Full wwPDB X-ray Structure Validation Report (i)

Apr 27, 2024 – 04:20 pm BST

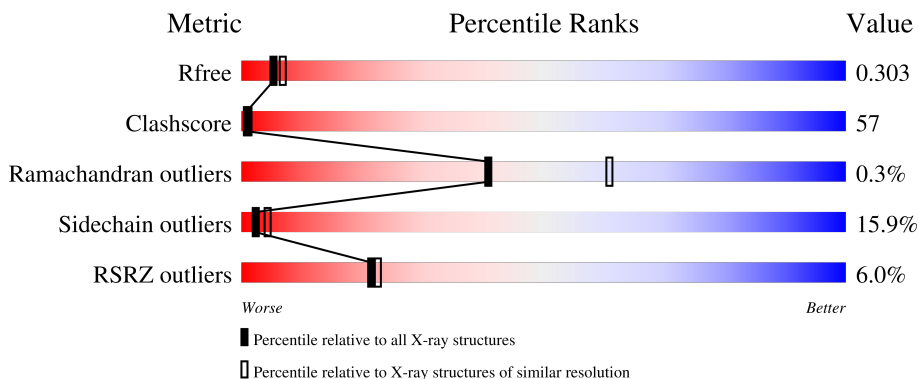|		
PDB ID	:	2CH7
Title	:	Crystal structure of the cytoplasmic domain of a bacterial chemoreceptor from Thermotoga maritima
Authors	:	Park, S.Y.; Bilwes, A.M.; Crane, B.R.
Deposited on	:	2006-03-13
Resolution	:	2.50 Å(reported)

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	Percentile Ranks	Value
Rfree		0.303
Clashscore		57
Ramachandran outliers		0.3%
Sidechain outliers		15.9%
RSRZ outliers		6.0%

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	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 of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	309	6% / 40% 51% 8%
2	B	309	6% / 40% 51% 9%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 5216 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 METHYL-ACCEPTING CHEMOTAXIS PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	309	Total 2329	C 1408	N 406	O 509	S 6	0	0	0

- Molecule 2 is a protein called METHYL-ACCEPTING CHEMOTAXIS PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	308	Total 2301	C 1389	N 402	O 505	S 5	0	0	1

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	466	ASN	THR	conflict	UNP Q9X0M7

- Molecule 3 is LEAD (II) ION (three-letter code: PB) (formula: Pb).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total 2	Pb 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	318	Total 318	O 318	0	0
4	B	266	Total 266	O 266	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: METHYL-ACCEPTING CHEMOTAXIS PROTEIN
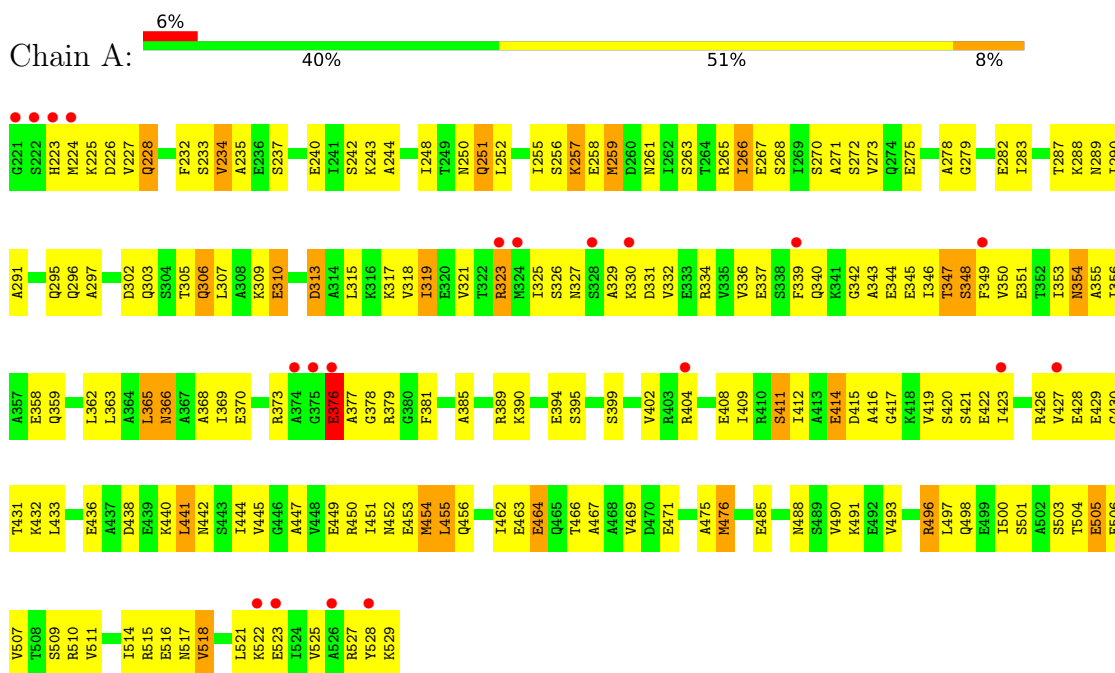
• Molecule 2: METHYL-ACCEPTING CHEMOTAXIS PROTEIN
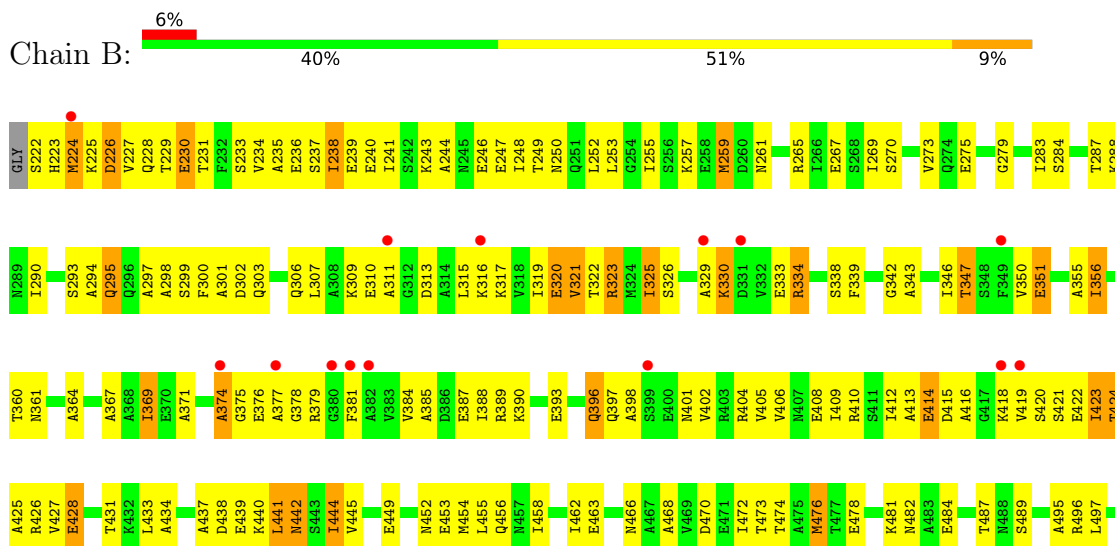
4   Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	24.60Å 99.40Å 117.20Å 90.00° 90.50° 90.00°	Depositor
Resolution (Å)	30.00 – 2.50 29.30 – 2.49	Depositor EDS
% Data completeness (in resolution range)	91.8 (30.00-2.50) 95.7 (29.30-2.49)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.82 (at 2.51Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.259 , 0.297 0.262 , 0.303	Depositor DCC
R_{free} test set	3640 reflections (9.66%)	wwPDB-VP
Wilson B-factor (Å^2)	39.6	Xtriage
Anisotropy	0.738	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 68.2	EDS
L-test for twinning[2]	$< |L| > = 0.51, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.043 for h,-k,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	5216	wwPDB-VP
Average B, all atoms (Å^2)	63.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.25% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: PB

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	0.44	0/2335	0.61	0/3148
2	B	0.46	1/2306 (0.0%)	0.62	0/3114
All	All	0.45	1/4641 (0.0%)	0.62	0/6262

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	224	MET	C-O	5.01	1.32	1.23

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	2329	0	2305	288	0
2	B	2301	0	2263	286	0
3	A	2	0	0	0	0
4	A	318	0	0	166	1
4	B	266	0	0	169	1
All	All	5216	0	4568	528	1

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 57.

