



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 12:13 PM EDT

PDB ID : 5I6I
Title : Crystal structure of a dBCCP-variant of Chaetomium thermophilum acetyl-CoA carboxylase
Authors : Hunkeler, M.; Stuttfeld, E.; Hagmann, A.; Imseng, S.; Maier, T.
Deposited on : 2016-02-16
Resolution : 8.40 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 : 4.02b-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

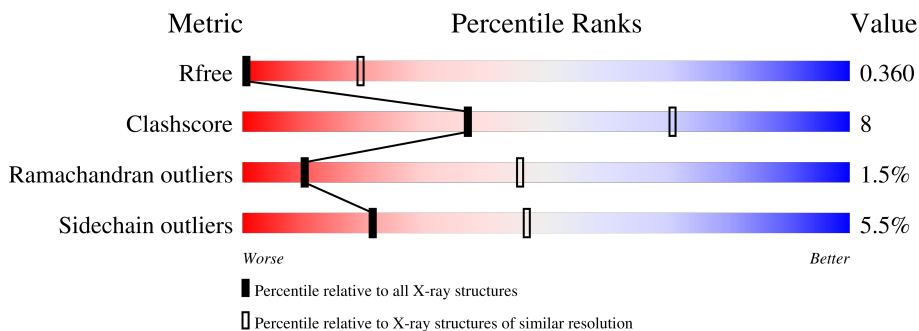
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 8.40 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}	130704	1005 (11.50-3.90)
Clashscore	141614	1070 (11.50-3.90)
Ramachandran outliers	138981	1003 (11.50-3.90)
Sidechain outliers	138945	1003 (11.50-3.86)

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	2211	48% (green), 13% (yellow), 37% (grey)
1	B	2211	49% (green), 13% (yellow), 37% (grey)

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 22445 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 Acetyl-CoA carboxylase-like protein, Acetyl-CoA carboxylase-like protein, Acetyl-CoA carboxylase-like protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1399	11224	7122	1978	2086	38	0	0	0
1	B	1394	11221	7120	1976	2086	39	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	63	GLY	-	expression tag	UNP G0S3L5
A	763	GLY	-	linker	UNP G0S3L5
A	764	SER	-	linker	UNP G0S3L5
A	765	GLY	-	linker	UNP G0S3L5
B	63	GLY	-	expression tag	UNP G0S3L5
B	763	GLY	-	linker	UNP G0S3L5
B	764	SER	-	linker	UNP G0S3L5
B	765	GLY	-	linker	UNP G0S3L5

S1772	V2008	ARG
V1773	T2020	HIS
L1782	K2024	ASP
G1783	P2025	PRO
Q1784	I2028	GLU
E1790	L2036	N2196
I1794	R2037	P2203
I1795	E2054	R2206
L1805	M2055	L2210
L1817	E2067	E2214
M1823	P2068	M2225
M1826	I2072	R2261
Q1845	P2073	UNK
Q1853	Y2076	UNK
S1864	M2085	UNK
P1865	R2087	UNK
V1884	L2088	UNK
R1885	S2109	UNK
W1886	I2112	UNK
M1887	Y2127	UNK
I1888	I2130	UNK
K1891	C2131	UNK
L1901	L2137	UNK
R1916	H2138	UNK
T1917	D2139	UNK
V1918	R2140	UNK
V1935	R2143	UNK
I1940	R2151	UNK
W1965	F2163	UNK
Y1966	R2166	UNK
P1967	V2167	UNK
N1968	R2168	UNK
S1969	R2169	UNK
A1970	R2170	UNK
F1971	E2173	UNK
K1972	A2187	UNK
Q1985	GLY	UNK
A1992	LYS	UNK
M2004	ARG	UNK

4 Data and refinement statistics

Property	Value	Source
Space group	P 64 2 2	Depositor
Cell constants a, b, c, α , β , γ	462.20Å 462.20Å 204.64Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.95 – 8.40 49.95 – 8.40	Depositor EDS
% Data completeness (in resolution range)	99.7 (49.95-8.40) 99.8 (49.95-8.40)	Depositor EDS
R_{merge}	0.29	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.33 (at 8.33Å)	Xtrriage
Refinement program	BUSTER 2.10.2	Depositor
R, R_{free}	0.297 , 0.324 0.340 , 0.360	Depositor DCC
R_{free} test set	549 reflections (4.53%)	wwPDB-VP
Wilson B-factor (Å ²)	572.4	Xtrriage
Anisotropy	0.424	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.43 , 899.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.36$, $\langle L^2 \rangle = 0.18$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.76	EDS
Total number of atoms	22445	wwPDB-VP
Average B, all atoms (Å ²)	250.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.05% 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](#)

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	0.41	0/11401	0.64	0/15435
1	B	0.41	0/11458	0.63	0/15511
All	All	0.41	0/22859	0.63	0/30946

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11224	0	11148	178	0
1	B	11221	0	11191	174	0
All	All	22445	0	22339	347	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 8.

