



Full wwPDB X-ray Structure Validation Report ⓘ

May 22, 2020 – 01:01 pm BST

PDB ID : 3HWC
Title : Crystal Structure of Chlorophenol 4-Monooxygenase (TftD) of Burkholderia cepacia AC1100
Authors : Ballinger, J.W.; Kang, C.H.
Deposited on : 2009-06-17
Resolution : 2.50 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 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 : 2.11
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) : 2.11

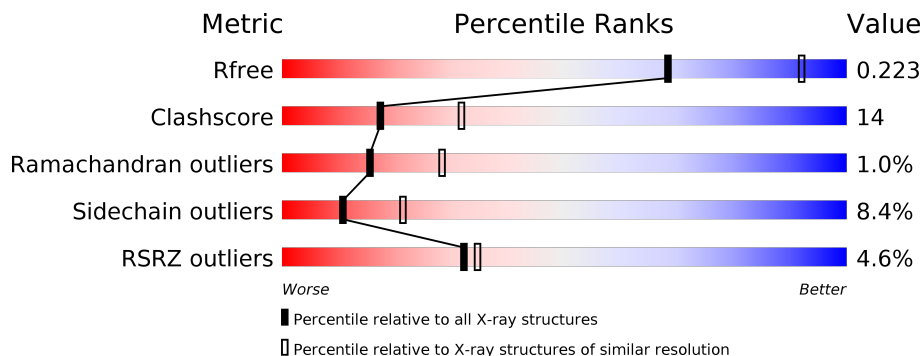
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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 respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	515	 6% 64% 24% 5% 6%
1	B	515	 6% 65% 24% • 6%
1	C	515	 4% 64% 26% • 6%
1	D	515	 70% 20% • 6%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 16516 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 Chlorophenol-4-monooxygenase component 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	482	3834	2429	684	708	13	0	0	0
1	B	482	3834	2429	684	708	13	0	0	0
1	C	482	3834	2429	684	708	13	0	0	0
1	D	482	3834	2429	684	708	13	0	0	0

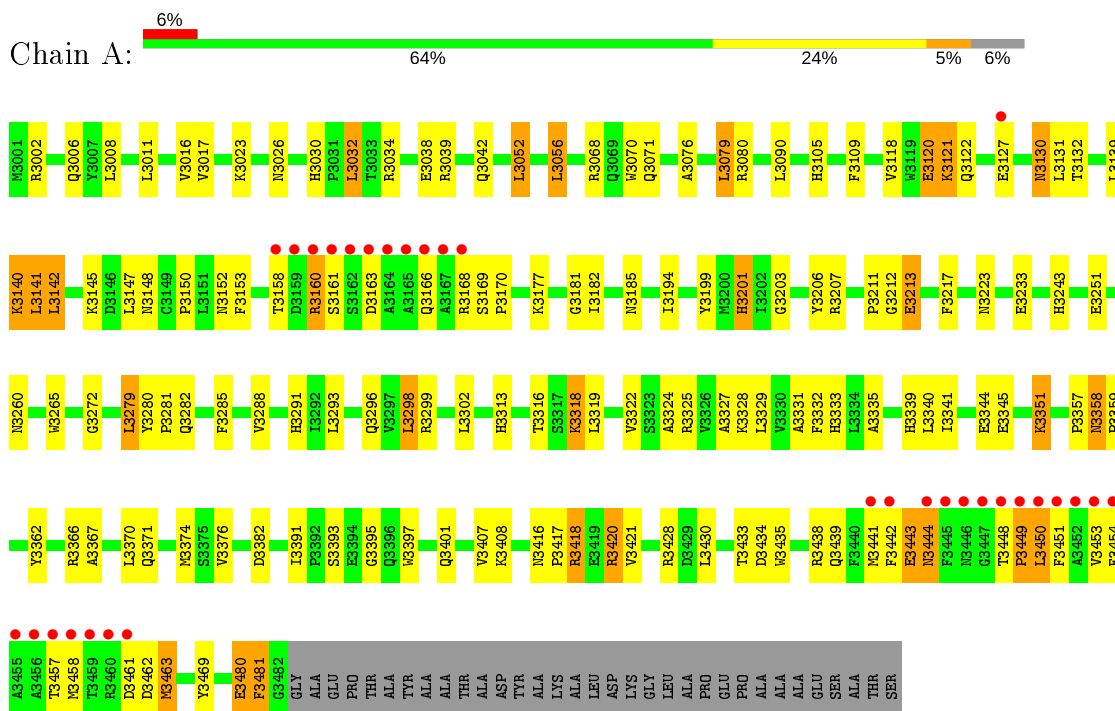
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	289	Total	O	0	0
			289	289		
2	B	271	Total	O	0	0
			271	271		
2	C	245	Total	O	0	0
			245	245		
2	D	375	Total	O	0	0
			375	375		

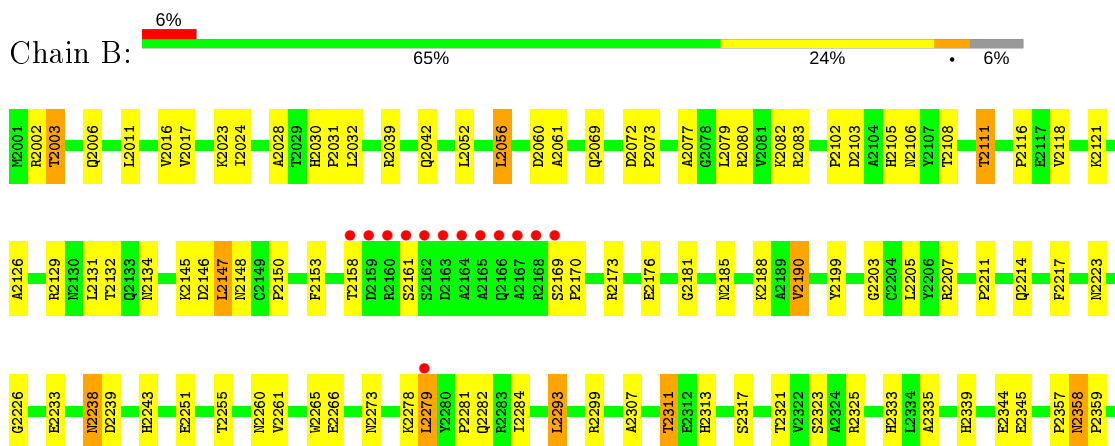
3 Residue-property plots [i](#)

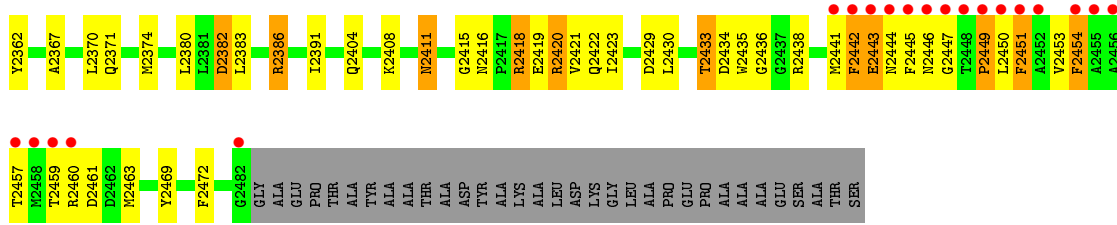
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are 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: Chlorophenol-4-monooxygenase component 2