All (528) 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:408:GLU:HB3	4:A:2236:HOH:O	1.43	1.19
2:B:342:GLY:HA3	4:B:2114:HOH:O	1.38	1.19
1:A:355:ALA:HB2	4:A:2163:HOH:O	1.43	1.18
2:B:261:ASN:HB3	4:B:2034:HOH:O	1.41	1.17
1:A:390:LYS:HB3	4:A:2212:HOH:O	1.46	1.15
1:A:279:GLY:HA2	4:A:2040:HOH:O	1.46	1.14
2:B:246:GLU:HB2	4:B:2010:HOH:O	1.46	1.14
1:A:449:GLU:HB3	4:A:2260:HOH:O	1.47	1.13
2:B:319:ILE:HD11	4:B:2079:HOH:O	1.47	1.12
2:B:393:GLU:HG3	4:B:2144:HOH:O	1.48	1.12
2:B:463:GLU:HA	4:B:2216:HOH:O	1.46	1.12
1:A:354:ASN:HB3	4:A:2170:HOH:O	1.47	1.11
1:A:390:LYS:HA	4:A:2215:HOH:O	1.48	1.11
4:A:2020:HOH:O	2:B:496:ARG:HD3	1.49	1.11
1:A:467:ALA:HB3	4:A:2273:HOH:O	1.51	1.10
4:A:2270:HOH:O	2:B:290:ILE:HD11	1.50	1.09
2:B:361:ASN:HA	4:B:2143:HOH:O	1.53	1.08
2:B:350:VAL:HG22	4:B:2181:HOH:O	1.52	1.08
1:A:318:VAL:HG11	4:B:2203:HOH:O	1.53	1.07
4:A:2063:HOH:O	2:B:454:MET:HG3	1.54	1.07
2:B:298:ALA:HA	4:B:2212:HOH:O	1.55	1.06
2:B:374:ALA:HB3	4:B:2156:HOH:O	1.55	1.05
1:A:430:GLY:HA2	4:A:2250:HOH:O	1.57	1.05
2:B:239:GLU:HG3	4:B:2008:HOH:O	1.56	1.05
2:B:346:ILE:HB	4:B:2120:HOH:O	1.55	1.05
1:A:319:ILE:HG22	4:A:2251:HOH:O	1.53	1.04
2:B:526:ALA:HB1	4:B:2260:HOH:O	1.56	1.02
1:A:330:LYS:HA	4:A:2112:HOH:O	1.57	1.02
1:A:306:GLN:HG2	4:A:2074:HOH:O	1.58	1.01
1:A:429:GLU:HB3	4:A:2244:HOH:O	1.62	0.99
1:A:377:ALA:HB3	4:A:2203:HOH:O	1.63	0.97
2:B:515:ARG:HA	4:B:2250:HOH:O	1.63	0.97
1:A:414:GLU:HB3	4:A:2238:HOH:O	1.63	0.97
1:A:263:SER:HB2	4:A:2023:HOH:O	1.63	0.97
1:A:257:LYS:HD3	4:A:2022:HOH:O	1.62	0.96
2:B:317:LYS:HD3	4:B:2081:HOH:O	1.64	0.96
1:A:334:ARG:HD3	4:A:2124:HOH:O	1.67	0.95
1:A:420:SER:HB3	4:A:2241:HOH:O	1.65	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:398:ALA:HB2	4:B:2179:HOH:O	1.66	0.95
1:A:325:ILE:HB	4:A:2095:HOH:O	1.65	0.95
2:B:226:ASP:HA	2:B:229:THR:HG22	1.47	0.95
2:B:244:ALA:HB2	4:B:2015:HOH:O	1.69	0.93
1:A:345:GLU:HB3	4:A:2152:HOH:O	1.67	0.93
2:B:265:ARG:HG2	4:B:2036:HOH:O	1.69	0.93
1:A:412:ILE:HD11	4:B:2106:HOH:O	1.68	0.92
1:A:454:MET:HG2	4:B:2059:HOH:O	1.68	0.92
2:B:413:ALA:HB3	4:B:2194:HOH:O	1.69	0.91
2:B:497:LEU:HD13	4:B:2026:HOH:O	1.71	0.89
1:A:490:VAL:HG11	4:A:2023:HOH:O	1.73	0.88
1:A:447:ALA:HA	4:B:2065:HOH:O	1.73	0.88
4:A:2056:HOH:O	2:B:454:MET:HE3	1.71	0.88
1:A:475:ALA:HA	4:A:2278:HOH:O	1.74	0.87
2:B:406:VAL:HG23	4:B:2185:HOH:O	1.72	0.87
1:A:427:VAL:HG22	4:A:2095:HOH:O	1.75	0.87
2:B:299:SER:HB3	4:B:2062:HOH:O	1.74	0.86
2:B:316:LYS:HA	4:B:2080:HOH:O	1.74	0.86
2:B:402:VAL:HG13	4:B:2185:HOH:O	1.74	0.86
1:A:224:MET:HB3	4:A:2001:HOH:O	1.76	0.85
2:B:481:LYS:HE3	4:B:2230:HOH:O	1.74	0.85
2:B:310:GLU:HA	2:B:313:ASP:HB2	1.57	0.85
2:B:294:ALA:HB2	2:B:458:ILE:HD11	1.56	0.85
1:A:225:LYS:HD3	4:A:2001:HOH:O	1.78	0.84
1:A:366:ASN:HB3	4:A:2184:HOH:O	1.78	0.83
2:B:253:LEU:HD12	4:B:2027:HOH:O	1.76	0.83
2:B:322:THR:HG23	2:B:427:VAL:HG22	1.60	0.83
1:A:350:VAL:HG12	4:A:2162:HOH:O	1.78	0.83
2:B:270:SER:HB2	4:B:2039:HOH:O	1.79	0.83
4:A:2219:HOH:O	2:B:236:GLU:HG2	1.79	0.83
2:B:355:ALA:HB1	4:B:2139:HOH:O	1.77	0.83
1:A:354:ASN:HB3	4:A:2164:HOH:O	1.78	0.83
2:B:515:ARG:HG3	4:B:2250:HOH:O	1.79	0.83
1:A:342:GLY:HA2	4:A:2152:HOH:O	1.78	0.82
2:B:316:LYS:HG3	4:B:2079:HOH:O	1.78	0.82
2:B:367:ALA:HB1	4:B:2147:HOH:O	1.79	0.81
2:B:526:ALA:HB2	4:B:2256:HOH:O	1.80	0.81
4:A:2040:HOH:O	2:B:468:ALA:HB1	1.79	0.81
1:A:228:GLN:HG3	1:A:525:VAL:HG21	1.64	0.79
1:A:454:MET:CG	4:B:2059:HOH:O	2.26	0.79
1:A:433:LEU:HB3	4:A:2250:HOH:O	1.82	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:485:GLU:HB3	4:B:2036:HOH:O	1.82	0.79
1:A:369:ILE:HD13	4:A:2154:HOH:O	1.82	0.79
2:B:500:ILE:HG13	4:B:2242:HOH:O	1.82	0.79
2:B:522:LYS:CG	4:B:2061:HOH:O	2.30	0.78
1:A:500:ILE:HG22	4:A:2297:HOH:O	1.83	0.78
2:B:225:LYS:CB	4:B:2002:HOH:O	2.30	0.78
2:B:507:VAL:CG2	4:B:2016:HOH:O	2.31	0.78
2:B:522:LYS:HG3	4:B:2061:HOH:O	1.84	0.78