All (347) 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:1192:VAL:HG21	1:A:1203:ALA:HB1	1.48	0.94
1:B:1108:ARG:HH21	1:B:1375:ARG:HH22	1.21	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1864:SER:HB2	1:B:1865:PRO:HD3	1.65	0.79
1:B:2054:GLU:HG3	1:B:2203:PRO:HG2	1.65	0.79
1:A:1864:SER:HB2	1:A:1865:PRO:HD3	1.65	0.78
1:A:2054:GLU:HG3	1:A:2203:PRO:HG2	1.69	0.75
1:B:1091:ALA:HB2	1:B:1260:ARG:HG2	1.66	0.75
1:B:1131:TRP:O	1:B:1188:LYS:HA	1.87	0.74
1:B:1462:MET:HG2	1:B:1470:ASN:HB2	1.69	0.74
1:B:1415:ASN:HB2	1:B:1452:VAL:HA	1.71	0.73
1:A:1657:ARG:HD3	1:A:1758:ALA:HA	1.72	0.72
1:B:1516:MET:HG3	1:B:1519:LEU:HD12	1.71	0.71
1:A:1415:ASN:HB2	1:A:1452:VAL:HA	1.71	0.70
1:B:1657:ARG:HD3	1:B:1758:ALA:HA	1.71	0.70
1:A:961:ASN:HA	1:A:964:LYS:HB2	1.74	0.68
1:A:1546:VAL:HG21	1:A:1633:ASP:HA	1.75	0.68
1:B:961:ASN:HA	1:B:964:LYS:HB2	1.74	0.68
1:A:1007:LEU:HD12	1:A:1029:LEU:HG	1.76	0.67
1:B:1007:LEU:HD12	1:B:1029:LEU:HG	1.77	0.67
1:B:2037:ARG:HE	1:B:2067:GLU:HA	1.59	0.67
1:B:1546:VAL:HG21	1:B:1633:ASP:HA	1.75	0.67
1:B:926:ILE:HD12	1:B:985:LEU:HD11	1.78	0.66
1:B:1376:PRO:HB3	1:B:1423:HIS:HB2	1.77	0.66
1:B:1127:TYR:HB2	1:B:1193:PRO:HD2	1.78	0.65
1:B:1299:ARG:HD2	1:B:1303:SER:HB2	1.78	0.65
1:B:1180:ARG:HD2	1:B:1182:ARG:HD3	1.79	0.64
1:A:926:ILE:HD12	1:A:985:LEU:HD11	1.78	0.64
1:B:1662:PRO:HB3	1:B:1763:PHE:HB3	1.80	0.63
1:A:1171:ILE:HG23	1:A:1330:PHE:HB2	1.80	0.63
1:A:848:LEU:HD23	1:A:851:ARG:HG3	1.81	0.63
1:A:1180:ARG:HD2	1:A:1182:ARG:HD3	1.79	0.63
1:A:1195:LYS:HA	1:A:1260:ARG:HD2	1.81	0.63
1:B:1427:VAL:HG11	1:B:1459:ILE:HD12	1.80	0.63
1:A:1087:THR:HG21	1:A:1305:PRO:HG2	1.80	0.62
1:B:848:LEU:HD23	1:B:851:ARG:HG3	1.81	0.62
1:B:1007:LEU:HD11	1:B:1025:ALA:O	2.00	0.62
1:A:1007:LEU:HD11	1:A:1025:ALA:O	2.00	0.62
1:B:1711:PHE:HB3	1:B:1714:GLU:HB2	1.82	0.61
1:A:880:LEU:HD13	1:A:915:LEU:HD13	1.80	0.61
1:A:1711:PHE:HB3	1:A:1714:GLU:HB2	1.82	0.61
1:A:1161:VAL:HB	1:A:1330:PHE:HZ	1.66	0.60
1:B:1176:TYR:CE2	1:B:1291:ARG:HD3	2.36	0.60
1:A:1168:ILE:HB	1:A:1181:THR:HG21	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1916:ARG:HB2	1:B:1940:ILE:HD13	1.83	0.60
1:A:1376:PRO:HG2	1:A:1423:HIS:HB2	1.82	0.60
1:B:1108:ARG:HH21	1:B:1375:ARG:NH2	1.96	0.60
1:A:852:MET:HB3	1:A:853:PRO:HD2	1.83	0.60
1:A:1517:HIS:HB3	1:A:1598:VAL:HG23	1.84	0.60
1:B:1341:LYS:HG3	1:B:1360:ARG:HG2	1.84	0.60
1:B:852:MET:HB3	1:B:853:PRO:HD2	1.83	0.60
1:B:1756:SER:HB2	1:B:1782:LEU:HD22	1.85	0.59
1:A:1091:ALA:CB	1:A:1260:ARG:HG2	2.33	0.59
1:B:1193:PRO:HB2	1:B:1260:ARG:HH21	1.66	0.59
1:B:1090:PHE:HB2	1:B:1193:PRO:HB3	1.85	0.59
1:A:2163:PHE:O	1:A:2167:VAL:HG23	2.03	0.59
1:B:1116:ARG:HE	1:B:1132:ASP:HB2	1.66	0.58