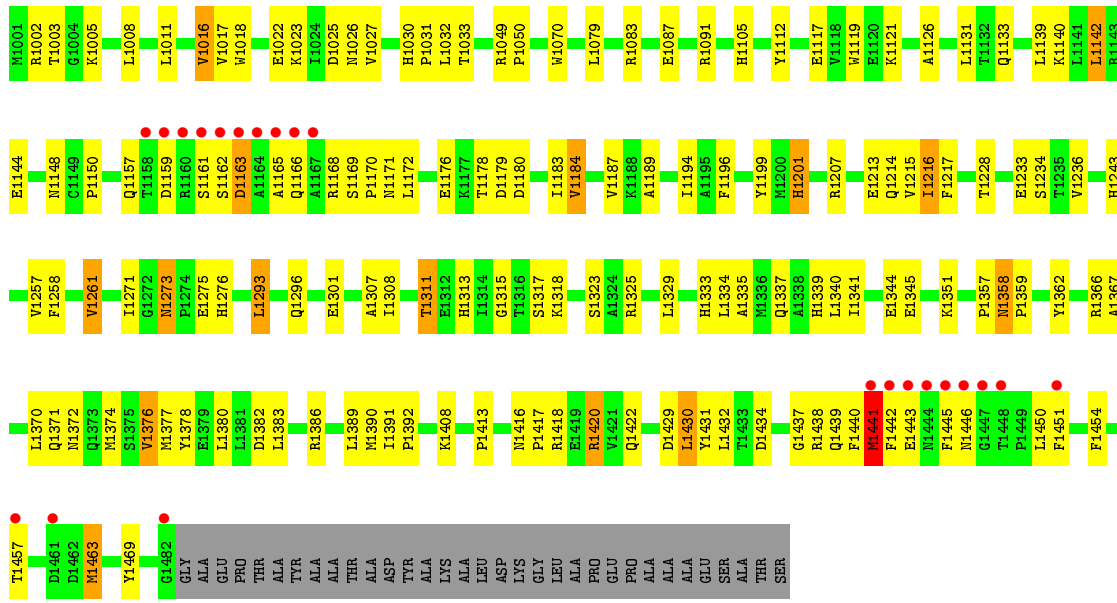


- Molecule 1: Chlorophenol-4-monooxygenase component 2

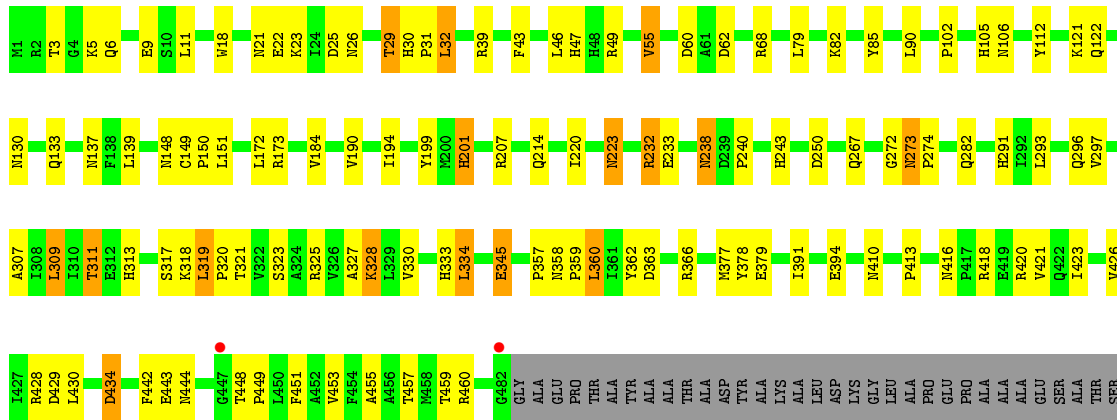




• Molecule 1: Chlorophenol-4-monoxygenase component 2



• Molecule 1: Chlorophenol-4-monoxygenase component 2



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	148.20Å 149.87Å 212.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.94 – 2.50 47.34 – 2.00	Depositor EDS
% Data completeness (in resolution range)	98.0 (19.94-2.50) 94.8 (47.34-2.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.51 (at 2.00Å)	Xtrriage
Refinement program	PHENIX ?	Depositor
R, R_{free}	0.168 , 0.224 0.167 , 0.223	Depositor DCC
R_{free} test set	1996 reflections (1.27%)	wwPDB-VP
Wilson B-factor (Å ²)	23.7	Xtrriage
Anisotropy	0.412	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 50.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtrriage
Estimated twinning fraction	0.009 for -k,-h,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	16516	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.81% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.25	0/3930	0.44	0/5335
1	B	0.25	0/3930	0.43	0/5335
1	C	0.24	0/3930	0.42	0/5335
1	D	0.26	0/3930	0.44	0/5335
All	All	0.25	0/15720	0.43	0/21340

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

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	3834	0	3734	123	0
1	B	3834	0	3734	124	0
1	C	3834	0	3734	119	0
1	D	3834	0	3737	94	0
2	A	289	0	0	6	0
2	B	271	0	0	8	0
2	C	245	0	0	3	0
2	D	375	0	0	5	0
All	All	16516	0	14939	419	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 14.

