Full wwPDB X-ray Structure Validation Report ⓘ

Dec 15, 2024 – 10:41 AM EST

PDB ID	:	1FP7
Title	:	MONOVALENT CATION BINDING SITES IN N10-FORMYLTETRAHYDROFOLATE SYNTHETASE FROM MOORELLA THERMOACETICA
Authors	:	Radfar, R.; Leaphart, A.; Brewer, J.M.; Minor, W.; Odom, J.D.
Deposited on	:	2000-08-30
Resolution	:	3.20 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:

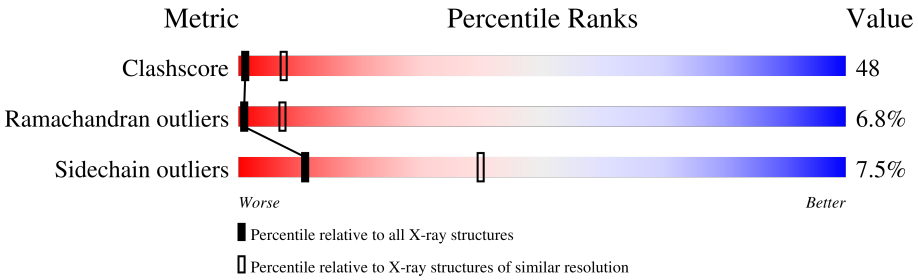
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.20 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))
Clashscore	180529	1497 (3.20-3.20)
Ramachandran outliers	177936	1479 (3.20-3.20)
Sidechain outliers	177891	1478 (3.20-3.20)

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%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	557	43% 49% 6% ••
1	B	557	30% 57% 10% ••

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	SO4	A	273	-	-	X	-
2	SO4	A	274	-	-	X	-
2	SO4	A	275	-	-	X	-
2	SO4	A	277	-	-	X	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	SO4	A	278	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 8585 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.

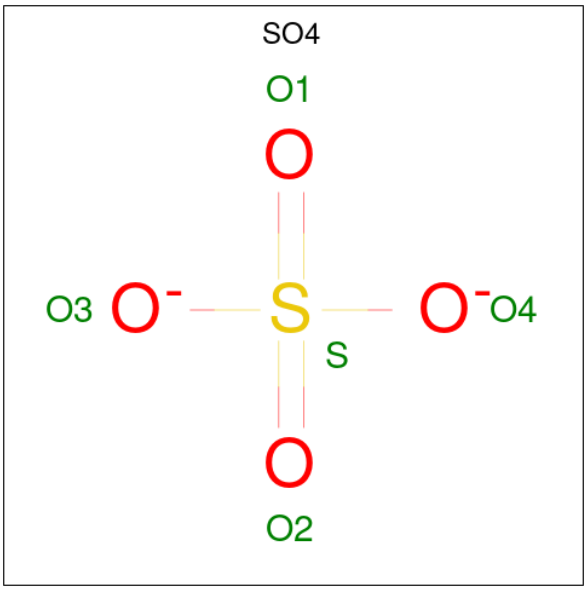
- Molecule 1 is a protein called FORMATE--TETRAHYDROFOLATE LIGASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	549	Total	C	N	O	S	0	0	0
			4133	2617	715	780	21			
1	B	548	Total	C	N	O	S	0	0	0
			4125	2613	714	777	21			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	GLU	deletion	UNP P21164
A	?	-	VAL	deletion	UNP P21164
B	?	-	GLU	deletion	UNP P21164
B	?	-	VAL	deletion	UNP P21164

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	A	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0

- Molecule 3 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total K 2 2	0	1

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	199	Total O 199 199	0	0
4	B	71	Total O 71 71	0	0

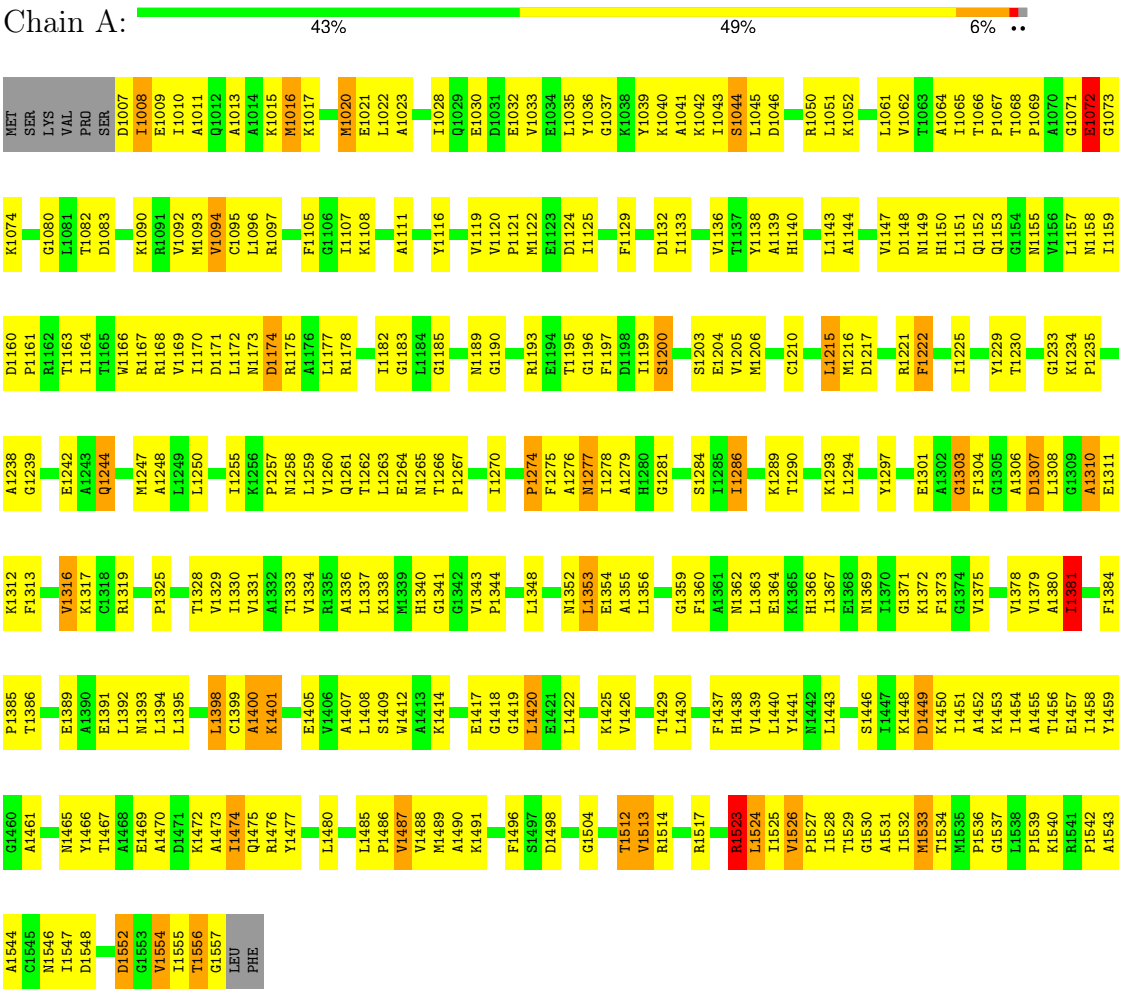
3 Residue-property plots (i)

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. 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. 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.

Note EDS was not executed.

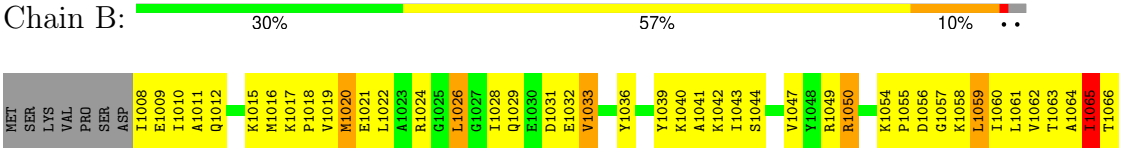
• Molecule 1: FORMATE--TETRAHYDROFOLATE LIGASE

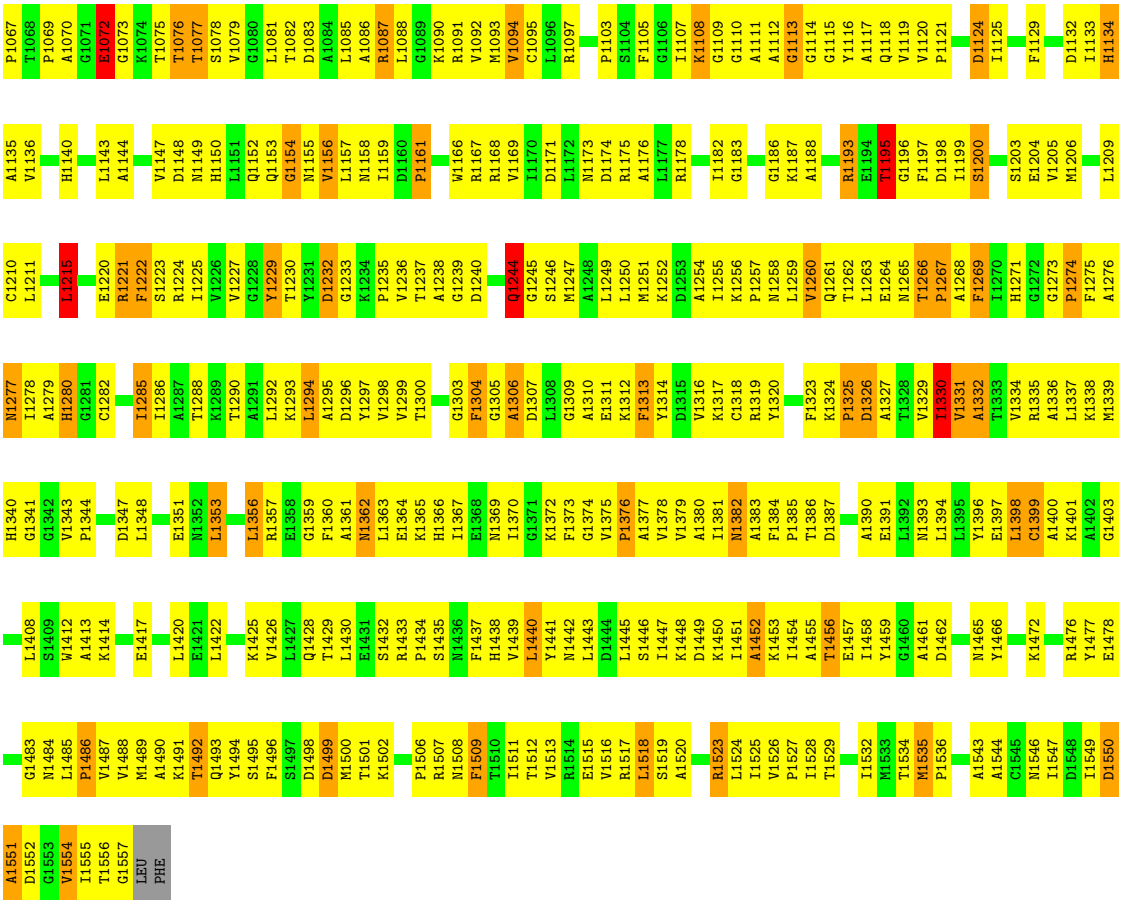
Chain A:



• Molecule 1: FORMATE--TETRAHYDROFOLATE LIGASE

Chain B:




P1067 T1068 P1069 A1070 G1071 E1072 G1073 K1074 T1075 T1076 T1077 S1078 V1079 G1080 L1081 T1082 D1083 A1084 L1085 A1086 R1087 L1088 G1089 K1090 R1091 V1092 M1093 V1094 C1095 L1096 R1097 P1103 S1104 F1105 G1106 I1107 K1108 G1109 G1110 A1111 A1112 G1113 G1114 G1115 Y1116 A1117 Q1118 V1119 V1120 P1121 D1124 I1125 F1129 D1132 I1133 H1134
A1135 V1136 H1140 L1143 A1144 V1147 D1148 N1149 H1150 L1151 Q1152 Q1153 G1154 N1155 V1156 L1157 N1158 I1159 D1160 P1161 W1166 R1167 R1168 V1169 I1170 D1171 L1172 N1173 D1174 R1175 A1176 L1177 R1178 I1182 G1183 G1186 K1187 A1188 R1193 E1194 T1195 G1196 F1197 D1198 I1199 S1200 S1203 E1204 V1205 M1206 L1209
C1210 L1211 L1215 E1220 R1221 F1222 S1223 R1224 I1225 V1226 V1227 G1228 Y1229 T1230 Y1231 D1232 G1233 K1234 P1235 V1236 T1237 A1238 G1239 D1240 Q1244 G1245 S1246 M1247 A1248 L1249 L1250 M1251 K1252 D1253 A1254 I1255 K1256 P1257 N1258 L1259 V1260 Q1261 T1262 L1263 E1264 N1265 T1266 P1267 A1268 F1269 I1270 H1271 G1272 G1273 P1274 F1275 A1276
N1277 I1278 A1279 H1280 G1281 C1282 I1285 I1286 A1287 T1288 K1289 T1290 A1291 L1292 K1293 L1294 A1295 D1296 Y1297 V1298 V1299 T1300 G1303 F1304 G1305 A1306 D1307 L1308 G1309 A1310 E1311 K1312 F1313 Y1314 D1315 V1316 K1317 C1318 R1319 Y1320 F1323 K1324 P1325 D1326 A1327 T1328 V1329 I1330 V1331 A1332 T1333 V1334 R1335 A1336 L1337 K1338 M1339
H1340 G1341 G1342 V1343 P1344 D1347 L1348 E1351 N1352 L1353 L1356 R1357 E1358 G1359 F1360 A1361 N1362 L1363 E1364 K1365 H1366 I1367 E1368 N1369 I1370 G1371 K1372 F1373 G1374 V1375 P1376 A1377 V1378 V1379 A1380 I1381 N1382 A1383 F1384 P1385 T1386 D1387 A1390 E1391 L1392 N1393 L1394 L1395 Y1396 E1397 L1398 C1399 A1400 K1401 A1402 G1403
L1408 S1409 W1412 A1413 K1414 E1417 L1420 E1421 L1422 K1425 V1426 L1427 Q1428 T1429 L1430 E1431 S1432 R1433 P1434 S1435 N1436 F1437 H1438 V1439 L1440 Y1441 N1442 L1443 D1444 L1445 S1446 I1447 K1448 D1449 K1450 I1451 A1452 K1453 I1454 A1455 T1456 E1457 I1458 Y1459 G1460 A1461 D1462 N1465 Y1466 K1472 R1476 Y1477 E1478
G1483 N1484 L1485 P1486 V1487 V1488 M1489 A1490 K1491 T1492 Q1493 Y1494 S1495 F1496 S1497 D1498 D1499 M1500 T1501 K1502 P1506 R1507 N1508 F1509 T1510 I1511 T1512 V1513 R1514 E1515 V1516 R1517 L1518 S1519 A1520 R1523 L1524 I1525 V1526 P1527 I1528 T1529 I1532 M1533 T1534 M1535 P1536 A1543 A1544 C1545 N1546 I1547 D1548 I1549 D1550
A1551 D1552 G1553 V1554 I1555 T1556 G1557 LEU PHE

4 Data and refinement statistics (i)

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α, β, γ	160.88Å 160.88Å 256.12Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.99 – 3.20	Depositor
% Data completeness (in resolution range)	87.2 (19.99-3.20)	Depositor
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.285 , 0.355	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	8585	wwPDB-VP
Average B, all atoms (Å^2)	40.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: K, SO4

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	0/4201	0.72	1/5690 (0.0%)
1	B	0.40	0/4193	0.68	0/5679
All	All	0.42	0/8394	0.70	1/11369 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1524	LEU	N-CA-C	5.35	125.44	111.00

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	4133	0	4219	358	1
1	B	4125	0	4211	449	0
2	A	35	0	0	15	1
2	B	20	0	0	3	0
3	A	2	0	0	1	0
4	A	199	0	0	28	0
4	B	71	0	0	16	0
All	All	8585	0	8430	808	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 48.