1:A:1756:SER:HB2	1:A:1782:LEU:HD22	1.85	0.58
1:B:2163:PHE:O	1:B:2167:VAL:HG23	2.04	0.58
1:A:1491:LEU:HB3	1:A:1508:SER:HA	1.86	0.58
1:B:1549:PHE:O	1:B:1553:PHE:HD1	1.87	0.58
1:A:1916:ARG:HB2	1:A:1940:ILE:HD13	1.85	0.58
1:A:1304:TYR:HB3	1:A:1350:LYS:HB2	1.86	0.58
1:B:1156:SER:HB2	1:B:1157:PRO:HD3	1.85	0.58
1:B:1254:VAL:HG12	1:B:1292:ARG:HB2	1.86	0.58
1:A:1068:ASP:HB3	1:A:1071:VAL:HG23	1.86	0.57
1:B:887:LEU:HD22	1:B:900:LEU:HB3	1.86	0.57
1:B:1307:TYR:H	1:B:1323:HIS:HA	1.70	0.57
1:A:1162:GLU:HG3	1:A:1501:GLU:HG2	1.86	0.57
1:B:1266:ASN:HB2	1:B:1270:ILE:HB	1.87	0.57
1:B:2025:PRO:HB3	1:B:2170:ARG:HD3	1.86	0.57
1:A:1087:THR:CB	1:A:1298:GLY:HA3	2.34	0.57
1:A:1549:PHE:O	1:A:1553:PHE:HD1	1.86	0.57
1:B:1884:VAL:HG21	1:B:1935:VAL:O	2.04	0.57
1:A:1918:VAL:HG13	1:A:1972:LYS:HD3	1.87	0.57
1:B:1081:THR:HG23	1:B:1375:ARG:HE	1.70	0.57
1:B:1517:HIS:HB3	1:B:1598:VAL:HG23	1.86	0.57
1:A:1884:VAL:HG21	1:A:1935:VAL:O	2.04	0.57
1:A:1492:TYR:HA	1:A:1506:TYR:HA	1.86	0.56
1:B:1310:PHE:HB3	1:B:1315:TYR:HB3	1.87	0.56
1:B:1059:GLU:HB3	1:B:1062:TRP:HZ3	1.70	0.56
1:A:2025:PRO:HB3	1:A:2170:ARG:HD3	1.86	0.56
1:A:1307:TYR:H	1:A:1323:HIS:HA	1.71	0.56
1:B:1918:VAL:HG13	1:B:1972:LYS:HD3	1.86	0.56
1:A:1087:THR:HG21	1:A:1305:PRO:CG	2.36	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:887:LEU:HD22	1:A:900:LEU:HB3	1.87	0.56
1:B:1068:ASP:HB3	1:B:1071:VAL:HG23	1.88	0.56
1:A:1059:GLU:HB3	1:A:1062:TRP:HZ3	1.71	0.55
1:A:1087:THR:OG1	1:A:1298:GLY:HA3	2.05	0.55
1:A:1156:SER:HB2	1:A:1157:PRO:HD3	1.87	0.55
1:A:2072:ILE:HD12	1:A:2131:CYS:HB2	1.89	0.55
1:B:1295:PHE:O	1:B:1307:TYR:HA	2.06	0.55
1:A:2072:ILE:HG23	1:A:2073:PRO:HD3	1.89	0.55
1:A:936:VAL:HG23	1:A:968:THR:HG23	1.89	0.55
1:B:1492:TYR:HA	1:B:1506:TYR:HA	1.87	0.55
1:B:2072:ILE:HG23	1:B:2073:PRO:HD3	1.88	0.55
1:B:936:VAL:HG23	1:B:968:THR:HG23	1.88	0.54
1:B:2072:ILE:HD12	1:B:2131:CYS:HB2	1.89	0.54
1:A:1333:GLU:HG2	1:A:1336:ARG:HG3	1.90	0.54
1:B:1516:MET:H	1:B:1600:ARG:HA	1.73	0.54
1:B:1176:TYR:HE2	1:B:1291:ARG:HD3	1.72	0.53
1:A:1371:ARG:HD3	1:A:1418:PHE:HB3	1.90	0.53
1:A:1295:PHE:O	1:A:1307:TYR:HA	2.07	0.53
1:A:1087:THR:HB	1:A:1298:GLY:HA3	1.91	0.53
1:B:1132:ASP:HA	1:B:1187:ARG:O	2.08	0.53
1:A:2037:ARG:HE	1:A:2067:GLU:HA	1.74	0.52
1:B:922:GLU:O	1:B:926:ILE:HG12	2.09	0.52
1:B:1116:ARG:HE	1:B:1132:ASP:CB	2.23	0.52
1:A:1688:TRP:HA	1:A:1698:PHE:HA	1.92	0.52
1:A:922:GLU:O	1:A:926:ILE:HG12	2.10	0.52
1:A:2256:MET:HA	1:A:2259:LEU:HD12	1.92	0.52
1:B:1059:GLU:HB3	1:B:1062:TRP:CZ3	2.45	0.52
1:B:1985:GLN:HB3	1:B:2024:LYS:HE3	1.92	0.52
1:B:1688:TRP:HA	1:B:1698:PHE:HA	1.92	0.51
1:A:1008:ARG:O	1:A:1011:THR:HG22	2.10	0.51
1:B:1133:PHE:HB2	1:B:1187:ARG:HB2	1.92	0.51
1:A:1349:ASN:HB3	1:A:1352:ILE:HG12	1.92	0.51
