



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 14, 2017 – 10:12 am GMT

PDB ID : 1SDD
Title : Crystal Structure of Bovine Factor Vai
Authors : Adams, T.E.; Hockin, M.F.; Mann, K.G.; Everse, S.J.
Deposited on : 2004-02-13
Resolution : 2.80 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

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

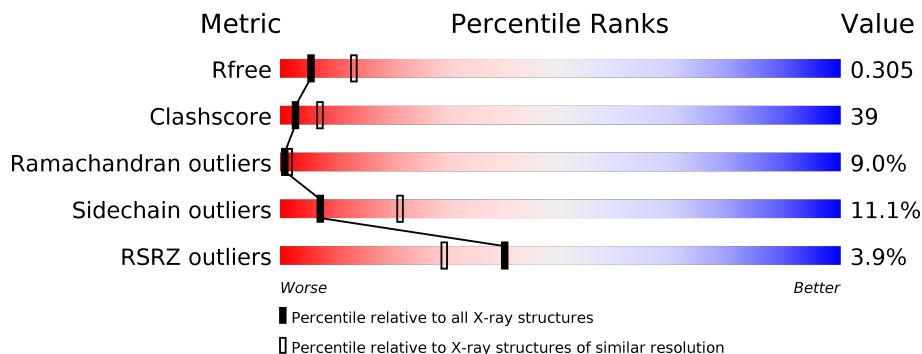
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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}	100719	2583 (2.80-2.80)
Clashscore	112137	3033 (2.80-2.80)
Ramachandran outliers	110173	2983 (2.80-2.80)
Sidechain outliers	110143	2985 (2.80-2.80)
RSRZ outliers	101464	2610 (2.80-2.80)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	306	
2	B	647	

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 7271 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.

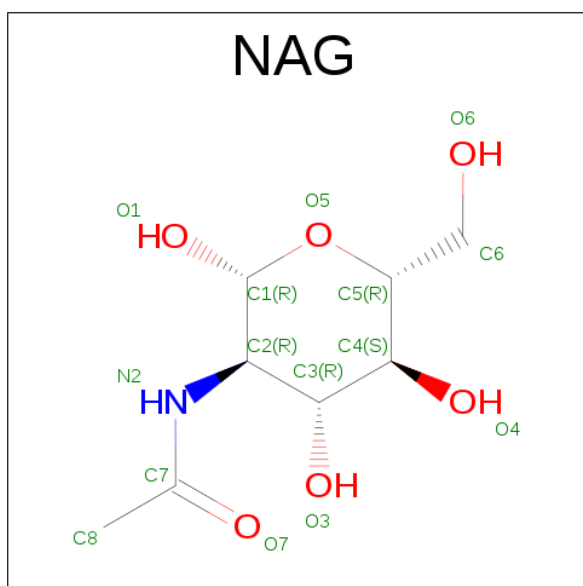
- Molecule 1 is a protein called Coagulation factor V.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	268	2132	1366	356	398	12	0	0	0

- Molecule 2 is a protein called Coagulation factor V.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	601	4878	3127	840	888	23	0	0	0

- Molecule 3 is SUGAR (N-ACETYL-D-GLUCOSAMINE) (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



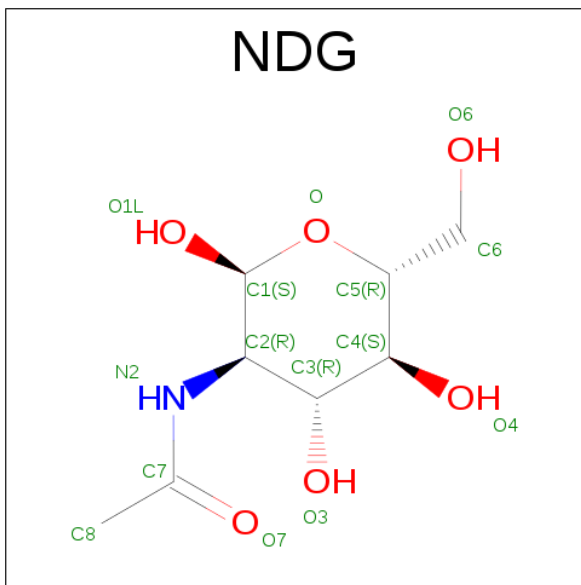
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	14	8	1	5	0	0
3	A	1	14	8	1	5	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	B	1	14	8	1	5	0	0

- Molecule 4 is SUGAR (2-(ACETYLAMINO)-2-DEOXY-A-D-GLUCOPYRANOSE) (three-letter code: NDG) (formula: C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
4	B	1	14	8	1	5	0	0
4	B	1	14	8	1	5	0	0

- Molecule 5 is COPPER (II) ION (three-letter code: CU) (formula: Cu).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Cu		
5	B	1	1	1	0	0

- Molecule 6 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Ca		
6	A	1	1	1	0	0

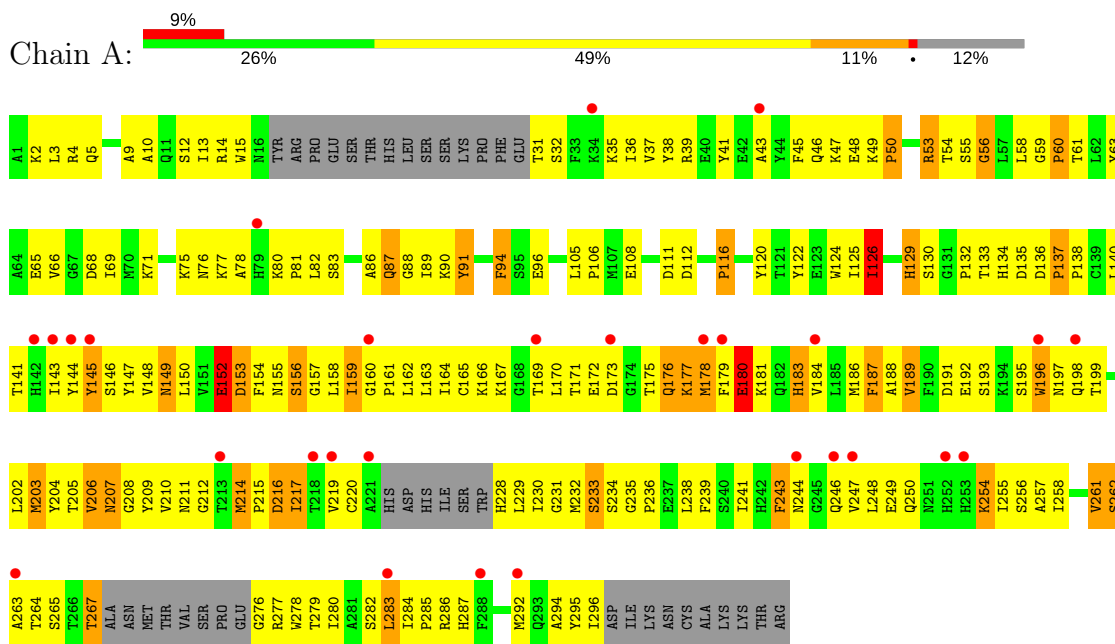
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	47	Total 47	O 47	0	0
7	B	142	Total 142	O 142	0	0

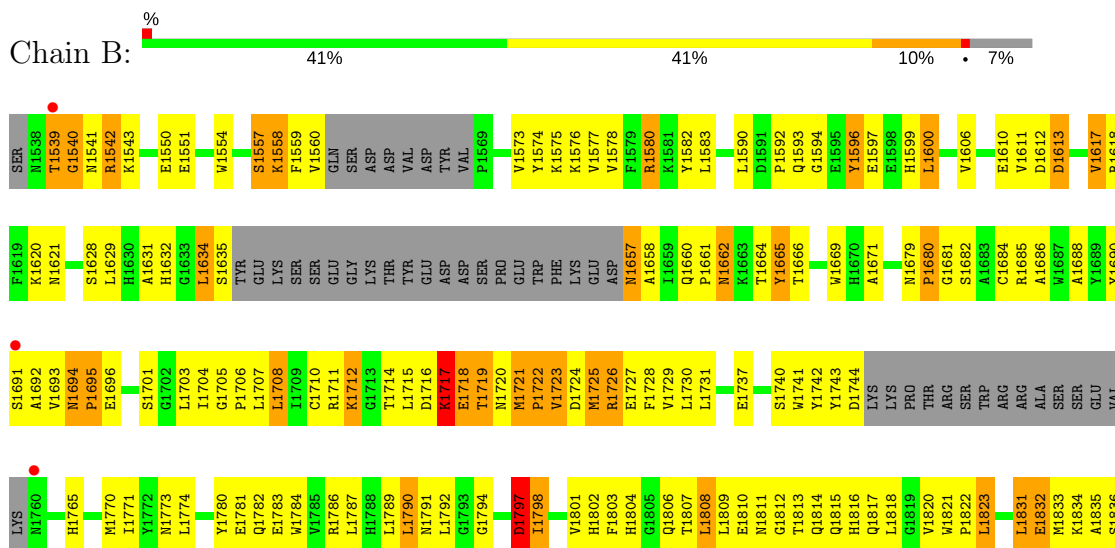
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA 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: Coagulation factor V



