Full wwPDB X-ray Structure Validation Report ⓘ

Jun 26, 2024 – 03:47 AM EDT

PDB ID	:	6S9I
Title	:	Human Brr2 Helicase Region D534C/N1866C in complex with C-tail deleted Jab1
Authors	:	Vester, K.; Santos, K.F.; Wahl, M.C.
Deposited on	:	2019-07-13
Resolution	:	2.60 Å(reported)

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

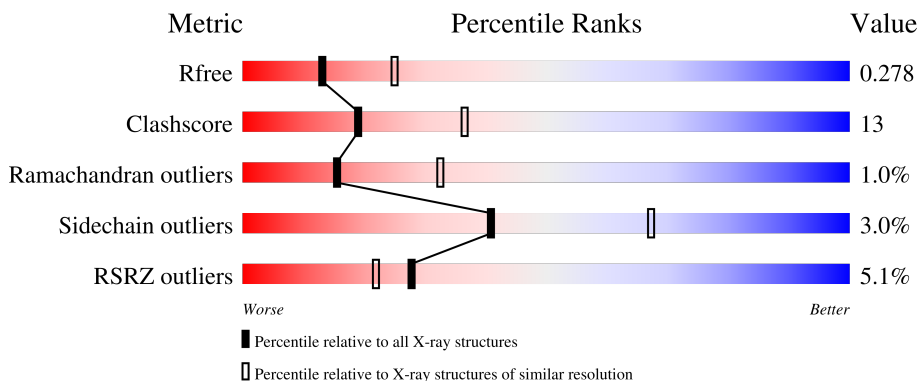|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
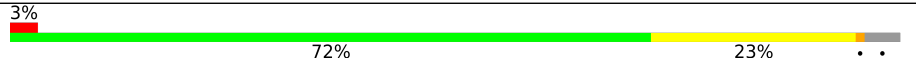*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.60 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.278
Clashscore		13
Ramachandran outliers		1.0%
Sidechain outliers		3.0%
RSRZ outliers		5.1%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	B	1747	5% / 68% 28% ⋯
2	J	263	3% / 72% 23% ⋅⋅

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 15928 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 U5 small nuclear ribonucleoprotein 200 kDa helicase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	1712	Total 13780	C 8808	N 2359	O 2539	S 74	0	1	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	390	GLY	-	expression tag	UNP O75643
B	391	ALA	-	expression tag	UNP O75643
B	392	GLU	-	expression tag	UNP O75643
B	393	PHE	-	expression tag	UNP O75643
B	534	CYS	ASP	engineered mutation	UNP O75643
B	1866	CYS	ASN	engineered mutation	UNP O75643

- Molecule 2 is a protein called Pre-mRNA-processing-splicing factor 8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	J	252	Total 2046	C 1312	N 353	O 369	S 12	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	2058	GLY	-	expression tag	UNP Q6P2Q9
J	2059	PRO	-	expression tag	UNP Q6P2Q9
J	2060	LEU	-	expression tag	UNP Q6P2Q9
J	2061	GLY	-	expression tag	UNP Q6P2Q9
J	2062	SER	-	expression tag	UNP Q6P2Q9
J	2063	MET	-	expression tag	UNP Q6P2Q9

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	86	Total O 86 86		0	0
3	J	16	Total O 16 16		0	0