All (419) 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:C:1178:THR:HG22	1:C:1180:ASP:H	1.14	1.05
1:A:3079:LEU:HD11	1:A:3357:PRO:HG3	1.44	0.97
1:A:3451:PHE:HD1	1:D:321:THR:HG1	0.98	0.97
1:B:2433:THR:HG22	1:B:2436:GLY:H	1.31	0.96
1:A:3185:ASN:HD22	1:A:3260:ASN:H	1.13	0.92
1:D:172:LEU:HD11	1:D:184:VAL:HG13	1.57	0.86
1:B:2185:ASN:HD22	1:B:2260:ASN:H	1.21	0.85
1:C:1030:HIS:HD2	1:C:1032:LEU:H	1.26	0.84
1:C:1087:GLU:O	1:C:1091:ARG:HG3	1.77	0.83
1:B:2108:THR:O	1:B:2111:THR:HG23	1.79	0.82
1:D:79:LEU:HD21	1:D:357:PRO:HG3	1.62	0.82
1:C:1313:HIS:CD2	1:C:1420:ARG:HD3	2.14	0.81
1:D:30:HIS:HD2	1:D:32:LEU:H	1.29	0.81
1:C:1027:VAL:HG13	1:C:1033:THR:HG21	1.62	0.80
1:A:3313:HIS:CD2	1:A:3420:ARG:HD3	2.17	0.80
1:C:1371:GLN:HE22	1:C:1450:LEU:HD22	1.47	0.80
1:C:1176:GLU:HB3	1:C:1183:ILE:HB	1.63	0.79
1:A:3345:GLU:HG3	1:C:1345:GLU:HG3	1.64	0.79
1:D:313:HIS:HD2	1:D:420:ARG:HE	1.32	0.77
1:A:3457:THR:HG22	1:A:3463:MET:HG3	1.67	0.77
1:C:1079:LEU:HD21	1:C:1357:PRO:HG3	1.65	0.77
1:D:311:THR:HG23	1:D:317:SER:HB3	1.65	0.76
1:C:1126:ALA:HB2	1:C:1271:ILE:HD11	1.68	0.76
1:C:1296:GLN:HE22	1:C:1366:ARG:HA	1.51	0.75
1:D:410:ASN:HD22	1:D:420:ARG:HD2	1.52	0.74
1:B:2450:LEU:HG	1:B:2451:PHE:HD2	1.51	0.73
1:B:2111:THR:HG21	1:B:2284:ILE:HA	1.71	0.73
1:B:2278:LYS:O	1:B:2279:LEU:HB2	1.87	0.73
1:C:1027:VAL:HG13	1:C:1033:THR:CG2	2.19	0.73
1:A:3185:ASN:ND2	1:A:3260:ASN:H	1.86	0.72
1:A:3448:THR:OG1	1:A:3449:PRO:HD2	1.89	0.72
1:A:3120:GLU:HG3	1:A:3132:THR:OG1	1.90	0.72
1:C:1311:THR:HG23	1:C:1317:SER:HB3	1.71	0.71
1:C:1315:GLY:HA3	1:C:1413:PRO:HG2	1.72	0.71
1:D:296:GLN:HE22	1:D:366:ARG:HA	1.55	0.71
1:B:2207:ARG:NH2	1:B:2214:GLN:HE22	1.89	0.71
1:C:1207:ARG:NH2	1:C:1214:GLN:HE22	1.88	0.70
1:D:313:HIS:CD2	1:D:420:ARG:HE	2.10	0.70
1:D:243:HIS:HD2	1:D:429:ASP:OD2	1.73	0.70
1:A:3441:MET:HA	1:A:3444:ASN:HB2	1.72	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3079:LEU:HD13	1:A:3344:GLU:HG2	1.73	0.69
1:C:1313:HIS:HD2	1:C:1420:ARG:HH11	1.36	0.69
1:A:3313:HIS:HD2	1:A:3420:ARG:HD3	1.55	0.69
1:D:106:ASN:HD21	1:D:149:CYS:H	1.38	0.69
1:C:1243:HIS:HD2	1:C:1429:ASP:OD2	1.74	0.69
1:A:3030:HIS:HD2	1:A:3032:LEU:H	1.41	0.68
1:A:3120:GLU:HG2	1:A:3131:LEU:HB2	1.76	0.68
1:B:2003:THR:HG22	1:B:2006:GLN:H	1.58	0.68
1:A:3393:SER:HB3	1:D:21:ASN:ND2	2.08	0.68
1:D:3:THR:H	1:D:6:GLN:HE21	1.40	0.68
1:D:172:LEU:HD11	1:D:184:VAL:CG1	2.24	0.67
1:A:3395:GLY:H	1:D:21:ASN:ND2	1.91	0.67
1:D:307:ALA:O	1:D:311:THR:HB	1.94	0.67
1:C:1176:GLU:HG2	1:C:1183:ILE:HD12	1.76	0.67
1:B:2052:LEU:HB3	1:B:2056:LEU:HD22	1.77	0.67
1:B:2311:THR:HG23	1:B:2317:SER:HB3	1.76	0.66
1:B:2017:VAL:H	1:B:2023:LYS:HZ3	1.41	0.66
1:D:18:TRP:CZ2	1:D:23:LYS:HE3	2.31	0.66
1:A:3450:LEU:HD22	1:A:3453:VAL:HG21	1.77	0.66
1:B:2030:HIS:HD2	1:B:2032:LEU:H	1.44	0.66
1:A:3450:LEU:HD13	1:A:3453:VAL:HB	1.76	0.65
1:C:1033:THR:HG23	1:C:1196:PHE:CZ	2.30	0.65
1:B:2190:VAL:HG11	1:B:2445:PHE:CZ	2.31	0.65
1:B:2313:HIS:CD2	1:B:2420:ARG:HD3	2.32	0.65
1:C:1313:HIS:HD2	1:C:1420:ARG:HD3	1.57	0.64
1:A:3462:ASP:OD1	1:A:3463:MET:N	2.31	0.64
1:C:1172:LEU:HD11	1:C:1184:VAL:HG13	1.77	0.64
1:A:3279:LEU:HD12	1:A:3279:LEU:H	1.63	0.64
1:A:3160:ARG:HG2	1:D:413:PRO:HG3	1.79	0.64
1:A:3016:VAL:HG13	1:A:3023:LYS:HE2	1.80	0.64
1:A:3454:PHE:HD2	1:C:1323:SER:HB2	1.63	0.63
1:A:3121:LYS:HD2	1:A:3122:GLN:HG2	1.80	0.63
1:A:3458:MET:HA	1:A:3463:MET:HB2	1.79	0.63
1:D:328:LYS:CE	1:D:379:GLU:HG3	2.28	0.62
1:A:3318:LYS:HD2	1:A:3318:LYS:H	1.64	0.62
1:C:1011:LEU:HD13	1:C:1027:VAL:HG12	1.80	0.62
1:D:207:ARG:HH12	1:D:214:GLN:NE2	1.96	0.62
1:B:2367:ALA:O	1:B:2371:GLN:HG3	2.00	0.62
1:A:3121:LYS:NZ	1:A:3122:GLN:HE21	1.96	0.62
1:B:2039:ARG:HE	1:B:2042:GLN:NE2	1.97	0.62
1:B:2391:ILE:HG23	1:B:2421:VAL:HG13	1.80	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3177:LYS:HG3	1:A:3182:ILE:HG22	1.82	0.61
1:A:3358:ASN:HD22	1:A:3358:ASN:C	2.04	0.61
1:B:2358:ASN:C	1:B:2358:ASN:HD22	2.02	0.61
1:B:2449:PRO:O	1:B:2453:VAL:HG22	1.99	0.61
1:B:2313:HIS:HD2	1:B:2420:ARG:HH11	1.48	0.61
1:C:1168:ARG:NE	1:C:1168:ARG:HA	2.16	0.61
1:B:2185:ASN:ND2	1:B:2260:ASN:H	1.97	0.60
1:C:1371:GLN:NE2	1:C:1450:LEU:HB2	2.16	0.60
1:A:3002:ARG:HG3	1:A:3006:GLN:HE21	1.65	0.60
1:D:30:HIS:CD2	1:D:32:LEU:H	2.16	0.60
1:B:2030:HIS:CD2	1:B:2031:PRO:HD2	2.36	0.60
1:A:3118:VAL:HA	1:A:3121:LYS:HE3	1.84	0.60
1:B:2454:PHE:CG	1:D:327:ALA:HB2	2.37	0.60
1:B:2450:LEU:HG	1:B:2451:PHE:CD2	2.36	0.59
1:B:2453:VAL:O	1:B:2457:THR:HG23	2.01	0.59
1:C:1163:ASP:HA	1:C:1166:GLN:HB3	1.83	0.59
1:D:3:THR:H	1:D:6:GLN:NE2	2.00	0.59
1:A:3105:HIS:HE1	1:A:3148:ASN:ND2	2.00	0.59
1:A:3313:HIS:HE1	1:A:3416:ASN:O	1.85	0.59
1:C:1313:HIS:CD2	1:C:1420:ARG:HH11	2.19	0.59
1:B:2003:THR:HG22	1:B:2006:GLN:HG3	1.84	0.59
1:B:2079:LEU:HD21	1:B:2357:PRO:HG3	1.85	0.58
1:D:133:GLN:HE21	1:D:137:ASN:HD21	1.50	0.58
1:A:3318:LYS:CD	1:A:3318:LYS:H	2.17	0.58