- Molecule 2: Coagulation factor V



K1837	P1920	E2016	K2088	I2171
L1843	M1921	L2017	I2089	A2172
D1844	M1926	Q2018	K2090	L2173
T1845	Q1927	G2019	K2091	R2174
E1846	K1928	V2022	I2092	L2175
V1847	L1931	C2025	V2096	F2178
G1848	I1935	S2026	T2097	G2179
E1849	I1935	T2027	Q2098	G2180
I1850	Q1938	G2030	G2099	D2181
Q1851	G1939	G2034	C2100	M2182
R1852	H1942	K2035	K2101	TYR
A1853	Y1943	I2036	E2106	
G1854	L1944	E2037	F2107	
M1855	K1945	N2038	Y2108	
Q1856	P1946	K2039	V2109	
I1861	T1950	Q2040	K2110	
R1864	E1951	S2044	S2111	
K1867	D1959	S2045	Y2112	
M1868	R1960	F2046	T2113	
P1869	M1963	K2047	D2118	
M1870	I1965	K2048	T2121	
G1871	F1966	S2049	D2122	
L1872	K1967	W2050	W2123	
L1876	M1969	W2051	K2124	
I1877	G1968	G2052	P2125	
E1886	M1969	N2053	Y2126	
F1887	S1970	W2054	R2127	
W1888	M1973	W2055	M2132	
G1889	V1974	F2058	N2140	
Y1890	M1975	L2062	N2141	
M1891	E1988	N2063	N2142	
E1892	I1991	K2067	V2143	
P1893	D1992	V2068	R2144	
K1894	P1993	N2069	G2145	
L1895	R1998	A2070	H2146	
A1896	I1999	W2071	V2147	
R1897	R1999	Q2072	K2148	
L1898	I2000	A2073	F2151	
M1899	R2001	N2076	M2152	
M1900	I2002	N2077	P2153	
Y1904	S2003	N2078	P2154	
M1905	P2004	N2079	I2155	
A1906	Y2008	Q2080	I2160	
K1911	Z2009	W2081	R2161	
L1912	K2010	L2082	T2162	
S1913	P2011	Q2083	K2165	
T1914	R2014	Z2084	T2166	
E1915	L2015	D2085	W2167	
F1916		L2086	M2168	
M1917		L2087	Q2169	
P1918			S2170	
E1919				

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	63.37Å 86.56Å 229.20Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.80 28.63 – 2.81	Depositor EDS
% Data completeness (in resolution range)	90.1 (30.00-2.80) 90.7 (28.63-2.81)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	0.05	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.22 (at 2.80Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.252 , 0.296 0.248 , 0.305	Depositor DCC
R_{free} test set	918 reflections (3.19%)	DCC
Wilson B-factor (Å ²)	70.0	Xtrriage
Anisotropy	0.086	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 73.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	7271	wwPDB-VP
Average B, all atoms (Å ²)	67.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.64% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CA, NDG, CU, NAG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.35	0/2188	0.60	0/2960
2	B	0.46	0/5012	0.70	2/6792 (0.0%)
All	All	0.43	0/7200	0.67	2/9752 (0.0%)

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
2	B	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
2	B	1847	VAL	N-CA-C	-6.63	93.11	111.00
2	B	2014	ARG	N-CA-C	-6.47	93.53	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	1890	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	2132	0	2074	198	0
2	B	4878	0	4767	357	0
3	A	28	0	26	3	0
3	B	14	0	13	4	0
4	B	28	0	26	6	0
5	B	1	0	0	0	0
6	A	1	0	0	0	0
7	A	47	0	0	1	0
7	B	142	0	0	3	0
All	All	7271	0	6906	548	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 39.