1:A:1702:TYR:HA	1:A:1729:LYS:HA	1.92	0.51
1:B:1702:TYR:HA	1:B:1729:LYS:HA	1.93	0.51
1:B:1026:ARG:HG2	1:B:1391:SER:OG	2.11	0.51
1:A:1333:GLU:CG	1:A:1336:ARG:HG3	2.41	0.51
1:A:1054:GLN:HB3	1:A:1062:TRP:CD1	2.46	0.51
1:A:1254:VAL:HG12	1:A:1292:ARG:HB2	1.92	0.51
1:A:1310:PHE:HB3	1:A:1315:TYR:HB3	1.92	0.51
1:A:1885:ARG:HA	1:A:1888:ILE:HD12	1.93	0.51
1:B:1006:VAL:O	1:B:1009:ARG:HG2	2.10	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1008:ARG:O	1:B:1011:THR:HG22	2.10	0.50
1:B:1506:TYR:H	1:B:1517:HIS:CE1	2.30	0.50
1:A:1340:PHE:CZ	1:A:1527:THR:HG22	2.47	0.50
1:B:1054:GLN:HB3	1:B:1062:TRP:CD1	2.47	0.50
1:B:1349:ASN:HB3	1:B:1352:ILE:HG12	1.93	0.50
1:A:1492:TYR:CD1	1:A:1506:TYR:HB3	2.46	0.50
1:B:1091:ALA:HB2	1:B:1260:ARG:CG	2.39	0.50
1:B:1885:ARG:HA	1:B:1888:ILE:HD12	1.93	0.50
1:A:907:LEU:O	1:A:911:LEU:HD13	2.12	0.50
1:A:1006:VAL:O	1:A:1009:ARG:HG2	2.11	0.50
1:A:1059:GLU:HB3	1:A:1062:TRP:CZ3	2.46	0.50
1:A:856:LEU:HB2	1:A:894:LYS:HE2	1.94	0.50
1:A:1091:ALA:HB1	1:A:1260:ARG:HG2	1.94	0.50
1:B:2210:LEU:O	1:B:2214:GLU:HB2	2.12	0.49
1:B:1535:ARG:HA	1:B:1545:TYR:HB2	1.94	0.49
1:A:1120:TYR:HD1	1:A:1129:ILE:HG22	1.78	0.49
1:A:1154:PRO:HB2	1:A:1158:ALA:HB2	1.93	0.49
1:B:907:LEU:O	1:B:911:LEU:HD13	2.12	0.49
1:A:1516:MET:H	1:A:1600:ARG:HA	1.77	0.49
1:A:1985:GLN:HB3	1:A:2024:LYS:HE3	1.93	0.49
1:B:1265:LYS:HE3	1:B:1299:ARG:HG3	1.93	0.49
1:B:1429:ALA:HB2	1:B:1475:LEU:HD13	1.94	0.49
1:A:827:PHE:O	1:A:831:LEU:HD23	2.13	0.49
1:B:1168:ILE:HB	1:B:1181:THR:HG21	1.95	0.49
1:A:1099:LEU:HA	1:A:1102:LEU:HD12	1.95	0.49
1:A:1506:TYR:HE2	1:A:1512:LYS:HA	1.77	0.49
1:A:1662:PRO:HB3	1:A:1763:PHE:HB3	1.94	0.49
1:A:1202:GLU:HB3	1:A:1206:ARG:HH12	1.78	0.49
1:B:827:PHE:O	1:B:831:LEU:HD23	2.13	0.49
1:B:1202:GLU:HB3	1:B:1206:ARG:HH12	1.78	0.48
1:A:1328:LEU:HD22	1:A:1373:VAL:HG21	1.94	0.48
1:A:1980:PHE:CB	1:A:1988:LEU:HD21	2.43	0.48
1:A:2028:ILE:HB	1:A:2055:MET:HG3	1.94	0.48
1:A:2210:LEU:O	1:A:2214:GLU:HB2	2.12	0.48
1:A:860:LEU:HG	1:A:879:LEU:HD22	1.95	0.48
1:B:860:LEU:HG	1:B:879:LEU:HD22	1.95	0.48
1:B:1053:VAL:HG23	1:B:1062:TRP:HB3	1.95	0.48
1:A:1091:ALA:HB2	1:A:1260:ARG:HG2	1.94	0.48
1:B:1192:VAL:HG11	1:B:1203:ALA:O	2.13	0.48
1:B:2028:ILE:HB	1:B:2055:MET:HG3	1.94	0.48
1:B:856:LEU:HB2	1:B:894:LYS:HE2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1053:VAL:HG23	1:A:1062:TRP:HB3	1.96	0.47
1:A:1293:LEU:O	1:A:1309:THR:HA	2.15	0.47
1:B:895:THR:HG23	1:B:895:THR:O	2.15	0.47
1:B:895:THR:HB	1:B:900:LEU:HD12	1.95	0.47
1:A:895:THR:HB	1:A:900:LEU:HD12	1.95	0.47
1:A:1174:MET:SD	1:A:1335:GLY:HA3	2.55	0.47
1:A:1516:MET:HG3	1:A:1519:LEU:HD22	1.96	0.47
1:A:1056:ARG:HD2	1:A:1062:TRP:CZ2	2.50	0.47
