:LEU:C	1:A:262:LEU:HD12	2.27	0.59
2:B:99:LEU:HD13	2:B:115:LYS:HZ1	1.67	0.59
1:A:292:LYS:HZ1	1:A:338:GLY:HA3	1.67	0.59
1:A:337:ALA:HA	1:A:357:LEU:CD1	2.27	0.59
2:B:55:GLN:HB3	2:B:75:GLU:OE1	2.04	0.58
1:A:193:LYS:HD3	1:A:198:PHE:HB3	1.84	0.58
1:A:251:ARG:HH22	2:B:110:ASN:HD21	1.51	0.58
2:B:82:MET:HE2	2:B:100:PHE:CZ	2.38	0.58
1:A:193:LYS:HA	1:A:228:ASN:O	2.03	0.58
1:A:319:THR:OG1	1:A:323:GLU:OE1	2.22	0.58
1:A:320:THR:HG22	1:A:321:ASP:H	1.69	0.58
2:B:117:HIS:CG	2:B:118:ALA:N	2.71	0.58
1:A:156:TRP:HA	1:A:181:ALA:CB	2.33	0.58
2:B:23:TYR:CD2	2:B:24:LYS:HA	2.39	0.58
1:A:290:TRP:HB2	1:A:312:LEU:CG	2.32	0.58
2:B:82:MET:O	2:B:83:ASP:HB3	2.04	0.58
1:A:344:ALA:N	1:A:350:ILE:HD11	2.18	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:117:HIS:C	2:B:119:GLU:H	2.11	0.58
2:B:31:CYS:HB2	2:B:147:PHE:CZ	2.39	0.57
1:A:342:CYS:O	1:A:352:PHE:CD2	2.55	0.57
2:B:30:TYR:CE1	2:B:32:SER:HA	2.39	0.57
2:B:80:LEU:O	2:B:98:CYS:HA	2.05	0.57
1:A:317:VAL:HG13	1:A:319:THR:HB	1.87	0.57
1:A:255:ARG:HD3	1:A:350:ILE:N	2.19	0.57
1:A:340:TYR:N	1:A:355:ALA:O	2.29	0.57
2:B:123:PHE:HB2	2:B:145:ILE:CD1	2.35	0.57
1:A:344:ALA:C	1:A:350:ILE:HD12	2.30	0.57
2:B:39:ARG:NH2	2:B:57:ILE:N	2.53	0.56
2:B:143:LYS:HD2	2:B:146:LEU:HD21	1.87	0.56
1:A:290:TRP:CD1	1:A:342:CYS:HB2	2.41	0.56
1:A:156:TRP:HD1	1:A:240:ILE:HG21	0.76	0.56
1:A:157:THR:HG22	1:A:181:ALA:H	1.70	0.56
2:B:36:HIS:CD2	2:B:50:ARG:HD2	2.40	0.56
1:A:210:ARG:HE	1:A:213:HIS:C	2.13	0.56
1:A:276:PHE:CD1	1:A:327:LEU:HD21	2.41	0.56
2:B:105:GLU:N	2:B:105:GLU:OE1	2.38	0.56
1:A:290:TRP:NE1	1:A:342:CYS:HB2	2.21	0.56
1:A:251:ARG:HG2	2:B:108:HIS:CE1	2.40	0.55
2:B:81:ALA:HB1	2:B:97:GLU:HB2	1.87	0.55
2:B:99:LEU:C	2:B:100:PHE:HD1	2.15	0.55
1:A:280:VAL:HG13	1:A:281:TYR:N	2.21	0.55
1:A:291:ILE:HG22	1:A:311:VAL:HA	1.88	0.55
2:B:99:LEU:HD13	2:B:115:LYS:NZ	2.22	0.55
2:B:131:SER:HB3	2:B:133:LYS:NZ	2.22	0.55
2:B:119:GLU:HG2	2:B:120:LYS:HB3	1.89	0.55
1:A:203:ARG:NH2	1:A:219:GLU:O	2.39	0.55
1:A:279:LYS:HE3	1:A:280:VAL:O	2.06	0.54
1:A:325:GLU:N	1:A:326:VAL:HG22	2.21	0.54
2:B:84:THR:O	2:B:122:TRP:CH2	2.60	0.54
1:A:290:TRP:HZ3	1:A:327:LEU:H	1.54	0.54
2:B:72:LYS:HD2	2:B:77:GLY:C	2.33	0.54
2:B:115:LYS:C	2:B:117:HIS:H	2.15	0.54
1:A:174:THR:HG22	1:A:219:GLU:HA	1.89	0.54