All (548) 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:1992:ASP:HB3	2:B:1993:PRO:HD3	1.13	1.13
2:B:2152:ASN:HB2	2:B:2153:PRO:HD3	1.22	1.10
2:B:1721:MET:HG3	2:B:1786:ARG:HH22	1.01	1.08
2:B:1914:THR:HB	2:B:1920:PRO:HD2	1.38	1.05
1:A:264:THR:HG21	2:B:1822:PRO:HG3	1.44	0.98
2:B:1597:GLU:HB2	2:B:1600:LEU:HD22	1.46	0.97
2:B:1542:ARG:CZ	2:B:1542:ARG:H	1.78	0.96
2:B:1992:ASP:CB	2:B:1993:PRO:HD3	1.93	0.95
2:B:1721:MET:HG3	2:B:1786:ARG:NH2	1.81	0.94
1:A:229:LEU:HD23	1:A:241:ILE:HD12	1.51	0.92
2:B:1542:ARG:NE	2:B:1542:ARG:H	1.69	0.91
2:B:1580:ARG:HH11	2:B:1580:ARG:HG2	1.30	0.91
2:B:2067:ARG:HA	2:B:2067:ARG:HH11	1.33	0.90
2:B:1894:LYS:HE2	2:B:1894:LYS:H	1.40	0.85
2:B:1628:SER:O	2:B:1691:SER:HA	1.77	0.84
2:B:1893:PRO:HD2	2:B:1894:LYS:NZ	1.92	0.84
2:B:2152:ASN:HB2	2:B:2153:PRO:CD	2.08	0.83
1:A:198:GLN:HB2	3:A:2185:NAG:H81	1.59	0.82
1:A:140:LEU:HA	1:A:267:THR:HG21	1.62	0.82
2:B:2030:GLY:HA3	2:B:2036:ILE:HG13	1.61	0.82
1:A:4:ARG:HH22	1:A:170:LEU:HD23	1.45	0.81
1:A:91:TYR:CE1	1:A:96:GLU:HG3	2.17	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1721:MET:CG	2:B:1786:ARG:HH22	1.91	0.80
2:B:1911:LYS:O	2:B:1911:LYS:HD2	1.83	0.79
2:B:2096:VAL:HG23	2:B:2178:PHE:HE1	1.48	0.79
2:B:1992:ASP:HB3	2:B:1993:PRO:CD	2.07	0.79
2:B:2111:SER:HB2	2:B:2166:THR:HG22	1.63	0.78
2:B:2162:ILE:N	2:B:2162:ILE:HD12	1.99	0.78
2:B:1721:MET:HE1	2:B:1723:VAL:HB	1.66	0.77
2:B:1905:ASN:H	2:B:1905:ASN:HD22	1.32	0.77
2:B:1893:PRO:HD2	2:B:1894:LYS:HZ1	1.50	0.76
2:B:2083:GLN:HB3	2:B:2161:ARG:HG2	1.67	0.76
1:A:197:ASN:HD21	3:A:2185:NAG:H4	1.50	0.76
2:B:1808:LEU:HB3	2:B:1831:LEU:HD12	1.68	0.76
2:B:2168:ASN:C	2:B:2168:ASN:HD22	1.90	0.75
1:A:232:MET:HA	1:A:262:SER:O	1.87	0.75
2:B:2096:VAL:HG23	2:B:2178:PHE:CE1	2.21	0.75
2:B:1917:ASN:HD21	2:B:1919:GLU:HB2	1.52	0.75
1:A:167:LYS:H	1:A:167:LYS:HD2	1.51	0.75
1:A:279:THR:HA	1:A:295:TYR:HA	1.69	0.73
2:B:1593:GLN:HG3	2:B:1597:GLU:HG3	1.70	0.73
2:B:2152:ASN:CB	2:B:2153:PRO:HD3	2.11	0.73
1:A:161:PRO:HG2	1:A:184:VAL:HG11	1.69	0.73
2:B:1680:PRO:HG2	2:B:1813:THR:HA	1.70	0.73
2:B:1580:ARG:HG2	2:B:1580:ARG:NH1	1.95	0.73
2:B:2071:TRP:O	2:B:2172:ALA:HA	1.88	0.73
2:B:1692:ALA:O	2:B:1695:PRO:HD3	1.89	0.72
1:A:141:THR:OG1	1:A:267:THR:HB	1.89	0.72
2:B:1685:ARG:HD2	2:B:1686:ALA:H	1.55	0.71
1:A:133:THR:HG22	1:A:134:HIS:H	1.55	0.71
2:B:2126:TYR:OH	2:B:2153:PRO:HD2	1.91	0.71
1:A:162:LEU:O	1:A:163:LEU:HD23	1.91	0.70
2:B:1706:PRO:HB3	2:B:1729:VAL:HG11	1.73	0.70
1:A:202:LEU:HD23	1:A:203:MET:H	1.57	0.70
2:B:2101:LYS:HD3	2:B:2144:ARG:NH2	2.07	0.69
2:B:2055:TRP:HB2	2:B:2072:GLN:HB2	1.73	0.69
1:A:159:ILE:HD13	1:A:186:MET:SD	2.32	0.68
2:B:1915:GLU:C	2:B:1917:ASN:H	1.95	0.68
1:A:80:LYS:NZ	1:A:152:GLU:HG2	2.08	0.68
1:A:146:SER:HB3	1:A:153:ASP:OD1	1.93	0.68
1:A:264:THR:CG2	2:B:1822:PRO:HG3	2.21	0.68
2:B:1577:VAL:HG22	2:B:1703:LEU:HD21	1.75	0.67
2:B:1680:PRO:O	3:B:2188:NAG:H62	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1725:MET:HG2	2:B:1726:ARG:N	2.10	0.67
1:A:37:VAL:HG11	1:A:39:ARG:NH1	2.10	0.66
2:B:2168:ASN:HD22	2:B:2169:GLN:N	1.93	0.66
2:B:1742:TYR:C	2:B:1744:ASP:H	1.98	0.65
2:B:1541:ASN:HA	2:B:1542:ARG:HH21	1.61	0.65
2:B:2101:LYS:NZ	2:B:2144:ARG:HH22	1.94	0.65
1:A:37:VAL:HG11	1:A:39:ARG:HH11	1.60	0.65
2:B:2110:LYS:HB2	2:B:2166:THR:HG23	1.78	0.65
2:B:1542:ARG:NE	2:B:1542:ARG:N	2.44	0.65
2:B:2111:SER:CB	2:B:2166:THR:HG22	2.26	0.65
1:A:71:LYS:NZ	1:A:71:LYS:HB2	2.12	0.65
2:B:1998:ARG:HD3	2:B:1999:TYR:CE1	2.32	0.65
1:A:206:VAL:O	1:A:207:ASN:HB2	1.96	0.65
2:B:1543:LYS:HD2	7:B:2358:HOH:O	1.97	0.65
2:B:2092:ILE:HG22	2:B:2151:PHE:HE2	1.62	0.64
2:B:1724:ASP:O	2:B:1725:MET:O	2.15	0.64
2:B:1664:THR:HG22	2:B:1665:TYR:H	1.63	0.64
2:B:1821:TRP:HZ3	2:B:1823:LEU:HD23	1.62	0.63
2:B:2002:ILE:HD12	2:B:2015:LEU:HD22	1.80	0.63
2:B:1890:TYR:HB3	2:B:1904:TYR:CE2	2.34	0.63
2:B:1927:GLN:C	2:B:1998:ARG:HE	2.01	0.63
2:B:1721:MET:CE	2:B:1723:VAL:HB	2.28	0.63
2:B:1803:PHE:CD2	2:B:1808:LEU:HD11	2.34	0.63
2:B:1969:ASN:OD1	4:B:2189:NDG:N2	2.30	0.63
1:A:132:PRO:HA	1:A:140:LEU:HD11	1.79	0.63
1:A:255:ILE:HD11	1:A:258:ILE:HG12	1.79	0.63
2:B:1541:ASN:OD1	2:B:1542:ARG:NH2	2.31	0.63
2:B:1931:LEU:HD12	2:B:2022:VAL:HA	1.80	0.63
2:B:2091:LYS:O	2:B:2179:GLY:HA3	1.99	0.62
1:A:38:TYR:O	1:A:39:ARG:HD2	2.00	0.62
1:A:4:ARG:NH2	1:A:170:LEU:HD23	2.13	0.62
2:B:2090:LYS:HE2	2:B:2181:ASP:OD2	1.98	0.62
2:B:1963:TRP:CZ3	2:B:2001:ARG:HB2	2.34	0.62
2:B:1894:LYS:CE	2:B:1894:LYS:H	2.11	0.62
2:B:1898:LEU:HD22	2:B:1938:GLN:OE1	1.99	0.62
1:A:76:ASN:ND2	1:A:116:PRO:HA	2.14	0.61
1:A:161:PRO:HG3	1:A:230:ILE:CD1	2.30	0.61
2:B:1727:GLU:CD	2:B:1786:ARG:HH21	2.04	0.61
1:A:231:GLY:O	1:A:239:PHE:HE2	1.84	0.61
2:B:1662:ASN:HB2	4:B:2187:NDG:H5	1.81	0.61
1:A:48:GLU:HG3	1:A:50:PRO:HD3	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1765:HIS:HD2	2:B:1850:ILE:HG23	1.66	0.61
2:B:2076:ASN:OD1	2:B:2170:SER:HA	2.00	0.61
2:B:2110:LYS:HD3	2:B:2167:TRP:O	2.00	0.61
2:B:1610:GLU:O	2:B:1613:ASP:HB2	2.01	0.61
2:B:2049:SER:HB2	2:B:2051:TRP:CE3	2.35	0.61
2:B:1543:LYS:HD2	2:B:1719:THR:HG21	1.83	0.60
2:B:1725:MET:HG2	2:B:1726:ARG:H	1.65	0.60
1:A:203:MET:O	1:A:205:THR:HG23	2.01	0.60
2:B:1803:PHE:CE1	2:B:1843:LEU:HD13	2.35	0.60
2:B:2109:VAL:HG21	2:B:2173:LEU:HG	1.83	0.60
2:B:1629:LEU:HD22	2:B:1669:TRP:HH2	1.64	0.60
2:B:1681:GLY:HA2	3:B:2188:NAG:H62	1.81	0.60
2:B:1662:ASN:HB2	4:B:2187:NDG:C5	2.32	0.60
2:B:1844:ASP:HB2	2:B:1851:GLN:HG3	1.84	0.60
1:A:90:LYS:NZ	2:B:1807:THR:HB	2.17	0.59
2:B:1780:TYR:O	2:B:1783:GLU:HB3	2.03	0.59
1:A:87:GLN:O	1:A:87:GLN:HG3	2.03	0.59
2:B:1685:ARG:HD2	2:B:1686:ALA:N	2.17	0.59
2:B:2008:TYR:O	2:B:2009:ASN:HB2	2.01	0.59
2:B:2092:ILE:HB	2:B:2155:ILE:HB	1.84	0.59
1:A:278:TRP:O	1:A:296:ILE:N	2.34	0.59
2:B:2037:GLU:O	2:B:2040:GLN:HB2	2.03	0.59
1:A:80:LYS:HZ1	1:A:152:GLU:HG2	1.66	0.59
2:B:1631:ALA:HB2	2:B:1669:TRP:CH2	2.38	0.59
1:A:236:PRO:HG3	2:B:1850:ILE:HD11	1.83	0.59
1:A:206:VAL:HG11	1:A:294:ALA:HB2	1.83	0.59
2:B:1731:LEU:HD12	2:B:1790:LEU:O	2.03	0.59
2:B:2055:TRP:CB	2:B:2072:GLN:HB2	2.31	0.58
2:B:1620:LYS:O	2:B:1621:ASN:HB3	2.03	0.58
2:B:1551:GLU:OE2	2:B:1741:TRP:CH2	2.56	0.58
2:B:1680:PRO:HG2	2:B:1813:THR:CA	2.33	0.58