1:A:1090:PHE:HB2	1:A:1193:PRO:HB3	1.97	0.47
1:B:1403:ALA:O	1:B:1406:ILE:HG13	2.15	0.47
1:A:1426:GLN:HG3	1:A:1462:MET:HB3	1.97	0.47
1:B:1966:TYR:H	1:B:1969:SER:HB2	1.80	0.47
1:A:895:THR:HG23	1:A:895:THR:O	2.15	0.47
1:A:1403:ALA:O	1:A:1406:ILE:HG13	2.14	0.46
1:A:1886:TRP:HB3	1:A:1891:LYS:HB2	1.98	0.46
1:A:2127:TYR:HA	1:A:2130:ILE:HD12	1.97	0.46
1:B:2127:TYR:HA	1:B:2130:ILE:HD12	1.97	0.46
1:A:1266:ASN:HB2	1:A:1270:ILE:HB	1.97	0.46
1:B:1056:ARG:HD2	1:B:1062:TRP:CZ2	2.50	0.46
1:B:1886:TRP:HB3	1:B:1891:LYS:HB2	1.98	0.46
1:A:1102:LEU:O	1:A:1106:VAL:HG23	2.15	0.46
1:B:1155:SER:HB2	1:B:1168:ILE:HG12	1.98	0.46
1:A:894:LYS:HG3	1:A:900:LEU:CD1	2.46	0.46
1:A:1492:TYR:CD1	1:A:1504:TYR:HB3	2.50	0.46
1:A:1966:TYR:H	1:A:1969:SER:HB2	1.81	0.46
1:B:1096:TYR:CD1	1:B:1096:TYR:C	2.89	0.46
1:B:1102:LEU:HD21	1:B:1193:PRO:HG3	1.97	0.46
1:B:1127:TYR:OH	1:B:1207:ALA:HB1	2.16	0.46
1:A:1416:HIS:HD2	1:A:1454:GLN:HG3	1.80	0.46
1:B:2203:PRO:HA	1:B:2206:ARG:HB3	1.97	0.46
1:B:2037:ARG:HH11	1:B:2068:PRO:HD3	1.81	0.46
1:B:945:LEU:HD13	1:B:951:ILE:HG13	1.98	0.46
1:B:1773:VAL:HG13	1:B:1795:ILE:HG23	1.98	0.46
1:A:1155:SER:HB2	1:A:1168:ILE:HG12	1.98	0.46
1:A:1992:ALA:HB1	1:A:2036:LEU:HD13	1.98	0.46
1:B:1531:LEU:HG	1:B:1535:ARG:HD2	1.98	0.46
1:B:933:TYR:HD1	1:B:978:LYS:HG2	1.81	0.45
1:B:1154:PRO:HB2	1:B:1158:ALA:HB2	1.97	0.45
1:A:1268:GLU:HA	1:A:1271:LEU:HD12	1.98	0.45
1:B:1531:LEU:HD23	1:B:1535:ARG:NH1	2.31	0.45
1:A:1255:VAL:O	1:A:1293:LEU:HA	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1519:LEU:HD11	1:A:1600:ARG:HD2	1.97	0.45
1:A:1096:TYR:C	1:A:1096:TYR:CD1	2.89	0.45
1:A:2004:MET:HA	1:A:2008:VAL:HG12	1.99	0.45
1:B:1253:ALA:O	1:B:1291:ARG:HG2	2.16	0.45
1:A:904:LEU:O	1:A:908:THR:HG23	2.17	0.45
1:B:1992:ALA:HB1	1:B:2036:LEU:HD13	1.98	0.45
1:B:2004:MET:HA	1:B:2008:VAL:HG12	1.99	0.45
1:A:1773:VAL:HG13	1:A:1795:ILE:HG23	1.99	0.45
1:A:2020:THR:HG21	1:B:1757:ARG:HG2	1.98	0.45
1:B:1323:HIS:CE1	1:B:1350:LYS:HD2	2.51	0.45
1:A:887:LEU:HD21	1:A:904:LEU:HD12	1.99	0.45
1:B:810:ILE:HD13	1:B:981:LEU:HD21	1.98	0.45
1:B:894:LYS:HG3	1:B:900:LEU:CD1	2.46	0.45
1:B:1268:GLU:HA	1:B:1271:LEU:HD12	1.97	0.45
1:B:1665:TYR:HB3	1:B:1766:THR:HG22	1.99	0.45
1:A:810:ILE:HD13	1:A:981:LEU:HD21	1.98	0.45
1:B:1291:ARG:HG3	1:B:1292:ARG:N	2.32	0.45
1:A:846:SER:HA	1:A:849:HIS:ND1	2.32	0.44
1:A:1665:TYR:HB3	1:A:1766:THR:HG22	2.00	0.44
1:A:2144:MET:HG2	1:B:1742:VAL:HG11	1.98	0.44
1:A:1087:THR:HG22	1:A:1296:ILE:HD11	1.99	0.44
1:B:1864:SER:HB2	1:B:1865:PRO:CD	2.43	0.44
1:A:923:LEU:HD21	1:A:999:VAL:HG12	2.00	0.44
1:A:1127:TYR:OH	1:A:1207:ALA:HB1	2.17	0.44
1:A:1689:ASN:HA	1:A:1699:LYS:HE3	2.00	0.44
1:A:933:TYR:HD1	1:A:978:LYS:HG2	1.82	0.44