1:A:292:LYS:HZ1	1:A:338:GLY:CA	2.21	0.54
2:B:69:VAL:C	2:B:70:TYR:HD1	2.16	0.54
1:A:197:GLU:CD	1:A:198:PHE:H	2.16	0.54
1:A:288:ILE:HG22	1:A:344:ALA:CB	2.38	0.54
1:A:275:GLU:OE2	1:A:327:LEU:O	2.26	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:288:ILE:HG22	1:A:344:ALA:HB1	1.89	0.53
2:B:85:ASP:CB	2:B:87:LEU:HG	2.37	0.53
1:A:172:ALA:O	1:A:220:SER:HA	2.09	0.53
1:A:239:SER:O	1:A:240:ILE:HD13	2.09	0.53
1:A:252:SER:C	1:A:254:HIS:H	2.15	0.53
1:A:295:GLU:OE2	1:A:307:PRO:HA	2.08	0.53
2:B:31:CYS:HB2	2:B:147:PHE:CE2	2.43	0.53
2:B:153:SER:OG	2:B:154:SER:N	2.41	0.53
1:A:160:GLU:OE2	1:A:178:ARG:CD	2.57	0.53
1:A:170:PRO:HB3	2:B:108:HIS:CD2	2.42	0.53
2:B:39:ARG:HH21	2:B:57:ILE:H	1.55	0.53
2:B:36:HIS:HB2	2:B:126:LEU:HD13	1.90	0.53
1:A:170:PRO:HB3	2:B:108:HIS:ND1	2.23	0.52
1:A:200:GLN:HE21	1:A:207:TYR:HB2	1.74	0.52
1:A:279:LYS:O	1:A:279:LYS:HG3	2.09	0.52
1:A:268:THR:C	1:A:360:LEU:HD21	2.34	0.52
1:A:290:TRP:HE1	1:A:342:CYS:HB2	1.74	0.52
1:A:210:ARG:CZ	1:A:213:HIS:CD2	2.93	0.52
1:A:192:LEU:HA	1:A:198:PHE:CD2	2.45	0.52
1:A:265:ASN:HA	1:A:276:PHE:HE2	1.73	0.52
1:A:284:ALA:HB3	1:A:346:ASN:ND2	2.23	0.52
1:A:156:TRP:CZ3	1:A:181:ALA:HB2	2.37	0.52
1:A:207:TYR:CD1	1:A:209:VAL:HG22	2.45	0.52
1:A:292:LYS:HD2	1:A:340:TYR:CZ	2.45	0.52
1:A:344:ALA:HB3	1:A:352:PHE:CZ	2.44	0.52
1:A:281:TYR:HE1	2:B:24:LYS:HE2	1.74	0.52
2:B:116:LYS:HZ3	2:B:117:HIS:HB3	1.74	0.52
1:A:336:ASP:O	1:A:340:TYR:OH	2.21	0.52
1:A:236:GLU:OE2	1:A:237:TYR:CE1	2.62	0.52
2:B:117:HIS:HD2	2:B:120:LYS:H	1.57	0.52
1:A:207:TYR:CZ	1:A:216:LEU:HD13	2.44	0.51
1:A:288:ILE:HG13	1:A:315:ALA:HB2	1.91	0.51
1:A:292:LYS:NZ	1:A:338:GLY:HA3	2.24	0.51
2:B:60:GLN:HG3	2:B:61:LEU:N	2.26	0.51
1:A:168:ALA:O	1:A:169:VAL:HG23	2.11	0.51
1:A:207:TYR:HD1	1:A:209:VAL:HG22	1.75	0.51
1:A:289:GLN:HG2	1:A:343:LEU:HB3	1.92	0.51
1:A:174:THR:OG1	1:A:175:VAL:N	2.43	0.51
1:A:230:THR:HG22	1:A:231:CYS:O	2.10	0.51
2:B:126:LEU:N	2:B:144:ALA:O	2.44	0.51
2:B:107:ASN:O	2:B:108:HIS:HB3	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:252:SER:O	1:A:254:HIS:N	2.41	0.50
1:A:259:GLN:HG3	1:A:260:ALA:O	2.10	0.50
2:B:123:PHE:CZ	2:B:139:HIS:N	2.79	0.50
2:B:120:LYS:O	2:B:122:TRP:CD1	2.65	0.50
2:B:85:ASP:HB3	2:B:87:LEU:H	1.77	0.50