All (808) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1175:ARG:NH1	2:B:279:SO4:O3	1.58	1.33
1:A:1175:ARG:HD3	2:A:275:SO4:O3	1.40	1.22
1:B:1222:PHE:O	1:B:1225:ILE:HG22	1.40	1.19
1:A:1007:ASP:OD2	4:A:32:HOH:O	1.68	1.11
1:B:1079:VAL:HB	1:B:1117:ALA:HB1	1.34	1.08
1:B:1335:ARG:HD3	1:B:1348:LEU:HB3	1.33	1.07
1:A:1013:ALA:HB1	4:A:39:HOH:O	1.57	1.04
1:B:1557:GLY:CA	4:B:65:HOH:O	2.03	1.04
1:B:1166:TRP:CH2	1:B:1225:ILE:HD11	1.95	1.02
1:A:1353:LEU:HD12	1:A:1353:LEU:H	1.25	1.02
1:A:1557:GLY:O	4:A:19:HOH:O	1.75	1.02
1:B:1239:GLY:HA2	1:B:1244:GLN:HE22	1.18	1.01
1:B:1376:PRO:HD3	1:B:1435:SER:HB3	1.45	0.97
1:B:1166:TRP:CZ3	1:B:1225:ILE:HD11	2.00	0.97
1:A:1417:GLU:HA	1:A:1420:LEU:HD23	1.45	0.97
1:A:1262:THR:HG22	1:A:1263:LEU:H	1.31	0.96
1:A:1405:GLU:CD	1:A:1422:LEU:HA	1.86	0.96
1:A:1469:GLU:HG3	4:A:175:HOH:O	1.64	0.95
1:A:1044:SER:OG	2:A:274:SO4:O4	1.84	0.94
1:A:1225:ILE:HG23	1:A:1238:ALA:HB2	1.48	0.94
1:A:1225:ILE:CG2	1:A:1238:ALA:CB	2.46	0.94
1:B:1417:GLU:HA	1:B:1420:LEU:HD23	1.52	0.91
1:A:1166:TRP:CZ3	1:A:1225:ILE:HD11	2.05	0.91
1:A:1277:ASN:HD22	1:A:1278:ILE:H	1.10	0.91
1:B:1455:ALA:HA	1:B:1459:TYR:HD2	1.34	0.91
1:B:1262:THR:HG22	1:B:1263:LEU:H	1.36	0.91
1:B:1329:VAL:HG12	1:B:1330:ILE:H	1.37	0.90
1:B:1451:ILE:HD11	1:B:1526:VAL:HG11	1.53	0.90
1:A:1375:VAL:O	4:A:103:HOH:O	1.87	0.90
1:B:1277:ASN:H	1:B:1277:ASN:HD22	1.15	0.90
1:B:1094:VAL:HG23	1:B:1268:ALA:HA	1.53	0.90
1:A:1125:ILE:HG12	1:A:1129:PHE:CE1	2.07	0.90
1:A:1210:CYS:O	4:A:62:HOH:O	1.89	0.89
1:B:1551:ALA:O	4:B:147:HOH:O	1.89	0.89
1:A:1277:ASN:HD22	1:A:1278:ILE:N	1.69	0.89
1:A:1476:ARG:O	1:A:1480:LEU:HB2	1.73	0.89
1:A:1301:GLU:OE1	4:A:197:HOH:O	1.91	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1372:LYS:HZ3	1:B:1457:GLU:HG2	1.36	0.89
1:A:1185:GLY:HA3	1:A:1189:ASN:HD22	1.37	0.88
1:B:1169:VAL:CG2	1:B:1200:SER:HA	2.03	0.88
1:B:1086:ALA:HB2	1:B:1092:VAL:HG12	1.57	0.87
1:B:1543:ALA:O	1:B:1547:ILE:HG13	1.73	0.87
1:A:1082:THR:HG21	1:A:1094:VAL:HG22	1.56	0.86
1:A:1225:ILE:CG2	1:A:1238:ALA:HB3	2.05	0.86
1:B:1079:VAL:HG11	1:B:1117:ALA:O	1.76	0.85
1:B:1107:ILE:O	1:B:1108:LYS:HB2	1.73	0.85
1:A:1044:SER:OG	2:A:274:SO4:S	2.36	0.84
3:A:282[B]:K:K	4:A:186:HOH:O	0.77	0.84
1:A:1225:ILE:HG23	1:A:1238:ALA:CB	2.05	0.83
1:B:1085:LEU:HD13	1:B:1092:VAL:HG21	1.60	0.83
1:B:1331:VAL:HG12	1:B:1332:ALA:H	1.42	0.83
1:B:1478:GLU:OE2	4:B:236:HOH:O	1.95	0.83
1:B:1523:ARG:NH1	1:B:1525:ILE:HD11	1.93	0.83
1:B:1447:ILE:HD11	1:B:1483:GLY:HA2	1.59	0.83
1:A:1072:GLU:OE1	4:A:191:HOH:O	1.98	0.82
1:A:1412:TRP:CG	2:A:277:SO4:O4	2.32	0.82
1:A:1244:GLN:H	1:A:1244:GLN:NE2	1.78	0.82
1:B:1239:GLY:HA2	1:B:1244:GLN:NE2	1.96	0.81
1:B:1523:ARG:N	1:B:1523:ARG:HD2	1.94	0.81
1:A:1225:ILE:HG22	1:A:1238:ALA:HB3	1.62	0.80
1:B:1477:TYR:HE2	1:B:1516:VAL:HG12	1.44	0.80
1:B:1049:ARG:O	1:B:1049:ARG:HD3	1.82	0.80
1:A:1008:ILE:HG12	1:A:1011:ALA:HB3	1.63	0.80
1:A:1166:TRP:CE3	1:A:1225:ILE:HD11	2.16	0.80
1:B:1169:VAL:HG21	1:B:1200:SER:HA	1.61	0.80
1:A:1140:HIS:HD2	1:A:1203:SER:OG	1.64	0.80
1:A:1175:ARG:CD	2:A:275:SO4:O3	2.27	0.79
1:A:1225:ILE:CG2	1:A:1238:ALA:HB2	2.07	0.79
1:B:1277:ASN:ND2	1:B:1278:ILE:H	1.81	0.79
1:A:1080:GLY:HA3	1:A:1409:SER:OG	1.82	0.79
1:B:1422:LEU:O	1:B:1426:VAL:HG23	1.82	0.79
1:B:1277:ASN:H	1:B:1277:ASN:ND2	1.81	0.78
1:B:1032:GLU:O	1:B:1033:VAL:HG23	1.84	0.77
1:B:1523:ARG:HD2	1:B:1523:ARG:H	1.50	0.77
1:A:1486:PRO:HD2	1:A:1523:ARG:HB3	1.65	0.77
1:A:1195:THR:HG21	4:A:35:HOH:O	1.83	0.77
1:A:1182:ILE:HG22	1:A:1183:GLY:N	1.99	0.77
1:B:1425:LYS:O	1:B:1429:THR:HG23	1.85	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1065:ILE:HD13	1:B:1332:ALA:HA	1.67	0.76
1:A:1306:ALA:O	1:A:1310:ALA:HB3	1.86	0.76
1:B:1110:GLY:HA2	4:B:92:HOH:O	1.84	0.76
1:B:1059:LEU:HD12	1:B:1060:ILE:N	2.01	0.75
1:A:1394:LEU:O	1:A:1398:LEU:HB2	1.86	0.75
1:A:1082:THR:HG21	1:A:1094:VAL:CG2	2.15	0.75
1:B:1325:PRO:HD2	1:B:1437:PHE:CD2	2.21	0.75
1:B:1103:PRO:CG	4:B:181:HOH:O	2.34	0.75
1:B:1337:LEU:HD23	1:B:1360:PHE:HA	1.69	0.75
1:A:1164:ILE:HG21	1:A:1193:ARG:NH2	2.02	0.74
1:B:1075:THR:HG21	1:B:1113:GLY:HA2	1.69	0.74
1:B:1017:LYS:HB2	1:B:1261:GLN:HE22	1.51	0.74
1:B:1075:THR:CG2	1:B:1113:GLY:HA2	2.17	0.74
1:B:1323:PHE:O	1:B:1324:LYS:HG3	1.87	0.74
1:A:1068:THR:HB	1:A:1069:PRO:HD2	1.69	0.73
1:A:1175:ARG:HD3	2:A:275:SO4:S	2.28	0.73
1:A:1439:VAL:HG13	4:A:99:HOH:O	1.89	0.73
1:A:1136:VAL:HG13	1:A:1205:VAL:HG12	1.68	0.73
1:B:1262:THR:HG22	1:B:1263:LEU:N	2.03	0.72
1:A:1498:ASP:CB	1:A:1528:ILE:HG21	2.19	0.72
1:A:1532:ILE:O	1:A:1534:THR:N	2.22	0.72
1:A:1556:THR:O	1:A:1556:THR:HG22	1.90	0.71
1:A:1474:ILE:O	1:A:1474:ILE:HG22	1.91	0.71
1:A:1363:LEU:O	1:A:1367:ILE:HG12	1.91	0.71
1:A:1418:GLY:O	4:A:210:HOH:O	2.08	0.71
1:A:1526:VAL:HG22	1:A:1526:VAL:O	1.90	0.71
1:B:1278:ILE:O	1:B:1525:ILE:HD12	1.90	0.71
1:B:1515:GLU:HG2	1:B:1516:VAL:H	1.54	0.71
1:A:1303:GLY:O	4:A:86:HOH:O	2.08	0.71
1:B:1454:ILE:HG22	1:B:1459:TYR:CE2	2.25	0.70
1:B:1556:THR:HG22	1:B:1556:THR:O	1.89	0.70
1:A:1148:ASP:OD1	4:A:69:HOH:O	2.09	0.70
1:B:1058:LYS:HB3	1:B:1430:LEU:HD21	1.72	0.70
1:A:1175:ARG:HG2	1:A:1178:ARG:CZ	2.21	0.70
1:B:1042:LYS:HE2	1:B:1258:ASN:OD1	1.92	0.70
1:A:1051:LEU:O	1:A:1293:LYS:HG2	1.92	0.70
1:B:1103:PRO:HG3	4:B:181:HOH:O	1.91	0.70
1:A:1319:ARG:NH2	1:A:1441:TYR:O	2.24	0.70
1:A:1337:LEU:O	1:A:1359:GLY:HA3	1.92	0.70
1:B:1306:ALA:O	1:B:1310:ALA:HB3	1.91	0.70
1:B:1417:GLU:CA	1:B:1420:LEU:HD23	2.22	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1182:ILE:CG2	1:A:1183:GLY:H	2.05	0.69
1:A:1042:LYS:HE2	1:A:1258:ASN:OD1	1.92	0.69