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: U5 small nuclear ribonucleoprotein 200 kDa helicase
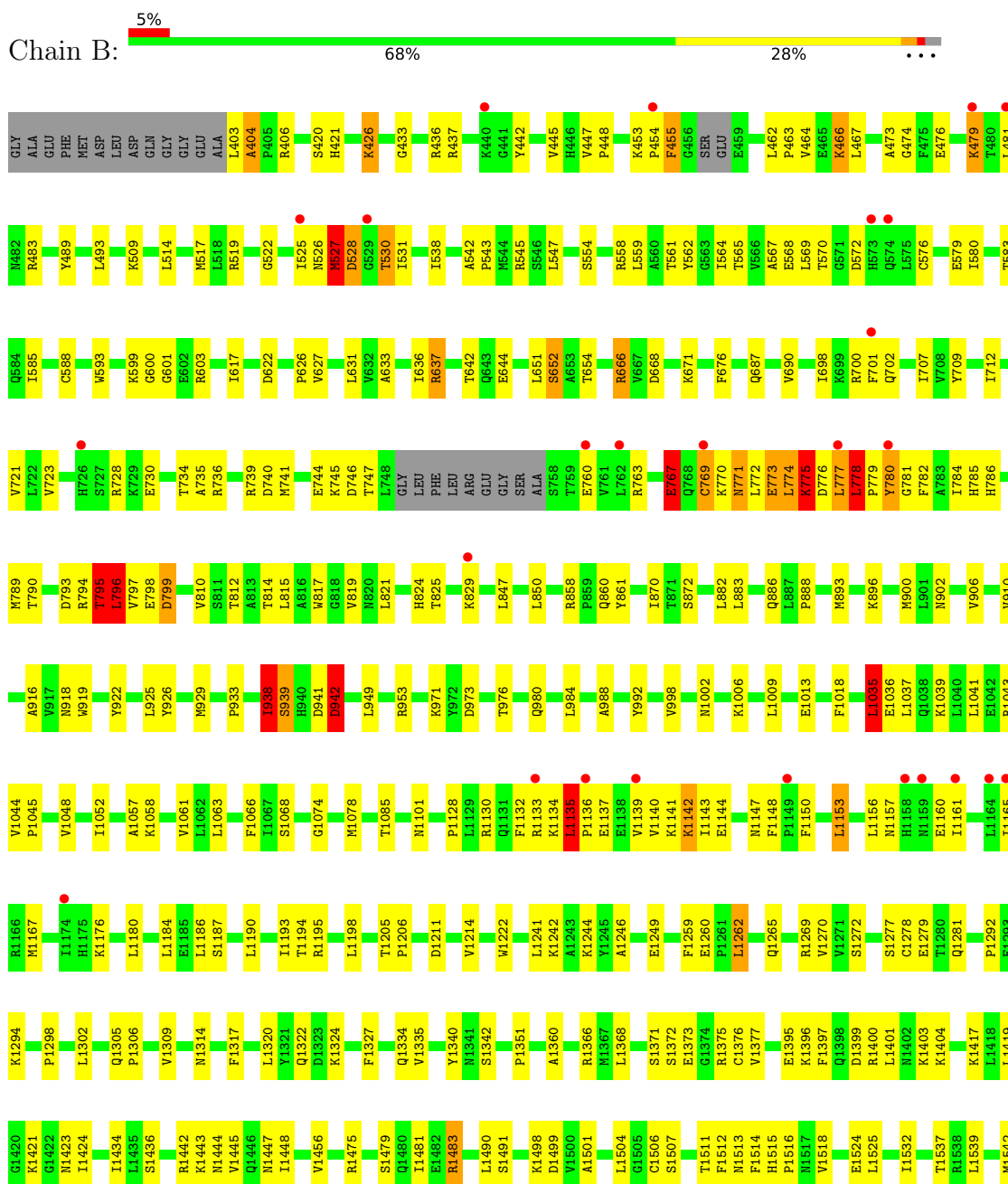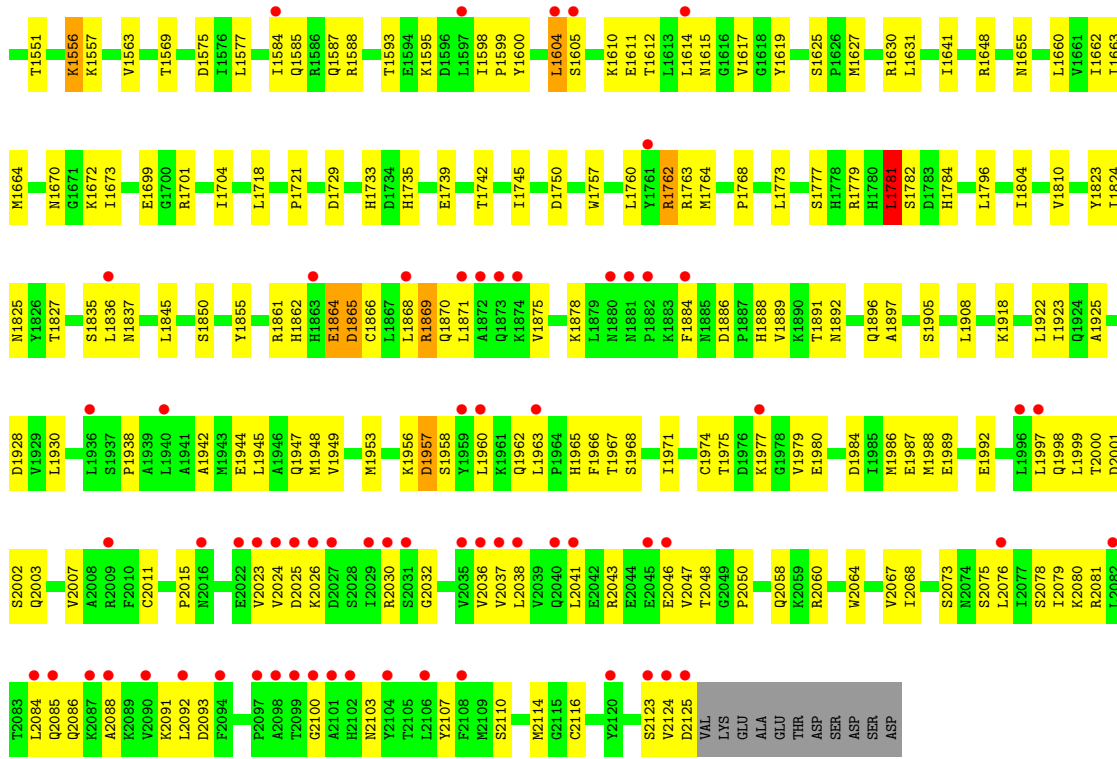
• Molecule 2: Pre-mRNA-processing-splicing factor 8
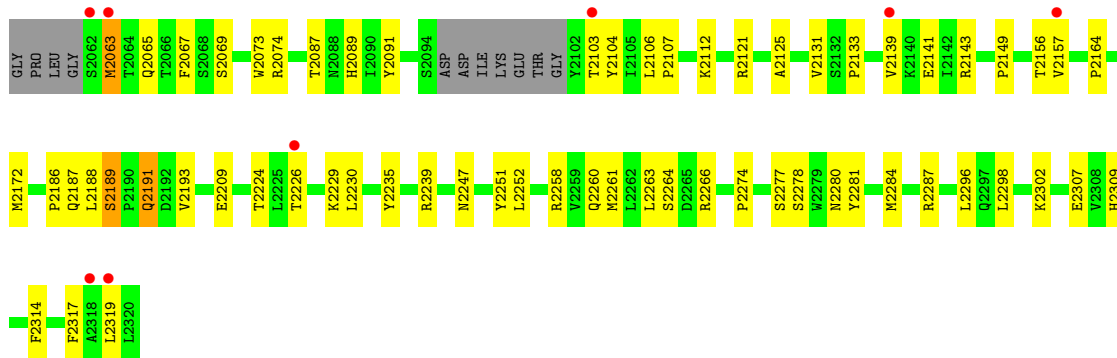
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	99.24Å 119.08Å 187.91Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.98 – 2.60 49.27 – 2.60	Depositor EDS
% Data completeness (in resolution range)	98.9 (47.98-2.60) 98.9 (49.27-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.35 (at 2.61Å)	Xtriage
Refinement program	PHENIX 1.15.2_3472	Depositor
R, R_{free}	0.197 , 0.278 0.197 , 0.278	Depositor DCC
R_{free} test set	2100 reflections (3.06%)	wwPDB-VP
Wilson B-factor (Å^2)	54.0	Xtriage
Anisotropy	0.130	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 50.4	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	15928	wwPDB-VP
Average B, all atoms (Å^2)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.27% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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	B	0.34	2/14071 (0.0%)	0.59	17/19063 (0.1%)
2	J	0.30	0/2111	0.48	0/2874
All	All	0.34	2/16182 (0.0%)	0.57	17/21937 (0.1%)

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	B	0	9

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	476	GLU	CD-OE2	8.52	1.35	1.25
1	B	426	LYS	CE-NZ	5.30	1.62	1.49

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	796	LEU	CA-CB-CG	18.17	157.09	115.30
1	B	778	LEU	CA-CB-CG	15.48	150.91	115.30
1	B	426	LYS	CD-CE-NZ	-13.53	80.58	111.70
1	B	796	LEU	CB-CG-CD2	9.60	127.32	111.00
1	B	799	ASP	CB-CG-OD2	8.83	126.25	118.30
1	B	1604	LEU	CA-CB-CG	8.42	134.68	115.30
1	B	774	LEU	CA-CB-CG	-6.78	99.70	115.30
1	B	777	LEU	CA-CB-CG	6.13	129.41	115.30
1	B	778	LEU	CB-CG-CD2	5.90	121.04	111.00
1	B	799	ASP	CB-CG-OD1	-5.64	113.22	118.30
1	B	942	ASP	CB-CG-OD1	-5.60	113.26	118.30
1	B	1781	LEU	CA-CB-CG	5.47	127.88	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	795	THR	C-N-CA	-5.45	108.07	121.70
1	B	767	GLU	CA-CB-CG	5.40	125.27	113.40
1	B	1135	LEU	CA-CB-CG	5.25	127.38	115.30
1	B	777	LEU	CB-CG-CD1	-5.25	102.08	111.00
1	B	775	LYS	CD-CE-NZ	5.17	123.58	111.70

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	1987	GLU	Peptide
1	B	479	LYS	Peptide
1	B	527	MET	Peptide
1	B	603	ARG	Peptide
1	B	767	GLU	Peptide
1	B	773	GLU	Peptide
1	B	775	LYS	Peptide
1	B	796	LEU	Peptide
1	B	938	ILE	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	B	13780	0	13925	383	2
2	J	2046	0	1990	42	1
3	B	86	0	0	5	0
3	J	16	0	0	1	0
All	All	15928	0	15915	413	2

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 13.