1:A:206:VAL:HG12	1:A:206:VAL:O	2.03	0.58
1:A:158:LEU:O	1:A:159:ILE:HB	2.03	0.58
2:B:1912:LEU:HD23	2:B:2011:PRO:HG3	1.86	0.58
2:B:1988:GLU:CD	2:B:1988:GLU:H	2.07	0.58
1:A:14:ARG:HG3	1:A:32:SER:HB3	1.86	0.58
2:B:2167:TRP:CZ3	2:B:2171:ILE:HD11	2.39	0.58
1:A:167:LYS:N	1:A:167:LYS:HD2	2.19	0.57
2:B:1765:HIS:CD2	2:B:1850:ILE:HG23	2.39	0.57
2:B:1634:LEU:HD23	2:B:1635:SER:N	2.19	0.57
2:B:1803:PHE:HD2	2:B:1808:LEU:HD11	1.69	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:197:ASN:HD21	3:A:2185:NAG:C4	2.16	0.57
2:B:1942:HIS:HD1	2:B:1943:TYR:HD1	1.51	0.57
1:A:186:MET:HG2	1:A:186:MET:O	2.03	0.57
1:A:229:LEU:N	1:A:229:LEU:HD12	2.20	0.57
2:B:1887:PHE:N	2:B:1887:PHE:CD1	2.73	0.56
1:A:143:ILE:CG2	1:A:265:SER:HB3	2.35	0.56
2:B:2081:TRP:CZ3	2:B:2083:GLN:HG2	2.39	0.56
1:A:90:LYS:HZ1	2:B:1807:THR:HB	1.69	0.56
2:B:1596:TYR:HD2	2:B:1596:TYR:N	2.04	0.56
1:A:132:PRO:HG3	1:A:140:LEU:HG	1.87	0.56
1:A:186:MET:O	1:A:188:ALA:N	2.38	0.56
2:B:1959:ASP:O	2:B:1960:ARG:CB	2.54	0.56
1:A:145:TYR:N	1:A:145:TYR:CD1	2.73	0.56
2:B:1629:LEU:HD22	2:B:1669:TRP:CH2	2.39	0.56
2:B:1911:LYS:C	2:B:1911:LYS:HD2	2.26	0.56
1:A:133:THR:HG22	1:A:134:HIS:N	2.21	0.56
1:A:60:PRO:HD2	1:A:144:TYR:OH	2.05	0.56
1:A:171:THR:HG22	1:A:173:ASP:H	1.70	0.56
1:A:212:GLY:HA2	1:A:214:MET:SD	2.46	0.56
1:A:75:LYS:HE3	1:A:77:LYS:HE3	1.86	0.56
2:B:1704:ILE:CD1	2:B:1792:LEU:HD12	2.36	0.56
1:A:9:ALA:HB1	1:A:75:LYS:O	2.06	0.55
2:B:1912:LEU:O	2:B:1914:THR:N	2.38	0.55
2:B:1992:ASP:CB	2:B:1993:PRO:CD	2.75	0.55
1:A:284:ILE:O	1:A:286:ARG:N	2.39	0.55
2:B:1596:TYR:CD2	2:B:1596:TYR:N	2.74	0.55
2:B:1892:GLU:O	2:B:1895:LEU:HB2	2.06	0.55
2:B:2110:LYS:HD3	2:B:2167:TRP:C	2.26	0.55
1:A:238:LEU:HD23	1:A:238:LEU:H	1.71	0.55
1:A:248:LEU:HD11	1:A:256:SER:O	2.06	0.55
2:B:1596:TYR:CE2	2:B:1597:GLU:HG2	2.41	0.55
2:B:1657:ASN:HD22	2:B:1657:ASN:C	2.10	0.55
1:A:86:ALA:HB2	1:A:124:TRP:CH2	2.41	0.55
1:A:71:LYS:HZ2	1:A:71:LYS:HB2	1.72	0.55
1:A:189:VAL:HB	1:A:204:TYR:HD1	1.72	0.55
2:B:1543:LYS:HE2	2:B:1543:LYS:HA	1.87	0.55
2:B:1543:LYS:CD	2:B:1719:THR:HG21	2.37	0.55
1:A:66:VAL:HG21	1:A:167:LYS:HE3	1.89	0.55
1:A:138:PRO:HG2	1:A:179:PHE:CE2	2.41	0.55
1:A:249:GLU:OE2	1:A:254:LYS:HB3	2.07	0.55
1:A:250:GLN:OE1	1:A:255:ILE:HD13	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2025:CYS:SG	2:B:2091:LYS:HD3	2.47	0.55
2:B:2048:LYS:HG2	2:B:2054:TYR:HD2	1.70	0.55
2:B:2112:TYR:CD2	2:B:2112:TYR:N	2.74	0.55
1:A:261:VAL:O	1:A:263:ALA:N	2.41	0.54
1:A:278:TRP:HB2	1:A:296:ILE:HD12	1.89	0.54
1:A:91:TYR:CZ	1:A:96:GLU:HG3	2.40	0.54
2:B:1681:GLY:HA3	2:B:1811:ASN:OD1	2.08	0.54
2:B:1704:ILE:HD13	2:B:1731:LEU:HD22	1.88	0.54
2:B:1782:GLN:NE2	2:B:1834:LYS:HE2	2.23	0.54
2:B:1906:ALA:HB2	2:B:2014:ARG:HG3	1.89	0.54
2:B:2071:TRP:HE3	2:B:2173:LEU:HB2	1.72	0.54
2:B:1606:VAL:O	2:B:1606:VAL:HG22	2.08	0.54
1:A:38:TYR:C	1:A:39:ARG:HD2	2.28	0.54
2:B:1596:TYR:HD2	2:B:1596:TYR:H	1.55	0.54
2:B:2039:LYS:HZ3	2:B:2039:LYS:H	1.55	0.54
2:B:1817:GLN:HE21	2:B:1817:GLN:HA	1.73	0.53
2:B:2121:THR:HB	7:B:2267:HOH:O	2.08	0.53
1:A:177:LYS:HE3	1:A:178:MET:HE3	1.88	0.53
1:A:214:MET:SD	1:A:214:MET:N	2.80	0.53
2:B:1577:VAL:HG13	2:B:1703:LEU:HG	1.90	0.53
2:B:2077:ASN:O	2:B:2167:TRP:HH2	1.90	0.53
1:A:13:ILE:O	1:A:13:ILE:HG13	2.06	0.53
2:B:1810:GLU:O	2:B:1815:GLN:HA	2.08	0.53
2:B:1870:MET:HG2	2:B:1926:MET:HE1	1.91	0.53
1:A:232:MET:O	1:A:233:SER:HB2	2.08	0.53
2:B:2062:LEU:O	2:B:2063:ASN:HB2	2.09	0.53
1:A:69:ILE:HG22	1:A:69:ILE:O	2.09	0.53
1:A:183:HIS:O	1:A:228:HIS:HB2	2.09	0.53
1:A:261:VAL:HG23	1:A:264:THR:CG2	2.38	0.53
2:B:1912:LEU:HB3	2:B:2011:PRO:HG2	1.91	0.53
1:A:233:SER:HB2	1:A:239:PHE:HZ	1.74	0.52
2:B:2038:ASN:C	2:B:2040:GLN:H	2.12	0.52
1:A:36:ILE:HG12	1:A:156:SER:OG	2.08	0.52
2:B:2054:TYR:CD1	2:B:2054:TYR:N	2.77	0.52
2:B:2086:LEU:CD1	2:B:2092:ILE:HD11	2.39	0.52
2:B:2109:VAL:CG2	2:B:2173:LEU:HG	2.39	0.52
1:A:47:LYS:HG2	1:A:48:GLU:N	2.25	0.52
2:B:1809:LEU:O	2:B:1831:LEU:HB2	2.10	0.52
2:B:1835:ALA:HB1	2:B:1861:ILE:HD13	1.92	0.52
2:B:1887:PHE:CE2	2:B:1892:GLU:HG2	2.44	0.52
1:A:37:VAL:HG12	1:A:38:TYR:N	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1742:TYR:C	2:B:1744:ASP:N	2.63	0.52
1:A:196:TRP:HA	1:A:196:TRP:HE3	1.75	0.52
1:A:212:GLY:O	1:A:214:MET:HG3	2.09	0.52
1:A:56:GLY:HA3	1:A:207:ASN:O	2.10	0.52
2:B:1551:GLU:OE2	2:B:1741:TRP:HH2	1.92	0.52
2:B:1959:ASP:O	2:B:1960:ARG:HB2	2.09	0.52
2:B:2039:LYS:N	2:B:2039:LYS:HZ3	2.08	0.52
2:B:2101:LYS:HZ3	2:B:2144:ARG:HH22	1.57	0.52
1:A:87:GLN:HG2	1:A:143:ILE:HG13	1.91	0.52
1:A:177:LYS:C	1:A:179:PHE:H	2.13	0.52
2:B:1610:GLU:HA	2:B:1710:CYS:O	2.10	0.52
1:A:132:PRO:HB2	1:A:166:LYS:HE2	1.90	0.51
2:B:1905:ASN:O	2:B:2014:ARG:HD3	2.10	0.51
2:B:2125:PRO:O	2:B:2127:ARG:HG3	2.10	0.51
1:A:49:LYS:O	1:A:50:PRO:O	2.29	0.51
2:B:1912:LEU:C	2:B:1914:THR:H	2.13	0.51
2:B:1921:TRP:C	2:B:1921:TRP:CD1	2.84	0.51
1:A:196:TRP:HA	1:A:196:TRP:CE3	2.45	0.51
1:A:58:LEU:HD11	1:A:161:PRO:HD3	1.92	0.51
1:A:206:VAL:O	1:A:207:ASN:CB	2.58	0.51
2:B:2086:LEU:HD13	2:B:2092:ILE:HD11	1.92	0.51
1:A:187:PHE:CE2	1:A:241:ILE:HG12	2.45	0.51
2:B:2069:ASN:O	2:B:2070:ALA:HB2	2.11	0.51
1:A:155:ASN:C	1:A:157:GLY:H	2.12	0.51
2:B:1714:THR:O	2:B:1722:PRO:CD	2.59	0.51
2:B:1960:ARG:O	2:B:1960:ARG:HD2	2.10	0.51
2:B:1991:ILE:O	2:B:1991:ILE:HG22	2.11	0.51
2:B:1664:THR:HG22	2:B:1665:TYR:N	2.24	0.51
2:B:1781:GLU:OE2	2:B:1864:ARG:HB2	2.10	0.51
2:B:2075:ALA:C	2:B:2076:ASN:HD22	2.14	0.51
2:B:2083:GLN:HB3	2:B:2161:ARG:CG	2.38	0.51
1:A:167:LYS:H	1:A:167:LYS:CD	2.21	0.51
1:A:177:LYS:HG2	1:A:178:MET:N	2.26	0.51
2:B:1679:ASN:HB2	2:B:1680:PRO:HD3	1.93	0.51
2:B:1818:LEU:HD22	2:B:1818:LEU:N	2.25	0.51
1:A:90:LYS:HD2	1:A:130:SER:HB3	1.92	0.50
2:B:1812:GLY:C	2:B:1814:GLN:H	2.13	0.50
2:B:2038:ASN:O	2:B:2040:GLN:N	2.41	0.50
2:B:1618:ARG:HH11	2:B:1664:THR:HG21	1.77	0.50
2:B:2086:LEU:O	2:B:2088:LYS:N	2.44	0.50
2:B:1694:ASN:C	2:B:1694:ASN:HD22	2.14	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1731:LEU:HB2	2:B:1790:LEU:CD1	2.42	0.50
2:B:1789:LEU:HD12	2:B:1831:LEU:HD21	1.92	0.50
2:B:1965:ILE:HG21	2:B:1974:VAL:HG11	1.93	0.50
1:A:165:CYS:SG	1:A:170:LEU:HD13	2.51	0.50
2:B:1789:LEU:CD1	2:B:1831:LEU:HD21	2.42	0.50
2:B:2086:LEU:C	2:B:2088:LYS:H	2.14	0.50