1:B:1557:GLY:HA2	4:B:65:HOH:O	1.81	0.69
1:A:1023:ALA:HB1	1:A:1028:ILE:HB	1.74	0.69
1:B:1324:LYS:HG2	1:B:1437:PHE:HB3	1.75	0.69
1:B:1042:LYS:NZ	1:B:1254:ALA:HA	2.08	0.69
1:A:1543:ALA:O	1:A:1547:ILE:HG12	1.91	0.69
1:B:1065:ILE:HG23	1:B:1332:ALA:HB2	1.75	0.69
1:B:1043:ILE:HD11	1:B:1259:LEU:HB2	1.74	0.68
1:A:1244:GLN:H	1:A:1244:GLN:HE21	1.42	0.68
1:B:1109:GLY:O	4:B:92:HOH:O	2.10	0.68
1:A:1035:LEU:HD22	1:A:1037:GLY:O	1.92	0.68
1:A:1182:ILE:CG2	1:A:1183:GLY:N	2.56	0.68
1:A:1082:THR:CG2	1:A:1094:VAL:HG22	2.24	0.68
1:A:1517:ARG:HH22	1:A:1532:ILE:HG13	1.59	0.68
1:B:1394:LEU:O	1:B:1398:LEU:HD23	1.92	0.68
1:B:1293:LYS:N	1:B:1293:LYS:HD2	2.09	0.68
1:A:1020:MET:HE3	1:A:1030:GLU:HG3	1.76	0.67
1:A:1308:LEU:O	1:A:1312:LYS:HG3	1.93	0.67
1:A:1412:TRP:CD2	2:A:277:SO4:O4	2.46	0.67
1:B:1125:ILE:HG12	1:B:1129:PHE:CE1	2.30	0.67
1:B:1205:VAL:HG12	1:B:1205:VAL:O	1.93	0.67
1:B:1065:ILE:CD1	1:B:1332:ALA:HA	2.25	0.67
1:B:1091:ARG:HB3	1:B:1296:ASP:H	1.60	0.67
1:A:1275:PHE:HB3	1:A:1277:ASN:ND2	2.10	0.67
1:B:1083:ASP:O	1:B:1087:ARG:HB2	1.95	0.67
1:B:1083:ASP:HB3	1:B:1264:GLU:OE1	1.95	0.67
1:B:1489:MET:HE1	1:B:1526:VAL:HG21	1.76	0.67
1:B:1043:ILE:HD11	1:B:1259:LEU:HD22	1.77	0.66
1:B:1149:ASN:O	1:B:1152:GLN:HB3	1.95	0.66
1:B:1360:PHE:CE2	1:B:1364:GLU:HB2	2.30	0.66
1:B:1417:GLU:O	1:B:1420:LEU:HB2	1.96	0.66
1:A:1116:TYR:CZ	2:A:278:SO4:O1	2.48	0.66
1:A:1092:VAL:HG23	1:A:1297:TYR:O	1.94	0.66
1:A:1150:HIS:CE1	1:A:1157:LEU:H	2.13	0.66
1:A:1171:ASP:HA	1:A:1199:ILE:HD12	1.77	0.66
1:A:1204:GLU:OE2	4:A:116:HOH:O	2.13	0.66
1:A:1262:THR:HG22	1:A:1263:LEU:N	2.05	0.66
1:A:1512:THR:O	1:A:1512:THR:HG22	1.94	0.66
1:A:1217:ASP:O	1:A:1221:ARG:HG3	1.95	0.66
1:B:1372:LYS:NZ	1:B:1457:GLU:HG2	2.10	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1166:TRP:CH2	1:B:1225:ILE:CD1	2.76	0.66
1:A:1210:CYS:HA	1:A:1284:SER:HA	1.76	0.66
1:B:1351:GLU:HG3	1:B:1391:GLU:HG3	1.78	0.66
1:B:1383:ALA:HB3	1:B:1408:LEU:HG	1.78	0.66
1:B:1206:MET:HE2	1:B:1273:GLY:O	1.96	0.65
1:A:1158:ASN:O	1:A:1230:THR:HA	1.96	0.65
1:B:1144:ALA:HB1	1:B:1168:ARG:HH21	1.60	0.65
1:B:1086:ALA:HB2	1:B:1092:VAL:CG1	2.26	0.65
1:B:1344:PRO:HD2	1:B:1347:ASP:HB2	1.79	0.65
1:A:1473:ALA:C	1:A:1475:GLN:H	1.99	0.65
1:B:1363:LEU:O	1:B:1367:ILE:HG12	1.96	0.65
1:A:1426:VAL:O	1:A:1430:LEU:HB2	1.97	0.65
1:B:1329:VAL:HG12	1:B:1330:ILE:N	2.11	0.65
1:A:1175:ARG:NH1	1:A:1537:GLY:HA3	2.11	0.64
1:A:1277:ASN:ND2	1:A:1278:ILE:N	2.45	0.64
1:B:1173:ASN:OD1	1:B:1536:PRO:HB2	1.97	0.64
1:B:1557:GLY:HA3	4:B:65:HOH:O	1.82	0.64
1:A:1540:LYS:O	1:A:1542:PRO:HD3	1.98	0.64
1:B:1319:ARG:NE	1:B:1443:LEU:HD13	2.12	0.64
1:A:1257:PRO:HD3	1:A:1286:ILE:CD1	2.28	0.64
1:B:1125:ILE:HA	1:B:1129:PHE:CD1	2.32	0.64
1:A:1090:LYS:HD2	1:A:1297:TYR:HE2	1.62	0.64
1:B:1526:VAL:HG23	1:B:1526:VAL:O	1.98	0.64
1:A:1066:THR:HB	1:A:1362:ASN:HD21	1.62	0.64
1:B:1175:ARG:O	1:B:1178:ARG:HG3	1.98	0.64
1:B:1222:PHE:O	1:B:1225:ILE:CG2	2.34	0.64
1:A:1121:PRO:O	1:A:1125:ILE:HG13	1.98	0.64
1:A:1491:LYS:HB3	1:A:1528:ILE:HG13	1.79	0.64
1:B:1442:ASN:O	1:B:1450:LYS:HE2	1.98	0.64
1:A:1082:THR:HG22	1:A:1266:THR:HG21	1.80	0.64
1:B:1337:LEU:O	1:B:1340:HIS:HB2	1.98	0.64
1:A:1111:ALA:HB2	1:A:1122:MET:SD	2.38	0.63
1:B:1143:LEU:HD23	1:B:1166:TRP:CE2	2.33	0.63
1:B:1472:LYS:O	1:B:1476:ARG:HG3	1.98	0.63
1:B:1496:PHE:HD2	1:B:1506:PRO:HD2	1.63	0.63
1:B:1292:LEU:HD23	1:B:1298:VAL:HG21	1.79	0.63
1:B:1186:GLY:O	1:B:1188:ALA:N	2.31	0.63
1:B:1275:PHE:O	1:B:1279:ALA:HB3	1.98	0.63
1:A:1452:ALA:O	1:A:1456:THR:N	2.30	0.63
1:B:1082:THR:HG22	1:B:1266:THR:HG21	1.80	0.63
1:B:1097:ARG:NH2	2:B:272:SO4:O1	2.24	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1083:ASP:HB3	1:B:1264:GLU:CD	2.20	0.63
1:B:1136:VAL:HG13	1:B:1205:VAL:HG12	1.81	0.63
1:A:1525:ILE:CG2	1:A:1526:VAL:N	2.62	0.62
1:B:1455:ALA:HA	1:B:1459:TYR:CD2	2.25	0.62
1:A:1530:GLY:C	1:A:1532:ILE:H	2.02	0.62
1:A:1092:VAL:HG22	1:A:1093:MET:N	2.14	0.62
1:A:1229:TYR:HD2	1:A:1233:GLY:O	1.82	0.62
1:B:1335:ARG:HH21	1:B:1386:THR:HG21	1.65	0.62
1:B:1488:VAL:HG21	1:B:1523:ARG:NE	2.15	0.62
1:A:1275:PHE:HB3	1:A:1277:ASN:HD21	1.65	0.62
1:A:1548:ASP:O	1:A:1555:ILE:HG22	2.00	0.62
1:A:1286:ILE:HG23	4:A:70:HOH:O	1.99	0.62
1:B:1090:LYS:HB3	1:B:1297:TYR:HE2	1.64	0.62
1:B:1059:LEU:HD12	1:B:1060:ILE:H	1.62	0.62
1:B:1339:MET:HA	1:B:1343:VAL:O	1.99	0.62
1:A:1095:CYS:O	1:A:1096:LEU:HD23	1.99	0.61
1:A:1119:VAL:HA	1:A:1262:THR:HA	1.82	0.61
1:A:1381:ILE:HD13	1:A:1381:ILE:H	1.65	0.61
1:A:1405:GLU:OE2	1:A:1422:LEU:HA	2.00	0.61
1:B:1021:GLU:O	1:B:1024:ARG:HB2	2.01	0.61
1:B:1451:ILE:HG12	1:B:1489:MET:HE1	1.82	0.61
1:B:1319:ARG:HE	1:B:1443:LEU:HD13	1.65	0.61
1:A:1120:VAL:HB	1:A:1121:PRO:HA	1.82	0.61
1:A:1405:GLU:OE2	1:A:1425:LYS:HB2	2.01	0.61
1:B:1059:LEU:HB3	1:B:1325:PRO:HA	1.83	0.61
1:A:1389:GLU:C	1:A:1391:GLU:H	2.04	0.61
1:B:1070:ALA:HB2	1:B:1339:MET:SD	2.41	0.61
1:A:1470:ALA:O	1:A:1474:ILE:HG13	2.01	0.60
1:B:1017:LYS:HG3	1:B:1265:ASN:OD1	2.00	0.60
1:B:1365:LYS:HE3	1:B:1369:ASN:HD21	1.64	0.60
1:A:1498:ASP:HB3	1:A:1528:ILE:HG21	1.80	0.60
1:B:1351:GLU:HG3	1:B:1391:GLU:CG	2.31	0.60
1:B:1303:GLY:O	1:B:1309:GLY:HA3	2.00	0.60
1:B:1293:LYS:O	1:B:1295:ALA:N	2.34	0.60
1:B:1043:ILE:HD12	1:B:1269:PHE:HE1	1.66	0.60
1:B:1275:PHE:HB3	1:B:1277:ASN:ND2	2.16	0.60
1:A:1071:GLY:C	1:A:1072:GLU:HG3	2.22	0.60
1:B:1062:VAL:HG12	1:B:1300:THR:O	2.01	0.60
1:A:1533:MET:HA	2:A:273:SO4:O2	2.00	0.60
1:A:1017:LYS:N	1:A:1261:GLN:HE22	2.00	0.60
1:A:1136:VAL:HG21	1:A:1206:MET:HE2	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1259:LEU:O	1:A:1260:VAL:HG13	2.01	0.60