All (413) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1130:ARG:NH1	1:B:1144:GLU:OE2	1.57	1.32
1:B:796:LEU:HB2	1:B:799:ASP:HB2	1.33	1.06
1:B:1130:ARG:NH1	1:B:1144:GLU:CD	2.09	1.05
1:B:1928:ASP:OD1	1:B:2081:ARG:NH1	1.94	0.98
1:B:896:LYS:HB2	1:B:900:MET:HE2	1.49	0.93
1:B:775:LYS:HE2	1:B:778:LEU:HB3	1.56	0.88
1:B:1156:LEU:HD13	1:B:1160:GLU:HB2	1.56	0.87
1:B:1156:LEU:HD11	1:B:1161:ILE:HG13	1.54	0.87
1:B:728[B]:ARG:HD2	1:B:786:HIS:HB2	1.57	0.87
1:B:569:LEU:HD21	1:B:580:ILE:HD11	1.56	0.85
1:B:739:ARG:NH1	1:B:776:ASP:O	2.11	0.84
1:B:1598:ILE:HG13	1:B:1599:PRO:HD3	1.58	0.83
1:B:1035:LEU:HG	1:B:1036:GLU:H	1.43	0.82
1:B:1137:GLU:HB2	1:B:1139:VAL:HG22	1.62	0.80
1:B:1953:MET:HE2	1:B:1962:GLN:HG2	1.64	0.80
1:B:545:ARG:NH2	1:B:568:GLU:OE1	2.15	0.79
1:B:1044:VAL:HA	2:J:2317:PHE:HZ	1.49	0.77
2:J:2091:TYR:HB2	2:J:2224:THR:HG22	1.64	0.77
1:B:1143:ILE:HG12	1:B:1165:ILE:HG21	1.65	0.77
1:B:1130:ARG:NH2	1:B:1141:LYS:HE3	2.01	0.76
1:B:1434:ILE:HD13	1:B:1823:TYR:HB2	1.68	0.75
1:B:1130:ARG:NH1	1:B:1144:GLU:OE1	2.18	0.75
1:B:728[B]:ARG:NH2	1:B:814:THR:OG1	2.19	0.74
1:B:1835:SER:O	1:B:1837:ASN:ND2	2.20	0.74
1:B:775:LYS:HA	1:B:778:LEU:HB2	1.70	0.73
1:B:2000:THR:HG22	1:B:2002:SER:H	1.51	0.73
1:B:893:MET:HB2	1:B:900:MET:HE1	1.70	0.72
1:B:1499:ASP:CG	1:B:1762:ARG:HE	1.93	0.72
1:B:773:GLU:O	1:B:777:LEU:N	2.24	0.71
1:B:739:ARG:NH2	1:B:740:ASP:OD1	2.25	0.70
1:B:775:LYS:HZ2	1:B:779:PRO:HA	1.57	0.70
1:B:1905:SER:HB2	1:B:1908:LEU:H	1.58	0.69
1:B:984:LEU:HD22	1:B:998:VAL:HG13	1.73	0.69
1:B:1368:LEU:HD22	1:B:1403:LYS:HE2	1.72	0.69
1:B:1539:LEU:HD23	1:B:1542:MET:HE1	1.74	0.69
1:B:2043:ARG:HH11	1:B:2085:GLN:HA	1.57	0.69
1:B:2067:VAL:HB	1:B:2107:TYR:HB2	1.75	0.69
1:B:1475:ARG:HD2	1:B:1504:LEU:HA	1.73	0.69
1:B:1963:LEU:HD22	1:B:2007:VAL:HG13	1.73	0.69
1:B:771:ASN:ND2	1:B:793:ASP:OD1	2.25	0.68
1:B:1499:ASP:OD1	1:B:1762:ARG:NE	2.18	0.68
1:B:636:ILE:HD13	1:B:666:ARG:HG3	1.75	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:2189:SER:OG	2:J:2191:GLN:OE1	2.12	0.67
1:B:1612:THR:HG22	1:B:1617:VAL:O	1.94	0.66
1:B:1604:LEU:HB3	1:B:1610:LYS:HZ3	1.60	0.66
1:B:1147:ASN:HB2	2:J:2287:ARG:HH22	1.61	0.66
1:B:736:ARG:HG3	1:B:777:LEU:HD12	1.77	0.65
1:B:790:THR:HB	1:B:793:ASP:HB2	1.78	0.65
1:B:1351:PRO:HG3	1:B:1516:PRO:HA	1.79	0.65
1:B:1044:VAL:HG22	1:B:1045:PRO:HD2	1.78	0.65
1:B:2067:VAL:HG22	1:B:2079:ILE:HD13	1.77	0.65
1:B:767:GLU:HB2	1:B:770:LYS:HG2	1.78	0.64
1:B:2043:ARG:HH12	1:B:2084:LEU:HG	1.63	0.64
1:B:2078:SER:HB3	1:B:2092:LEU:HD23	1.78	0.64
1:B:404:ALA:HB1	1:B:406:ARG:HE	1.63	0.63
1:B:772:LEU:O	1:B:773:GLU:HB2	1.98	0.63
1:B:1006:LYS:HG2	1:B:1009:LEU:HD13	1.80	0.63
1:B:1302:LEU:N	1:B:1334:GLN:OE1	2.17	0.63
1:B:1499:ASP:OD2	1:B:1763:ARG:NH1	2.31	0.63
1:B:929:MET:HE3	1:B:938:ILE:HD11	1.79	0.63
2:J:2106:LEU:HD12	2:J:2107:PRO:HD2	1.80	0.63
1:B:772:LEU:HD23	1:B:773:GLU:HG3	1.80	0.63
1:B:2023:VAL:HG11	1:B:2026:LYS:HE3	1.81	0.62
1:B:2023:VAL:HG21	1:B:2124:VAL:HG21	1.79	0.62
1:B:1242:LYS:HD2	1:B:1244:LYS:HE3	1.81	0.62
1:B:2015:PRO:HG2	1:B:2116:CYS:SG	2.39	0.62
1:B:2043:ARG:NH1	1:B:2085:GLN:HA	2.14	0.62
1:B:1037:LEU:HB3	1:B:1052:ILE:HD11	1.82	0.62
1:B:973:ASP:OD1	1:B:976:THR:OG1	2.17	0.62
1:B:420:SER:HB3	1:B:622:ASP:HA	1.80	0.61
1:B:1186:LEU:HD11	1:B:1270:VAL:HG12	1.81	0.61
1:B:942:ASP:OD1	1:B:942:ASP:N	2.19	0.61
1:B:1960:LEU:HD11	1:B:1980:GLU:HA	1.83	0.61
1:B:1971:ILE:O	1:B:1975:THR:HG23	2.01	0.61
1:B:775:LYS:CE	1:B:778:LEU:HB3	2.29	0.61
1:B:565:THR:OG1	1:B:583:THR:HA	2.01	0.60
1:B:2000:THR:HB	1:B:2003:GLN:HG3	1.84	0.60
1:B:1057:ALA:O	1:B:1061:VAL:HG23	2.01	0.60
1:B:1930:LEU:HD22	1:B:1938:PRO:HB2	1.84	0.60
1:B:2041:LEU:HB2	1:B:2088:ALA:HB3	1.84	0.60
1:B:474:GLY:O	1:B:558:ARG:NH2	2.30	0.60
1:B:1043:ARG:HD2	2:J:2074:ARG:HE	1.67	0.60