2:B:124:VAL:O	2:B:145:ILE:HD13	2.11	0.50
1:A:208:LYS:H	1:A:218:MET:CE	2.25	0.50
2:B:116:LYS:HZ2	2:B:117:HIS:HB3	1.76	0.50
2:B:117:HIS:HB2	2:B:119:GLU:CB	2.38	0.50
1:A:153:ALA:N	1:A:237:TYR:HD2	2.09	0.50
1:A:240:ILE:O	1:A:241:ASN:HB3	2.11	0.50
1:A:156:TRP:CE2	1:A:240:ILE:HB	2.43	0.50
1:A:280:VAL:HG21	2:B:23:TYR:CD1	2.47	0.50
2:B:81:ALA:HB1	2:B:97:GLU:HB3	1.92	0.50
2:B:113:ILE:HG22	2:B:123:PHE:CB	2.21	0.50
1:A:343:LEU:HA	1:A:350:ILE:HD11	1.93	0.50
2:B:83:ASP:HA	2:B:97:GLU:OE1	2.12	0.50
1:A:269:VAL:HA	1:A:360:LEU:CD1	2.41	0.49
1:A:174:THR:HB	1:A:219:GLU:HA	1.93	0.49
1:A:269:VAL:HA	1:A:360:LEU:HD11	1.94	0.49
2:B:115:LYS:C	2:B:117:HIS:N	2.67	0.49
2:B:82:MET:HE2	2:B:100:PHE:CE2	2.47	0.49
1:A:193:LYS:O	1:A:193:LYS:HG2	2.12	0.49
1:A:210:ARG:NH1	1:A:215:SER:HB2	2.27	0.49
2:B:29:LEU:HB3	2:B:147:PHE:HD2	1.76	0.49
2:B:145:ILE:O	2:B:147:PHE:HD1	1.96	0.49
1:A:329:ILE:H	1:A:329:ILE:CD1	2.12	0.49
1:A:267:SER:HB3	1:A:358:THR:OG1	2.12	0.49
1:A:290:TRP:CH2	1:A:325:GLU:C	2.91	0.49
1:A:291:ILE:HD12	1:A:309:LEU:HB2	1.94	0.49
2:B:72:LYS:HB2	2:B:79:TYR:HD1	1.78	0.49
1:A:201:GLU:C	1:A:203:ARG:H	2.21	0.48
1:A:190:ARG:C	1:A:191:TRP:CD1	2.91	0.48
2:B:127:LYS:CD	2:B:128:LYS:HZ2	2.20	0.48
1:A:200:GLN:HE21	1:A:207:TYR:HD2	1.61	0.48
2:B:96:GLU:C	2:B:115:LYS:NZ	2.72	0.48
1:A:159:THR:HG22	1:A:163:GLU:OE2	2.14	0.48
1:A:169:VAL:HG22	2:B:109:TYR:OH	2.13	0.48
2:B:37:PHE:CE2	2:B:52:ARG:HB3	2.46	0.48
1:A:156:TRP:CH2	1:A:231:CYS:SG	3.07	0.48
1:A:157:THR:N	1:A:181:ALA:HA	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:25:LYS:NZ	2:B:151:PRO:HB2	2.28	0.48
2:B:114:SER:O	2:B:117:HIS:ND1	2.47	0.48
1:A:174:THR:CB	1:A:219:GLU:HA	2.44	0.48
1:A:194:ASN:OD1	1:A:228:ASN:HB2	2.13	0.48
1:A:194:ASN:OD1	1:A:228:ASN:O	2.31	0.48
1:A:200:GLN:HG2	1:A:207:TYR:CB	2.33	0.48
1:A:169:VAL:HA	1:A:170:PRO:HD3	1.58	0.48
2:B:96:GLU:CA	2:B:115:LYS:NZ	2.60	0.48
2:B:132:CYS:SG	2:B:133:LYS:N	2.69	0.48
2:B:29:LEU:HD23	2:B:29:LEU:HA	1.63	0.47
2:B:81:ALA:HB3	2:B:91:SER:OG	2.14	0.47
2:B:99:LEU:CD2	2:B:115:LYS:HZ1	2.26	0.47
2:B:127:LYS:NZ	2:B:128:LYS:NZ	2.62	0.47
1:A:157:THR:HG22	1:A:181:ALA:N	2.29	0.47
1:A:192:LEU:O	1:A:229:TYR:HA	2.14	0.47
2:B:75:GLU:HG3	2:B:76:THR:HG23	1.96	0.47
1:A:156:TRP:CZ3	1:A:179:CYS:HB3	2.50	0.47