1:C:1440:PHE:O	1:C:1440:PHE:HD1	1.86	0.58
1:D:5:LYS:HE2	1:D:9:GLU:OE2	2.04	0.58
1:A:3393:SER:HB3	1:D:21:ASN:HD21	1.69	0.58
1:C:1307:ALA:O	1:C:1311:THR:HB	2.04	0.57
1:B:2307:ALA:O	1:B:2311:THR:HB	2.05	0.57
1:B:2374:MET:HG3	1:C:1378:TYR:HB2	1.86	0.57
1:B:2207:ARG:HH21	1:B:2214:GLN:HE22	1.50	0.57
1:B:2411:ASN:HD21	1:B:2415:GLY:HA2	1.69	0.57
1:A:3367:ALA:O	1:A:3371:GLN:HG3	2.05	0.57
1:A:3391:ILE:HG23	1:A:3421:VAL:HG13	1.87	0.57
1:C:1454:PHE:HA	1:C:1457:THR:HB	1.86	0.57
1:A:3454:PHE:HA	1:A:3457:THR:HB	1.86	0.57
1:B:2161:SER:HB2	1:C:1413:PRO:HA	1.85	0.57
1:A:3145:LYS:HE3	1:A:3147:LEU:HD21	1.87	0.56
1:C:1335:ALA:O	1:C:1339:HIS:HD2	1.88	0.56
1:C:1372:ASN:O	1:C:1376:VAL:HG13	2.05	0.56
1:A:3279:LEU:HD13	1:A:3280:TYR:CD1	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3030:HIS:CD2	1:A:3032:LEU:H	2.22	0.56
1:B:2017:VAL:H	1:B:2023:LYS:NZ	2.04	0.56
1:B:2111:THR:HG22	2:B:334:HOH:O	2.05	0.56
1:B:2371:GLN:HG2	1:B:2449:PRO:HG2	1.87	0.56
1:C:1119:TRP:CE3	1:C:1276:HIS:HE1	2.24	0.56
1:A:3039:ARG:HE	1:A:3042:GLN:NE2	2.04	0.56
1:D:172:LEU:CD1	1:D:184:VAL:HG13	2.35	0.55
1:D:30:HIS:CD2	1:D:32:LEU:HB2	2.41	0.55
1:D:293:LEU:HD22	1:D:362:TYR:HB2	1.89	0.55
1:D:428:ARG:HD2	2:D:864:HOH:O	2.07	0.55
1:C:1030:HIS:CD2	1:C:1032:LEU:H	2.15	0.55
1:D:328:LYS:HE2	1:D:379:GLU:HG3	1.89	0.55
1:B:2003:THR:CG2	1:B:2006:GLN:H	2.19	0.55
1:A:3140:LYS:HD2	1:A:3140:LYS:N	2.22	0.55
1:A:3441:MET:HA	1:A:3444:ASN:CB	2.35	0.55
1:B:2313:HIS:HD2	1:B:2420:ARG:HD3	1.72	0.55
1:A:3450:LEU:HB3	2:A:997:HOH:O	2.08	0.54
1:B:2358:ASN:HD22	1:B:2359:PRO:N	2.05	0.54
1:C:1003:THR:HG22	1:C:1005:LYS:N	2.23	0.54
1:D:55:VAL:HG22	2:D:597:HOH:O	2.06	0.54
1:A:3296:GLN:HE22	1:A:3366:ARG:HA	1.72	0.54
1:B:2185:ASN:HD22	1:B:2260:ASN:N	1.98	0.54
1:D:309:LEU:HB3	1:D:423:ILE:HD13	1.88	0.54
1:A:3408:LYS:HD2	2:A:1072:HOH:O	2.08	0.54
1:B:2243:HIS:HD2	1:B:2429:ASP:OD2	1.90	0.54
1:A:3480:GLU:HG2	1:A:3481:PHE:N	2.23	0.54
1:C:1150:PRO:HB2	1:C:1194:ILE:HD13	1.89	0.54
1:C:1234:SER:OG	1:C:1236:VAL:HG23	2.08	0.54
1:C:1105:HIS:HE1	1:C:1148:ASN:OD1	1.90	0.54
1:A:3282:GLN:H	1:A:3282:GLN:NE2	2.06	0.53
1:C:1178:THR:CG2	1:C:1179:ASP:N	2.71	0.53
1:A:3395:GLY:H	1:D:21:ASN:HD21	1.55	0.53
1:C:1258:PHE:HB3	1:C:1261:VAL:HG13	1.90	0.53
1:A:3374:MET:HG3	1:D:378:TYR:HB2	1.91	0.53
1:C:1168:ARG:CZ	1:C:1168:ARG:HA	2.39	0.53
1:A:3435:TRP:O	1:A:3438:ARG:HG3	2.07	0.53
1:A:3313:HIS:HD2	1:A:3420:ARG:HH11	1.57	0.53
1:C:1311:THR:HG23	1:C:1317:SER:CB	2.37	0.53
1:C:1351:LYS:HD2	1:C:1351:LYS:H	1.73	0.53
1:C:1325:ARG:HH22	1:C:1382:ASP:HB3	1.73	0.53
1:A:3030:HIS:CD2	1:A:3032:LEU:HB2	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3141:LEU:CD2	1:A:3145:LYS:HG3	2.40	0.52
1:A:3233:GLU:OE2	1:D:243:HIS:HE1	1.92	0.52
1:B:2454:PHE:CD2	1:D:327:ALA:HB2	2.44	0.52
1:A:3251:GLU:H	1:A:3438:ARG:NH2	2.07	0.52
1:D:60:ASP:HB3	1:D:62:ASP:OD2	2.09	0.52
1:A:3335:ALA:O	1:A:3339:HIS:HD2	1.93	0.52
1:B:2293:LEU:HD12	1:B:2362:TYR:HB2	1.91	0.52
1:B:2311:THR:HG23	1:B:2317:SER:CB	2.39	0.52
1:C:1418:ARG:O	1:C:1422:GLN:HG3	2.10	0.52
1:B:2069:GLN:HG2	2:B:299:HOH:O	2.09	0.52
1:B:2408:LYS:HB3	1:C:1170:PRO:HG3	1.91	0.52
1:A:3056:LEU:C	1:A:3068:ARG:HG3	2.30	0.52
1:B:2126:ALA:O	1:B:2129:ARG:HG2	2.09	0.52
1:B:2153:PHE:CZ	1:B:2203:GLY:HA3	2.45	0.51
1:B:2441:MET:HG2	1:C:1389:LEU:HG	1.92	0.51
1:A:3070:TRP:HH2	1:A:3142:LEU:HD22	1.76	0.51
1:A:3211:PRO:HB2	1:A:3213:GLU:HG3	1.92	0.51
1:C:1358:ASN:C	1:C:1358:ASN:HD22	2.13	0.51
1:D:243:HIS:CD2	1:D:429:ASP:OD2	2.61	0.51
1:A:3121:LYS:HZ2	1:A:3122:GLN:HE21	1.59	0.51
1:A:3030:HIS:HD2	1:A:3032:LEU:HB2	1.75	0.51
1:A:3469:TYR:OH	1:C:1333:HIS:CD2	2.64	0.51
1:B:2002:ARG:HB2	1:B:2146:ASP:HB3	1.93	0.51
1:B:2023:LYS:HD3	1:B:2024:ILE:N	2.26	0.51
1:D:105:HIS:HE1	1:D:148:ASN:OD1	1.94	0.50
1:A:3105:HIS:HE1	1:A:3148:ASN:HD21	1.60	0.50
1:A:3469:TYR:OH	1:C:1333:HIS:HD2	1.94	0.50
1:D:313:HIS:HE1	1:D:416:ASN:O	1.94	0.50
1:D:444:ASN:OD1	1:D:449:PRO:HG3	2.11	0.50
1:A:3034:ARG:O	1:A:3038:GLU:HG3	2.11	0.50
1:B:2217:PHE:HZ	1:B:2281:PRO:HG3	1.75	0.50
1:C:1437:GLY:HA2	1:C:1440:PHE:CZ	2.46	0.50
1:D:220:ILE:HG22	1:D:267:GLN:NE2	2.27	0.50
1:A:3351:LYS:HE3	1:A:3351:LYS:HA	1.94	0.50
1:C:1159:ASP:O	1:C:1165:ALA:HB2	2.11	0.50
1:D:121:LYS:HE2	1:D:122:GLN:HE21	1.77	0.50
1:A:3017:VAL:H	1:A:3023:LYS:HZ3	1.59	0.49
1:C:1150:PRO:HD2	1:C:1199:TYR:O	2.12	0.49
1:C:1430:LEU:HB3	1:C:1431:TYR:CD1	2.46	0.49
1:A:3358:ASN:HD22	1:A:3359:PRO:N	2.10	0.49
1:B:2170:PRO:HG3	1:C:1408:LYS:HD2	1.92	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3105:HIS:CE1	1:A:3148:ASN:HD21	2.30	0.49
1:B:2169:SER:H	1:B:2173:ARG:NH2	2.09	0.49
1:C:1243:HIS:CD2	1:C:1429:ASP:OD2	2.62	0.49
1:B:2386:ARG:HD2	2:C:720:HOH:O	2.11	0.49
1:D:112:TYR:OH	1:D:201:HIS:HE1	1.96	0.49
1:A:3150:PRO:HB2	1:A:3194:ILE:HD13	1.95	0.49
1:A:3233:GLU:OE2	1:D:243:HIS:CE1	2.65	0.49