1:B:1305:GLN:HG2	1:B:1306:PRO:HD2	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1479:SER:HG	1:B:1757:TRP:HH2	1.48	0.59
1:B:1376:CYS:HB3	1:B:1424:ILE:HG22	1.84	0.59
1:B:559:LEU:HD13	1:B:564:ILE:HD11	1.85	0.59
1:B:971:LYS:HB2	1:B:980:GLN:HB3	1.85	0.59
2:J:2103:THR:HG23	2:J:2260:GLN:HG2	1.85	0.59
1:B:775:LYS:NZ	1:B:779:PRO:HA	2.18	0.59
1:B:785:HIS:CE1	1:B:815:LEU:HD23	2.38	0.59
1:B:744:GLU:N	1:B:744:GLU:OE2	2.36	0.59
1:B:795:THR:O	1:B:798:GLU:HB2	2.03	0.58
1:B:984:LEU:HD11	1:B:1002:ASN:HB2	1.85	0.58
1:B:2081:ARG:HD2	1:B:2081:ARG:N	2.18	0.58
1:B:1979:VAL:HG11	1:B:1988:MET:HE1	1.86	0.58
1:B:1044:VAL:HA	2:J:2317:PHE:CZ	2.35	0.58
1:B:421:HIS:ND1	3:B:2205:HOH:O	2.32	0.58
1:B:1035:LEU:HD23	1:B:1035:LEU:H	1.68	0.58
1:B:1375:ARG:NH2	1:B:1444:ASN:OD1	2.37	0.58
1:B:1375:ARG:NH1	1:B:1447:ASN:O	2.36	0.58
1:B:728[B]:ARG:NH1	1:B:812:THR:OG1	2.37	0.57
1:B:1824:ILE:HD13	1:B:1922:LEU:HD13	1.86	0.57
1:B:530:THR:HG23	1:B:531:ILE:HG23	1.86	0.57
1:B:1965:HIS:HB2	1:B:1999:LEU:HD21	1.86	0.57
2:J:2188:LEU:HD12	2:J:2193:VAL:HG23	1.85	0.57
1:B:2046:GLU:HA	1:B:2086:GLN:OE1	2.05	0.57
2:J:2125:ALA:HB2	2:J:2157:VAL:HG11	1.85	0.57
1:B:637:ARG:NH1	1:B:918:ASN:OD1	2.38	0.57
1:B:988:ALA:HB2	1:B:998:VAL:HG21	1.85	0.57
1:B:1861:ARG:HD2	1:B:1864:GLU:OE1	2.04	0.57
2:J:2087:THR:HB	2:J:2112:LYS:HG2	1.87	0.57
1:B:433:GLY:HA3	1:B:448:PRO:HG3	1.85	0.57
1:B:824:HIS:HB2	1:B:858:ARG:HH12	1.70	0.57
1:B:829:LYS:O	1:B:870:ILE:HB	2.04	0.56
1:B:850:LEU:HD11	1:B:882:LEU:HD11	1.87	0.56
1:B:767:GLU:HB2	1:B:770:LYS:CG	2.35	0.56
1:B:775:LYS:HG3	1:B:778:LEU:HB2	1.87	0.56
1:B:896:LYS:HB2	1:B:900:MET:CE	2.30	0.56
1:B:453:LYS:O	1:B:455:PHE:N	2.32	0.56
1:B:933:PRO:HB2	1:B:939:SER:H	1.70	0.56
1:B:1269:ARG:HG2	1:B:1281:GLN:HG3	1.88	0.56
1:B:1375:ARG:HH12	1:B:1447:ASN:HB2	1.70	0.56
1:B:1195:ARG:HD2	1:B:1294:LYS:HG2	1.86	0.56
1:B:1456:VAL:HG12	1:B:1491:SER:HB2	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:2209:GLU:HA	2:J:2229:LYS:HE2	1.88	0.56
1:B:1043:ARG:NH2	2:J:2073:TRP:HE1	2.04	0.56
2:J:2235:TYR:O	2:J:2239:ARG:HG3	2.06	0.56
1:B:775:LYS:HA	1:B:778:LEU:H	1.70	0.56
1:B:767:GLU:HA	1:B:769:CYS:O	2.06	0.55
1:B:462:LEU:HD12	1:B:463:PRO:HD2	1.89	0.55
1:B:1944:GLU:HA	1:B:1947:GLN:HG2	1.87	0.55
1:B:567:ALA:HB3	1:B:583:THR:HG21	1.87	0.55
1:B:760:GLU:HG2	1:B:760:GLU:O	2.07	0.55
1:B:790:THR:HB	1:B:793:ASP:CB	2.37	0.55
1:B:1186:LEU:HD21	1:B:1270:VAL:HG11	1.87	0.55
2:J:2156:THR:HG23	2:J:2191:GLN:HG3	1.87	0.55
1:B:1137:GLU:O	1:B:1139:VAL:HG13	2.07	0.55
1:B:1974:CYS:HB3	1:B:1979:VAL:CG2	2.37	0.55
1:B:1739:GLU:HA	1:B:1742:THR:HG22	1.88	0.55
1:B:1205:THR:HG23	1:B:1249:GLU:HG2	1.88	0.54
1:B:447:VAL:HB	1:B:687:GLN:HB2	1.88	0.54
1:B:1142:LYS:HE3	1:B:1167:MET:HE1	1.89	0.54
1:B:1861:ARG:NH2	1:B:1864:GLU:OE2	2.40	0.54
1:B:2103:ASN:HB3	1:B:2123:SER:OG	2.07	0.54
1:B:1663:ILE:HD12	1:B:1704:ILE:HG12	1.90	0.54
1:B:794:ARG:HA	1:B:797:VAL:HB	1.90	0.54
1:B:1211:ASP:HB3	1:B:1214:VAL:HG22	1.90	0.53
1:B:1419:LEU:HG	1:B:1444:ASN:HB3	1.90	0.53
1:B:949:LEU:O	1:B:953:ARG:HD3	2.09	0.53
2:J:2106:LEU:HB3	2:J:2263:LEU:HD23	1.89	0.53
1:B:559:LEU:HB3	1:B:564:ILE:HD11	1.91	0.53
1:B:1481:ILE:HG13	1:B:1483:ARG:H	1.73	0.53
1:B:1442:ARG:NH1	1:B:1442:ARG:HA	2.24	0.53
1:B:1600:TYR:HD1	1:B:1631:LEU:HD22	1.74	0.53
1:B:2023:VAL:HG21	1:B:2124:VAL:CG2	2.39	0.53
1:B:778:LEU:O	1:B:781:GLY:N	2.41	0.52
1:B:1542:MET:HE3	1:B:1664:MET:HG2	1.90	0.52
1:B:1779:ARG:HB3	1:B:1779:ARG:CZ	2.39	0.52
1:B:522:GLY:O	1:B:525:ILE:HG22	2.08	0.52
1:B:599:LYS:O	1:B:601:GLY:N	2.42	0.52
1:B:2076:LEU:HD21	1:B:2079:ILE:HB	1.89	0.52
1:B:642:THR:HG22	1:B:644:GLU:HG2	1.91	0.52
1:B:1611:GLU:OE1	1:B:1611:GLU:N	2.35	0.52
1:B:2026:LYS:HE3	1:B:2124:VAL:HG23	1.92	0.52
1:B:2046:GLU:O	1:B:2048:THR:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1515:HIS:CE1	1:B:1721:PRO:HG3	2.44	0.52