1:A:1629:VAL:HG22	1:A:1664:ILE:HB	1.99	0.44
1:B:846:SER:HA	1:B:849:HIS:ND1	2.33	0.44
1:A:1378:ARG:HD3	1:A:1392:GLU:HG2	1.99	0.44
1:A:1739:GLY:HA2	1:A:1744:CYS:SG	2.58	0.44
1:B:1192:VAL:CG1	1:B:1203:ALA:HB1	2.48	0.44
1:A:887:LEU:HD11	1:A:904:LEU:HB2	2.00	0.44
1:B:824:LEU:O	1:B:828:ILE:HG12	2.18	0.44
1:B:1153:VAL:N	1:B:1154:PRO:CD	2.81	0.44
1:A:824:LEU:O	1:A:828:ILE:HG12	2.18	0.44
1:A:1052:VAL:HG22	1:A:1096:TYR:CE1	2.53	0.44
1:B:2109:SER:HA	1:B:2112:ILE:HD12	2.00	0.44
1:B:1087:THR:OG1	1:B:1298:GLY:HA3	2.17	0.44
1:A:1757:ARG:HG2	1:B:2020:THR:HG21	2.00	0.43
1:A:2109:SER:HA	1:A:2112:ILE:HD12	1.99	0.43
1:B:904:LEU:O	1:B:908:THR:HG23	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1544:GLN:HG3	1:B:1552:LEU:HD11	2.00	0.43
1:B:1742:VAL:HA	1:B:1745:LEU:HD12	1.99	0.43
1:A:945:LEU:HD13	1:A:951:ILE:HG13	2.00	0.43
1:A:1096:TYR:O	1:A:1099:LEU:HB3	2.18	0.43
1:B:891:VAL:HA	1:B:895:THR:HG22	2.01	0.43
1:A:891:VAL:HA	1:A:895:THR:HG22	2.00	0.43
1:A:1048:LEU:O	1:A:1052:VAL:HG23	2.18	0.43
1:B:887:LEU:HD21	1:B:904:LEU:HD12	1.99	0.43
1:B:1081:THR:OG1	1:B:1375:ARG:HB3	2.19	0.43
1:B:1116:ARG:NE	1:B:1132:ASP:HB2	2.31	0.43
1:B:1689:ASN:HA	1:B:1699:LYS:HE3	1.99	0.43
1:A:856:LEU:CB	1:A:894:LYS:HE2	2.48	0.43
1:A:1258:ALA:HA	1:A:1296:ILE:HG23	2.00	0.43
1:A:2177:LEU:HA	1:A:2180:ILE:HD12	2.00	0.43
1:B:975:VAL:HG11	1:B:1017:GLN:HG2	2.01	0.43
1:B:1052:VAL:HG22	1:B:1096:TYR:CE1	2.54	0.43
1:B:1739:GLY:HA2	1:B:1744:CYS:SG	2.58	0.43
1:A:1266:ASN:CB	1:A:1270:ILE:HB	2.49	0.43
1:A:1262:ALA:HB2	1:A:1298:GLY:O	2.19	0.43
1:B:831:LEU:HD12	1:B:922:GLU:HA	2.01	0.43
1:A:1066:ARG:HH12	1:A:1120:TYR:HB3	1.84	0.43
1:A:1415:ASN:HD22	1:A:1451:ARG:C	2.22	0.43
1:A:1742:VAL:HA	1:A:1745:LEU:HD12	1.99	0.43
1:B:1108:ARG:NH2	1:B:1375:ARG:HH22	2.03	0.43
1:B:1164:ASP:H	1:B:1167:ARG:NE	2.17	0.43
1:B:2137:LEU:HA	1:B:2140:ARG:HD3	2.01	0.43
1:A:1164:ASP:H	1:A:1167:ARG:NE	2.17	0.43
1:B:1099:LEU:HA	1:B:1102:LEU:HD12	2.00	0.43
1:A:831:LEU:HD12	1:A:922:GLU:HA	2.01	0.42
1:B:1096:TYR:O	1:B:1099:LEU:HB3	2.19	0.42
1:B:1504:TYR:HE1	1:B:1521:VAL:HA	1.83	0.42
1:B:1629:VAL:HG22	1:B:1664:ILE:HB	2.00	0.42
1:A:2137:LEU:HA	1:A:2140:ARG:HD3	2.00	0.42
1:A:831:LEU:HD13	1:A:921:ARG:CZ	2.49	0.42
1:A:836:LEU:HG	1:A:921:ARG:HH12	1.84	0.42
1:A:1631:ALA:HB2	1:A:1666:LEU:HB2	2.01	0.42
1:A:2085:MET:C	1:A:2087:ARG:H	2.23	0.42
1:A:1040:ARG:HH21	1:A:1085:VAL:HB	1.84	0.42
1:A:1389:LEU:HD11	1:A:1425:PHE:CG	2.53	0.42
1:B:831:LEU:HD13	1:B:921:ARG:CZ	2.49	0.42
1:B:856:LEU:CB	1:B:894:LYS:HE2	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1275:LYS:N	1:B:1276:PRO:HD2	2.34	0.42
1:A:1325:GLU:HG3	1:A:1327:SER:H	1.83	0.42
1:B:1415:ASN:HD22	1:B:1451:ARG:C	2.22	0.42