1:A:1379:VAL:HG12	1:A:1381:ILE:HD13	1.84	0.60
1:A:1407:ALA:C	1:A:1409:SER:H	2.05	0.59
1:A:1446:SER:N	4:A:23:HOH:O	2.28	0.59
1:A:1488:VAL:HB	1:A:1525:ILE:HD13	1.84	0.59
1:B:1066:THR:HG23	4:B:179:HOH:O	2.01	0.59
1:A:1090:LYS:HD2	1:A:1297:TYR:CE2	2.37	0.59
1:B:1193:ARG:NH2	1:B:1195:THR:HG23	2.17	0.59
1:B:1312:LYS:O	1:B:1316:VAL:HG23	2.02	0.59
1:A:1554:VAL:HG12	1:A:1555:ILE:N	2.16	0.59
1:B:1159:ILE:HA	1:B:1230:THR:HA	1.84	0.59
1:A:1381:ILE:HD13	1:A:1381:ILE:N	2.17	0.59
1:B:1124:ASP:O	1:B:1129:PHE:HA	2.02	0.59
1:B:1550:ASP:C	1:B:1552:ASP:H	2.06	0.59
1:A:1306:ALA:HB3	1:A:1366:HIS:ND1	2.17	0.59
1:B:1092:VAL:HG23	1:B:1297:TYR:HB2	1.85	0.59
1:B:1155:ASN:HD21	1:B:1159:ILE:N	2.01	0.59
1:B:1451:ILE:HG12	1:B:1487:VAL:HG11	1.83	0.59
1:B:1133:ILE:HD13	1:B:1171:ASP:OD1	2.03	0.59
1:B:1408:LEU:HD13	1:B:1414:LYS:HE3	1.85	0.59
1:A:1008:ILE:HG12	1:A:1011:ALA:CB	2.33	0.59
1:A:1277:ASN:O	1:A:1490:ALA:HB2	2.03	0.59
1:A:1277:ASN:HD22	1:A:1277:ASN:H	1.50	0.59
1:A:1485:LEU:HD13	1:A:1523:ARG:HA	1.85	0.58
1:A:1325:PRO:HD2	1:A:1437:PHE:CD2	2.38	0.58
1:B:1451:ILE:HG23	1:B:1489:MET:CE	2.33	0.58
1:A:1020:MET:HE1	1:A:1030:GLU:HA	1.85	0.58
1:A:1045:LEU:HD11	1:A:1255:ILE:O	2.03	0.58
1:B:1275:PHE:HB3	1:B:1277:ASN:HD21	1.67	0.58
1:A:1230:THR:HG23	1:A:1234:LYS:O	2.04	0.58
1:A:1488:VAL:HA	4:A:14:HOH:O	2.04	0.58
1:B:1140:HIS:HD2	1:B:1203:SER:OG	1.85	0.58
1:A:1275:PHE:O	1:A:1279:ALA:HB3	2.04	0.58
1:B:1091:ARG:NH1	4:B:118:HOH:O	2.32	0.58
1:A:1182:ILE:HG22	1:A:1183:GLY:H	1.64	0.58
1:A:1173:ASN:HB3	1:A:1536:PRO:O	2.04	0.57
1:A:1334:VAL:HG12	1:A:1338:LYS:HE2	1.86	0.57
1:A:1408:LEU:HD13	1:A:1414:LYS:CE	2.34	0.57
1:A:1311:GLU:HG3	1:A:1312:LYS:N	2.17	0.57
1:B:1063:THR:HG23	1:B:1064:ALA:N	2.19	0.57
1:B:1072:GLU:CD	1:B:1073:GLY:H	2.07	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1367:ILE:HG22	1:A:1401:LYS:HE3	1.85	0.57
1:B:1515:GLU:HG2	1:B:1516:VAL:N	2.19	0.57
1:A:1170:ILE:HD12	1:A:1171:ASP:H	1.68	0.57
1:B:1079:VAL:CB	1:B:1117:ALA:HB1	2.22	0.57
1:A:1454:ILE:O	1:A:1458:ILE:HB	2.04	0.57
1:B:1337:LEU:O	1:B:1359:GLY:HA3	2.04	0.57
1:B:1384:PHE:CD1	1:B:1385:PRO:HD2	2.40	0.57
1:A:1242:GLU:OE1	1:A:1242:GLU:HA	2.05	0.57
1:A:1408:LEU:HD13	1:A:1414:LYS:HE3	1.87	0.57
1:B:1276:ALA:HA	1:B:1279:ALA:O	2.05	0.57
1:B:1499:ASP:OD2	1:B:1502:LYS:HE3	2.05	0.57
1:B:1549:ILE:HG23	1:B:1549:ILE:O	2.03	0.57
1:B:1029:GLN:HB3	1:B:1031:ASP:OD2	2.05	0.56
1:B:1343:VAL:HG13	1:B:1347:ASP:O	2.05	0.56
1:B:1081:LEU:O	1:B:1085:LEU:HB2	2.04	0.56
1:B:1221:ARG:O	1:B:1222:PHE:C	2.44	0.56
1:B:1459:TYR:OH	1:B:1489:MET:HG3	2.05	0.56
1:A:1036:TYR:O	1:A:1040:LYS:NZ	2.38	0.56
1:A:1488:VAL:HG21	1:A:1523:ARG:CZ	2.35	0.56
1:A:1489:MET:HE1	1:A:1526:VAL:HG11	1.86	0.56
1:B:1206:MET:O	1:B:1209:LEU:HB3	2.05	0.56
1:B:1276:ALA:HB3	1:B:1304:PHE:CD2	2.40	0.56
1:B:1445:LEU:O	1:B:1450:LYS:HE3	2.05	0.56
1:A:1384:PHE:CD2	1:A:1385:PRO:HD2	2.41	0.56
1:B:1044:SER:OG	2:B:280:SO4:O2	2.20	0.56
1:B:1054:LYS:HB3	1:B:1055:PRO:HD2	1.86	0.56
1:B:1066:THR:OG1	1:B:1366:HIS:NE2	2.32	0.56
1:B:1095:CYS:SG	1:B:1288:THR:HA	2.46	0.56
1:B:1277:ASN:ND2	1:B:1277:ASN:N	2.45	0.56
1:B:1178:ARG:HD3	1:B:1535:MET:HB3	1.86	0.56
1:A:1107:ILE:CG2	1:A:1539:PRO:HG2	2.35	0.56
1:A:1473:ALA:O	1:A:1475:GLN:N	2.39	0.56
1:A:1555:ILE:HG23	1:A:1555:ILE:O	2.06	0.56
1:B:1017:LYS:N	1:B:1261:GLN:OE1	2.39	0.56
1:B:1042:LYS:HD3	1:B:1256:LYS:HB2	1.88	0.56
1:B:1058:LYS:CB	1:B:1430:LEU:HD21	2.36	0.56
1:B:1169:VAL:HG22	1:B:1200:SER:HA	1.84	0.56
1:A:1140:HIS:CD2	1:A:1203:SER:OG	2.54	0.56
1:B:1454:ILE:HG22	1:B:1459:TYR:HE2	1.70	0.56
1:A:1119:VAL:HG13	1:A:1261:GLN:O	2.06	0.56
1:A:1167:ARG:NH2	1:A:1178:ARG:O	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1086:ALA:C	1:B:1088:LEU:H	2.08	0.56
1:B:1334:VAL:HB	1:B:1387:ASP:OD1	2.06	0.56
1:B:1499:ASP:C	1:B:1501:THR:H	2.09	0.56
1:B:1009:GLU:HG2	1:B:1118:GLN:HE22	1.71	0.56
1:A:1525:ILE:HG22	1:A:1526:VAL:N	2.21	0.55
1:B:1075:THR:O	1:B:1078:SER:N	2.29	0.55
1:B:1285:ILE:N	4:B:184:HOH:O	2.34	0.55
1:A:1451:ILE:HG12	1:A:1489:MET:CE	2.37	0.55
1:B:1277:ASN:HD22	1:B:1278:ILE:H	1.53	0.55
1:A:1150:HIS:HE1	1:A:1157:LEU:H	1.54	0.55
1:A:1222:PHE:O	1:A:1225:ILE:HG22	2.05	0.55
1:B:1518:LEU:HD12	1:B:1519:SER:N	2.21	0.55
1:A:1032:GLU:OE2	1:A:1050:ARG:NH1	2.39	0.55
1:B:1233:GLY:O	1:B:1235:PRO:HD3	2.07	0.55
1:B:1331:VAL:HG12	1:B:1332:ALA:N	2.15	0.55
1:A:1381:ILE:HG21	1:A:1395:LEU:HD23	1.87	0.55
1:B:1477:TYR:CE2	1:B:1516:VAL:HG12	2.33	0.55
1:B:1063:THR:HG22	1:B:1329:VAL:O	2.06	0.55
1:B:1211:LEU:HD21	1:B:1280:HIS:CD2	2.41	0.55
1:B:1262:THR:CG2	1:B:1263:LEU:H	2.15	0.55
1:B:1115:GLY:O	1:B:1118:GLN:HG2	2.07	0.55
1:A:1277:ASN:ND2	1:A:1278:ILE:H	1.92	0.55
1:B:1466:TYR:CE2	1:B:1513:VAL:HG11	2.42	0.55
1:B:1132:ASP:OD2	1:B:1254:ALA:HA	2.07	0.54
1:A:1166:TRP:CZ3	1:A:1225:ILE:CD1	2.86	0.54
1:B:1076:THR:HG23	1:B:1114:GLY:O	2.07	0.54
1:B:1043:ILE:HD12	1:B:1269:PHE:CE1	2.42	0.54
1:B:1380:ALA:O	1:B:1381:ILE:HD13	2.07	0.54
1:B:1357:ARG:O	1:B:1360:PHE:HB3	2.08	0.54
1:B:1374:GLY:HA3	1:B:1438:HIS:CE1	2.42	0.54
1:B:1376:PRO:CD	1:B:1435:SER:HB3	2.30	0.54
1:A:1389:GLU:C	1:A:1391:GLU:N	2.61	0.54
1:A:1533:MET:CA	2:A:273:SO4:O2	2.56	0.54
1:B:1090:LYS:HB3	1:B:1297:TYR:CE2	2.43	0.54
1:A:1043:ILE:HD11	1:A:1259:LEU:HB2	1.90	0.54
1:A:1286:ILE:HA	1:A:1289:LYS:HG2	1.90	0.54
1:A:1013:ALA:CB	4:A:39:HOH:O	2.32	0.54
1:B:1210:CYS:SG	1:B:1274:PRO:HD3	2.48	0.54
1:A:1278:ILE:CG2	1:A:1278:ILE:O	2.55	0.54
1:B:1085:LEU:HD21	1:B:1297:TYR:CD2	2.43	0.54