1:A:317:LYS:HG3	4:A:2081:HOH:O	1.85	0.77
1:A:369:ILE:CD1	4:A:2154:HOH:O	2.31	0.77
1:A:402:VAL:HG23	2:B:346:ILE:CD1	2.15	0.77
2:B:244:ALA:O	2:B:248:ILE:HG12	1.85	0.77
1:A:475:ALA:CA	4:A:2278:HOH:O	2.30	0.77
2:B:316:LYS:CA	4:B:2080:HOH:O	2.31	0.76
1:A:252:LEU:HD21	4:A:2297:HOH:O	1.85	0.76
2:B:270:SER:CB	4:B:2039:HOH:O	2.34	0.75
1:A:353:ILE:HD11	2:B:398:ALA:HB3	1.68	0.75
2:B:350:VAL:HA	4:B:2131:HOH:O	1.86	0.75
1:A:402:VAL:HG23	2:B:346:ILE:HD11	1.69	0.74
1:A:503:SER:HB2	2:B:248:ILE:HD11	1.70	0.73
2:B:522:LYS:HB2	4:B:2061:HOH:O	1.87	0.73
1:A:332:VAL:CG2	4:A:2109:HOH:O	2.36	0.73
2:B:440:LYS:NZ	4:B:2206:HOH:O	2.20	0.73
2:B:267:GLU:HG2	4:B:2038:HOH:O	1.89	0.72
1:A:227:VAL:HG22	4:A:2006:HOH:O	1.89	0.72
2:B:481:LYS:CE	4:B:2229:HOH:O	2.37	0.72
2:B:223:HIS:C	2:B:225:LYS:H	1.90	0.72
2:B:244:ALA:CA	4:B:2015:HOH:O	2.37	0.72
1:A:346:ILE:HG13	4:A:2152:HOH:O	1.89	0.72
1:A:354:ASN:CB	4:A:2164:HOH:O	2.33	0.72
1:A:363:LEU:HD21	2:B:387:GLU:HG3	1.71	0.72
2:B:420:SER:HB2	4:B:2200:HOH:O	1.88	0.72
1:A:353:ILE:HD11	2:B:398:ALA:CB	2.20	0.72
1:A:273:VAL:HG22	1:A:476:MET:HE3	1.71	0.71
1:A:377:ALA:CA	4:A:2203:HOH:O	2.37	0.71
1:A:485:GLU:CB	4:B:2036:HOH:O	2.36	0.70
2:B:396:GLN:HG2	2:B:397:GLN:HE21	1.56	0.70
1:A:235:ALA:C	4:A:2008:HOH:O	2.29	0.70
1:A:268:SER:HB3	4:A:2033:HOH:O	1.91	0.70
2:B:228:GLN:HA	2:B:231:THR:HG22	1.72	0.70
1:A:385:ALA:C	4:A:2183:HOH:O	2.30	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:297:ALA:N	4:B:2059:HOH:O	2.25	0.70
1:A:295:GLN:NE2	4:A:2055:HOH:O	2.25	0.70
1:A:399:SER:HA	1:A:402:VAL:HG12	1.74	0.70
2:B:504:THR:HA	4:B:2016:HOH:O	1.90	0.69
2:B:369:ILE:HG13	4:B:2146:HOH:O	1.91	0.69
1:A:475:ALA:CB	4:A:2278:HOH:O	2.40	0.69
1:A:351:GLU:N	4:A:2162:HOH:O	2.25	0.69
2:B:329:ALA:HB2	2:B:423:ILE:HG21	1.75	0.69
1:A:268:SER:CB	4:A:2033:HOH:O	2.41	0.69
2:B:512:GLN:HG2	4:B:2251:HOH:O	1.92	0.68
1:A:331:ASP:HB2	2:B:419:VAL:HG11	1.74	0.68
1:A:510:ARG:NE	4:A:2303:HOH:O	2.26	0.68
2:B:351:GLU:HB3	4:B:2119:HOH:O	1.92	0.68
1:A:454:MET:SD	4:B:2059:HOH:O	2.50	0.68
2:B:265:ARG:NE	4:B:2036:HOH:O	2.25	0.68
1:A:329:ALA:HA	4:A:2109:HOH:O	1.92	0.68
2:B:414:GLU:N	4:B:2194:HOH:O	2.27	0.68
2:B:238:ILE:HD11	2:B:511:VAL:O	1.93	0.68
1:A:317:LYS:CG	4:A:2081:HOH:O	2.41	0.68
2:B:515:ARG:CA	4:B:2250:HOH:O	2.31	0.67
1:A:344:GLU:O	1:A:348:SER:HB2	1.94	0.67
1:A:297:ALA:N	4:A:2063:HOH:O	2.27	0.67
2:B:351:GLU:HG2	4:B:2133:HOH:O	1.94	0.67
2:B:379:ARG:NH2	4:B:2157:HOH:O	2.27	0.67
2:B:244:ALA:CB	4:B:2015:HOH:O	2.34	0.67
2:B:316:LYS:HD2	4:B:2080:HOH:O	1.93	0.67
1:A:368:ALA:HB2	4:A:2183:HOH:O	1.93	0.67
2:B:265:ARG:CG	4:B:2036:HOH:O	2.34	0.67
2:B:311:ALA:HB1	2:B:441:LEU:HD21	1.77	0.67
2:B:481:LYS:HE2	4:B:2229:HOH:O	1.95	0.67
2:B:497:LEU:HD22	4:B:2026:HOH:O	1.94	0.67
1:A:442:ASN:ND2	4:A:2257:HOH:O	2.27	0.67
2:B:420:SER:CB	4:B:2200:HOH:O	2.42	0.67
2:B:466:ASN:ND2	4:B:2220:HOH:O	2.27	0.67
1:A:408:GLU:O	1:A:412:ILE:HG12	1.96	0.66
2:B:418:LYS:HG3	2:B:422:GLU:HB2	1.77	0.66
1:A:491:LYS:NZ	4:A:2288:HOH:O	2.28	0.66
1:A:223:HIS:CE1	4:A:2002:HOH:O	2.47	0.66
1:A:342:GLY:CA	4:A:2152:HOH:O	2.40	0.66
2:B:317:LYS:HA	4:B:2081:HOH:O	1.95	0.66
1:A:428:GLU:HA	1:A:431:THR:HG22	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:265:ARG:NH1	4:B:2034:HOH:O	2.28	0.66
1:A:475:ALA:HB2	4:A:2278:HOH:O	1.95	0.66
2:B:238:ILE:CD1	4:B:2250:HOH:O	2.43	0.65
1:A:378:GLY:N	4:A:2203:HOH:O	2.29	0.65
1:A:462:ILE:N	4:A:2270:HOH:O	2.29	0.65
1:A:522:LYS:O	1:A:525:VAL:HG12	1.97	0.65
1:A:252:LEU:CD2	4:A:2297:HOH:O	2.42	0.65
2:B:316:LYS:N	4:B:2080:HOH:O	2.27	0.65
1:A:420:SER:CB	4:A:2241:HOH:O	2.35	0.64
1:A:227:VAL:CG2	4:A:2006:HOH:O	2.45	0.64
1:A:347:THR:O	1:A:351:GLU:HG2	1.96	0.64
2:B:315:LEU:C	4:B:2080:HOH:O	2.35	0.64
1:A:282:GLU:CD	4:A:2044:HOH:O	2.36	0.64
2:B:398:ALA:N	4:B:2179:HOH:O	2.31	0.64
2:B:284:SER:O	2:B:287:THR:HG22	1.98	0.63