1:B:2003:THR:H	1:B:2006:GLN:HE21	1.60	0.49
1:A:3150:PRO:HD2	1:A:3199:TYR:O	2.12	0.49
1:A:3332:PHE:CD2	1:A:3376:VAL:HG21	2.48	0.49
1:B:2238:ASN:C	1:B:2238:ASN:HD22	2.15	0.49
1:B:2454:PHE:HD1	1:D:323:SER:HB3	1.76	0.49
1:A:3316:THR:HB	1:A:3322:VAL:HG21	1.93	0.49
1:D:151:LEU:HA	1:D:201:HIS:HB3	1.95	0.49
1:A:3160:ARG:H	1:A:3160:ARG:HE	1.60	0.49
1:A:3333:HIS:HE1	2:A:219:HOH:O	1.96	0.49
1:B:2238:ASN:HD22	1:B:2239:ASP:N	2.11	0.49
1:C:1440:PHE:O	1:C:1440:PHE:CD1	2.66	0.49
1:A:3285:PHE:HA	1:A:3288:VAL:HG12	1.95	0.48
1:B:2433:THR:HG22	1:B:2436:GLY:N	2.14	0.48
1:C:1178:THR:HG22	1:C:1180:ASP:N	2.00	0.48
1:D:133:GLN:HE21	1:D:137:ASN:ND2	2.10	0.48
1:B:2039:ARG:HE	1:B:2042:GLN:HE21	1.61	0.48
1:A:3341:ILE:O	1:A:3345:GLU:HG2	2.14	0.48
1:C:1178:THR:HG22	1:C:1179:ASP:N	2.28	0.48
1:C:1215:VAL:O	1:C:1271:ILE:HA	2.13	0.48
1:B:2105:HIS:HE1	1:B:2148:ASN:OD1	1.95	0.48
1:A:3169:SER:HB2	1:A:3170:PRO:CD	2.43	0.48
1:C:1033:THR:HG23	1:C:1196:PHE:CE1	2.49	0.48
1:C:1377:MET:HG3	1:C:1431:TYR:CD2	2.49	0.48
1:C:1408:LYS:HD3	1:C:1408:LYS:O	2.14	0.48
1:B:2323:SER:HG	1:D:451:PHE:HE2	1.62	0.47
1:A:3068:ARG:HE	1:A:3071:GLN:HE22	1.62	0.47
1:C:1207:ARG:HH21	1:C:1214:GLN:HE22	1.58	0.47
1:B:2190:VAL:HG22	1:C:1390:MET:HG3	1.95	0.47
1:C:1070:TRP:HH2	1:C:1142:LEU:HD22	1.79	0.47
1:A:3327:ALA:HB2	1:C:1454:PHE:CD1	2.49	0.47
1:C:1454:PHE:CZ	1:C:1463:MET:HG2	2.50	0.47
1:D:291:HIS:HE1	2:D:608:HOH:O	1.97	0.47
1:A:3324:ALA:HB2	1:C:1451:PHE:CD1	2.50	0.47
1:A:3052:LEU:HB3	1:A:3056:LEU:HD22	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1439:GLN:O	1:C:1443:GLU:HG3	2.15	0.47
1:A:3324:ALA:HB2	1:C:1451:PHE:HD1	1.80	0.47
1:B:2333:HIS:HE1	2:B:159:HOH:O	1.97	0.47
1:D:55:VAL:O	1:D:68:ARG:HD2	2.15	0.47
1:A:3153:PHE:CZ	1:A:3203:GLY:HA3	2.50	0.46
1:A:3181:GLY:HA2	1:A:3265:TRP:CD1	2.50	0.46
1:B:2082:LYS:HG3	2:B:408:HOH:O	2.14	0.46
1:B:2233:GLU:OE2	1:C:1243:HIS:HE1	1.98	0.46
1:D:453:VAL:O	1:D:457:THR:HG23	2.15	0.46
1:A:3331:ALA:HB2	1:C:1450:LEU:HD11	1.96	0.46
1:A:3370:LEU:HD21	1:A:3443:GLU:HB2	1.96	0.46
1:A:3279:LEU:HD12	1:A:3279:LEU:N	2.28	0.46
1:C:1091:ARG:NH2	1:C:1301:GLU:OE2	2.47	0.46
1:B:2145:LYS:HB3	1:B:2147:LEU:HD13	1.96	0.46
1:A:3293:LEU:HD22	1:A:3362:TYR:HB2	1.98	0.46
1:B:2003:THR:HG22	1:B:2006:GLN:CG	2.45	0.46
1:C:1293:LEU:HD12	1:C:1362:TYR:HB2	1.97	0.46
1:D:282:GLN:NE2	1:D:460:ARG:HD2	2.31	0.46
1:C:1187:VAL:HG22	1:C:1257:VAL:HG12	1.98	0.46
1:B:2190:VAL:HG11	1:B:2445:PHE:HZ	1.79	0.46
1:D:30:HIS:HD2	1:D:32:LEU:HB2	1.79	0.46
1:D:39:ARG:HA	1:D:39:ARG:NE	2.31	0.46
1:B:2391:ILE:CG2	1:B:2421:VAL:HG13	2.44	0.46
1:C:1367:ALA:O	1:C:1371:GLN:HG3	2.16	0.46
1:A:3333:HIS:HD2	1:C:1469:TYR:OH	1.98	0.45
1:C:1003:THR:HG22	1:C:1005:LYS:H	1.81	0.45
1:C:1216:ILE:HD12	1:C:1217:PHE:N	2.32	0.45
1:C:1083:ARG:HD2	1:C:1340:LEU:HD21	1.98	0.45
1:A:3109:PHE:HB3	1:A:3139:LEU:HD21	1.98	0.45
1:B:2131:LEU:O	1:B:2134:ASN:HB2	2.16	0.45
1:C:1025:ASP:OD2	1:C:1026:ASN:N	2.48	0.45
1:C:1318:LYS:HB2	2:C:871:HOH:O	2.16	0.45
1:C:1389:LEU:HA	2:C:586:HOH:O	2.16	0.45
1:B:2116:PRO:HB2	1:B:2132:THR:HG23	1.97	0.45
1:B:2150:PRO:HD2	1:B:2199:TYR:O	2.16	0.45
1:B:2226:GLY:HA3	1:B:2261:VAL:HG12	1.98	0.45
1:C:1207:ARG:HH21	1:C:1214:GLN:NE2	2.14	0.45
1:C:1083:ARG:HD3	1:C:1344:GLU:OE2	2.16	0.45
1:A:3080:ARG:HG2	2:A:725:HOH:O	2.16	0.45
1:B:2371:GLN:CG	1:B:2449:PRO:HG2	2.47	0.45
1:C:1049:ARG:HA	1:C:1050:PRO:HD3	1.85	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:22:GLU:OE2	1:D:30:HIS:HE1	1.99	0.45
1:B:2205:LEU:HD22	1:B:2205:LEU:N	2.31	0.45
1:B:2217:PHE:CZ	1:B:2281:PRO:HG3	2.51	0.45
1:C:1018:TRP:CZ2	1:C:1023:LYS:HE2	2.52	0.45
1:A:3318:LYS:HD3	1:A:3319:LEU:N	2.31	0.45
1:D:455:ALA:O	1:D:459:THR:HG23	2.17	0.45
1:B:2003:THR:H	1:B:2006:GLN:NE2	2.13	0.45
1:D:333:HIS:HD2	1:D:334:LEU:HD13	1.82	0.45
1:D:47:HIS:HE1	1:D:85:TYR:OH	1.99	0.45
1:C:1313:HIS:HE1	1:C:1416:ASN:O	2.00	0.45
1:C:1454:PHE:CE2	1:C:1463:MET:HG2	2.52	0.45
1:A:3448:THR:O	1:A:3449:PRO:C	2.56	0.44
1:C:1273:ASN:HD22	1:C:1273:ASN:C	2.21	0.44
1:A:3120:GLU:OE2	1:A:3130:ASN:HA	2.16	0.44
1:A:3333:HIS:CD2	1:C:1469:TYR:OH	2.70	0.44
1:C:1359:PRO:HA	1:C:1362:TYR:CZ	2.53	0.44
1:B:2433:THR:CG2	1:B:2435:TRP:HB3	2.47	0.44
1:C:1308:ILE:O	1:C:1311:THR:HG22	2.17	0.44
1:B:2459:THR:HG23	1:B:2460:ARG:N	2.31	0.44
1:A:3243:HIS:NE2	1:D:233:GLU:OE1	2.49	0.44
1:A:3299:ARG:HH12	1:A:3439:GLN:NE2	2.16	0.44
1:D:293:LEU:O	1:D:297:VAL:HG23	2.18	0.44
1:C:1273:ASN:ND2	1:C:1275:GLU:H	2.15	0.44
1:A:3039:ARG:HE	1:A:3042:GLN:HE21	1.65	0.44
1:A:3318:LYS:N	1:A:3318:LYS:CD	2.81	0.44
1:B:2188:LYS:HD3	1:B:2188:LYS:HA	1.87	0.44
1:D:410:ASN:ND2	1:D:420:ARG:HD2	2.28	0.44
1:A:3163:ASP:HB2	1:A:3166:GLN:HB3	2.00	0.43
1:B:2358:ASN:HA	1:B:2359:PRO:HD3	1.82	0.43
1:C:1016:VAL:HG22	1:C:1228:THR:HG23	2.01	0.43
1:D:238:ASN:O	1:D:240:PRO:HD3	2.18	0.43
1:A:3070:TRP:CH2	1:A:3142:LEU:HD22	2.51	0.43
1:D:30:HIS:CD2	1:D:31:PRO:HD2	2.53	0.43