1:B:1155:ASN:O	1:B:1158:ASN:N	2.36	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1343:VAL:HG12	1:A:1344:PRO:O	2.09	0.53
1:B:1119:VAL:HG13	1:B:1261:GLN:O	2.07	0.53
1:A:1453:LYS:O	1:A:1457:GLU:HB2	2.08	0.53
1:A:1489:MET:CE	1:A:1526:VAL:HG11	2.39	0.53
1:B:1182:ILE:HG13	1:B:1183:GLY:N	2.24	0.53
1:A:1525:ILE:C	1:A:1526:VAL:HG12	2.27	0.53
1:B:1193:ARG:NH2	1:B:1195:THR:CG2	2.71	0.53
1:A:1169:VAL:HG21	1:A:1200:SER:HA	1.91	0.53
1:B:1493:GLN:C	1:B:1495:SER:H	2.11	0.53
1:A:1042:LYS:NZ	1:A:1132:ASP:OD2	2.38	0.53
1:A:1155:ASN:OD1	1:A:1158:ASN:HA	2.09	0.53
1:A:1512:THR:HG22	1:A:1514:ARG:HE	1.74	0.53
1:B:1516:VAL:HG22	1:B:1526:VAL:HG12	1.91	0.53
1:B:1490:ALA:HB3	1:B:1527:PRO:HA	1.90	0.53
1:A:1488:VAL:CG2	1:A:1523:ARG:HD3	2.39	0.53
1:B:1133:ILE:HG22	1:B:1134:HIS:N	2.23	0.53
1:A:1175:ARG:HH11	1:A:1537:GLY:HA3	1.73	0.53
1:A:1391:GLU:O	1:A:1392:LEU:C	2.46	0.53
1:B:1225:ILE:HA	1:B:1520:ALA:HB3	1.89	0.53
1:B:1408:LEU:HD13	1:B:1414:LYS:CE	2.39	0.52
1:A:1023:ALA:CB	1:A:1028:ILE:HD12	2.40	0.52
1:A:1175:ARG:HA	1:A:1178:ARG:HG3	1.91	0.52
1:B:1379:VAL:HG12	1:B:1380:ALA:N	2.24	0.52
1:B:1075:THR:O	1:B:1076:THR:C	2.48	0.52
1:B:1255:ILE:O	1:B:1255:ILE:HG13	2.10	0.52
1:B:1076:THR:OG1	1:B:1114:GLY:HA3	2.09	0.52
1:B:1093:MET:HG2	1:B:1267:PRO:HB2	1.91	0.52
1:B:1384:PHE:CG	1:B:1385:PRO:HD2	2.44	0.52
1:A:1065:ILE:HB	1:A:1362:ASN:HD22	1.75	0.52
1:A:1009:GLU:HG3	4:A:151:HOH:O	2.09	0.52
1:A:1488:VAL:HG23	1:A:1523:ARG:HD3	1.90	0.52
1:B:1557:GLY:C	4:B:65:HOH:O	2.37	0.52
1:B:1076:THR:O	1:B:1079:VAL:N	2.42	0.52
1:B:1485:LEU:HD13	1:B:1523:ARG:HA	1.90	0.52
1:B:1517:ARG:HH12	1:B:1532:ILE:CD1	2.23	0.52
1:A:1523:ARG:HD2	1:A:1523:ARG:C	2.28	0.52
1:A:1533:MET:HB2	2:A:273:SO4:O2	2.09	0.52
1:B:1204:GLU:C	1:B:1206:MET:H	2.11	0.52
1:B:1335:ARG:HD3	1:B:1348:LEU:CB	2.23	0.52
1:A:1169:VAL:CG2	1:A:1200:SER:HA	2.40	0.52
1:A:1092:VAL:CG2	1:A:1093:MET:N	2.73	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1008:ILE:HG13	1:B:1011:ALA:HB2	1.91	0.52
1:A:1174:ASP:HB3	1:A:1177:LEU:HG	1.91	0.51
1:A:1277:ASN:ND2	1:A:1277:ASN:N	2.58	0.51
1:A:1373:PHE:CE2	1:A:1440:LEU:HB2	2.44	0.51
1:A:1379:VAL:HG12	1:A:1380:ALA:N	2.24	0.51
1:A:1451:ILE:HG12	1:A:1489:MET:HE3	1.92	0.51
1:B:1515:GLU:O	1:B:1527:PRO:HD2	2.10	0.51
1:B:1150:HIS:HE1	1:B:1156:VAL:N	2.08	0.51
1:B:1150:HIS:NE2	1:B:1157:LEU:HG	2.25	0.51
1:B:1448:LYS:HE2	1:B:1466:TYR:CD2	2.45	0.51
1:B:1043:ILE:O	1:B:1257:PRO:HD2	2.11	0.51
1:B:1081:LEU:O	1:B:1081:LEU:HG	2.10	0.51
1:B:1178:ARG:O	1:B:1196:GLY:HA3	2.10	0.51
1:B:1247:MET:HA	1:B:1250:LEU:HD23	1.93	0.51
1:A:1044:SER:OG	2:A:274:SO4:O1	2.24	0.51
1:B:1077:THR:HG21	1:B:1331:VAL:HG22	1.91	0.51
1:B:1498:ASP:HB3	1:B:1528:ILE:HG21	1.92	0.51
1:B:1087:ARG:O	1:B:1088:LEU:HD23	2.10	0.51
1:B:1487:VAL:HG12	1:B:1489:MET:HE2	1.93	0.51
1:A:1036:TYR:O	1:A:1040:LYS:HB2	2.11	0.51
1:A:1083:ASP:OD1	1:A:1262:THR:HG21	2.10	0.51
1:B:1318:CYS:HA	1:B:1323:PHE:HB2	1.92	0.51
1:A:1147:VAL:HG11	1:A:1164:ILE:HD13	1.91	0.51
1:B:1105:PHE:HB3	1:B:1544:ALA:HB2	1.93	0.51
1:A:1125:ILE:HG12	1:A:1129:PHE:CD1	2.43	0.51
1:A:1389:GLU:O	1:A:1393:ASN:HB2	2.11	0.51
1:B:1237:THR:O	1:B:1240:ASP:HB2	2.10	0.51
1:B:1279:ALA:HA	1:B:1523:ARG:NH2	2.26	0.51
1:B:1517:ARG:HH12	1:B:1532:ILE:HD12	1.75	0.51
1:A:1446:SER:HB3	1:A:1449:ASP:HB2	1.93	0.51
1:B:1331:VAL:O	1:B:1332:ALA:HB2	2.10	0.51
1:B:1489:MET:CE	1:B:1526:VAL:HG21	2.41	0.51
1:A:1329:VAL:HA	1:A:1378:VAL:O	2.10	0.50
1:B:1042:LYS:NZ	1:B:1132:ASP:OD2	2.39	0.50
1:A:1473:ALA:C	1:A:1475:GLN:N	2.64	0.50
1:B:1026:LEU:HD23	1:B:1028:ILE:HD11	1.94	0.50
1:B:1293:LYS:C	1:B:1295:ALA:H	2.14	0.50
1:B:1061:LEU:HD13	1:B:1313:PHE:CE1	2.46	0.50
1:B:1313:PHE:CD2	1:B:1313:PHE:C	2.84	0.50
1:B:1337:LEU:HA	1:B:1340:HIS:HD2	1.77	0.50
1:B:1353:LEU:N	1:B:1353:LEU:HD12	2.26	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1398:LEU:C	1:B:1400:ALA:H	2.15	0.50
1:B:1277:ASN:HD22	1:B:1278:ILE:N	2.09	0.50
1:B:1554:VAL:HG12	1:B:1555:ILE:N	2.27	0.50
1:A:1363:LEU:HD11	1:A:1367:ILE:HD11	1.93	0.50
1:B:1008:ILE:HG13	1:B:1011:ALA:CB	2.41	0.50
1:B:1124:ASP:O	1:B:1129:PHE:CA	2.59	0.50
1:B:1461:ALA:HB2	1:B:1509:PHE:HE1	1.77	0.50
1:B:1487:VAL:HG22	1:B:1524:LEU:HD12	1.94	0.50
1:A:1136:VAL:HG13	1:A:1205:VAL:CG1	2.41	0.50
1:A:1277:ASN:ND2	1:A:1277:ASN:H	2.10	0.50
1:B:1338:LYS:C	1:B:1343:VAL:HB	2.32	0.50
1:B:1351:GLU:OE1	1:B:1390:ALA:HB3	2.12	0.50
1:A:1171:ASP:HA	1:A:1199:ILE:CD1	2.42	0.49
1:A:1486:PRO:HD2	1:A:1523:ARG:CB	2.40	0.49
1:B:1083:ASP:HA	4:B:190:HOH:O	2.11	0.49
1:B:1221:ARG:O	1:B:1224:ARG:N	2.37	0.49
1:B:1229:TYR:CD1	1:B:1229:TYR:N	2.80	0.49
1:B:1556:THR:O	1:B:1556:THR:CG2	2.58	0.49
1:A:1419:GLY:HA2	4:A:210:HOH:O	2.12	0.49
1:B:1261:GLN:HB2	1:B:1265:ASN:HA	1.94	0.49
1:A:1472:LYS:O	1:A:1476:ARG:HG3	2.12	0.49
1:B:1446:SER:HB3	1:B:1449:ASP:OD2	2.12	0.49
1:B:1447:ILE:HD12	1:B:1478:GLU:HG3	1.93	0.49
1:A:1467:THR:O	1:A:1470:ALA:HB3	2.13	0.49
1:B:1019:VAL:HG11	1:B:1041:ALA:HB3	1.94	0.49
1:B:1491:LYS:HG3	1:B:1492:THR:O	2.13	0.49
1:B:1277:ASN:ND2	1:B:1278:ILE:N	2.55	0.49
1:B:1440:LEU:HD22	1:B:1458:ILE:HD11	1.95	0.49
1:B:1082:THR:OG1	1:B:1094:VAL:HG13	2.13	0.49
1:B:1088:LEU:O	1:B:1090:LYS:HG2	2.12	0.49
1:A:1512:THR:O	1:A:1512:THR:CG2	2.59	0.49
1:B:1057:GLY:HA3	1:B:1296:ASP:O	2.12	0.49
1:B:1244:GLN:HG2	1:B:1245:GLY:N	2.28	0.49
1:B:1486:PRO:O	1:B:1524:LEU:HD12	2.12	0.49
1:A:1136:VAL:HG11	1:A:1206:MET:HE2	1.94	0.48
1:A:1453:LYS:HG2	4:A:111:HOH:O	2.13	0.48
1:B:1215:LEU:HD22	1:B:1215:LEU:O	2.13	0.48
1:B:1376:PRO:HG3	1:B:1433:ARG:HG2	1.95	0.48
1:B:1442:ASN:OD1	1:B:1443:LEU:N	2.46	0.48
1:B:1493:GLN:N	1:B:1493:GLN:OE1	2.46	0.48