1:B:1871:LEU:HD21	1:B:1897:ALA:HB2	1.90	0.52
1:B:1551:THR:HG22	1:B:1588:ARG:HH12	1.74	0.52
1:B:1009:LEU:HD11	1:B:1013:GLU:HG2	1.92	0.52
1:B:1979:VAL:HB	1:B:1984:ASP:HB3	1.92	0.51
1:B:1045:PRO:HD3	2:J:2317:PHE:CE1	2.45	0.51
2:J:2186:PRO:O	2:J:2187:GLN:NE2	2.40	0.51
1:B:1556:LYS:HD3	1:B:1557:LYS:H	1.75	0.51
1:B:1825:ASN:OD1	1:B:1827:THR:OG1	2.21	0.51
1:B:1864:GLU:HG3	1:B:1908:LEU:HD21	1.93	0.51
1:B:1309:VAL:HG21	1:B:1322:GLN:HB3	1.92	0.51
1:B:1442:ARG:HH22	1:B:1443:LYS:HG2	1.76	0.51
1:B:1532:ILE:HG21	1:B:1537:THR:HB	1.92	0.51
1:B:637:ARG:HG3	1:B:922:TYR:CE2	2.46	0.51
1:B:1306:PRO:HB2	1:B:1327:PHE:HB3	1.93	0.51
1:B:2084:LEU:HD13	1:B:2088:ALA:CB	2.41	0.51
2:J:2277:SER:OG	2:J:2278:SER:N	2.42	0.51
1:B:1130:ARG:HG3	1:B:1140:VAL:HG21	1.91	0.51
1:B:1600:TYR:CD1	1:B:1631:LEU:HD22	2.45	0.51
1:B:1878:LYS:H	1:B:1878:LYS:HD2	1.76	0.51
1:B:2100:GLY:HA2	1:B:2125:ASP:OD2	2.11	0.50
2:J:2149:PRO:HD3	2:J:2274:PRO:HG3	1.92	0.50
1:B:1868:LEU:HA	1:B:1871:LEU:HB2	1.92	0.50
1:B:466:LYS:O	1:B:466:LYS:HD3	2.11	0.50
1:B:775:LYS:HE2	1:B:778:LEU:CB	2.37	0.50
1:B:1733:HIS:HB3	1:B:1796:LEU:HD21	1.94	0.50
1:B:690:VAL:HG11	1:B:707:ILE:HG21	1.93	0.50
1:B:1130:ARG:HH21	1:B:1141:LYS:HE3	1.76	0.50
1:B:1627:MET:HA	1:B:1630:ARG:HB2	1.92	0.50
1:B:1190:LEU:HD22	1:B:1198:LEU:HD21	1.93	0.50
1:B:1501:ALA:HB1	1:B:1506:CYS:HB2	1.94	0.50
1:B:775:LYS:HA	1:B:778:LEU:N	2.27	0.50
1:B:893:MET:HG2	1:B:925:LEU:HB2	1.93	0.49
1:B:1043:ARG:HD2	2:J:2074:ARG:HH21	1.76	0.49
1:B:2043:ARG:NH1	1:B:2084:LEU:HG	2.25	0.49
1:B:700:ARG:NH1	1:B:872:SER:OG	2.45	0.49
1:B:1041:LEU:HD11	1:B:1048:VAL:HB	1.93	0.49
1:B:1569:THR:HB	1:B:1619:TYR:HB2	1.94	0.49
1:B:739:ARG:HD2	1:B:779:PRO:HG2	1.94	0.49
1:B:2073:SER:HB3	1:B:2075:SER:HB3	1.94	0.49
1:B:815:LEU:HD11	1:B:821:LEU:HD23	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1371:SER:C	1:B:1373:GLU:H	2.15	0.49
1:B:2079:ILE:O	1:B:2080:LYS:HG3	2.11	0.49
1:B:1176:LYS:HE2	1:B:1180:LEU:HD11	1.94	0.49
1:B:817:TRP:HZ2	1:B:847:LEU:HB3	1.78	0.49
1:B:775:LYS:HG3	1:B:778:LEU:CB	2.42	0.48
1:B:1035:LEU:HG	1:B:1036:GLU:N	2.22	0.48
1:B:926:TYR:CE1	1:B:953:ARG:HD2	2.48	0.48
1:B:1948:MET:HA	1:B:2114:MET:HE2	1.95	0.48
2:J:2133:PRO:HD2	2:J:2139:VAL:HG13	1.96	0.48
1:B:1195:ARG:NH1	1:B:1260:GLU:OE2	2.46	0.48
1:B:1524:GLU:HB2	1:B:1701:ARG:HG2	1.95	0.48
1:B:1587:GLN:HG3	1:B:1615:ASN:HA	1.95	0.48
1:B:735:ALA:HB2	1:B:810:VAL:HB	1.95	0.48
1:B:1193:ILE:HG22	1:B:1194:THR:HG23	1.96	0.48
1:B:1150:PHE:O	1:B:1153:LEU:HD12	2.13	0.48
2:J:2141:GLU:OE2	2:J:2143:ARG:NH2	2.46	0.48
1:B:730:GLU:OE1	1:B:734:THR:OG1	2.23	0.48
1:B:1360:ALA:HB2	1:B:1490:LEU:HD11	1.96	0.48
1:B:1593:THR:C	1:B:1595:LYS:H	2.17	0.48
1:B:442:TYR:CD1	1:B:690:VAL:HG13	2.49	0.48
1:B:1514:PHE:HB3	1:B:1518:VAL:HG21	1.96	0.48
1:B:527:MET:SD	1:B:527:MET:N	2.86	0.47
1:B:723:VAL:HB	1:B:810:VAL:HG22	1.96	0.47
1:B:1043:ARG:HA	2:J:2074:ARG:NH2	2.29	0.47
1:B:1259:PHE:O	1:B:1262:LEU:HD12	2.14	0.47
1:B:1037:LEU:HD11	1:B:1058:LYS:HD2	1.97	0.47
1:B:1777:SER:O	1:B:1781:LEU:HD23	2.14	0.47
1:B:746:ASP:OD2	1:B:780:TYR:HB2	2.14	0.47
2:J:2307:GLU:HG3	2:J:2314:PHE:CE1	2.49	0.47
1:B:1298:PRO:HB3	1:B:1515:HIS:CG	2.49	0.47
1:B:1584:ILE:O	1:B:1584:ILE:HG22	2.14	0.47
1:B:436:ARG:HG3	1:B:445:VAL:HG22	1.96	0.47
1:B:1132:PHE:O	1:B:1134:LYS:N	2.47	0.47
1:B:1397:PHE:HA	1:B:1401:LEU:HB2	1.97	0.47
1:B:1855:TYR:HB3	1:B:1891:THR:HG21	1.97	0.47
1:B:525:ILE:HG13	1:B:526:ASN:O	2.15	0.47
1:B:777:LEU:HD21	1:B:784:ILE:HG23	1.96	0.47
2:J:2089:HIS:HB3	2:J:2091:TYR:OH	2.15	0.47
1:B:403:LEU:HG	1:B:404:ALA:H	1.78	0.47
1:B:1140:VAL:O	1:B:1144:GLU:N	2.37	0.47
1:B:938:ILE:HG22	1:B:939:SER:N	2.30	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1539:LEU:HD23	1:B:1542:MET:CE	2.45	0.47
1:B:1836:LEU:HD22	1:B:1930:LEU:HD21	1.97	0.47