1:A:174:THR:CG2	1:A:219:GLU:HA	2.45	0.47
1:A:210:ARG:HG2	1:A:215:SER:H	1.78	0.47
2:B:99:LEU:HD22	2:B:115:LYS:NZ	2.30	0.47
1:A:195:GLY:CA	1:A:198:PHE:HZ	2.27	0.47
1:A:320:THR:HG22	1:A:321:ASP:N	2.29	0.47
2:B:86:GLY:HA2	2:B:122:TRP:CZ3	2.39	0.47
1:A:154:PRO:HD3	1:A:235:ASN:HD21	1.79	0.47
1:A:201:GLU:HG2	1:A:202:HIS:N	2.30	0.47
1:A:164:LYS:HE3	1:A:167:HIS:HE1	1.80	0.46
1:A:268:THR:HG21	1:A:274:VAL:HG23	1.97	0.46
1:A:280:VAL:HG11	2:B:23:TYR:CB	2.45	0.46
2:B:111:THR:CG2	2:B:145:ILE:HG13	2.44	0.46
2:B:120:LYS:HE2	2:B:139:HIS:CG	2.50	0.46
1:A:275:GLU:HG3	1:A:327:LEU:O	2.15	0.46
1:A:289:GLN:OE1	1:A:343:LEU:HD22	2.15	0.46
2:B:31:CYS:HB3	2:B:126:LEU:HD22	1.97	0.46
1:A:232:VAL:HG13	1:A:232:VAL:O	2.15	0.46
2:B:131:SER:HB3	2:B:133:LYS:HZ1	1.79	0.46
1:A:290:TRP:CZ2	1:A:325:GLU:O	2.69	0.46
2:B:34:GLY:H	2:B:126:LEU:CD2	2.27	0.46
2:B:141:GLY:HA3	2:B:142:GLN:HA	1.59	0.46
1:A:207:TYR:CE1	1:A:216:LEU:HD13	2.51	0.46
2:B:97:GLU:CA	2:B:115:LYS:HD3	2.46	0.46
2:B:120:LYS:O	2:B:122:TRP:HD1	1.99	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:109:TYR:CD2	2:B:146:LEU:HD13	2.51	0.45
1:A:321:ASP:OD1	1:A:321:ASP:O	2.34	0.45
1:A:253:PRO:O	1:A:348:ILE:HG12	2.16	0.45
2:B:33:ASN:HB3	2:B:126:LEU:HD23	1.98	0.45
1:A:186:MET:HA	1:A:187:PRO:HD3	1.43	0.45
1:A:255:ARG:HA	1:A:346:ASN:ND2	2.30	0.45
2:B:39:ARG:HB2	2:B:57:ILE:HG23	1.99	0.45
2:B:56:HIS:N	2:B:56:HIS:CD2	2.84	0.45
2:B:126:LEU:H	2:B:144:ALA:HB1	1.81	0.45
1:A:292:LYS:HE3	1:A:294:VAL:HG13	1.99	0.45
1:A:251:ARG:NE	1:A:283:ASP:OD2	2.48	0.45
2:B:42:PRO:HG3	2:B:56:HIS:HE1	1.82	0.45
2:B:61:LEU:HG	2:B:71:ILE:HG12	1.99	0.45
1:A:262:LEU:CD1	1:A:278:CYS:HA	2.47	0.45
2:B:23:TYR:CG	2:B:24:LYS:N	2.84	0.44
1:A:201:GLU:C	1:A:203:ARG:N	2.76	0.44
2:B:72:LYS:HD3	2:B:79:TYR:CD1	2.51	0.44
1:A:172:ALA:HA	1:A:220:SER:C	2.42	0.44
1:A:156:TRP:CH2	1:A:179:CYS:HB3	2.52	0.44
1:A:201:GLU:O	1:A:203:ARG:N	2.51	0.44
1:A:226:LYS:HZ1	1:A:247:ASP:CG	2.23	0.44
1:A:258:LEU:HD22	1:A:258:LEU:HA	1.67	0.44
2:B:115:LYS:HG3	2:B:116:LYS:N	2.32	0.44
2:B:127:LYS:NZ	2:B:128:LYS:HZ2	2.16	0.44
1:A:351:SER:C	1:A:352:PHE:CD1	2.95	0.44
2:B:97:GLU:C	2:B:115:LYS:HD3	2.42	0.44
1:A:281:TYR:HA	1:A:282:SER:CB	2.45	0.44
1:A:210:ARG:NE	1:A:215:SER:HB2	2.32	0.44