2:B:1721:MET:HE2	2:B:1786:ARG:HH12	1.77	0.50
2:B:1917:ASN:ND2	2:B:1919:GLU:HB2	2.24	0.50
1:A:177:LYS:O	1:A:179:PHE:N	2.44	0.50
2:B:2168:ASN:C	2:B:2168:ASN:ND2	2.63	0.50
2:B:1784:TRP:CD2	3:B:2188:NAG:H81	2.46	0.50
1:A:105:LEU:HB3	1:A:106:PRO:HD2	1.94	0.50
2:B:2048:LYS:HG2	2:B:2054:TYR:CD2	2.47	0.49
1:A:180:GLU:OE1	1:A:181:LYS:HB2	2.12	0.49
2:B:1931:LEU:O	2:B:2019:GLY:HA3	2.12	0.49
1:A:3:LEU:C	1:A:3:LEU:HD23	2.32	0.49
1:A:254:LYS:HD3	1:A:254:LYS:C	2.32	0.49
2:B:1575:LYS:HE2	2:B:1741:TRP:CE3	2.48	0.49
2:B:1730:LEU:HD22	2:B:1730:LEU:N	2.27	0.49
2:B:1723:VAL:HG12	2:B:1724:ASP:N	2.28	0.49
1:A:149:ASN:C	1:A:149:ASN:HD22	2.16	0.49
1:A:83:SER:HB3	1:A:112:ASP:O	2.13	0.49
1:A:247:VAL:HG22	1:A:247:VAL:O	2.12	0.49
2:B:1657:ASN:HD22	2:B:1658:ALA:N	2.11	0.49
2:B:1740:SER:OG	2:B:1741:TRP:CD1	2.66	0.49
2:B:1550:GLU:OE2	2:B:1582:TYR:HE1	1.96	0.49
2:B:1617:VAL:HG21	2:B:1629:LEU:HD13	1.94	0.49
2:B:1870:MET:HG2	2:B:1926:MET:CE	2.43	0.49
2:B:1935:ILE:HD11	2:B:2002:ILE:HD13	1.95	0.49
1:A:37:VAL:CG1	1:A:39:ARG:HH11	2.24	0.48
2:B:1919:GLU:HB3	2:B:1920:PRO:HD3	1.95	0.48
1:A:126:ILE:O	1:A:126:ILE:HG13	2.12	0.48
1:A:36:ILE:N	1:A:156:SER:O	2.39	0.48
1:A:229:LEU:HD23	1:A:241:ILE:CD1	2.32	0.48
2:B:1554:TRP:O	2:B:1573:VAL:HA	2.13	0.48
2:B:1723:VAL:O	2:B:1724:ASP:C	2.51	0.48
1:A:147:TYR:O	1:A:149:ASN:N	2.47	0.48
1:A:189:VAL:HB	1:A:204:TYR:CD1	2.48	0.48
2:B:1590:LEU:O	2:B:1592:PRO:HD3	2.14	0.48
1:A:125:ILE:O	1:A:125:ILE:HG22	2.12	0.48
2:B:1540:GLY:HA2	2:B:1612:ASP:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1574:TYR:CD1	2:B:1737:GLU:HG3	2.48	0.48
2:B:1742:TYR:O	2:B:1744:ASP:N	2.46	0.48
2:B:1843:LEU:O	2:B:1856:GLN:HA	2.12	0.48
2:B:1914:THR:CB	2:B:1920:PRO:HD2	2.27	0.48
1:A:179:PHE:O	1:A:180:GLU:O	2.32	0.48
1:A:233:SER:O	1:A:235:GLY:N	2.43	0.48
2:B:1915:GLU:C	2:B:1917:ASN:N	2.65	0.48
1:A:161:PRO:HG3	1:A:230:ILE:HD12	1.94	0.48
2:B:1821:TRP:CZ3	2:B:1823:LEU:HA	2.49	0.48
2:B:1914:THR:HB	2:B:1920:PRO:CD	2.27	0.48
2:B:2099:GLY:HA3	2:B:2108:TYR:HB3	1.96	0.48
1:A:248:LEU:HD23	1:A:248:LEU:H	1.78	0.48
2:B:1716:ASP:O	2:B:1719:THR:N	2.47	0.48
1:A:145:TYR:HE2	1:A:150:LEU:HD22	1.79	0.48
1:A:282:SER:O	1:A:284:ILE:N	2.47	0.48
2:B:1550:GLU:OE2	2:B:1582:TYR:CE1	2.67	0.47
1:A:212:GLY:C	1:A:214:MET:SD	2.93	0.47
1:A:47:LYS:HG2	1:A:48:GLU:H	1.78	0.47
2:B:1612:ASP:HB2	2:B:1712:LYS:HZ3	1.78	0.47
2:B:1804:HIS:O	2:B:1806:GLN:HG2	2.15	0.47
2:B:1898:LEU:O	2:B:1899:ASN:HB2	2.14	0.47
1:A:143:ILE:HD12	1:A:143:ILE:C	2.34	0.47
1:A:250:GLN:CD	1:A:255:ILE:HD13	2.34	0.47
2:B:1721:MET:CE	2:B:1786:ARG:HH12	2.28	0.47
2:B:1831:LEU:N	2:B:1831:LEU:HD23	2.29	0.47
2:B:2049:SER:HB2	2:B:2051:TRP:CZ3	2.49	0.47
2:B:1557:SER:O	2:B:1558:LYS:C	2.53	0.47
2:B:1787:LEU:HD21	2:B:1833:MET:HB3	1.95	0.47
2:B:2076:ASN:HD22	2:B:2076:ASN:N	2.12	0.47
2:B:1868:MET:HE1	2:B:2027:THR:HA	1.95	0.47
1:A:53:ARG:HH22	1:A:217:ILE:HG12	1.78	0.47
2:B:1710:CYS:SG	2:B:1715:LEU:HD21	2.54	0.47
2:B:1854:GLY:O	2:B:1856:GLN:N	2.46	0.47
2:B:1770:MET:HE3	2:B:1774:LEU:HD12	1.96	0.47
2:B:1926:MET:C	2:B:1928:LYS:H	2.16	0.47
1:A:149:ASN:HD22	1:A:150:LEU:N	2.12	0.47
1:A:87:GLN:CG	1:A:87:GLN:O	2.62	0.47
2:B:1576:LYS:HD2	2:B:1701:SER:O	2.14	0.47
2:B:1797:ASP:O	2:B:1798:ILE:O	2.33	0.47
2:B:1844:ASP:HB2	2:B:1851:GLN:CG	2.45	0.47
2:B:1899:ASN:O	2:B:1900:ASN:C	2.53	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:2121:THR:O	2:B:2122:ASP:HB2	2.14	0.47
2:B:2106:GLU:CD	2:B:2143:VAL:HG21	2.36	0.47
2:B:2162:ILE:N	2:B:2162:ILE:CD1	2.69	0.47
2:B:1618:ARG:HD2	2:B:1664:THR:CG2	2.45	0.47
2:B:1629:LEU:CD2	2:B:1669:TRP:HH2	2.27	0.47
1:A:147:TYR:CD1	1:A:150:LEU:HD21	2.50	0.47
1:A:65:GLU:HB2	1:A:68:ASP:OD1	2.14	0.47
2:B:1771:ILE:O	2:B:1771:ILE:HG13	2.15	0.47
2:B:1905:ASN:HD22	2:B:1905:ASN:N	1.99	0.47
2:B:1802:HIS:HB3	2:B:1844:ASP:OD1	2.14	0.46
2:B:2044:SER:HB3	2:B:2081:TRP:CE2	2.50	0.46
1:A:161:PRO:HG3	1:A:230:ILE:HD11	1.98	0.46
1:A:177:LYS:HG2	1:A:178:MET:HE2	1.97	0.46
1:A:81:PRO:O	1:A:82:LEU:HD23	2.15	0.46
2:B:1812:GLY:C	2:B:1814:GLN:N	2.69	0.46
2:B:2110:LYS:CB	2:B:2166:THR:HG23	2.44	0.46
2:B:2047:LYS:O	2:B:2048:LYS:HG3	2.15	0.46
2:B:2046:PHE:HA	2:B:2072:GLN:O	2.15	0.46
2:B:1539:THR:O	2:B:1541:ASN:N	2.48	0.46
2:B:1599:HIS:NE2	2:B:1728:PHE:HD1	2.14	0.46
2:B:1714:THR:O	2:B:1722:PRO:HD2	2.14	0.46
2:B:1722:PRO:HG2	2:B:1723:VAL:H	1.80	0.46
2:B:1912:LEU:C	2:B:1914:THR:N	2.69	0.46
1:A:136:ASP:HB2	1:A:137:PRO:HD2	1.97	0.46
2:B:1557:SER:O	2:B:1560:VAL:HG12	2.15	0.46
2:B:1814:GLN:HG2	2:B:1816:HIS:NE2	2.31	0.46
2:B:2068:VAL:O	2:B:2068:VAL:HG23	2.16	0.46
1:A:205:THR:O	1:A:206:VAL:HG23	2.16	0.46
2:B:1770:MET:CE	2:B:1774:LEU:HD12	2.46	0.46
1:A:36:ILE:HD12	1:A:78:ALA:HB1	1.98	0.46
2:B:1872:LEU:HG	2:B:1877:ILE:HD12	1.98	0.46
2:B:1893:PRO:HD2	2:B:1894:LYS:HZ3	1.74	0.46
1:A:243:PHE:CE1	1:A:280:ILE:HD13	2.51	0.45
2:B:1724:ASP:OD2	2:B:1786:ARG:HB2	2.16	0.45
2:B:2055:TRP:CG	2:B:2072:GLN:HB2	2.50	0.45
1:A:169:THR:O	1:A:177:LYS:HB2	2.15	0.45
1:A:71:LYS:NZ	1:A:71:LYS:CB	2.79	0.45
2:B:2050:TRP:HE3	2:B:2050:TRP:H	1.63	0.45
2:B:1836:SER:O	2:B:1837:LYS:HB2	2.15	0.45
2:B:1583:LEU:HD21	2:B:1973:ASN:HD21	1.81	0.45
1:A:80:LYS:HZ3	1:A:152:GLU:HG2	1.78	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:PHE:HE2	2:B:2182:MET:CE	2.30	0.45
2:B:1803:PHE:CD1	2:B:1843:LEU:HD13	2.52	0.45
2:B:1942:HIS:ND1	2:B:1943:TYR:HD1	2.14	0.45
1:A:187:PHE:HD1	1:A:187:PHE:H	1.65	0.45
1:A:239:PHE:HD1	1:A:287:HIS:CE1	2.34	0.45
1:A:59:GLY:O	1:A:60:PRO:O	2.35	0.45
2:B:1870:MET:HG3	7:B:2199:HOH:O	2.16	0.45
2:B:1632:HIS:HB3	2:B:1688:ALA:O	2.16	0.45
2:B:1791:ASN:HB2	2:B:1823:LEU:HD13	1.98	0.45
2:B:1801:VAL:HG23	2:B:1801:VAL:O	2.14	0.45
2:B:1939:GLY:O	2:B:2014:ARG:NE	2.46	0.45
2:B:2049:SER:OG	2:B:2053:ASN:HB2	2.16	0.45
1:A:255:ILE:HD12	1:A:257:ALA:O	2.16	0.45
2:B:1611:VAL:O	2:B:1612:ASP:HB2	2.16	0.45
2:B:2140:ASN:HA	2:B:2147:VAL:HG21	1.99	0.45
1:A:238:LEU:HD23	1:A:238:LEU:N	2.32	0.45
2:B:1631:ALA:HB2	2:B:1669:TRP:CZ2	2.52	0.45
1:A:89:ILE:HD11	1:A:164:ILE:HD11	1.99	0.44
1:A:10:ALA:O	1:A:77:LYS:HB2	2.17	0.44
2:B:1618:ARG:HD2	2:B:1664:THR:HG22	1.99	0.44
1:A:229:LEU:CD1	1:A:229:LEU:N	2.80	0.44
1:A:261:VAL:HG23	1:A:264:THR:HG23	2.00	0.44