1:A:505:GLU:HG3	4:A:2298:HOH:O	1.98	0.63
2:B:330:LYS:HA	4:B:2095:HOH:O	1.97	0.63
1:A:377:ALA:N	4:A:2203:HOH:O	2.31	0.63
1:A:488:ASN:ND2	4:A:2287:HOH:O	2.31	0.63
1:A:451:ILE:CD1	4:B:2068:HOH:O	2.47	0.63
4:A:2180:HOH:O	2:B:360:THR:HG21	1.98	0.63
2:B:279:GLY:O	2:B:283:ILE:HG12	1.98	0.63
2:B:439:GLU:HA	2:B:442:ASN:OD1	1.98	0.63
1:A:416:ALA:HA	4:A:2239:HOH:O	1.98	0.63
2:B:238:ILE:HD12	4:B:2250:HOH:O	1.98	0.63
2:B:410:ARG:NH1	4:B:2192:HOH:O	2.30	0.63
1:A:503:SER:HB2	2:B:248:ILE:CD1	2.29	0.62
1:A:515:ARG:HB2	4:A:2009:HOH:O	1.98	0.62
1:A:385:ALA:HB1	4:A:2183:HOH:O	1.99	0.62
1:A:355:ALA:N	4:A:2170:HOH:O	2.31	0.62
1:A:496:ARG:HD2	1:A:496:ARG:N	2.15	0.61
1:A:507:VAL:HG13	2:B:241:ILE:HG13	1.82	0.61
1:A:259:MET:CE	1:A:493:VAL:HG11	2.29	0.61
1:A:432:LYS:HE3	4:A:2253:HOH:O	2.00	0.61
1:A:527:ARG:HG3	1:A:528:TYR:CD1	2.35	0.61
2:B:243:LYS:HG2	4:B:2020:HOH:O	1.99	0.61
1:A:237:SER:CB	2:B:514:ILE:HD11	2.30	0.61
2:B:497:LEU:CD1	4:B:2026:HOH:O	2.38	0.61
1:A:244:ALA:HB2	2:B:506:GLU:HG2	1.83	0.61
1:A:369:ILE:CG2	4:A:2185:HOH:O	2.47	0.61
1:A:377:ALA:CB	4:A:2203:HOH:O	2.30	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:416:ALA:O	1:A:419:VAL:HG22	2.01	0.60
2:B:361:ASN:ND2	4:B:2144:HOH:O	2.33	0.60
1:A:332:VAL:HG23	4:A:2109:HOH:O	1.98	0.60
1:A:354:ASN:C	4:A:2170:HOH:O	2.39	0.60
2:B:301:ALA:C	4:B:2063:HOH:O	2.39	0.60
1:A:433:LEU:HD22	4:A:2250:HOH:O	2.00	0.60
1:A:471:GLU:HB2	4:B:2047:HOH:O	2.02	0.60
1:A:257:LYS:NZ	4:A:2022:HOH:O	2.34	0.60
1:A:317:LYS:CD	4:A:2081:HOH:O	2.50	0.59
2:B:510:ARG:O	2:B:514:ILE:HD13	2.03	0.59
1:A:451:ILE:HD12	4:B:2068:HOH:O	2.02	0.59
2:B:495:ALA:HA	4:B:2238:HOH:O	2.02	0.59
1:A:412:ILE:HD12	2:B:334:ARG:NH1	2.17	0.59
2:B:226:ASP:HA	2:B:229:THR:CG2	2.28	0.59
1:A:433:LEU:CB	4:A:2250:HOH:O	2.46	0.59
1:A:522:LYS:HG2	4:A:2313:HOH:O	2.02	0.59
2:B:507:VAL:HG21	4:B:2016:HOH:O	1.97	0.59
1:A:326:SER:HB2	4:A:2102:HOH:O	2.02	0.59
2:B:408:GLU:O	2:B:412:ILE:HG12	2.03	0.59
2:B:267:GLU:HG2	4:B:2037:HOH:O	2.01	0.59
2:B:452:ASN:ND2	4:B:2212:HOH:O	2.36	0.59
1:A:343:ALA:O	1:A:347:THR:HB	2.03	0.58
1:A:313:ASP:O	1:A:317:LYS:HD3	2.03	0.58
1:A:363:LEU:HD23	2:B:388:ILE:HG13	1.85	0.58
1:A:422:GLU:HG3	4:A:2242:HOH:O	2.03	0.58
2:B:329:ALA:CB	2:B:423:ILE:HG21	2.33	0.58
2:B:466:ASN:HA	4:B:2220:HOH:O	2.02	0.58
1:A:289:ASN:ND2	4:A:2050:HOH:O	2.36	0.58
1:A:296:GLN:C	4:A:2063:HOH:O	2.41	0.58
2:B:223:HIS:ND1	4:B:2002:HOH:O	2.32	0.58
2:B:410:ARG:HG3	2:B:410:ARG:HH11	1.69	0.58
2:B:434:ALA:N	4:B:2203:HOH:O	2.35	0.58
1:A:318:VAL:CG1	4:B:2203:HOH:O	2.28	0.58
1:A:525:VAL:N	4:A:2312:HOH:O	2.36	0.58
2:B:346:ILE:CB	4:B:2120:HOH:O	2.31	0.58
2:B:378:GLY:N	4:B:2156:HOH:O	2.36	0.58
1:A:248:ILE:HD13	4:B:2242:HOH:O	2.04	0.58
1:A:321:VAL:O	1:A:325:ILE:HG12	2.04	0.58
1:A:417:GLY:CA	4:A:2116:HOH:O	2.52	0.58
1:A:417:GLY:HA3	4:A:2116:HOH:O	2.03	0.58
2:B:398:ALA:CA	4:B:2179:HOH:O	2.52	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:332:VAL:O	1:A:336:VAL:HG23	2.04	0.57
1:A:436:GLU:O	1:A:440:LYS:HG2	2.04	0.57
1:A:493:VAL:HG13	2:B:255:ILE:HD12	1.84	0.57
1:A:522:LYS:CD	4:A:2313:HOH:O	2.51	0.57
2:B:222:SER:N	4:B:2001:HOH:O	2.37	0.57
1:A:433:LEU:HD21	2:B:317:LYS:HB3	1.85	0.57
2:B:275:GLU:CG	4:B:2047:HOH:O	2.51	0.57
1:A:429:GLU:N	4:A:2244:HOH:O	2.37	0.57
1:A:507:VAL:O	1:A:511:VAL:HG23	2.04	0.57
2:B:522:LYS:CB	4:B:2061:HOH:O	2.44	0.57
2:B:526:ALA:CB	4:B:2260:HOH:O	2.33	0.57
1:A:426:ARG:NH1	4:A:2246:HOH:O	2.36	0.57
1:A:339:PHE:CE1	2:B:409:ILE:HG23	2.40	0.57
1:A:356:ILE:HG22	4:A:2171:HOH:O	2.05	0.57
1:A:462:ILE:HG13	4:A:2270:HOH:O	2.04	0.57
1:A:267:GLU:HA	4:A:2029:HOH:O	2.03	0.57
1:A:325:ILE:HD11	2:B:426:ARG:HB3	1.85	0.57
1:A:399:SER:HA	1:A:402:VAL:CG1	2.35	0.57
2:B:441:LEU:HD12	2:B:444:ILE:HG21	1.86	0.57
1:A:394:GLU:HG3	4:A:2167:HOH:O	2.05	0.56
2:B:273:VAL:HG22	2:B:476:MET:HE3	1.87	0.56