1:B:1945:LEU:HA	1:B:1948:MET:HB2	1.97	0.46
1:B:1804:ILE:HG12	1:B:1810:VAL:HG12	1.98	0.46
1:B:1944:GLU:HA	1:B:1947:GLN:CG	2.44	0.46
1:B:2081:ARG:HD2	1:B:2081:ARG:H	1.79	0.46
1:B:700:ARG:NH2	3:B:2213:HOH:O	2.48	0.46
1:B:1513:ASN:ND2	3:B:2202:HOH:O	2.22	0.46
1:B:1824:ILE:HD12	1:B:1925:ALA:HB2	1.96	0.46
1:B:528:ASP:HB2	1:B:1870:GLN:NE2	2.29	0.46
1:B:542:ALA:HB1	1:B:547:LEU:HD23	1.97	0.46
1:B:902:ASN:O	1:B:906:VAL:HG23	2.15	0.46
1:B:1986:MET:HG2	1:B:2011:CYS:HB3	1.97	0.46
1:B:569:LEU:HD23	1:B:569:LEU:HA	1.52	0.46
1:B:1670:ASN:HB3	1:B:1673:ILE:HG12	1.97	0.46
1:B:514:LEU:HD11	1:B:559:LEU:HD21	1.98	0.46
1:B:777:LEU:O	1:B:782:PHE:HB2	2.16	0.46
1:B:815:LEU:HD22	1:B:819:VAL:HB	1.98	0.46
1:B:798:GLU:HG2	1:B:819:VAL:HG11	1.97	0.46
1:B:1074:GLY:O	1:B:1078:MET:HG3	2.15	0.46
1:B:1945:LEU:O	1:B:1949:VAL:HG23	2.16	0.46
1:B:698:ILE:HA	1:B:701:PHE:HB3	1.98	0.46
1:B:1773:LEU:HD21	1:B:1784:HIS:CG	2.50	0.46
1:B:1018:PHE:CE2	1:B:1063:LEU:HD22	2.51	0.46
1:B:1132:PHE:O	1:B:1135:LEU:HB3	2.16	0.46
1:B:1967:THR:OG1	1:B:1968:SER:N	2.47	0.46
1:B:2064:TRP:CZ3	1:B:2110:SER:HB3	2.51	0.46
1:B:579:GLU:O	1:B:583:THR:HG23	2.16	0.45
1:B:1864:GLU:C	1:B:1866:CYS:H	2.18	0.45
1:B:2000:THR:HG22	1:B:2002:SER:N	2.24	0.45
1:B:1335:VAL:HG12	1:B:1512:PHE:CG	2.52	0.45
1:B:1577:LEU:HD23	1:B:1577:LEU:HA	1.79	0.45
1:B:1135:LEU:HB2	1:B:1137:GLU:CD	2.36	0.45
1:B:1395:GLU:O	1:B:1400:ARG:HG2	2.16	0.45
1:B:1507:SER:O	1:B:1511:THR:HG23	2.17	0.45
1:B:1974:CYS:HB3	1:B:1979:VAL:HG22	1.97	0.45
1:B:473:ALA:HB3	1:B:562:TYR:CZ	2.52	0.45
1:B:775:LYS:CA	1:B:778:LEU:HB2	2.43	0.45
1:B:1320:LEU:O	1:B:1324:LYS:NZ	2.49	0.45
1:B:1871:LEU:O	1:B:1875:VAL:HG13	2.16	0.45
2:J:2280:ASN:HB3	2:J:2309:HIS:CG	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1039:LYS:HE3	1:B:1039:LYS:HB3	1.85	0.45
2:J:2284:MET:O	2:J:2287:ARG:HG2	2.16	0.45
1:B:775:LYS:CG	1:B:778:LEU:HB2	2.47	0.45
1:B:1918:LYS:O	1:B:1922:LEU:HD22	2.17	0.45
1:B:525:ILE:HD11	1:B:530:THR:OG1	2.17	0.45
1:B:1139:VAL:HA	1:B:1142:LYS:HB2	1.99	0.44
2:J:2164:PRO:HB3	2:J:2296:LEU:HD11	1.99	0.44
1:B:538:ILE:HB	1:B:585:ILE:HG13	2.00	0.44
1:B:770:LYS:HA	1:B:770:LYS:HE2	2.00	0.44
1:B:1399:ASP:HB3	1:B:1400:ARG:NH1	2.31	0.44
1:B:1314:ASN:HB3	1:B:1317:PHE:HB2	1.99	0.44
1:B:1443:LYS:HG3	1:B:1444:ASN:N	2.31	0.44
1:B:1760:LEU:O	1:B:1764:MET:HG3	2.17	0.44
1:B:2037:VAL:HG11	1:B:2068:ILE:HD11	1.99	0.44
1:B:668:ASP:HB3	1:B:671:LYS:HB2	1.99	0.44
1:B:1068:SER:HG	2:J:2317:PHE:HD1	1.65	0.44
1:B:588:CYS:SG	1:B:593:TRP:HB2	2.57	0.44
1:B:2103:ASN:HA	1:B:2123:SER:HA	1.99	0.44
1:B:886:GLN:O	1:B:888:PRO:HD3	2.18	0.44
1:B:1066:PHE:CG	1:B:1085:THR:HG21	2.52	0.44
1:B:1128:PRO:HB3	1:B:1277:SER:HB2	1.99	0.44
1:B:1563:VAL:HG12	1:B:1664:MET:HE1	2.00	0.44
2:J:2104:TYR:O	2:J:2261:MET:HA	2.18	0.44
1:B:910:VAL:HG11	1:B:916:ALA:HB2	2.00	0.44
1:B:1948:MET:HA	1:B:2114:MET:CE	2.46	0.44
1:B:1958:SER:OG	1:B:1960:LEU:HD12	2.18	0.44
1:B:746:ASP:OD1	1:B:747:THR:N	2.50	0.43
1:B:709:TYR:HA	1:B:712:ILE:HG22	2.00	0.43
1:B:1156:LEU:HB2	1:B:1160:GLU:OE1	2.18	0.43
1:B:745:LYS:HB3	1:B:745:LYS:HE3	1.84	0.43
1:B:824:HIS:HB2	1:B:858:ARG:NH1	2.33	0.43
1:B:1845:LEU:HD11	1:B:1942:ALA:HB2	2.00	0.43
1:B:1862:HIS:HA	1:B:1865:ASP:HB2	2.00	0.43
1:B:1878:LYS:HD2	1:B:1878:LYS:N	2.33	0.43
1:B:1585:GLN:O	1:B:1588:ARG:HB2	2.19	0.43
1:B:775:LYS:CB	1:B:778:LEU:HB2	2.49	0.43
1:B:1340:TYR:O	1:B:1366:ARG:NH1	2.41	0.43
1:B:1044:VAL:O	2:J:2074:ARG:NH1	2.44	0.43
1:B:815:LEU:HD11	1:B:821:LEU:HB3	2.01	0.43
1:B:2050:PRO:HB2	1:B:2060:ARG:O	2.19	0.43
2:J:2067:PHE:CZ	2:J:2069:SER:HA	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:467:LEU:HD11	1:B:481:LEU:HD21	1.99	0.43
1:B:709:TYR:O	1:B:712:ILE:HG22	2.18	0.43
1:B:850:LEU:HD23	1:B:883:LEU:HD13	2.01	0.43
2:J:2063:MET:SD	3:J:2414:HOH:O	2.62	0.43