2:B:38:LEU:HA	2:B:38:LEU:HD12	1.66	0.44
2:B:36:HIS:CE1	2:B:130:GLY:CA	3.00	0.44
1:A:156:TRP:HZ3	1:A:179:CYS:C	2.24	0.44
1:A:265:ASN:ND2	1:A:355:ALA:HA	2.31	0.44
1:A:344:ALA:N	1:A:350:ILE:CD1	2.80	0.44
2:B:58:GLN:OE1	2:B:58:GLN:N	2.51	0.44
2:B:84:THR:O	2:B:86:GLY:N	2.51	0.44
2:B:99:LEU:CD1	2:B:115:LYS:HZ1	2.30	0.44
2:B:103:ARG:O	2:B:110:ASN:HA	2.18	0.44
1:A:259:GLN:HB2	1:A:279:LYS:CD	2.38	0.43
2:B:72:LYS:HB2	2:B:79:TYR:CD1	2.53	0.43
2:B:125:GLY:HA3	2:B:132:CYS:SG	2.59	0.43
1:A:285:GLN:HG2	1:A:286:PRO:HD2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:83:ASP:HB3	2:B:85:ASP:OD2	2.19	0.43
2:B:153:SER:C	2:B:155:ASP:H	2.25	0.43
1:A:319:THR:O	1:A:319:THR:HG23	2.18	0.43
2:B:79:TYR:HE2	2:B:94:PRO:HD3	1.82	0.43
1:A:287:HIS:ND1	2:B:65:SER:HA	2.33	0.43
1:A:290:TRP:CB	1:A:312:LEU:HG	2.35	0.43
2:B:111:THR:C	2:B:112:TYR:CG	2.96	0.43
2:B:86:GLY:O	2:B:88:LEU:HD12	2.18	0.43
2:B:86:GLY:CA	2:B:122:TRP:HZ3	2.25	0.43
2:B:117:HIS:HD2	2:B:120:LYS:N	2.17	0.43
1:A:287:HIS:CG	2:B:65:SER:HA	2.53	0.43
2:B:72:LYS:HD2	2:B:78:GLN:N	2.33	0.43
2:B:99:LEU:HD22	2:B:115:LYS:HE3	2.00	0.43
1:A:161:LYS:HB3	1:A:164:LYS:CD	2.46	0.43
1:A:223:PRO:O	1:A:226:LYS:HB2	2.19	0.43
1:A:292:LYS:HD2	1:A:340:TYR:CE2	2.54	0.43
1:A:192:LEU:HD22	1:A:198:PHE:HE2	1.83	0.43
2:B:22:ASN:O	2:B:27:LYS:NZ	2.51	0.43
1:A:156:TRP:HA	1:A:181:ALA:HA	2.01	0.42
1:A:343:LEU:CA	1:A:350:ILE:HD11	2.49	0.42
1:A:227:GLY:O	1:A:245:HIS:HA	2.18	0.42
1:A:156:TRP:CZ3	1:A:181:ALA:CB	2.99	0.42
2:B:126:LEU:HA	2:B:132:CYS:HB2	2.01	0.42
2:B:139:HIS:C	2:B:141:GLY:H	2.27	0.42
1:A:322:LYS:CG	1:A:323:GLU:HG3	2.50	0.42
1:A:263:PRO:CB	1:A:276:PHE:HB3	2.41	0.42
1:A:168:ALA:HA	1:A:247:ASP:O	2.20	0.42
1:A:230:THR:HG23	1:A:242:HIS:O	2.20	0.42
1:A:166:LEU:HG	1:A:167:HIS:N	2.35	0.42
1:A:360:LEU:H	1:A:360:LEU:HG	1.50	0.42
1:A:200:GLN:NE2	1:A:207:TYR:HB2	2.34	0.42
2:B:39:ARG:NH2	2:B:54:ASP:C	2.78	0.42
2:B:101:LEU:O	2:B:103:ARG:N	2.53	0.42
2:B:119:GLU:HG2	2:B:120:LYS:N	2.34	0.42
1:A:353:HIS:ND1	1:A:353:HIS:N	2.68	0.41
2:B:30:TYR:HD2	2:B:37:PHE:HE1	1.67	0.41
2:B:140:TYR:OH	2:B:142:GLN:NE2	2.53	0.41
1:A:154:PRO:HD3	1:A:235:ASN:OD1	2.20	0.41
2:B:115:LYS:CG	2:B:116:LYS:N	2.82	0.41
1:A:256:PRO:HD3	1:A:346:ASN:CG	2.45	0.41