2:B:346:ILE:CA	4:B:2120:HOH:O	2.53	0.56
2:B:364:ALA:HB3	4:B:2143:HOH:O	2.05	0.56
1:A:318:VAL:HG12	2:B:433:LEU:HB2	1.85	0.56
2:B:255:ILE:HB	4:B:2026:HOH:O	2.03	0.56
2:B:398:ALA:O	2:B:402:VAL:HG23	2.06	0.56
1:A:523:GLU:HB2	4:A:2311:HOH:O	2.05	0.56
2:B:321:VAL:O	2:B:325:ILE:HG22	2.06	0.55
1:A:334:ARG:CD	4:A:2124:HOH:O	2.38	0.55
1:A:339:PHE:HE1	2:B:409:ILE:HG23	1.71	0.55
1:A:366:ASN:ND2	4:A:2185:HOH:O	2.38	0.55
1:A:385:ALA:CB	4:A:2183:HOH:O	2.53	0.55
1:A:462:ILE:CA	4:A:2270:HOH:O	2.55	0.55
2:B:346:ILE:N	4:B:2120:HOH:O	2.39	0.55
2:B:423:ILE:HG22	2:B:424:THR:N	2.20	0.55
2:B:517:ASN:ND2	4:B:2254:HOH:O	2.33	0.55
2:B:330:LYS:CA	4:B:2095:HOH:O	2.55	0.55
1:A:498:GLN:HG2	4:A:2295:HOH:O	2.06	0.55
2:B:515:ARG:O	2:B:518:VAL:HG12	2.07	0.55
1:A:315:LEU:O	1:A:318:VAL:HG22	2.07	0.55
2:B:248:ILE:HG21	4:B:2242:HOH:O	2.06	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:396:GLN:HG3	4:B:2177:HOH:O	2.07	0.54
1:A:528:TYR:OH	2:B:223:HIS:HB2	2.07	0.54
2:B:238:ILE:HD13	2:B:515:ARG:HG3	1.90	0.54
2:B:484:GLU:HG2	4:B:2231:HOH:O	2.05	0.54
1:A:237:SER:HB2	2:B:514:ILE:HD11	1.90	0.54
2:B:326:SER:HB2	4:B:2089:HOH:O	2.07	0.54
2:B:507:VAL:HB	4:B:2016:HOH:O	2.08	0.54
1:A:517:ASN:OD1	2:B:233:SER:HB3	2.08	0.54
1:A:522:LYS:HD2	4:A:2313:HOH:O	2.07	0.53
2:B:343:ALA:O	2:B:346:ILE:HG22	2.08	0.53
1:A:305:THR:O	1:A:309:LYS:HG2	2.08	0.53
2:B:255:ILE:O	2:B:259:MET:HB2	2.09	0.53
2:B:434:ALA:CA	4:B:2203:HOH:O	2.56	0.53
2:B:434:ALA:HA	4:B:2203:HOH:O	2.08	0.53
2:B:455:LEU:CD2	4:B:2212:HOH:O	2.56	0.53
1:A:251:GLN:HG3	4:A:2020:HOH:O	2.08	0.53
1:A:404:ARG:HG3	4:A:2234:HOH:O	2.09	0.53
2:B:402:VAL:CG1	4:B:2185:HOH:O	2.41	0.53
2:B:526:ALA:CA	4:B:2260:HOH:O	2.55	0.53
2:B:507:VAL:O	2:B:511:VAL:HG23	2.08	0.52
1:A:227:VAL:HA	4:A:2006:HOH:O	2.09	0.52
1:A:283:ILE:O	1:A:287:THR:HG23	2.08	0.52
4:A:2040:HOH:O	2:B:468:ALA:CB	2.49	0.52
2:B:223:HIS:C	2:B:225:LYS:N	2.63	0.52
1:A:248:ILE:CD1	4:B:2242:HOH:O	2.57	0.52
1:A:331:ASP:HB2	2:B:419:VAL:CG1	2.40	0.52
1:A:366:ASN:O	1:A:370:GLU:HB2	2.10	0.52
1:A:426:ARG:HA	1:A:429:GLU:HG2	1.91	0.52
4:A:2020:HOH:O	2:B:496:ARG:CD	2.28	0.52
1:A:248:ILE:HG23	2:B:500:ILE:HD12	1.91	0.52
2:B:527:ARG:NH2	4:B:2263:HOH:O	2.36	0.52
1:A:258:GLU:HG3	2:B:489:SER:HB3	1.92	0.52
4:A:2142:HOH:O	2:B:412:ILE:HD11	2.09	0.52
1:A:237:SER:HB3	2:B:514:ILE:HD11	1.92	0.51
1:A:330:LYS:CA	4:A:2112:HOH:O	2.36	0.51
1:A:462:ILE:HA	4:A:2270:HOH:O	2.10	0.51
2:B:405:VAL:HG23	4:B:2185:HOH:O	2.10	0.51
2:B:524:ILE:CD1	2:B:527:ARG:HH11	2.23	0.51
2:B:226:ASP:O	2:B:230:GLU:HB2	2.10	0.51
2:B:317:LYS:CD	4:B:2081:HOH:O	2.39	0.51
1:A:404:ARG:O	1:A:408:GLU:HG3	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:393:GLU:HG2	4:B:2172:HOH:O	2.09	0.51
1:A:223:HIS:HE1	4:A:2002:HOH:O	1.88	0.51
1:A:369:ILE:HG21	4:A:2185:HOH:O	2.10	0.51
2:B:381:PHE:HA	2:B:384:VAL:HG22	1.93	0.51
2:B:470:ASP:O	2:B:474:THR:HG22	2.11	0.51
2:B:433:LEU:C	4:B:2203:HOH:O	2.48	0.51
2:B:320:GLU:HA	2:B:323:ARG:HG3	1.93	0.51
2:B:455:LEU:HD23	4:B:2212:HOH:O	2.11	0.51
2:B:246:GLU:HA	2:B:249:THR:HG22	1.91	0.50
1:A:257:LYS:CD	4:A:2022:HOH:O	2.39	0.50
1:A:501:SER:HA	4:A:2297:HOH:O	2.11	0.50
2:B:350:VAL:CA	4:B:2131:HOH:O	2.53	0.50
2:B:416:ALA:O	2:B:419:VAL:HG22	2.11	0.50
1:A:259:MET:HE3	1:A:493:VAL:HG11	1.92	0.50
1:A:463:GLU:O	1:A:466:THR:HG22	2.11	0.50
2:B:235:ALA:HB2	2:B:518:VAL:HG21	1.94	0.50
2:B:247:GLU:HB3	4:B:2019:HOH:O	2.10	0.50
1:A:240:GLU:HA	1:A:243:LYS:HE2	1.93	0.50
2:B:246:GLU:O	2:B:249:THR:HG22	2.12	0.50
2:B:317:LYS:CA	4:B:2081:HOH:O	2.56	0.50
2:B:248:ILE:CG2	2:B:500:ILE:HD11	2.42	0.50
1:A:235:ALA:CB	4:A:2008:HOH:O	2.60	0.50
1:A:349:PHE:O	1:A:353:ILE:HG12	2.12	0.49
2:B:295:GLN:O	2:B:298:ALA:HB3	2.12	0.49
1:A:390:LYS:CA	4:A:2215:HOH:O	2.27	0.49
1:A:402:VAL:CG2	2:B:346:ILE:HD11	2.41	0.49
2:B:275:GLU:CD	4:B:2047:HOH:O	2.50	0.49
2:B:287:THR:HG21	4:B:2220:HOH:O	2.11	0.49