1:A:133:THR:HG21	2:B:1815:GLN:HB2	1.99	0.44
2:B:1716:ASP:O	2:B:1718:GLU:N	2.50	0.44
2:B:1726:ARG:HD3	2:B:1726:ARG:HA	1.62	0.44
2:B:1704:ILE:HD11	2:B:1792:LEU:HD12	1.99	0.44
2:B:1871:GLY:HA3	2:B:1876:LEU:HB2	2.00	0.44
2:B:2123:TRP:CZ3	2:B:2161:ARG:HG3	2.53	0.44
2:B:2000:ILE:HG13	2:B:2017:LEU:HD13	1.99	0.44
1:A:108:GLU:O	1:A:111:ASP:OD1	2.35	0.44
1:A:219:VAL:HG12	1:A:220:CYS:N	2.32	0.44
2:B:1686:ALA:HA	2:B:1708:LEU:HD12	2.00	0.44
1:A:161:PRO:CG	1:A:184:VAL:HG11	2.43	0.44
1:A:35:LYS:NZ	1:A:192:GLU:OE1	2.46	0.44
2:B:1832:GLU:HG3	3:B:2188:NAG:O7	2.17	0.44
2:B:2067:ARG:CA	2:B:2067:ARG:HH11	2.17	0.44
2:B:2092:ILE:HG22	2:B:2151:PHE:CE2	2.48	0.44
2:B:2112:TYR:HD2	2:B:2112:TYR:N	2.16	0.44
1:A:204:TYR:HB3	1:A:292:MET:SD	2.57	0.43
2:B:1657:ASN:ND2	2:B:1657:ASN:C	2.70	0.43
2:B:1790:LEU:HD12	2:B:1790:LEU:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1900:ASN:OD1	2:B:1905:ASN:HB2	2.18	0.43
2:B:1939:GLY:O	2:B:2014:ARG:NH2	2.50	0.43
1:A:152:GLU:O	1:A:153:ASP:C	2.56	0.43
2:B:1926:MET:O	2:B:1927:GLN:HB2	2.18	0.43
1:A:136:ASP:OD2	1:A:140:LEU:HD21	2.18	0.43
2:B:1722:PRO:HG2	2:B:1723:VAL:N	2.32	0.43
1:A:133:THR:CG2	1:A:134:HIS:H	2.22	0.43
1:A:87:GLN:CG	1:A:143:ILE:HG13	2.49	0.43
1:A:163:LEU:HD22	1:A:228:HIS:CE1	2.53	0.43
1:A:209:TYR:CD2	1:A:214:MET:HB3	2.53	0.43
2:B:1872:LEU:HB2	2:B:2016:GLU:OE2	2.18	0.43
2:B:1950:THR:O	2:B:1951:GLU:HB2	2.18	0.43
1:A:143:ILE:HD12	1:A:144:TYR:N	2.34	0.43
2:B:1944:LEU:O	2:B:1946:PRO:HD3	2.19	0.43
2:B:2070:ALA:HB1	2:B:2173:LEU:O	2.18	0.43
1:A:146:SER:CB	1:A:153:ASP:OD1	2.64	0.43
2:B:1894:LYS:CD	2:B:1894:LYS:N	2.82	0.43
2:B:2049:SER:C	2:B:2051:TRP:H	2.22	0.43
2:B:1927:GLN:CA	2:B:1998:ARG:HE	2.32	0.43
2:B:2162:ILE:H	2:B:2162:ILE:HD12	1.79	0.43
1:A:133:THR:HB	1:A:136:ASP:OD1	2.19	0.42
1:A:276:GLY:O	1:A:277:ARG:HG2	2.19	0.42
2:B:1706:PRO:CB	2:B:1729:VAL:HG11	2.47	0.42
2:B:2054:TYR:O	2:B:2068:VAL:HG21	2.18	0.42
2:B:2098:GLN:HA	2:B:2140:ASN:ND2	2.34	0.42
1:A:39:ARG:HB3	1:A:48:GLU:OE2	2.19	0.42
2:B:1914:THR:HG21	2:B:2004:PRO:O	2.19	0.42
2:B:1868:MET:CE	2:B:2027:THR:HA	2.48	0.42
2:B:1935:ILE:HD11	2:B:2002:ILE:CD1	2.49	0.42
2:B:2016:GLU:HA	2:B:2016:GLU:OE2	2.18	0.42
1:A:154:PHE:CD1	1:A:232:MET:HG2	2.55	0.42
2:B:1876:LEU:HD22	2:B:2148:LYS:HB2	2.01	0.42
1:A:181:LYS:HA	7:A:2276:HOH:O	2.20	0.42
2:B:1967:LYS:HG2	2:B:1968:GLY:N	2.34	0.42
1:A:248:LEU:HG	1:A:248:LEU:O	2.18	0.42
1:A:280:ILE:HB	1:A:294:ALA:O	2.20	0.42
1:A:287:HIS:O	1:A:292:MET:HB2	2.19	0.42
2:B:1594:GLY:H	2:B:1596:TYR:HE2	1.68	0.42
2:B:2155:ILE:HG21	2:B:2160:ILE:HD11	2.02	0.42
1:A:191:ASP:OD2	1:A:191:ASP:C	2.57	0.42
1:A:83:SER:HB2	1:A:122:TYR:OH	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1557:SER:O	2:B:1560:VAL:N	2.50	0.42
2:B:1716:ASP:O	2:B:1717:LYS:C	2.58	0.42
2:B:1784:TRP:CZ2	2:B:1834:LYS:HB2	2.55	0.42
2:B:1817:GLN:NE2	2:B:1817:GLN:HA	2.33	0.42
2:B:1895:LEU:O	2:B:1897:ARG:N	2.51	0.42
2:B:2081:TRP:HZ3	2:B:2083:GLN:HG2	1.82	0.42
1:A:15:TRP:CH2	1:A:208:GLY:HA3	2.55	0.42
2:B:1632:HIS:HB2	2:B:1690:TYR:CE1	2.55	0.42
2:B:1969:ASN:OD1	4:B:2189:NDG:H3	2.19	0.42
2:B:2037:GLU:HB3	2:B:2039:LYS:HE2	2.02	0.42
2:B:2167:TRP:CE3	2:B:2171:ILE:HD11	2.55	0.42
1:A:133:THR:H	1:A:136:ASP:CG	2.23	0.42
1:A:171:THR:HG22	1:A:172:GLU:N	2.34	0.41
2:B:1714:THR:O	2:B:1722:PRO:HD3	2.20	0.41
2:B:1913:SER:O	2:B:1915:GLU:OE2	2.38	0.41
2:B:2044:SER:HB3	2:B:2081:TRP:NE1	2.35	0.41
2:B:2101:LYS:CD	2:B:2144:ARG:NH2	2.81	0.41
1:A:53:ARG:O	1:A:53:ARG:HG3	2.20	0.41
2:B:1893:PRO:C	2:B:1895:LEU:H	2.23	0.41
1:A:153:ASP:HA	1:A:158:LEU:HD12	2.02	0.41
2:B:1618:ARG:HD3	2:B:1666:THR:OG1	2.19	0.41
2:B:1802:HIS:N	2:B:1844:ASP:O	2.47	0.41
2:B:2034:GLY:O	2:B:2035:LYS:C	2.59	0.41
2:B:2085:ASP:C	2:B:2087:LEU:H	2.22	0.41
1:A:160:GLY:HA2	1:A:161:PRO:HD3	1.84	0.41
2:B:1724:ASP:C	2:B:1725:MET:O	2.58	0.41
2:B:1662:ASN:CB	4:B:2187:NDG:H5	2.49	0.41
1:A:254:LYS:HD3	1:A:254:LYS:O	2.21	0.41
1:A:66:VAL:HG23	1:A:66:VAL:O	2.20	0.41
1:A:89:ILE:CG2	1:A:90:LYS:N	2.83	0.41
2:B:1692:ALA:O	2:B:1693:VAL:C	2.59	0.41
2:B:1813:THR:HG22	2:B:1813:THR:O	2.21	0.41
2:B:1970:SER:HG	2:B:1975:MET:HA	1.86	0.41
1:A:191:ASP:OD2	1:A:193:SER:CB	2.69	0.41
1:A:216:ASP:HB3	1:A:295:TYR:O	2.21	0.41
2:B:1820:VAL:HG11	2:B:1846:GLU:OE2	2.20	0.41
2:B:1998:ARG:NH1	2:B:1999:TYR:OH	2.54	0.41
1:A:179:PHE:CD1	1:A:179:PHE:N	2.89	0.41
1:A:176:GLN:HB3	1:A:180:GLU:HA	2.02	0.41
2:B:1557:SER:HB3	2:B:1771:ILE:HD11	2.01	0.41
2:B:1578:VAL:HA	2:B:1703:LEU:HD23	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1740:SER:OG	2:B:1741:TRP:HD1	2.04	0.41
1:A:135:ASP:OD1	1:A:135:ASP:O	2.39	0.41
2:B:1704:ILE:HG12	2:B:1705:GLY:N	2.36	0.41
2:B:1851:GLN:C	2:B:1851:GLN:HE21	2.24	0.41
2:B:1817:GLN:HE21	2:B:1817:GLN:CA	2.32	0.41
2:B:1818:LEU:CD2	2:B:1818:LEU:N	2.84	0.41
1:A:12:SER:HA	1:A:35:LYS:O	2.21	0.41
2:B:1694:ASN:O	2:B:1695:PRO:C	2.58	0.41
2:B:1914:THR:CG2	2:B:2004:PRO:O	2.69	0.41
1:A:202:LEU:HD23	1:A:203:MET:N	2.30	0.40
1:A:31:THR:HB	1:A:32:SER:H	1.67	0.40
2:B:1894:LYS:CD	2:B:1894:LYS:H	2.35	0.40
2:B:1886:GLU:OE1	2:B:1911:LYS:HE3	2.20	0.40
2:B:2003:SER:HA	2:B:2004:PRO:HD3	1.85	0.40
2:B:2089:ILE:HD11	2:B:2118:ASP:OD2	2.21	0.40
2:B:2151:PHE:O	2:B:2152:ASN:C	2.58	0.40
2:B:2083:GLN:HA	2:B:2160:ILE:O	2.21	0.40
1:A:133:THR:N	1:A:136:ASP:OD1	2.55	0.40
1:A:36:ILE:O	1:A:156:SER:O	2.39	0.40
1:A:192:GLU:HB3	1:A:199:THR:OG1	2.22	0.40
1:A:37:VAL:CG1	1:A:38:TYR:N	2.83	0.40
1:A:55:SER:O	1:A:56:GLY:O	2.40	0.40
2:B:1789:LEU:HD13	2:B:1801:VAL:HG21	2.03	0.40
2:B:1969:ASN:CG	4:B:2189:NDG:HA	2.21	0.40
2:B:1557:SER:O	2:B:1559:PHE:N	2.55	0.40
2:B:2045:SER:HB2	2:B:2074:LYS:HB3	2.02	0.40
1:A:129:HIS:ND1	1:A:129:HIS:C	2.75	0.40
1:A:175:THR:HG22	1:A:176:GLN:N	2.36	0.40
1:A:15:TRP:O	1:A:32:SER:HA	2.20	0.40
1:A:155:ASN:C	1:A:157:GLY:N	2.75	0.40
1:A:244:ASN:HB3	1:A:278:TRP:CE3	2.56	0.40
2:B:1721:MET:HE3	2:B:1724:ASP:HB3	2.03	0.40
2:B:1770:MET:HG2	2:B:1773:ASN:O	2.22	0.40
2:B:2058:PHE:CD1	2:B:2058:PHE:C	2.95	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	260/306 (85%)	178 (68%)	46 (18%)	36 (14%)	0	1
2	B	593/647 (92%)	479 (81%)	73 (12%)	41 (7%)	1	3
All	All	853/953 (90%)	657 (77%)	119 (14%)	77 (9%)	1	1