1:D:359:PRO:O	1:D:363:ASP:HB2	2.18	0.43
1:B:2011:LEU:HD12	1:B:2028:ALA:HB2	1.99	0.43
1:B:2321:THR:HG22	1:B:2325:ARG:HH21	1.83	0.43
1:B:2386:ARG:HH21	1:C:1189:ALA:HB1	1.83	0.43
1:B:2345:GLU:CD	1:D:345:GLU:HG2	2.39	0.43
1:C:1112:TYR:OH	1:C:1201:HIS:HE1	2.01	0.43
1:A:3217:PHE:HZ	1:A:3281:PRO:HG3	1.84	0.43
1:B:2370:LEU:HD21	1:B:2443:GLU:HB3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:313:HIS:HD2	1:D:420:ARG:NE	2.09	0.43
1:B:2438:ARG:O	1:B:2442:PHE:HD1	2.00	0.43
1:C:1359:PRO:HA	1:C:1362:TYR:CE2	2.54	0.43
1:D:330:VAL:HG12	1:D:334:LEU:HD22	2.00	0.43
1:B:2469:TYR:OH	1:D:333:HIS:CD2	2.71	0.43
1:A:3109:PHE:CZ	1:A:3201:HIS:CD2	3.07	0.43
1:B:2359:PRO:HA	1:B:2362:TYR:CZ	2.53	0.43
1:C:1416:ASN:N	1:C:1417:PRO:HD3	2.33	0.43
1:B:2083:ARG:HD3	1:B:2344:GLU:OE1	2.19	0.43
1:B:2382:ASP:HB3	2:B:355:HOH:O	2.18	0.43
1:B:2419:GLU:O	1:B:2423:ILE:HG13	2.19	0.43
1:A:3120:GLU:HG3	1:A:3132:THR:N	2.34	0.43
1:B:2072:ASP:HA	1:B:2073:PRO:HD3	1.84	0.42
1:C:1070:TRP:CH2	1:C:1142:LEU:HD22	2.54	0.42
1:A:3397:TRP:CZ2	1:A:3418:ARG:HG2	2.53	0.42
1:A:3206:TYR:CG	1:A:3207:ARG:N	2.86	0.42
1:A:3358:ASN:HA	1:A:3359:PRO:HD3	1.81	0.42
1:B:2443:GLU:OE2	1:B:2446:ASN:HB2	2.20	0.42
1:B:2454:PHE:CE2	1:B:2463:MET:HG2	2.53	0.42
1:C:1207:ARG:NH2	1:C:1214:GLN:NE2	2.61	0.42
1:D:232:ARG:NH2	1:D:250:ASP:OD1	2.52	0.42
1:D:82:LYS:O	1:D:85:TYR:HB3	2.19	0.42
1:C:1027:VAL:O	1:C:1033:THR:HG22	2.19	0.42
1:B:2282:GLN:OE1	1:B:2460:ARG:HD3	2.19	0.42
1:C:1391:ILE:HA	1:C:1392:PRO:HD3	1.91	0.42
1:D:325:ARG:O	1:D:328:LYS:HG3	2.20	0.42
1:B:2150:PRO:HG3	2:B:763:HOH:O	2.19	0.42
1:D:102:PRO:HA	1:D:105:HIS:CE1	2.55	0.42
1:B:2449:PRO:HA	1:B:2453:VAL:HG13	2.02	0.42
1:D:319:LEU:HA	1:D:320:PRO:HD3	1.92	0.42
1:A:3359:PRO:HA	1:A:3362:TYR:CZ	2.55	0.42
1:B:2077:ALA:HA	1:B:2080:ARG:NH1	2.35	0.42
1:B:2359:PRO:HA	1:B:2362:TYR:CE2	2.55	0.42
1:D:223:ASN:C	1:D:223:ASN:ND2	2.73	0.42
1:A:3291:HIS:HE1	2:A:225:HOH:O	2.03	0.42
1:C:1140:LYS:O	1:C:1144:GLU:HG3	2.20	0.42
1:D:273:ASN:C	1:D:273:ASN:HD22	2.23	0.42
1:D:328:LYS:HD2	2:D:1022:HOH:O	2.20	0.42
1:B:2181:GLY:HA2	1:B:2265:TRP:CD1	2.55	0.41
1:B:2313:HIS:HE1	1:B:2416:ASN:O	2.03	0.41
1:B:2418:ARG:O	1:B:2422:GLN:HG3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:187:HOH:O	1:C:1339:HIS:HE1	2.01	0.41
1:C:1441:MET:CE	1:C:1445:PHE:HB3	2.50	0.41
1:D:360:LEU:HA	1:D:360:LEU:HD23	1.92	0.41
1:A:3212:GLY:O	1:A:3272:GLY:HA2	2.20	0.41
1:B:2457:THR:C	1:B:2459:THR:H	2.24	0.41
1:C:1184:VAL:HG12	1:C:1261:VAL:HG22	2.01	0.41
1:D:313:HIS:CD2	1:D:420:ARG:HB2	2.55	0.41
1:A:3374:MET:HG3	1:D:378:TYR:CB	2.50	0.41
1:B:2279:LEU:O	1:B:2282:GLN:HB3	2.21	0.41
1:D:358:ASN:HA	1:D:359:PRO:HD3	1.87	0.41
1:B:2069:GLN:HG3	1:B:2103:ASP:HA	2.03	0.41
1:C:1358:ASN:HA	1:C:1359:PRO:HD3	1.88	0.41
1:B:2335:ALA:O	1:B:2339:HIS:HD2	2.04	0.41
1:B:2454:PHE:HE2	1:B:2463:MET:HG2	1.85	0.41
1:C:1030:HIS:HA	1:C:1031:PRO:HD3	1.95	0.41
1:D:29:THR:HG21	2:D:922:HOH:O	2.20	0.41
1:A:3068:ARG:HE	1:A:3071:GLN:NE2	2.19	0.41
1:A:3076:ALA:HB1	1:A:3080:ARG:NH2	2.36	0.41
1:B:2345:GLU:HG2	1:D:345:GLU:HG2	2.03	0.41
1:B:2169:SER:OG	1:C:1408:LYS:HE2	2.21	0.41
1:D:220:ILE:HG22	1:D:267:GLN:HE21	1.85	0.41
1:B:2435:TRP:O	1:B:2438:ARG:HG3	2.21	0.41
1:B:2438:ARG:O	1:B:2442:PHE:CD1	2.74	0.41
1:C:1337:GLN:O	1:C:1341:ILE:HG12	2.21	0.41
1:D:328:LYS:NZ	1:D:379:GLU:HG3	2.35	0.41
1:A:3407:VAL:HG13	1:A:3417:PRO:HG2	2.01	0.41
1:A:3450:LEU:HD22	1:A:3453:VAL:CG2	2.48	0.41
1:B:2169:SER:HA	1:B:2173:ARG:NH2	2.36	0.41
1:A:3433:THR:HA	1:D:434:ASP:HB3	2.03	0.41
1:A:3328:LYS:HA	1:C:1450:LEU:HD21	2.02	0.41
1:B:2459:THR:HG23	1:B:2460:ARG:H	1.84	0.41
1:D:150:PRO:HB2	1:D:194:ILE:HD13	2.02	0.41
1:D:207:ARG:HH12	1:D:214:GLN:HE22	1.68	0.41
1:B:2472:PHE:HB3	2:B:246:HOH:O	2.20	0.40
1:B:2243:HIS:HE1	1:C:1233:GLU:OE1	2.04	0.40
1:B:2266:GLU:HB3	2:B:631:HOH:O	2.21	0.40
1:B:2251:GLU:H	1:B:2438:ARG:NH2	2.20	0.40
1:D:391:ILE:HG23	1:D:421:VAL:HG13	2.02	0.40
1:A:3298:LEU:HA	1:A:3298:LEU:HD12	1.90	0.40
1:B:2243:HIS:CE1	1:C:1233:GLU:OE1	2.75	0.40
1:C:1169:SER:HB3	1:C:1171:ASN:OD1	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:272:GLY:O	1:D:274:PRO:HD3	2.22	0.40
1:B:2060:ASP:OD2	1:B:2061:ALA:N	2.47	0.40
1:B:2102:PRO:O	1:B:2106:ASN:HB2	2.22	0.40
1:B:2118:VAL:HA	1:B:2121:LYS:HG2	2.04	0.40
1:B:2359:PRO:HB2	1:B:2460:ARG:NH2	2.36	0.40
1:C:1117:GLU:O	1:C:1121:LYS:HD3	2.21	0.40
1:D:442:PHE:CE2	1:D:443:GLU:HG3	2.56	0.40
1:A:3325:ARG:HH12	1:A:3382:ASP:HB3	1.86	0.40
1:D:150:PRO:HD2	1:D:199:TYR:O	2.22	0.40
1:D:43:PHE:O	1:D:47:HIS:CD2	2.74	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	480/515 (93%)	453 (94%)	22 (5%)	5 (1%)	15 28
1	B	480/515 (93%)	446 (93%)	24 (5%)	10 (2%)	7 11
1	C	480/515 (93%)	458 (95%)	19 (4%)	3 (1%)	25 43
1	D	480/515 (93%)	472 (98%)	7 (2%)	1 (0%)	47 68
All	All	1920/2060 (93%)	1829 (95%)	72 (4%)	19 (1%)	15 28