2:B:414:GLU:HG2	4:B:2194:HOH:O	2.13	0.49
1:A:365:LEU:HG	1:A:389:ARG:HD3	1.95	0.49
2:B:401:ASN:N	2:B:401:ASN:HD22	2.09	0.49
2:B:482:ASN:N	4:B:2230:HOH:O	2.45	0.49
1:A:271:ALA:HB2	4:A:2032:HOH:O	2.13	0.49
1:A:453:GLU:HG2	4:A:2268:HOH:O	2.12	0.49
1:A:234:VAL:HG12	2:B:517:ASN:HB3	1.95	0.49
1:A:273:VAL:HA	1:A:476:MET:HE3	1.95	0.49
1:A:522:LYS:CG	4:A:2313:HOH:O	2.60	0.49
1:A:528:TYR:CE2	2:B:223:HIS:HB3	2.48	0.49
2:B:322:THR:HG23	2:B:427:VAL:CG2	2.35	0.49
1:A:261:ASN:HB3	1:A:265:ARG:HH11	1.78	0.49
1:A:451:ILE:HD11	4:B:2068:HOH:O	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:251:GLN:NE2	4:A:2020:HOH:O	2.20	0.48
1:A:412:ILE:HD12	2:B:334:ARG:HH12	1.78	0.48
1:A:450:ARG:HD3	2:B:300:PHE:CE2	2.49	0.48
1:A:515:ARG:CB	4:A:2009:HOH:O	2.58	0.48
1:A:272:SER:HA	1:A:275:GLU:OE2	2.14	0.48
2:B:273:VAL:HG13	2:B:476:MET:HG3	1.94	0.48
1:A:235:ALA:HB2	1:A:518:VAL:HG21	1.96	0.48
1:A:350:VAL:C	4:A:2162:HOH:O	2.49	0.48
1:A:395:SER:OG	2:B:356:ILE:HG21	2.13	0.48
2:B:257:LYS:HD3	4:B:2028:HOH:O	2.12	0.48
2:B:317:LYS:CG	4:B:2081:HOH:O	2.59	0.48
2:B:375:GLY:C	2:B:377:ALA:H	2.16	0.48
2:B:468:ALA:O	2:B:472:ILE:HG13	2.13	0.48
2:B:497:LEU:CD2	4:B:2026:HOH:O	2.56	0.48
2:B:484:GLU:CG	4:B:2231:HOH:O	2.62	0.48
2:B:243:LYS:NZ	4:B:2007:HOH:O	2.45	0.48
1:A:235:ALA:HB2	1:A:518:VAL:CG2	2.44	0.48
2:B:297:ALA:CA	4:B:2059:HOH:O	2.62	0.47
2:B:390:LYS:CB	4:B:2163:HOH:O	2.62	0.47
1:A:278:ALA:O	1:A:282:GLU:HG3	2.13	0.47
2:B:347:THR:O	2:B:350:VAL:HB	2.14	0.47
1:A:485:GLU:HB2	4:B:2036:HOH:O	2.07	0.47
2:B:445:VAL:O	2:B:449:GLU:HB2	2.15	0.47
2:B:405:VAL:CG2	4:B:2185:HOH:O	2.62	0.47
1:A:337:GLU:HA	1:A:340:GLN:HB3	1.97	0.47
2:B:323:ARG:NH2	4:B:2090:HOH:O	2.47	0.47
2:B:381:PHE:N	2:B:381:PHE:CD2	2.80	0.47
1:A:379:ARG:HD3	4:A:2205:HOH:O	2.13	0.47
1:A:409:ILE:HG13	4:B:2114:HOH:O	2.15	0.47
2:B:507:VAL:HG21	4:B:2017:HOH:O	2.14	0.47
1:A:431:THR:HG23	1:A:432:LYS:N	2.30	0.47
1:A:517:ASN:O	1:A:521:LEU:HG	2.14	0.47
2:B:423:ILE:HD13	2:B:423:ILE:HA	1.73	0.47
1:A:440:LYS:HD2	2:B:307:LEU:HD22	1.97	0.47
1:A:319:ILE:HG21	4:A:2255:HOH:O	2.14	0.47
2:B:526:ALA:C	4:B:2260:HOH:O	2.53	0.47
2:B:223:HIS:CE1	4:B:2002:HOH:O	2.68	0.46
2:B:238:ILE:HD13	4:B:2250:HOH:O	2.12	0.46
1:A:319:ILE:H	1:A:319:ILE:HG12	1.54	0.46
2:B:389:ARG:HA	4:B:2143:HOH:O	2.15	0.46
2:B:441:LEU:O	2:B:444:ILE:HG23	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:425:ALA:O	2:B:428:GLU:HB3	2.16	0.46
1:A:390:LYS:C	4:A:2212:HOH:O	2.53	0.46
2:B:244:ALA:HA	4:B:2015:HOH:O	2.11	0.46
2:B:497:LEU:O	2:B:500:ILE:HG23	2.16	0.46
2:B:504:THR:HG22	4:B:2244:HOH:O	2.15	0.46
2:B:303:GLN:NE2	4:B:2065:HOH:O	2.49	0.45
2:B:487:THR:HG23	4:B:2032:HOH:O	2.17	0.45
2:B:409:ILE:O	2:B:412:ILE:HB	2.16	0.45
2:B:437:ALA:O	2:B:441:LEU:HB2	2.17	0.45
1:A:515:ARG:HD3	4:A:2009:HOH:O	2.15	0.45
1:A:329:ALA:HB1	1:A:423:ILE:HD12	1.99	0.45
1:A:327:ASN:O	1:A:330:LYS:HB3	2.17	0.45
1:A:318:VAL:HG12	2:B:433:LEU:CB	2.47	0.45
2:B:265:ARG:O	2:B:269:ILE:HG12	2.17	0.45
2:B:481:LYS:CE	4:B:2230:HOH:O	2.48	0.45
1:A:243:LYS:NZ	4:A:2016:HOH:O	2.47	0.45
1:A:283:ILE:HD11	2:B:468:ALA:HB3	1.99	0.44
1:A:303:GLN:O	1:A:307:LEU:HG	2.16	0.44
1:A:511:VAL:HG11	4:A:2014:HOH:O	2.17	0.44
1:A:441:LEU:O	1:A:444:ILE:HG12	2.17	0.44
2:B:424:THR:HA	2:B:427:VAL:HG12	1.98	0.44
2:B:441:LEU:HD12	2:B:444:ILE:CG2	2.46	0.44
1:A:266:ILE:HD13	1:A:266:ILE:HA	1.81	0.44
1:A:358:GLU:CG	4:A:2178:HOH:O	2.65	0.44
2:B:294:ALA:CB	2:B:458:ILE:HD11	2.37	0.44
1:A:323:ARG:HD3	4:A:2102:HOH:O	2.16	0.44
2:B:419:VAL:O	2:B:423:ILE:HG12	2.17	0.44
1:A:441:LEU:O	1:A:445:VAL:HG23	2.17	0.44
1:A:516:GLU:HG3	1:A:517:ASN:N	2.33	0.44
2:B:230:GLU:O	2:B:234:VAL:HG13	2.18	0.44
1:A:295:GLN:HG2	4:A:2055:HOH:O	2.18	0.44
2:B:481:LYS:C	4:B:2230:HOH:O	2.55	0.44
1:A:243:LYS:CE	4:A:2016:HOH:O	2.65	0.44
1:A:447:ALA:CB	4:B:2065:HOH:O	2.65	0.44
4:A:2003:HOH:O	2:B:224:MET:HG3	2.18	0.44