All (77) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	50	PRO
1	A	60	PRO
1	A	180	GLU
1	A	187	PHE
1	A	206	VAL
1	A	207	ASN
1	A	210	VAL
1	A	233	SER
1	A	262	SER
1	A	285	PRO
2	B	1680	PRO
2	B	1682	SER
2	B	1723	VAL
2	B	1725	MET
2	B	1867	LYS
2	B	1970	SER
2	B	2050	TRP
2	B	2067	ARG
1	A	56	GLY
1	A	61	THR
1	A	159	ILE
1	A	178	MET
1	A	246	GLN
1	A	283	LEU
2	B	1540	GLY

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Mol	Chain	Res	Type
2	B	1558	LYS
2	B	1662	ASN
2	B	1671	ALA
2	B	1695	PRO
2	B	1717	LYS
2	B	1719	THR
2	B	1848	GLY
2	B	1889	GLY
2	B	1913	SER
2	B	2039	LYS
2	B	2087	LEU
1	A	53	ARG
1	A	88	GLY
1	A	148	VAL
1	A	153	ASP
1	A	203	MET
1	A	216	ASP
2	B	1634	LEU
2	B	1665	TYR
2	B	1722	PRO
2	B	1794	GLY
2	B	1846	GLU
2	B	1896	ALA
2	B	2078	ASN
1	A	2	LYS
1	A	41	TYR
1	A	43	ALA
1	A	116	PRO
1	A	156	SER
1	A	195	SER
1	A	215	PRO
2	B	1712	LYS
2	B	1797	ASP
2	B	1798	ILE
2	B	1837	LYS
2	B	1918	PRO
2	B	1993	PRO
2	B	2122	ASP
1	A	152	GLU
1	A	177	LYS
1	A	234	SER
2	B	1557	SER