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3449	PRO
1	A	3463	MET
1	A	3480	GLU
1	A	3481	PHE
1	B	2190	VAL

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Mol	Chain	Res	Type
1	A	3161	SER
1	B	2158	THR
1	B	2442	PHE
1	B	2449	PRO
1	C	1162	SER
1	B	2279	LEU
1	C	1161	SER
1	C	1441	MET
1	B	2451	PHE
1	B	2176	GLU
1	B	2444	ASN
1	D	448	THR
1	B	2211	PRO
1	B	2447	GLY

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	406/425 (96%)	365 (90%)	41 (10%)	7 14
1	B	406/425 (96%)	379 (93%)	27 (7%)	16 31
1	C	406/425 (96%)	369 (91%)	37 (9%)	9 18
1	D	406/425 (96%)	374 (92%)	32 (8%)	12 24
All	All	1624/1700 (96%)	1487 (92%)	137 (8%)	11 21

All (137) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3008	LEU
1	A	3011	LEU
1	A	3026	ASN
1	A	3032	LEU
1	A	3052	LEU
1	A	3056	LEU
1	A	3079	LEU

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Mol	Chain	Res	Type
1	A	3090	LEU
1	A	3120	GLU
1	A	3121	LYS
1	A	3127	GLU
1	A	3130	ASN
1	A	3140	LYS
1	A	3141	LEU
1	A	3142	LEU
1	A	3152	ASN
1	A	3158	THR
1	A	3160	ARG
1	A	3168	ARG
1	A	3201	HIS
1	A	3213	GLU
1	A	3223	ASN
1	A	3279	LEU
1	A	3298	LEU
1	A	3302	LEU
1	A	3318	LYS
1	A	3329	LEU
1	A	3340	LEU
1	A	3351	LYS
1	A	3358	ASN
1	A	3401	GLN
1	A	3418	ARG
1	A	3420	ARG
1	A	3428	ARG
1	A	3430	LEU
1	A	3434	ASP
1	A	3442	PHE
1	A	3443	GLU
1	A	3444	ASN
1	A	3450	LEU
1	A	3461	ASP
1	B	2003	THR
1	B	2016	VAL
1	B	2056	LEU
1	B	2111	THR
1	B	2147	LEU
1	B	2223	ASN
1	B	2238	ASN
1	B	2255	THR

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Mol	Chain	Res	Type
1	B	2273	ASN
1	B	2293	LEU
1	B	2299	ARG
1	B	2311	THR
1	B	2358	ASN
1	B	2380	LEU
1	B	2382	ASP
1	B	2383	LEU
1	B	2386	ARG
1	B	2404	GLN
1	B	2411	ASN
1	B	2418	ARG
1	B	2420	ARG
1	B	2430	LEU
1	B	2433	THR
1	B	2434	ASP
1	B	2443	GLU
1	B	2454	PHE
1	B	2461	ASP
1	C	1002	ARG
1	C	1008	LEU
1	C	1016	VAL
1	C	1017	VAL
1	C	1022	GLU
1	C	1131	LEU
1	C	1133	GLN
1	C	1139	LEU
1	C	1142	LEU
1	C	1157	GLN
1	C	1163	ASP
1	C	1184	VAL
1	C	1201	HIS
1	C	1213	GLU
1	C	1216	ILE
1	C	1261	VAL
1	C	1273	ASN
1	C	1293	LEU
1	C	1311	THR
1	C	1329	LEU
1	C	1334	LEU
1	C	1358	ASN
1	C	1370	LEU