2:B:505:GLU:O	2:B:508:THR:HG22	2.18	0.44
1:A:273:VAL:HG13	1:A:476:MET:HG3	1.99	0.43
1:A:454:MET:HG2	2:B:293:SER:O	2.17	0.43
2:B:288:LYS:NZ	4:B:2054:HOH:O	2.39	0.43
2:B:322:THR:HG21	2:B:431:THR:OG1	2.18	0.43
1:A:250:ASN:ND2	4:A:2019:HOH:O	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:411:SER:O	1:A:415:ASP:HB2	2.19	0.43
1:A:496:ARG:CB	2:B:255:ILE:HD11	2.49	0.43
1:A:359:GLN:O	1:A:363:LEU:HB2	2.18	0.43
2:B:243:LYS:HD3	4:B:2007:HOH:O	2.19	0.43
2:B:390:LYS:HB2	4:B:2163:HOH:O	2.18	0.43
1:A:243:LYS:HE3	4:A:2016:HOH:O	2.19	0.43
2:B:252:LEU:HD11	2:B:500:ILE:HD13	2.01	0.43
1:A:273:VAL:HA	1:A:476:MET:CE	2.49	0.43
2:B:473:THR:HA	4:B:2225:HOH:O	2.19	0.43
2:B:261:ASN:HD22	2:B:261:ASN:N	2.17	0.42
1:A:496:ARG:HB2	2:B:255:ILE:HD11	2.01	0.42
2:B:481:LYS:HB3	4:B:2230:HOH:O	2.19	0.42
1:A:332:VAL:HG21	4:A:2109:HOH:O	2.11	0.42
1:A:233:SER:HB3	2:B:517:ASN:OD1	2.20	0.42
1:A:315:LEU:HD21	2:B:315:LEU:HD21	2.01	0.42
1:A:323:ARG:HD3	1:A:323:ARG:HA	1.72	0.42
2:B:310:GLU:CA	2:B:313:ASP:HB2	2.40	0.42
2:B:315:LEU:C	2:B:317:LYS:H	2.23	0.42
2:B:384:VAL:HG23	2:B:385:ALA:N	2.35	0.42
2:B:500:ILE:CG1	4:B:2242:HOH:O	2.53	0.42
2:B:287:THR:HG21	2:B:466:ASN:ND2	2.35	0.42
1:A:323:ARG:NH2	4:A:2097:HOH:O	2.28	0.42
1:A:452:ASN:O	1:A:456:GLN:HG3	2.20	0.42
2:B:227:VAL:CG1	2:B:228:GLN:N	2.82	0.42
1:A:369:ILE:HD11	4:A:2154:HOH:O	2.12	0.42
1:A:376:GLU:O	1:A:379:ARG:HB2	2.20	0.42
1:A:399:SER:CA	1:A:402:VAL:HG12	2.48	0.42
1:A:466:THR:O	1:A:469:VAL:HG12	2.20	0.42
1:A:279:GLY:CA	4:A:2040:HOH:O	2.30	0.42
1:A:523:GLU:HG3	4:A:2311:HOH:O	2.20	0.42
2:B:398:ALA:CB	4:B:2179:HOH:O	2.38	0.42
1:A:417:GLY:HA2	4:A:2116:HOH:O	2.19	0.41
1:A:428:GLU:CA	1:A:431:THR:HG22	2.49	0.41
1:A:451:ILE:O	1:A:455:LEU:HD22	2.20	0.41
2:B:396:GLN:HG2	2:B:397:GLN:N	2.34	0.41
1:A:306:GLN:O	1:A:310:GLU:HB2	2.20	0.41
1:A:510:ARG:HA	1:A:510:ARG:HD3	1.94	0.41
1:A:288:LYS:HD3	4:A:2091:HOH:O	2.21	0.41
1:A:325:ILE:CG2	4:A:2095:HOH:O	2.68	0.41
2:B:303:GLN:O	2:B:307:LEU:HG	2.20	0.41
2:B:473:THR:HA	4:B:2224:HOH:O	2.19	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:263:SER:CB	4:A:2023:HOH:O	2.42	0.41
1:A:379:ARG:CD	4:A:2205:HOH:O	2.69	0.41
1:A:390:LYS:N	4:A:2215:HOH:O	2.47	0.41
1:A:339:PHE:CE1	2:B:339:PHE:HB3	2.55	0.41
1:A:369:ILE:HD11	4:A:2140:HOH:O	2.20	0.41
1:A:389:ARG:NH2	4:A:2215:HOH:O	2.54	0.41
2:B:231:THR:HA	2:B:234:VAL:HG22	2.03	0.41
1:A:250:ASN:ND2	4:A:2018:HOH:O	2.53	0.41
1:A:290:ILE:HG22	1:A:462:ILE:HD11	2.03	0.41
1:A:325:ILE:CB	4:A:2095:HOH:O	2.44	0.41
1:A:402:VAL:HG23	2:B:346:ILE:HD12	2.00	0.41
1:A:514:ILE:HD11	2:B:237:SER:HB2	2.02	0.41
1:A:523:GLU:CB	4:A:2311:HOH:O	2.65	0.41
2:B:244:ALA:N	4:B:2015:HOH:O	2.51	0.41
2:B:299:SER:O	2:B:302:ASP:HB2	2.21	0.41
1:A:224:MET:HG2	1:A:529:LYS:CB	2.51	0.41
1:A:255:ILE:HG22	1:A:497:LEU:HD11	2.03	0.41
1:A:447:ALA:CA	4:B:2065:HOH:O	2.47	0.41
1:A:330:LYS:C	4:A:2112:HOH:O	2.58	0.40
1:A:363:LEU:HD23	2:B:388:ILE:CG1	2.51	0.40
1:A:428:GLU:HA	1:A:431:THR:CG2	2.50	0.40
1:A:515:ARG:CG	4:A:2009:HOH:O	2.69	0.40
2:B:496:ARG:O	2:B:500:ILE:HG22	2.21	0.40
1:A:242:SER:CB	4:A:2014:HOH:O	2.69	0.40
1:A:329:ALA:CA	4:A:2109:HOH:O	2.62	0.40
2:B:371:ALA:HB1	2:B:381:PHE:HB2	2.03	0.40
2:B:441:LEU:HD12	2:B:441:LEU:HA	1.76	0.40
1:A:306:GLN:CG	4:A:2074:HOH:O	2.40	0.40
1:A:319:ILE:O	1:A:323:ARG:N	2.52	0.40
1:A:381:PHE:HZ	2:B:374:ALA:HB2	1.86	0.40
1:A:366:ASN:CG	4:A:2185:HOH:O	2.59	0.40
1:A:441:LEU:HD13	1:A:441:LEU:HA	1.91	0.40
1:A:464:GLU:HA	4:A:2273:HOH:O	2.22	0.40
1:A:291:ALA:HA	1:A:462:ILE:HD13	2.02	0.40
1:A:412:ILE:HG21	2:B:338:SER:HB2	2.04	0.40
1:A:423:ILE:O	1:A:427:VAL:HG23	2.21	0.40
2:B:247:GLU:CB	4:B:2019:HOH:O	2.69	0.40
2:B:288:LYS:HE2	2:B:288:LYS:HB3	1.94	0.40
2:B:404:ARG:CB	4:B:2188:HOH:O	2.68	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2166:HOH:O	4:B:2050:HOH:O[1_556]	1.79	0.41