2:B:87:LEU:O	2:B:88:LEU:C	2.64	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:157:THR:H	1:A:181:ALA:HA	1.84	0.41
1:A:183:GLY:O	1:A:185:PRO:O	2.38	0.41
1:A:164:LYS:HD2	1:A:167:HIS:NE2	2.35	0.41
1:A:173:ASN:O	1:A:220:SER:N	2.53	0.41
1:A:235:ASN:HB2	1:A:236:GLU:H	1.61	0.41
2:B:70:TYR:CD1	2:B:70:TYR:N	2.88	0.41
1:A:184:ASN:HA	1:A:185:PRO:HA	1.73	0.41
1:A:317:VAL:O	1:A:318:ASN:HB3	2.20	0.41
1:A:327:LEU:HD13	1:A:329:ILE:HG13	2.03	0.41
1:A:343:LEU:HG	1:A:350:ILE:HD13	2.03	0.41
1:A:162:MET:HB3	1:A:242:HIS:CE1	2.56	0.41
2:B:102:GLU:HG3	2:B:102:GLU:O	2.21	0.41
2:B:110:ASN:C	2:B:111:THR:HG23	2.45	0.41
2:B:103:ARG:NE	2:B:105:GLU:CD	2.77	0.41
2:B:111:THR:HG22	2:B:145:ILE:HG13	2.03	0.41
1:A:155:TYR:O	1:A:182:GLY:N	2.53	0.41
1:A:168:ALA:CB	2:B:150:LEU:HD11	2.51	0.41
1:A:175:VAL:HG13	1:A:175:VAL:O	2.21	0.41
1:A:231:CYS:HB3	1:A:242:HIS:H	1.85	0.41
1:A:252:SER:C	1:A:254:HIS:N	2.79	0.41
2:B:50:ARG:HA	2:B:50:ARG:NE	2.36	0.41
2:B:116:LYS:HG3	2:B:117:HIS:HB3	2.02	0.41
1:A:209:VAL:HG12	1:A:210:ARG:H	1.85	0.41
1:A:258:LEU:HD12	1:A:352:PHE:CD2	2.56	0.41
2:B:105:GLU:C	2:B:107:ASN:N	2.78	0.41
2:B:115:LYS:O	2:B:117:HIS:N	2.54	0.41
1:A:255:ARG:O	1:A:256:PRO:C	2.62	0.40
1:A:273:ASP:OD2	1:A:328:TYR:CE1	2.74	0.40
1:A:290:TRP:CD1	1:A:342:CYS:CB	3.03	0.40
2:B:122:TRP:CH2	2:B:136:PRO:HD3	2.57	0.40
1:A:194:ASN:HD21	1:A:228:ASN:H	1.69	0.40
1:A:324:ILE:HD12	1:A:324:ILE:HG23	1.69	0.40
1:A:344:ALA:H	1:A:350:ILE:HD11	1.86	0.40
1:A:156:TRP:HA	1:A:181:ALA:HB2	2.02	0.40
1:A:251:ARG:HD2	1:A:283:ASP:OD2	2.22	0.40
2:B:61:LEU:CG	2:B:71:ILE:HG12	2.52	0.40
1:A:358:THR:OG1	1:A:358:THR:O	2.38	0.40

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	194/223 (87%)	134 (69%)	43 (22%)	17 (9%)	0	10
2	B	132/138 (96%)	102 (77%)	20 (15%)	10 (8%)	1	12
All	All	326/361 (90%)	236 (72%)	63 (19%)	27 (8%)	0	11

All (27) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	159	THR
1	A	175	VAL
1	A	214	TRP
1	A	280	VAL
1	A	313	LYS
2	B	85	ASP
2	B	121	ASN
2	B	133	LYS
2	B	139	HIS
2	B	140	TYR
2	B	152	VAL
1	A	173	ASN
1	A	180	PRO
1	A	219	GLU
1	A	273	ASP
1	A	281	TYR
2	B	118	ALA
2	B	119	GLU
1	A	282	SER
1	A	295	GLU
1	A	350	ILE
2	B	88	LEU
1	A	221	VAL
1	A	332	VAL
1	A	202	HIS

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Mol	Chain	Res	Type