1:B:1143:LEU:HD23	1:B:1166:TRP:NE1	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1155:ASN:ND2	1:B:1159:ILE:N	2.61	0.48
1:B:1338:LYS:O	1:B:1341:GLY:N	2.45	0.48
1:A:1344:PRO:O	1:A:1348:LEU:HG	2.13	0.48
1:B:1036:TYR:CE1	1:B:1042:LYS:HG3	2.49	0.48
1:B:1133:ILE:O	1:B:1135:ALA:N	2.46	0.48
1:B:1465:ASN:O	1:B:1513:VAL:HG12	2.14	0.48
1:B:1550:ASP:C	1:B:1552:ASP:N	2.66	0.48
1:B:1343:VAL:CG1	1:B:1348:LEU:HD23	2.44	0.48
1:A:1381:ILE:H	1:A:1381:ILE:CD1	2.19	0.48
1:A:1090:LYS:HB3	1:A:1297:TYR:CD2	2.48	0.48
1:A:1343:VAL:CG1	1:A:1348:LEU:HD23	2.43	0.48
1:A:1455:ALA:O	1:A:1461:ALA:HB3	2.13	0.48
1:A:1526:VAL:O	1:A:1526:VAL:CG2	2.61	0.48
1:B:1393:ASN:O	1:B:1396:TYR:HB2	2.13	0.48
1:A:1185:GLY:CA	1:A:1189:ASN:HD22	2.18	0.48
1:A:1290:THR:O	1:A:1294:LEU:HG	2.13	0.48
1:A:1542:PRO:C	1:A:1544:ALA:N	2.66	0.48
1:A:1178:ARG:NH2	2:A:275:SO4:O2	2.46	0.48
1:B:1125:ILE:HG12	1:B:1129:PHE:HE1	1.79	0.48
1:B:1169:VAL:HG23	1:B:1198:ASP:O	2.13	0.48
1:B:1440:LEU:CD2	1:B:1458:ILE:HD11	2.44	0.48
1:B:1443:LEU:HG	1:B:1484:ASN:O	2.14	0.48
1:A:1195:THR:HG22	1:A:1196:GLY:H	1.77	0.48
1:B:1010:ILE:C	1:B:1012:GLN:H	2.17	0.48
1:B:1019:VAL:HG23	1:B:1039:TYR:HA	1.95	0.48
1:B:1111:ALA:C	1:B:1113:GLY:H	2.17	0.48
1:B:1292:LEU:HD23	1:B:1298:VAL:CG2	2.43	0.48
1:B:1319:ARG:HG3	1:B:1439:VAL:HG11	1.96	0.48
1:A:1061:LEU:O	1:A:1328:THR:HA	2.14	0.47
1:A:1116:TYR:CE2	2:A:278:SO4:O1	2.67	0.47
1:A:1136:VAL:HG21	1:A:1206:MET:CE	2.44	0.47
1:A:1366:HIS:NE2	1:A:1496:PHE:CZ	2.82	0.47
1:A:1554:VAL:CG1	1:A:1555:ILE:N	2.77	0.47
1:B:1049:ARG:HD3	1:B:1049:ARG:C	2.33	0.47
1:B:1133:ILE:O	1:B:1136:VAL:N	2.46	0.47
1:A:1286:ILE:HD12	1:A:1286:ILE:C	2.34	0.47
1:B:1374:GLY:HA3	1:B:1438:HIS:HE1	1.78	0.47
1:B:1461:ALA:HA	1:B:1509:PHE:CE1	2.49	0.47
1:A:1360:PHE:CE2	1:A:1364:GLU:HB2	2.49	0.47
1:B:1313:PHE:CE2	1:B:1318:CYS:SG	3.07	0.47
1:A:1353:LEU:HD12	1:A:1353:LEU:N	2.09	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1107:ILE:HG22	1:A:1539:PRO:HG2	1.94	0.47
1:A:1386:THR:HA	4:A:48:HOH:O	2.14	0.47
1:B:1143:LEU:O	1:B:1147:VAL:HG23	2.14	0.47
1:A:1542:PRO:C	1:A:1544:ALA:H	2.16	0.47
1:A:1555:ILE:O	1:A:1556:THR:CB	2.63	0.47
1:B:1155:ASN:OD1	1:B:1159:ILE:HB	2.14	0.47
1:B:1343:VAL:HG11	1:B:1348:LEU:HD23	1.96	0.47
1:A:1277:ASN:HD22	1:A:1277:ASN:N	2.08	0.47
1:A:1400:ALA:O	1:A:1401:LYS:HB2	2.15	0.47
1:A:1474:ILE:O	1:A:1474:ILE:CG2	2.61	0.47
1:B:1244:GLN:HG2	1:B:1245:GLY:H	1.79	0.47
1:A:1066:THR:H	1:A:1362:ASN:HD21	1.63	0.47
1:A:1259:LEU:O	1:A:1260:VAL:CG1	2.63	0.47
1:B:1009:GLU:HG2	1:B:1009:GLU:O	2.14	0.47
1:B:1199:ILE:HA	1:B:1535:MET:HE2	1.97	0.47
1:B:1257:PRO:HD3	1:B:1286:ILE:CD1	2.45	0.47
1:B:1507:ARG:O	1:B:1508:ASN:HB2	2.14	0.47
1:A:1457:GLU:OE2	4:A:218:HOH:O	2.20	0.47
1:B:1061:LEU:HD22	1:B:1313:PHE:CD1	2.50	0.47
1:B:1550:ASP:OD1	1:B:1551:ALA:N	2.47	0.47
1:A:1096:LEU:O	1:A:1270:ILE:HA	2.15	0.47
1:A:1366:HIS:CE1	1:A:1496:PHE:CZ	3.03	0.47
1:A:1533:MET:CB	2:A:273:SO4:O2	2.63	0.47
1:B:1154:GLY:O	1:B:1155:ASN:C	2.53	0.47
1:A:1160:ASP:HB3	1:A:1163:THR:CG2	2.45	0.46
1:A:1353:LEU:H	1:A:1353:LEU:CD1	2.04	0.46
1:B:1414:LYS:O	1:B:1417:GLU:HB3	2.15	0.46
1:B:1278:ILE:N	1:B:1278:ILE:HD12	2.31	0.46
1:A:1107:ILE:O	1:A:1108:LYS:HB2	2.15	0.46
1:A:1149:ASN:O	1:A:1152:GLN:HB3	2.16	0.46
1:A:1532:ILE:O	1:A:1534:THR:HG23	2.15	0.46
1:A:1555:ILE:O	1:A:1556:THR:HB	2.16	0.46
1:B:1277:ASN:HD22	1:B:1277:ASN:N	1.85	0.46
1:B:1338:LYS:HB3	1:B:1343:VAL:HG21	1.97	0.46
1:B:1492:THR:HG23	1:B:1493:GLN:N	2.31	0.46
1:B:1360:PHE:O	1:B:1361:ALA:C	2.54	0.46
1:B:1502:LYS:HB3	1:B:1506:PRO:HB3	1.98	0.46
1:B:1492:THR:HG22	1:B:1498:ASP:HA	1.98	0.46
1:A:1138:TYR:O	1:A:1139:ALA:C	2.53	0.46
1:A:1448:LYS:HG2	1:A:1466:TYR:CZ	2.51	0.46
1:B:1136:VAL:HG13	1:B:1205:VAL:O	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1150:HIS:O	1:B:1153:GLN:N	2.42	0.46
1:B:1451:ILE:CD1	1:B:1526:VAL:HG11	2.36	0.46
1:A:1023:ALA:HB1	1:A:1028:ILE:HD12	1.98	0.46
1:B:1120:VAL:HB	1:B:1121:PRO:HA	1.98	0.46
1:B:1378:VAL:HG11	1:B:1422:LEU:CD1	2.46	0.46
1:B:1425:LYS:HA	1:B:1428:GLN:HB3	1.97	0.46
1:A:1276:ALA:HB2	1:A:1281:GLY:HA3	1.98	0.45
1:A:1450:LYS:HB2	1:A:1487:VAL:HG21	1.97	0.45
1:B:1331:VAL:CG1	1:B:1332:ALA:H	2.23	0.45
1:B:1499:ASP:C	1:B:1501:THR:N	2.70	0.45
1:B:1036:TYR:HB3	1:B:1040:LYS:NZ	2.30	0.45
1:B:1121:PRO:HG2	1:B:1124:ASP:HB2	1.98	0.45
1:B:1276:ALA:HB3	1:B:1304:PHE:CE2	2.51	0.45
1:B:1373:PHE:CE2	1:B:1440:LEU:HB2	2.51	0.45
1:B:1491:LYS:C	1:B:1492:THR:O	2.52	0.45
1:B:1493:GLN:O	1:B:1495:SER:N	2.50	0.45
1:A:1105:PHE:HB3	1:A:1544:ALA:HB2	1.99	0.45
1:A:1381:ILE:CG2	1:A:1395:LEU:HD23	2.45	0.45
1:A:1498:ASP:HB2	1:A:1528:ILE:HG21	1.96	0.45
1:A:1523:ARG:HD2	1:A:1523:ARG:N	2.31	0.45
1:A:1071:GLY:O	1:A:1072:GLU:HG3	2.16	0.45
1:B:1205:VAL:O	1:B:1205:VAL:CG1	2.62	0.45
1:B:1488:VAL:HG23	1:B:1523:ARG:HG2	1.97	0.45
1:A:1408:LEU:HD13	1:A:1414:LYS:NZ	2.32	0.45
1:B:1026:LEU:HD21	1:B:1294:LEU:HB3	1.97	0.45
1:B:1320:TYR:CZ	4:B:228:HOH:O	2.55	0.45
1:B:1515:GLU:O	1:B:1516:VAL:HG23	2.16	0.45
1:B:1554:VAL:CG1	1:B:1555:ILE:N	2.80	0.45
1:A:1016:MET:HB3	1:A:1261:GLN:NE2	2.31	0.45
1:A:1052:LYS:HE3	4:A:227:HOH:O	2.15	0.45
1:A:1170:ILE:HG13	1:A:1171:ASP:N	2.32	0.45
1:A:1170:ILE:CD1	1:A:1171:ASP:H	2.29	0.45
1:B:1040:LYS:NZ	1:B:1040:LYS:HB2	2.31	0.45
1:B:1329:VAL:CG1	1:B:1330:ILE:H	2.18	0.45
1:A:1125:ILE:HA	1:A:1129:PHE:CD1	2.51	0.45
1:B:1060:ILE:HD12	1:B:1299:VAL:HG22	1.98	0.45
1:B:1140:HIS:HE1	1:B:1167:ARG:O	1.99	0.45
1:A:1152:GLN:OE1	1:A:1190:GLY:HA2	2.17	0.45
1:A:1247:MET:O	1:A:1250:LEU:N	2.46	0.45