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	307/309 (99%)	298 (97%)	8 (3%)	1 (0%)	41	61
2	B	306/309 (99%)	292 (95%)	13 (4%)	1 (0%)	41	61
All	All	613/618 (99%)	590 (96%)	21 (3%)	2 (0%)	41	61

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	374	ALA
1	A	376	GLU

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	251/253 (99%)	212 (84%)	39 (16%)	2	4
2	B	247/253 (98%)	207 (84%)	40 (16%)	2	4
All	All	498/506 (98%)	419 (84%)	79 (16%)	2	4

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	226	ASP
1	A	228	GLN
1	A	232	PHE
1	A	234	VAL
1	A	251	GLN
1	A	256	SER
1	A	257	LYS
1	A	259	MET
1	A	266	ILE
1	A	270	SER
1	A	302	ASP
1	A	306	GLN
1	A	310	GLU
1	A	313	ASP
1	A	319	ILE
1	A	323	ARG
1	A	347	THR
1	A	348	SER
1	A	354	ASN
1	A	362	LEU
1	A	365	LEU
1	A	366	ASN
1	A	373	ARG
1	A	376	GLU
1	A	411	SER
1	A	414	GLU
1	A	421	SER
1	A	438	ASP
1	A	441	LEU
1	A	454	MET
1	A	455	LEU
1	A	464	GLU
1	A	476	MET
1	A	496	ARG
1	A	504	THR
1	A	505	GLU
1	A	506	GLU
1	A	509	SER
1	A	518	VAL
2	B	226	ASP
2	B	230	GLU
2	B	238	ILE
2	B	240	GLU

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Mol	Chain	Res	Type
2	B	250	ASN
2	B	259	MET
2	B	295	GLN
2	B	306	GLN
2	B	309	LYS
2	B	320	GLU
2	B	321	VAL
2	B	323	ARG
2	B	325	ILE
2	B	330	LYS
2	B	333	GLU
2	B	334	ARG
2	B	347	THR
2	B	351	GLU
2	B	356	ILE
2	B	369	ILE
2	B	376	GLU
2	B	396	GLN
2	B	414	GLU
2	B	415	ASP
2	B	421	SER
2	B	423	ILE
2	B	424	THR
2	B	428	GLU
2	B	438	ASP
2	B	441	LEU
2	B	442	ASN
2	B	444	ILE
2	B	453	GLU
2	B	456	GLN
2	B	462	ILE
2	B	476	MET
2	B	478	GLU
2	B	500	ILE
2	B	517	ASN
2	B	521	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	223	HIS
1	A	250	ASN

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Mol	Chain	Res	Type
1	A	261	ASN
1	A	303	GLN
1	A	340	GLN
1	A	396	GLN
1	A	465	GLN
1	A	488	ASN
2	B	261	ASN
2	B	397	GLN
2	B	401	ASN
2	B	407	ASN
2	B	452	ASN
2	B	466	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)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7　Other polymers ⓘ

There are no such residues in this entry.

5.8　Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Fit of model and data ⓘ

6.1   Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	309/309 (100%)	0.28	20 (6%)	18	19	22, 56, 108, 123	0
2	B	308/309 (99%)	0.31	17 (5%)	25	26	17, 61, 104, 126	0
All	All	617/618 (99%)	0.30	37 (5%)	21	22	17, 59, 107, 126	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	419	VAL	7.8
2	B	528	TYR	5.4
2	B	311	ALA	5.3
1	A	328	SER	5.1
1	A	528	TYR	4.5
1	A	223	HIS	4.5
2	B	224	MET	4.3
1	A	221	GLY	4.1
1	A	375	GLY	4.0
1	A	339	PHE	4.0
2	B	331	ASP	3.8
1	A	522	LYS	3.7
2	B	377	ALA	3.3
1	A	222	SER	3.3
1	A	330	LYS	3.3
1	A	404	ARG	3.3
1	A	423	ILE	3.0
2	B	349	PHE	3.0
1	A	224	MET	2.9
1	A	427	VAL	2.8
1	A	323	ARG	2.7
1	A	526	ALA	2.7
1	A	523	GLU	2.6
1	A	376	GLU	2.6

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Mol	Chain	Res	Type	RSRZ
2	B	418	LYS	2.5
1	A	374	ALA	2.5
2	B	316	LYS	2.4
1	A	324	MET	2.4
2	B	527	ARG	2.3
1	A	349	PHE	2.3
2	B	329	ALA	2.3
2	B	374	ALA	2.3
2	B	399	SER	2.2
2	B	381	PHE	2.2
2	B	382	ALA	2.1
2	B	380	GLY	2.1
2	B	529	LYS	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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. 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	B-factors(Å^2)	Q<0.9
3	PB	A	1531	1/1	0.81	0.10	100,100,100,100	1
3	PB	A	1530	1/1	0.98	0.10	66,66,66,66	1

6.5 Other polymers ⓘ

There are no such residues in this entry.