2:J:2302:LYS:HZ2	2:J:2302:LYS:HG2	1.74	0.43
1:B:1377:VAL:HG21	1:B:1448:ILE:HD13	2.00	0.43
1:B:1101:ASN:HB3	3:B:2250:HOH:O	2.18	0.43
1:B:1222:TRP:O	1:B:1270:VAL:HA	2.19	0.42
1:B:1604:LEU:HB3	1:B:1610:LYS:NZ	2.30	0.42
1:B:570:THR:HG23	1:B:572:ASP:H	1.84	0.42
1:B:462:LEU:HD11	1:B:466:LYS:HB3	2.00	0.42
1:B:1956:LYS:NZ	1:B:1957:ASP:OD1	2.53	0.42
1:B:617:ILE:HG22	1:B:652:SER:HB3	2.01	0.42
1:B:1556:LYS:HD3	1:B:1557:LYS:N	2.34	0.42
1:B:2068:ILE:HG13	1:B:2092:LEU:HD22	2.00	0.42
2:J:2226:THR:HG21	2:J:2258:ARG:HE	1.85	0.42
1:B:509:LYS:HD2	1:B:651:LEU:HB3	2.02	0.42
1:B:1241:LEU:HD11	1:B:1246:ALA:HA	2.01	0.42
1:B:1729:ASP:OD1	1:B:1729:ASP:N	2.53	0.42
1:B:1923:ILE:HD11	1:B:1949:VAL:HG21	2.01	0.42
1:B:760:GLU:HA	1:B:763:ARG:HB3	2.02	0.42
1:B:2091:LYS:HE2	1:B:2093:ASP:OD2	2.20	0.42
1:B:1953:MET:HB2	1:B:2114:MET:HE1	2.01	0.42
1:B:493:LEU:O	1:B:519:ARG:NH2	2.49	0.42
1:B:543:PRO:HD2	1:B:547:LEU:HD23	2.02	0.42
1:B:637:ARG:HD2	1:B:919:TRP:HA	2.01	0.42
1:B:1375:ARG:HD3	1:B:1419:LEU:O	2.20	0.42
1:B:1977:LYS:HE3	1:B:1992:GLU:OE1	2.20	0.42
1:B:2084:LEU:HD13	1:B:2088:ALA:HB2	2.02	0.42
1:B:2084:LEU:HD13	1:B:2088:ALA:HB3	2.02	0.42
1:B:736:ARG:NE	1:B:773:GLU:OE2	2.52	0.42
1:B:1320:LEU:HD13	1:B:1396:LYS:HB3	2.02	0.42
1:B:1735:HIS:HD2	3:B:2210:HOH:O	2.03	0.41
1:B:633:ALA:O	1:B:637:ARG:HB2	2.20	0.41
1:B:1184:LEU:HD23	1:B:1206:PRO:HA	2.02	0.41
1:B:1269:ARG:NH1	1:B:1279:GLU:OE1	2.47	0.41
1:B:1404:LYS:H	1:B:1423:ASN:HB2	1.85	0.41
1:B:1417:LYS:O	1:B:1421:LYS:HG2	2.19	0.41
1:B:1892:ASN:OD1	1:B:1896:GLN:NE2	2.50	0.41
1:B:795:THR:O	1:B:798:GLU:N	2.52	0.41
1:B:1442:ARG:HA	1:B:1442:ARG:CZ	2.49	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:926:TYR:CD1	1:B:953:ARG:HD2	2.56	0.41
2:J:2131:VAL:HG23	2:J:2172:MET:HA	2.02	0.41
1:B:721:VAL:HG13	1:B:825:THR:HG22	2.03	0.41
1:B:1372:SER:O	1:B:1403:LYS:HE3	2.20	0.41
1:B:2024:VAL:HG21	1:B:2036:VAL:HB	2.03	0.41
1:B:2038:LEU:HD12	1:B:2038:LEU:HA	1.79	0.41
1:B:514:LEU:HD12	1:B:517:MET:HE1	2.02	0.41
1:B:789:MET:HB2	1:B:794:ARG:HG2	2.02	0.41
1:B:1272:SER:HB2	1:B:1278:CYS:SG	2.60	0.41
1:B:939:SER:CB	1:B:942:ASP:OD1	2.69	0.41
2:J:2251:TYR:O	2:J:2252:LEU:HD13	2.21	0.41
1:B:464:VAL:HG13	1:B:467:LEU:HD12	2.03	0.41
1:B:1148:PHE:HZ	1:B:1153:LEU:HD21	1.85	0.41
1:B:1577:LEU:HD22	1:B:1615:ASN:HB3	2.02	0.41
1:B:1195:ARG:NE	1:B:1292:PRO:O	2.54	0.41
1:B:1265:GLN:OE1	2:J:2298:LEU:HD11	2.20	0.41
1:B:1542:MET:CE	1:B:1664:MET:HG2	2.51	0.41
1:B:1745:ILE:HA	1:B:1750:ASP:HB3	2.03	0.41
1:B:1768:PRO:HB2	1:B:1773:LEU:HB2	2.02	0.41
1:B:1886:ASP:HB3	1:B:1889:VAL:HG12	2.03	0.41
2:J:2149:PRO:HB3	2:J:2281:TYR:CE1	2.56	0.41
1:B:774:LEU:O	1:B:778:LEU:N	2.54	0.41
1:B:1928:ASP:OD1	1:B:2081:ARG:CZ	2.64	0.41
1:B:2030:ARG:O	1:B:2032:GLY:N	2.53	0.41
1:B:473:ALA:HB1	1:B:561:THR:HG21	2.03	0.40
1:B:654:THR:HG21	1:B:676:PHE:O	2.22	0.40
1:B:1641:ILE:HD13	1:B:1641:ILE:HA	1.80	0.40
1:B:1869:ARG:HA	1:B:1884:PHE:CE1	2.56	0.40
2:J:2229:LYS:NZ	2:J:2230:LEU:O	2.54	0.40
1:B:547:LEU:HD12	1:B:547:LEU:HA	1.78	0.40
1:B:1988:MET:O	1:B:1989:GLU:C	2.59	0.40
1:B:709:TYR:CG	1:B:741:MET:HE1	2.57	0.40
1:B:1211:ASP:HB3	1:B:1214:VAL:CG2	2.51	0.40
1:B:1989:GLU:HB2	1:B:1992:GLU:CB	2.51	0.40
1:B:627:VAL:O	1:B:631:LEU:HG	2.20	0.40
1:B:1045:PRO:HD3	2:J:2317:PHE:CZ	2.57	0.40
1:B:1167:MET:HE2	1:B:1167:MET:HB2	1.85	0.40
1:B:1436:SER:HA	1:B:1445:VAL:HG11	2.04	0.40
1:B:1525:LEU:HD21	1:B:1718:LEU:HD23	2.02	0.40
1:B:1850:SER:HB2	1:B:1888:HIS:O	2.22	0.40
1:B:1997:LEU:O	1:B:1999:LEU:N	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:626:PRO:HG2	1:B:896:LYS:HG3	2.04	0.40
1:B:1660:LEU:HD11	1:B:1662:ILE:HG13	2.03	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1782:SER:OG	2:J:2065:GLN:OE1[4_545]	2.01	0.19
1:B:860:GLN:NE2	1:B:941:ASP:OD1[4_555]	2.14	0.06