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Mol	Chain	Res	Type
1	C	1374	MET
1	C	1376	VAL
1	C	1380	LEU
1	C	1383	LEU
1	C	1386	ARG
1	C	1420	ARG
1	C	1430	LEU
1	C	1432	LEU
1	C	1434	ASP
1	C	1438	ARG
1	C	1441	MET
1	C	1442	PHE
1	C	1446	ASN
1	C	1463	MET
1	D	11	LEU
1	D	25	ASP
1	D	26	ASN
1	D	29	THR
1	D	32	LEU
1	D	46	LEU
1	D	49	ARG
1	D	55	VAL
1	D	90	LEU
1	D	130	ASN
1	D	139	LEU
1	D	173	ARG
1	D	190	VAL
1	D	201	HIS
1	D	223	ASN
1	D	232	ARG
1	D	238	ASN
1	D	273	ASN
1	D	309	LEU
1	D	311	THR
1	D	318	LYS
1	D	319	LEU
1	D	328	LYS
1	D	334	LEU
1	D	345	GLU
1	D	360	LEU
1	D	377	MET
1	D	394	GLU

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Mol	Chain	Res	Type
1	D	418	ARG
1	D	426	VAL
1	D	430	LEU
1	D	434	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (104) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3006	GLN
1	A	3026	ASN
1	A	3030	HIS
1	A	3042	GLN
1	A	3071	GLN
1	A	3105	HIS
1	A	3122	GLN
1	A	3133	GLN
1	A	3134	ASN
1	A	3136	HIS
1	A	3137	ASN
1	A	3148	ASN
1	A	3152	ASN
1	A	3171	ASN
1	A	3185	ASN
1	A	3201	HIS
1	A	3223	ASN
1	A	3282	GLN
1	A	3291	HIS
1	A	3296	GLN
1	A	3313	HIS
1	A	3333	HIS
1	A	3339	HIS
1	A	3358	ASN
1	A	3368	HIS
1	A	3373	GLN
1	A	3396	GLN
1	A	3422	GLN
1	A	3439	GLN
1	A	3444	ASN
1	A	3475	GLN
1	B	2006	GLN
1	B	2030	HIS
1	B	2042	GLN

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Mol	Chain	Res	Type
1	B	2105	HIS
1	B	2133	GLN
1	B	2134	ASN
1	B	2137	ASN
1	B	2166	GLN
1	B	2185	ASN
1	B	2214	GLN
1	B	2223	ASN
1	B	2238	ASN
1	B	2243	HIS
1	B	2260	ASN
1	B	2273	ASN
1	B	2313	HIS
1	B	2333	HIS
1	B	2339	HIS
1	B	2358	ASN
1	B	2372	ASN
1	B	2396	GLN
1	B	2411	ASN
1	C	1030	HIS
1	C	1105	HIS
1	C	1122	GLN
1	C	1133	GLN
1	C	1157	GLN
1	C	1201	HIS
1	C	1214	GLN
1	C	1243	HIS
1	C	1248	GLN
1	C	1267	GLN
1	C	1270	HIS
1	C	1273	ASN
1	C	1276	HIS
1	C	1282	GLN
1	C	1296	GLN
1	C	1313	HIS
1	C	1333	HIS
1	C	1339	HIS
1	C	1358	ASN
1	C	1368	HIS
1	C	1371	GLN
1	C	1396	GLN
1	D	6	GLN

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Mol	Chain	Res	Type
1	D	21	ASN
1	D	26	ASN
1	D	30	HIS
1	D	47	HIS
1	D	48	HIS
1	D	105	HIS
1	D	106	ASN
1	D	122	GLN
1	D	130	ASN
1	D	137	ASN
1	D	201	HIS
1	D	214	GLN
1	D	223	ASN
1	D	243	HIS
1	D	267	GLN
1	D	273	ASN
1	D	282	GLN
1	D	289	HIS
1	D	291	HIS
1	D	296	GLN
1	D	313	HIS
1	D	333	HIS
1	D	368	HIS
1	D	396	GLN
1	D	410	ASN
1	D	422	GLN
1	D	439	GLN
1	D	446	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](#)

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

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	482/515 (93%)	-0.19	32 (6%) 18 19	14, 29, 87, 134	0
1	B	482/515 (93%)	-0.15	33 (6%) 17 17	15, 30, 92, 129	0
1	C	482/515 (93%)	-0.24	22 (4%) 32 34	16, 33, 69, 119	0
1	D	482/515 (93%)	-0.61	2 (0%) 92 93	12, 22, 45, 68	0
All	All	1928/2060 (93%)	-0.30	89 (4%) 32 34	12, 29, 69, 134	0

All (89) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	3459	THR	14.2
1	B	2450	LEU	12.3
1	C	1165	ALA	10.6
1	A	3162	SER	10.4
1	A	3165	ALA	10.1
1	B	2448	THR	9.7
1	B	2162	SER	9.2
1	B	2459	THR	9.0
1	A	3450	LEU	8.3
1	A	3460	ARG	8.1
1	A	3444	ASN	7.5
1	A	3166	GLN	7.5
1	B	2164	ALA	7.4
1	C	1164	ALA	7.3
1	B	2163	ASP	7.3
1	B	2165	ALA	7.3
1	C	1163	ASP	7.0
1	A	3167	ALA	6.5
1	A	3451	PHE	6.4
1	B	2158	THR	6.3
1	A	3163	ASP	6.3

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Mol	Chain	Res	Type	RSRZ
1	B	2159	ASP	6.3
1	B	2460	ARG	5.9
1	B	2442	PHE	5.9
1	B	2451	PHE	5.9
1	B	2454	PHE	5.8
1	C	1162	SER	5.4
1	A	3448	THR	5.4
1	B	2160	ARG	5.4
1	A	3452	ALA	5.3
1	C	1161	SER	5.0
1	B	2441	MET	4.7
1	B	2166	GLN	4.6
1	B	2456	ALA	4.5
1	A	3457	THR	4.4
1	B	2455	ALA	4.4
1	A	3446	ASN	4.4
1	A	3161	SER	4.3
1	C	1442	PHE	4.2
1	A	3442	PHE	4.1
1	B	2161	SER	3.9
1	C	1451	PHE	3.9
1	B	2447	GLY	3.8
1	C	1166	GLN	3.8
1	A	3454	PHE	3.8
1	C	1446	ASN	3.7
1	C	1159	ASP	3.7
1	C	1447	GLY	3.5
1	D	447	GLY	3.5
1	B	2457	THR	3.5
1	C	1160	ARG	3.5
1	C	1441	MET	3.5
1	A	3455	ALA	3.5
1	A	3458	MET	3.5
1	B	2458	MET	3.5
1	A	3456	ALA	3.4
1	C	1445	PHE	3.3
1	B	2444	ASN	3.3
1	B	2168	ARG	3.2
1	B	2167	ALA	3.2
1	C	1167	ALA	3.1
1	A	3158	THR	3.1
1	B	2279	LEU	3.1

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Mol	Chain	Res	Type	RSRZ
1	D	482	GLY	3.1
1	A	3159	ASP	2.9
1	A	3449	PRO	2.9
1	A	3160	ARG	2.9
1	B	2446	ASN	2.8
1	B	2443	GLU	2.8
1	A	3164	ALA	2.7
1	A	3445	PHE	2.7
1	C	1158	THR	2.7
1	A	3441	MET	2.7
1	B	2169	SER	2.6
1	A	3168	ARG	2.6
1	A	3461	ASP	2.5
1	A	3447	GLY	2.5
1	C	1443	GLU	2.5
1	B	2449	PRO	2.4
1	B	2482	GLY	2.4
1	B	2445	PHE	2.4
1	B	2452	ALA	2.3
1	C	1448	THR	2.3
1	C	1482	GLY	2.3
1	A	3453	VAL	2.3
1	C	1457	THR	2.2
1	C	1461	ASP	2.2
1	C	1444	ASN	2.2
1	A	3127	GLU	2.2

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 [\(i\)](#)

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.