1:B:2085:MET:C	1:B:2087:ARG:H	2.23	0.42
1:A:1275:LYS:N	1:A:1276:PRO:HD2	2.35	0.42
1:A:1291:ARG:HE	1:A:1291:ARG:HB2	1.73	0.42
1:A:975:VAL:HG11	1:A:1017:GLN:HG2	2.02	0.42
1:A:1259:VAL:HG23	1:A:1297:CYS:HA	2.02	0.41
1:B:1170:SER:HB2	1:B:1187:ARG:HH22	1.85	0.41
1:B:887:LEU:HD11	1:B:904:LEU:HB2	2.01	0.41
1:B:1170:SER:HB3	1:B:1173:ASP:HB3	2.02	0.41
1:B:1631:ALA:HB2	1:B:1666:LEU:HB2	2.02	0.41
1:B:1048:LEU:O	1:B:1052:VAL:HG23	2.19	0.41
1:A:1027:GLU:O	1:A:1031:LEU:HG	2.20	0.41
1:A:2018:ALA:HA	1:A:2021:ARG:HD2	2.01	0.41
1:A:1052:VAL:HG22	1:A:1096:TYR:CD1	2.56	0.41
1:A:1504:TYR:HE1	1:A:1521:VAL:HA	1.86	0.41
1:A:2203:PRO:HA	1:A:2206:ARG:HB3	2.01	0.41
1:B:2169:ARG:O	1:B:2173:GLU:HB2	2.21	0.41
1:B:1052:VAL:HG22	1:B:1096:TYR:CD1	2.56	0.41
1:B:1504:TYR:CE1	1:B:1521:VAL:HA	2.56	0.41
1:A:961:ASN:O	1:A:965:VAL:HG23	2.21	0.41
1:A:1208:LEU:HD21	1:A:1285:LEU:HD23	2.03	0.41
1:A:1275:LYS:HA	1:A:1278:VAL:HG12	2.03	0.41
1:B:836:LEU:HG	1:B:921:ARG:HH12	1.84	0.41
1:A:1544:GLN:HG3	1:A:1552:LEU:HD11	2.02	0.41
1:B:820:MET:HA	1:B:823:LYS:HE3	2.03	0.41
1:B:1098:ALA:O	1:B:1102:LEU:HG	2.21	0.41
1:B:1127:TYR:CG	1:B:1128:PHE:N	2.88	0.41
1:B:1265:LYS:HG3	1:B:1299:ARG:HE	1.86	0.41
1:A:1460:ASN:HD22	1:A:1472:THR:HG21	1.86	0.41
1:A:1524:PRO:O	1:A:1525:TYR:C	2.60	0.41
1:A:2088:LEU:HG	1:B:1686:VAL:HG23	2.01	0.41
1:B:1027:GLU:O	1:B:1031:LEU:HG	2.20	0.41
1:B:1054:GLN:HB3	1:B:1062:TRP:NE1	2.36	0.41
1:B:1066:ARG:HH12	1:B:1120:TYR:HB3	1.86	0.41
1:B:1319:ASP:C	1:B:1344:PRO:HG2	2.41	0.41
1:A:1054:GLN:HB3	1:A:1062:TRP:NE1	2.36	0.41
1:A:1341:LYS:HG3	1:A:1360:ARG:HG2	2.02	0.41
1:A:2134:PHE:HA	1:A:2137:LEU:HD12	2.03	0.41
1:B:923:LEU:HD21	1:B:999:VAL:HG12	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1076:VAL:HG11	1:B:1107:ARG:HB3	2.03	0.41
1:B:1007:LEU:HD11	1:B:1025:ALA:C	2.41	0.40
1:B:1530:TRP:O	1:B:1533:PRO:HD2	2.21	0.40
1:A:1864:SER:HB2	1:A:1865:PRO:CD	2.43	0.40
1:A:1987:PRO:HG3	1:A:2171:LEU:HD21	2.03	0.40
1:A:1988:LEU:HG	1:A:2022:PHE:CZ	2.57	0.40
1:B:1162:GLU:HG3	1:B:1522:SER:OG	2.20	0.40
1:B:993:LYS:HG2	1:B:1031:LEU:HD22	2.03	0.40
1:B:1794:ILE:HD12	1:B:1823:MET:HG3	2.04	0.40
1:A:1325:GLU:CD	1:A:1326:PRO:HD2	2.42	0.40
1:A:2005:TYR:HA	1:B:1826:ASN:HD22	1.87	0.40
1:B:1340:PHE:CZ	1:B:1527:THR:HG22	2.56	0.40
1:A:820:MET:HA	1:A:823:LYS:HE3	2.02	0.40
1:A:1125:ARG:HH22	1:A:1199:ASP:CG	2.25	0.40
1:A:2077:LYS:H	1:A:2080:LYS:HD2	1.87	0.40
1:B:1052:VAL:HA	1:B:1096:TYR:CZ	2.57	0.40
1:B:1527:THR:O	1:B:1530:TRP:CD1	2.75	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	1373/2211 (62%)	1229 (90%)	123 (9%)	21 (2%)	10 46
1	B	1380/2211 (62%)	1249 (90%)	110 (8%)	21 (2%)	10 46
All	All	2753/4422 (62%)	2478 (90%)	233 (8%)	42 (2%)	10 46