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	B	1707/1747 (98%)	1584 (93%)	103 (6%)	20 (1%)	13	27
2	J	248/263 (94%)	234 (94%)	14 (6%)	0	100	100
All	All	1955/2010 (97%)	1818 (93%)	117 (6%)	20 (1%)	15	32

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	528	ASP
1	B	780	TYR
1	B	795	THR
1	B	938	ILE
1	B	1133	ARG
1	B	600	GLY
1	B	1035	LEU
1	B	2047	VAL
1	B	1136	PRO
1	B	1157	ASN

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Mol	Chain	Res	Type
1	B	1998	GLN
1	B	771	ASN
1	B	939	SER
1	B	1262	LEU
1	B	454	PRO
1	B	1865	ASP
1	B	404	ALA
1	B	530	THR
1	B	2025	ASP
1	B	778	LEU

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	B	1535/1560 (98%)	1491 (97%)	44 (3%)	42	68
2	J	228/236 (97%)	220 (96%)	8 (4%)	36	62
All	All	1763/1796 (98%)	1711 (97%)	52 (3%)	41	68

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	426	LYS
1	B	437	ARG
1	B	455	PHE
1	B	466	LYS
1	B	479	LYS
1	B	483	ARG
1	B	489	TYR
1	B	527	MET
1	B	554	SER
1	B	576	CYS
1	B	637	ARG
1	B	652	SER
1	B	666	ARG

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Mol	Chain	Res	Type
1	B	702	GLN
1	B	767	GLU
1	B	769	CYS
1	B	861	TYR
1	B	942	ASP
1	B	992	TYR
1	B	1035	LEU
1	B	1135	LEU
1	B	1142	LYS
1	B	1153	LEU
1	B	1187	SER
1	B	1342	SER
1	B	1483	ARG
1	B	1498	LYS
1	B	1556	LYS
1	B	1575	ASP
1	B	1605	SER
1	B	1614	LEU
1	B	1625	SER
1	B	1648	ARG
1	B	1655	ASN
1	B	1672	LYS
1	B	1699	GLU
1	B	1762	ARG
1	B	1781	LEU
1	B	1864	GLU
1	B	1869	ARG
1	B	1957	ASP
1	B	1966	PHE
1	B	2001	ASP
1	B	2058	GLN
2	J	2063	MET
2	J	2121	ARG
2	J	2189	SER
2	J	2191	GLN
2	J	2247	ASN
2	J	2264	SER
2	J	2266	ARG
2	J	2319	LEU

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

Mol	Chain	Res	Type
1	B	573	HIS
1	B	2085	GLN
1	B	2103	ASN

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 monosaccharides 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(Å²)	Q<0.9
1	B	1712/1747 (97%)	0.18	92 (5%)	25	20	29, 63, 123, 183	0
2	J	252/263 (95%)	0.10	8 (3%)	47	40	37, 60, 100, 172	0
All	All	1964/2010 (97%)	0.17	100 (5%)	28	22	29, 62, 120, 183	0

All (100) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	J	2318	ALA	8.0
1	B	1880	ASN	6.5
2	J	2319	LEU	6.4
1	B	2099	THR	6.1
1	B	1165	ILE	5.8
1	B	2024	VAL	5.7
1	B	2037	VAL	5.6
1	B	2124	VAL	5.3
1	B	1136	PRO	5.3
1	B	2036	VAL	5.3
1	B	2035	VAL	4.9
1	B	1584	ILE	4.8
1	B	780	TYR	4.8
1	B	2027	ASP	4.8
1	B	2101	ALA	4.7
1	B	1963	LEU	4.7
1	B	2038	LEU	4.6
1	B	1868	LEU	4.4
1	B	777	LEU	4.4
1	B	769	CYS	4.3
1	B	2085	GLN	4.2
2	J	2062	SER	4.0
1	B	2088	ALA	3.8
1	B	1871	LEU	3.8

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Mol	Chain	Res	Type	RSRZ
1	B	2087	LYS	3.6
1	B	1881	ASN	3.6
1	B	2045	GLU	3.6
1	B	2106	LEU	3.6
1	B	2030	ARG	3.5
1	B	1872	ALA	3.3
1	B	2100	GLY	3.3
1	B	1874	LYS	3.3
1	B	525	ILE	3.3
1	B	2025	ASP	3.3
2	J	2157	VAL	3.3
1	B	2082	LEU	3.3
1	B	1836	LEU	3.2
1	B	1997	LEU	3.1
1	B	726	HIS	3.1
1	B	1597	LEU	3.1
1	B	1161	ILE	3.0
1	B	2029	ILE	3.0
1	B	573	HIS	3.0
1	B	1996	LEU	3.0
1	B	2098	ALA	3.0
1	B	760	GLU	3.0
1	B	1761	TYR	3.0
1	B	1605	SER	2.9
1	B	2090	VAL	2.9
1	B	1873	GLN	2.9
1	B	2125	ASP	2.9
1	B	2094	PHE	2.9
1	B	2041	LEU	2.9
1	B	1936	LEU	2.8
1	B	2102	HIS	2.8
2	J	2063	MET	2.8
1	B	2097	PRO	2.8
2	J	2139	VAL	2.8
1	B	2022	GLU	2.7
1	B	2040	GLN	2.7
1	B	2009	ARG	2.7
1	B	2108	PHE	2.7
1	B	1977	LYS	2.6
1	B	2031	SER	2.6
1	B	1174	ILE	2.6
1	B	1940	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	762	LEU	2.5
1	B	1133	ARG	2.5
1	B	1959	TYR	2.5
1	B	454	PRO	2.5
1	B	1159	ASN	2.5
1	B	701	PHE	2.4
1	B	2123	SER	2.4
1	B	2026	LYS	2.3
1	B	481	LEU	2.3
1	B	1149	PRO	2.3
2	J	2226	THR	2.3
1	B	1164	LEU	2.3
1	B	1139	VAL	2.2
1	B	2016	ASN	2.2
1	B	574	GLN	2.2
1	B	2120	TYR	2.2
1	B	1882	PRO	2.2
1	B	1884	PHE	2.2
2	J	2103	THR	2.2
1	B	1604	LEU	2.2
1	B	1960	LEU	2.2
1	B	2084	LEU	2.1
1	B	1863	HIS	2.1
1	B	479	LYS	2.1
1	B	2092	LEU	2.1
1	B	2104	TYR	2.1
1	B	529	GLY	2.1
1	B	2023	VAL	2.0
1	B	2046	GLU	2.0
1	B	829	LYS	2.0
1	B	1614	LEU	2.0
1	B	1158	HIS	2.0
1	B	2076	LEU	2.0
1	B	440	LYS	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 ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.