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Mol	Chain	Res	Type
2	B	1914	THR
2	B	2009	ASN
1	A	45	PHE
1	A	137	PRO
2	B	1743	TYR
2	B	1942	HIS
2	B	1960	ARG
1	A	217	ILE
2	B	1661	PRO
1	A	126	ILE

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	233/269 (87%)	208 (89%)	25 (11%)	8	22
2	B	526/570 (92%)	467 (89%)	59 (11%)	7	21
All	All	759/839 (90%)	675 (89%)	84 (11%)	7	21

All (84) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	46	GLN
1	A	54	THR
1	A	63	TYR
1	A	87	GLN
1	A	91	TYR
1	A	94	PHE
1	A	120	TYR
1	A	126	ILE
1	A	129	HIS
1	A	145	TYR
1	A	149	ASN
1	A	152	GLU

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Mol	Chain	Res	Type
1	A	176	GLN
1	A	180	GLU
1	A	183	HIS
1	A	189	VAL
1	A	196	TRP
1	A	211	ASN
1	A	214	MET
1	A	243	PHE
1	A	254	LYS
1	A	261	VAL
1	A	267	THR
1	A	283	LEU
2	B	1539	THR
2	B	1542	ARG
2	B	1580	ARG
2	B	1596	TYR
2	B	1600	LEU
2	B	1613	ASP
2	B	1617	VAL
2	B	1657	ASN
2	B	1660	GLN
2	B	1684	CYS
2	B	1694	ASN
2	B	1696	GLU
2	B	1707	LEU
2	B	1708	LEU
2	B	1711	ARG
2	B	1717	LYS
2	B	1718	GLU
2	B	1720	ASN
2	B	1721	MET
2	B	1726	ARG
2	B	1790	LEU
2	B	1797	ASP
2	B	1808	LEU
2	B	1823	LEU
2	B	1831	LEU
2	B	1832	GLU
2	B	1845	THR
2	B	1851	GLN
2	B	1852	ARG
2	B	1887	PHE

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Mol	Chain	Res	Type
2	B	1890	TYR
2	B	1894	LYS
2	B	1895	LEU
2	B	1898	LEU
2	B	1900	ASN
2	B	1905	ASN
2	B	1911	LYS
2	B	1914	THR
2	B	1915	GLU
2	B	1918	PRO
2	B	1921	TRP
2	B	1928	LYS
2	B	1931	LEU
2	B	2039	LYS
2	B	2054	TYR
2	B	2067	ARG
2	B	2079	ASN
2	B	2089	ILE
2	B	2097	THR
2	B	2112	TYR
2	B	2113	THR
2	B	2132	MET
2	B	2140	ASN
2	B	2141	ASN
2	B	2143	VAL
2	B	2146	HIS
2	B	2165	LYS
2	B	2168	ASN
2	B	2175	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	11	GLN
1	A	73	HIS
1	A	103	HIS
1	A	142	HIS
1	A	149	ASN
1	A	155	ASN
1	A	176	GLN
1	A	242	HIS

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Mol	Chain	Res	Type
2	B	1632	HIS
2	B	1657	ASN
2	B	1694	ASN
2	B	1782	GLN
2	B	1804	HIS
2	B	1814	GLN
2	B	1815	GLN
2	B	1817	GLN
2	B	1851	GLN
2	B	1905	ASN
2	B	1917	ASN
2	B	1927	GLN
2	B	2009	ASN
2	B	2023	ASN
2	B	2065	GLN
2	B	2076	ASN
2	B	2079	ASN
2	B	2083	GLN
2	B	2115	HIS
2	B	2168	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 7 ligands modelled in this entry, 2 are monoatomic - leaving 5 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length

(or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	A	2185	1	14,14,15	0.64	0	15,19,21	0.72	0
3	NAG	A	2186	1	14,14,15	0.51	0	15,19,21	0.71	0
4	NDG	B	2187	2	14,14,15	0.58	0	15,19,21	0.86	1 (6%)
3	NAG	B	2188	2	14,14,15	0.55	0	15,19,21	0.80	1 (6%)
4	NDG	B	2189	2	14,14,15	0.63	0	15,19,21	0.70	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	A	2185	1	-	0/6/23/26	0/1/1/1
3	NAG	A	2186	1	-	0/6/23/26	0/1/1/1
4	NDG	B	2187	2	-	0/6/23/26	0/1/1/1
3	NAG	B	2188	2	-	0/6/23/26	0/1/1/1
4	NDG	B	2189	2	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	2187	NDG	O-C1-C2	-2.07	108.59	111.47
3	B	2188	NAG	C2-N2-C7	-2.06	119.94	122.94

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	2185	NAG	3	0
4	B	2187	NDG	3	0
3	B	2188	NAG	4	0
4	B	2189	NDG	3	0

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

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	268/306 (87%)	0.56	28 (10%) 7 4	48, 89, 127, 136	0
2	B	601/647 (92%)	-0.20	6 (0%) 82 77	26, 54, 91, 112	0
All	All	869/953 (91%)	0.03	34 (3%) 40 29	26, 64, 116, 136	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	218	THR	4.4
1	A	34	LYS	3.7
1	A	247	VAL	3.7
1	A	178	MET	3.6
2	B	1760	ASN	3.6
1	A	145	TYR	3.3
1	A	196	TRP	3.3
1	A	292	MET	3.2
1	A	169	THR	3.1
1	A	219	VAL	3.1
1	A	253	HIS	2.9
1	A	288	PHE	2.8
1	A	246	GLN	2.8
1	A	143	ILE	2.7
1	A	283	LEU	2.7
1	A	252	HIS	2.7
1	A	160	GLY	2.7
1	A	179	PHE	2.5
1	A	43	ALA	2.5
1	A	263	ALA	2.5
2	B	2050	TRP	2.4
1	A	144	TYR	2.4
1	A	198	GLN	2.4
1	A	173	ASP	2.3

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Mol	Chain	Res	Type	RSRZ
2	B	1691	SER	2.3
1	A	213	THR	2.2
1	A	221	ALA	2.2
2	B	1539	THR	2.2
2	B	2121	THR	2.1
1	A	79	HIS	2.1
1	A	142	HIS	2.1
2	B	2132	MET	2.0
1	A	184	VAL	2.0
1	A	244	ASN	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 carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å ²)	Q < 0.9
4	NDG	B	2189	14/15	0.90	0.19	-0.19	70,72,74,76	0
5	CU	B	2190	1/1	0.97	0.20	-0.46	65,65,65,65	0
3	NAG	B	2188	14/15	0.89	0.13	-1.25	73,74,76,78	0
3	NAG	A	2186	14/15	0.90	0.16	-1.61	86,88,90,91	0
6	CA	A	2184	1/1	0.95	0.08	-1.93	68,68,68,68	0
4	NDG	B	2187	14/15	0.83	0.34	-	94,98,101,101	0
3	NAG	A	2185	14/15	0.75	0.40	-	127,128,129,130	0

6.5 Other polymers [i](#)

There are no such residues in this entry.