All (42) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	943	ARG

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Mol	Chain	Res	Type
1	A	1156	SER
1	A	1516	MET
1	A	1784	GLN
1	A	1864	SER
1	B	943	ARG
1	B	1092	HIS
1	B	1156	SER
1	B	1864	SER
1	A	887	LEU
1	A	1128	PHE
1	A	1180	ARG
1	A	2225	ASN
1	B	887	LEU
1	B	1180	ARG
1	A	853	PRO
1	A	1486	VAL
1	A	1512	LYS
1	B	853	PRO
1	B	1160	PRO
1	B	1426	GLN
1	B	1516	MET
1	B	1638	ILE
1	B	1784	GLN
1	B	2225	ASN
1	A	892	PRO
1	A	1333	GLU
1	A	1638	ILE
1	A	1790	GLU
1	B	892	PRO
1	B	1128	PHE
1	B	1486	VAL
1	B	1790	GLU
1	A	1313	PRO
1	A	1317	GLU
1	A	1865	PRO
1	B	1313	PRO
1	B	1865	PRO
1	B	1317	GLU
1	A	1052	VAL
1	B	1052	VAL
1	A	1525	TYR

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	1208/1879 (64%)	1138 (94%)	70 (6%)	20	45
1	B	1215/1879 (65%)	1151 (95%)	64 (5%)	22	47
All	All	2423/3758 (64%)	2289 (94%)	134 (6%)	21	47

All (134) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	819	VAL
1	A	836	LEU
1	A	848	LEU
1	A	852	MET
1	A	880	LEU
1	A	883	PHE
1	A	884	ASN
1	A	911	LEU
1	A	913	LEU
1	A	921	ARG
1	A	930	LEU
1	A	951	ILE
1	A	952	LEU
1	A	954	LEU
1	A	961	ASN
1	A	970	LEU
1	A	1007	LEU
1	A	1021	VAL
1	A	1062	TRP
1	A	1079	LYS
1	A	1086	LEU
1	A	1090	PHE
1	A	1096	TYR
1	A	1115	LEU
1	A	1127	TYR
1	A	1132	ASP
1	A	1171	ILE

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Mol	Chain	Res	Type
1	A	1177	LEU
1	A	1259	VAL
1	A	1261	ASP
1	A	1291	ARG
1	A	1320	SER
1	A	1342	LEU
1	A	1343	THR
1	A	1378	ARG
1	A	1379	LEU
1	A	1424	THR
1	A	1462	MET
1	A	1475	LEU
1	A	1489	ILE
1	A	1551	GLU
1	A	1557	ILE
1	A	1563	GLU
1	A	1593	ASP
1	A	1595	LEU
1	A	1618	THR
1	A	1632	ASN
1	A	1638	ILE
1	A	1674	LEU
1	A	1715	VAL
1	A	1771	ARG
1	A	1805	LEU
1	A	1817	LEU
1	A	1853	GLN
1	A	1901	LEU
1	A	1917	THR
1	A	1965	TRP
1	A	1967	PRO
1	A	1971	PHE
1	A	1988	LEU
1	A	2022	PHE
1	A	2076	TYR
1	A	2088	LEU
1	A	2140	ARG
1	A	2143	ARG
1	A	2151	ARG
1	A	2166	ARG
1	A	2196	ASN
1	A	2234	GLU

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Mol	Chain	Res	Type
1	A	2240	ILE
1	B	819	VAL
1	B	836	LEU
1	B	848	LEU
1	B	852	MET
1	B	880	LEU
1	B	883	PHE
1	B	884	ASN
1	B	911	LEU
1	B	913	LEU
1	B	915	LEU
1	B	921	ARG
1	B	930	LEU
1	B	951	ILE
1	B	952	LEU
1	B	954	LEU
1	B	961	ASN
1	B	970	LEU
1	B	1007	LEU
1	B	1021	VAL
1	B	1032	CYS
1	B	1062	TRP
1	B	1086	LEU
1	B	1090	PHE
1	B	1096	TYR
1	B	1115	LEU
1	B	1116	ARG
1	B	1127	TYR
1	B	1177	LEU
1	B	1192	VAL
1	B	1254	VAL
1	B	1296	ILE
1	B	1324	ILE
1	B	1327	SER
1	B	1331	GLN
1	B	1378	ARG
1	B	1430	ASP
1	B	1551	GLU
1	B	1557	ILE
1	B	1563	GLU
1	B	1593	ASP
1	B	1595	LEU

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Mol	Chain	Res	Type
1	B	1618	THR
1	B	1632	ASN
1	B	1638	ILE
1	B	1674	LEU
1	B	1715	VAL
1	B	1771	ARG
1	B	1805	LEU
1	B	1817	LEU
1	B	1845	GLN
1	B	1853	GLN
1	B	1901	LEU
1	B	1917	THR
1	B	1965	TRP
1	B	1967	PRO
1	B	1971	PHE
1	B	2076	TYR
1	B	2088	LEU
1	B	2139	ASP
1	B	2140	ARG
1	B	2143	ARG
1	B	2151	ARG
1	B	2166	ARG
1	B	2196	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1415	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.