1	A	335	GLU
2	B	124	VAL

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	170/190 (90%)	128 (75%)	42 (25%)	1	4
2	B	118/120 (98%)	100 (85%)	18 (15%)	3	15
All	All	288/310 (93%)	228 (79%)	60 (21%)	1	7

All (60) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	161	LYS
1	A	162	MET
1	A	169	VAL
1	A	174	THR
1	A	178	ARG
1	A	186	MET
1	A	189	MET
1	A	199	LYS
1	A	200	GLN
1	A	201	GLU
1	A	208	LYS
1	A	209	VAL
1	A	212	GLN
1	A	213	HIS
1	A	218	MET
1	A	219	GLU
1	A	221	VAL
1	A	226	LYS
1	A	235	ASN
1	A	239	SER
1	A	249	VAL

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Mol	Chain	Res	Type
1	A	250	GLU
1	A	251	ARG
1	A	258	LEU
1	A	262	LEU
1	A	275	GLU
1	A	279	LYS
1	A	280	VAL
1	A	289	GLN
1	A	294	VAL
1	A	310	LYS
1	A	312	LEU
1	A	313	LYS
1	A	319	THR
1	A	320	THR
1	A	322	LYS
1	A	325	GLU
1	A	329	ILE
1	A	333	THR
1	A	335	GLU
1	A	353	HIS
1	A	359	VAL
2	B	22	ASN
2	B	23	TYR
2	B	39	ARG
2	B	49	THR
2	B	50	ARG
2	B	56	HIS
2	B	59	LEU
2	B	60	GLN
2	B	70	TYR
2	B	72	LYS
2	B	99	LEU
2	B	101	LEU
2	B	108	HIS
2	B	113	ILE
2	B	116	LYS
2	B	134	ARG
2	B	145	ILE
2	B	146	LEU

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

Mol	Chain	Res	Type
1	A	158	ASN
1	A	202	HIS
1	A	213	HIS
1	A	242	HIS
1	A	265	ASN
2	B	36	HIS
2	B	56	HIS
2	B	142	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

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	198/223 (88%)	0.82	22 (11%)	10 13	134, 278, 416, 527	0
2	B	134/138 (97%)	0.54	10 (7%)	20 19	162, 281, 425, 455	0
All	All	332/361 (91%)	0.71	32 (9%)	13 15	134, 279, 424, 527	0

All (32) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	68	GLU	7.8
1	A	156	TRP	7.5
1	A	257	ILE	6.7
1	A	291	ILE	4.2
1	A	343	LEU	3.9
1	A	157	THR	3.8
1	A	253	PRO	3.8
1	A	207	TYR	3.1
1	A	217	ILE	3.1
1	A	158	ASN	2.9
1	A	359	VAL	2.8
2	B	87	LEU	2.7
1	A	307	PRO	2.7
2	B	67	GLY	2.7
1	A	161	LYS	2.7
2	B	66	VAL	2.6
1	A	233	VAL	2.6
1	A	240	ILE	2.6
2	B	121	ASN	2.5
2	B	101	LEU	2.5
1	A	277	VAL	2.5
1	A	162	MET	2.4
2	B	41	LEU	2.3
1	A	311	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	180	PRO	2.2
1	A	352	PHE	2.1
2	B	38	LEU	2.0
1	A	160	GLU	2.0
1	A	264	ALA	2.0
2	B	49	THR	2.0
1	A	309	LEU	2.0
2	B	37	PHE	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.