1:A:1488:VAL:HG21	1:A:1523:ARG:NH1	2.32	0.45
1:B:1432:SER:O	1:B:1434:PRO:HD3	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1488:VAL:CG2	1:B:1523:ARG:HG2	2.47	0.45
1:A:1083:ASP:HB3	1:A:1264:GLU:OE1	2.17	0.44
1:A:1466:TYR:CE2	1:A:1513:VAL:HG11	2.52	0.44
1:B:1020:MET:HE2	1:B:1033:VAL:HG11	1.99	0.44
1:B:1047:VAL:O	1:B:1050:ARG:HG3	2.17	0.44
1:B:1174:ASP:OD2	1:B:1176:ALA:HB3	2.17	0.44
1:B:1195:THR:HB	1:B:1196:GLY:H	1.29	0.44
1:B:1221:ARG:O	1:B:1223:SER:N	2.51	0.44
1:B:1382:ASN:HD22	1:B:1382:ASN:HA	1.60	0.44
1:B:1009:GLU:OE1	1:B:1115:GLY:N	2.33	0.44
1:B:1061:LEU:HD22	1:B:1313:PHE:CG	2.52	0.44
1:B:1257:PRO:HA	1:B:1271:HIS:CG	2.52	0.44
1:B:1369:ASN:OD1	1:B:1458:ILE:HA	2.18	0.44
1:B:1375:VAL:O	1:B:1376:PRO:O	2.35	0.44
1:A:1225:ILE:HG23	1:A:1225:ILE:O	2.17	0.44
1:A:1407:ALA:C	1:A:1409:SER:N	2.70	0.44
1:B:1236:VAL:HG12	1:B:1237:THR:N	2.32	0.44
1:B:1325:PRO:C	1:B:1327:ALA:H	2.20	0.44
1:B:1486:PRO:HD2	1:B:1523:ARG:HB3	1.99	0.44
1:A:1132:ASP:O	1:A:1136:VAL:HG23	2.18	0.44
1:A:1341:GLY:HA3	1:A:1355:ALA:O	2.17	0.44
1:A:1372:LYS:HE2	4:A:218:HOH:O	2.17	0.44
1:A:1465:ASN:HB2	1:A:1512:THR:OG1	2.17	0.44
1:A:1544:ALA:HA	1:A:1547:ILE:CG1	2.47	0.44
1:B:1017:LYS:O	1:B:1018:PRO:C	2.55	0.44
1:B:1022:LEU:HD11	1:B:1261:GLN:NE2	2.33	0.44
1:A:1017:LYS:H	1:A:1261:GLN:HE22	1.66	0.44
1:A:1340:HIS:HB3	1:A:1504:GLY:HA2	2.00	0.44
1:A:1530:GLY:C	1:A:1532:ILE:N	2.70	0.44
1:B:1221:ARG:O	1:B:1224:ARG:HG3	2.18	0.44
1:B:1447:ILE:CD1	1:B:1478:GLU:HG3	2.47	0.44
1:A:1033:VAL:HG13	1:A:1041:ALA:HB1	2.00	0.44
1:A:1264:GLU:O	1:A:1265:ASN:HB2	2.18	0.44
1:A:1475:GLN:C	1:A:1477:TYR:N	2.70	0.44
1:B:1265:ASN:N	1:B:1265:ASN:ND2	2.65	0.44
1:B:1439:VAL:HG23	1:B:1441:TYR:O	2.18	0.44
1:B:1466:TYR:CD2	1:B:1513:VAL:CG1	3.00	0.44
1:B:1523:ARG:N	1:B:1523:ARG:CD	2.63	0.44
1:A:1039:TYR:O	1:A:1260:VAL:HG12	2.17	0.44
1:A:1067:PRO:HB3	4:A:18:HOH:O	2.17	0.44
1:A:1143:LEU:O	1:A:1144:ALA:C	2.56	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1043:ILE:CG2	1:B:1047:VAL:HG21	2.48	0.44
1:B:1065:ILE:HB	1:B:1066:THR:H	1.46	0.44
1:B:1069:PRO:HG2	1:B:1339:MET:CE	2.48	0.44
1:B:1155:ASN:ND2	1:B:1158:ASN:HA	2.33	0.44
1:B:1209:LEU:HD13	1:B:1251:MET:CE	2.48	0.44
1:B:1293:LYS:HD2	1:B:1293:LYS:H	1.82	0.44
1:B:1397:GLU:O	1:B:1399:CYS:N	2.50	0.44
1:A:1343:VAL:HG12	1:A:1348:LEU:HD23	2.00	0.44
1:B:1351:GLU:HA	1:B:1391:GLU:OE2	2.18	0.44
1:B:1532:ILE:O	1:B:1534:THR:N	2.48	0.44
1:A:1234:LYS:HA	1:A:1235:PRO:HD3	1.80	0.43
1:A:1556:THR:O	1:A:1556:THR:CG2	2.62	0.43
1:B:1086:ALA:O	1:B:1088:LEU:N	2.51	0.43
1:B:1166:TRP:HB2	1:B:1227:VAL:HA	1.99	0.43
1:B:1225:ILE:HG23	1:B:1225:ILE:O	2.18	0.43
1:B:1249:LEU:O	1:B:1249:LEU:HD12	2.17	0.43
1:B:1511:ILE:HG22	1:B:1528:ILE:HD12	1.99	0.43
1:A:1065:ILE:CD1	1:A:1337:LEU:HD13	2.47	0.43
1:A:1312:LYS:O	1:A:1316:VAL:HB	2.18	0.43
1:B:1168:ARG:HB3	1:B:1197:PHE:CE1	2.53	0.43
1:B:1043:ILE:HG22	1:B:1047:VAL:HG21	2.00	0.43
1:A:1239:GLY:HA2	1:A:1244:GLN:HE22	1.82	0.43
1:B:1326:ASP:O	1:B:1430:LEU:HD13	2.18	0.43
1:B:1465:ASN:HB2	1:B:1512:THR:HG23	2.01	0.43
1:B:1029:GLN:HG3	1:B:1050:ARG:NH1	2.32	0.43
1:B:1032:GLU:OE1	1:B:1050:ARG:NH1	2.52	0.43
1:B:1086:ALA:C	1:B:1088:LEU:N	2.72	0.43
1:A:1093:MET:HG2	1:A:1267:PRO:HB2	2.00	0.43
1:A:1160:ASP:HB3	1:A:1163:THR:HG23	2.00	0.43
1:A:1330:ILE:HG22	1:A:1379:VAL:HA	2.01	0.43
1:B:1016:MET:HB3	1:B:1261:GLN:OE1	2.17	0.43
1:B:1337:LEU:HA	1:B:1340:HIS:CD2	2.54	0.43
1:A:1215:LEU:HB3	1:A:1216:MET:HE3	2.00	0.43
1:A:1168:ARG:HG2	1:A:1197:PHE:CE2	2.54	0.43
1:A:1262:THR:CG2	1:A:1263:LEU:H	2.14	0.43
1:A:1369:ASN:C	1:A:1371:GLY:N	2.70	0.43
1:B:1498:ASP:HB3	1:B:1528:ILE:CG2	2.49	0.43
1:A:1010:ILE:HG13	1:A:1122:MET:HE2	1.99	0.43
1:A:1257:PRO:HD3	1:A:1286:ILE:HD13	1.98	0.43
1:A:1330:ILE:CG2	1:A:1379:VAL:HA	2.49	0.43
1:A:1544:ALA:HA	1:A:1547:ILE:HG12	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1021:GLU:O	1:B:1024:ARG:N	2.51	0.43
1:B:1042:LYS:HZ1	1:B:1254:ALA:HA	1.81	0.43
1:B:1280:HIS:CD2	1:B:1282:CYS:HB2	2.54	0.43
1:B:1314:TYR:HD2	1:B:1437:PHE:HE2	1.67	0.43
1:B:1353:LEU:HB3	1:B:1394:LEU:HD22	2.01	0.43
1:B:1356:LEU:HD13	1:B:1356:LEU:O	2.18	0.43
1:B:1369:ASN:O	1:B:1370:ILE:C	2.56	0.43
1:B:1526:VAL:O	1:B:1526:VAL:CG2	2.66	0.43
1:A:1399:CYS:O	1:A:1401:LYS:N	2.52	0.43
1:A:1525:ILE:HG22	1:A:1527:PRO:HD3	2.01	0.43
1:A:1532:ILE:O	1:A:1532:ILE:HG12	2.17	0.43
1:B:1305:GLY:O	1:B:1307:ASP:N	2.51	0.43
1:A:1159:ILE:O	1:A:1161:PRO:HD3	2.20	0.42
1:B:1047:VAL:HG11	1:B:1294:LEU:HD21	2.00	0.42
1:B:1220:GLU:O	1:B:1221:ARG:C	2.55	0.42
1:B:1408:LEU:O	1:B:1414:LYS:HB2	2.20	0.42
1:A:1149:ASN:ND2	1:A:1153:GLN:HE21	2.16	0.42
1:B:1159:ILE:O	1:B:1161:PRO:HD3	2.19	0.42
1:B:1250:LEU:H	1:B:1250:LEU:HD22	1.84	0.42
1:B:1143:LEU:HD11	1:B:1238:ALA:CB	2.49	0.42
1:B:1499:ASP:O	1:B:1501:THR:N	2.52	0.42
1:B:1506:PRO:HB2	1:B:1509:PHE:CD2	2.55	0.42
1:B:1029:GLN:HG3	1:B:1050:ARG:HH12	1.84	0.42
1:B:1517:ARG:HH22	1:B:1532:ILE:HG13	1.85	0.42
1:B:1555:ILE:O	1:B:1556:THR:HB	2.19	0.42
1:A:1425:LYS:O	1:A:1429:THR:HG23	2.19	0.42
1:B:1193:ARG:HH21	1:B:1195:THR:HG23	1.83	0.42
1:A:1175:ARG:HG2	1:A:1178:ARG:NH2	2.34	0.42
1:A:1257:PRO:HD3	1:A:1286:ILE:HD11	1.99	0.42
1:B:1010:ILE:C	1:B:1012:GLN:N	2.72	0.42
1:B:1229:TYR:CD2	1:B:1235:PRO:HG3	2.55	0.42
1:B:1390:ALA:HA	1:B:1393:ASN:HD22	1.84	0.42
1:B:1230:THR:C	1:B:1232:ASP:H	2.21	0.42
1:B:1477:TYR:CZ	1:B:1518:LEU:HB3	2.54	0.42
1:A:1108:LYS:HE2	1:A:1556:THR:HG23	2.01	0.42
1:A:1177:LEU:HB3	1:A:1197:PHE:HB2	2.01	0.42
1:A:1244:GLN:HE21	1:A:1244:GLN:N	2.13	0.42
1:B:1076:THR:O	1:B:1078:SER:N	2.52	0.42
1:B:1140:HIS:CE1	1:B:1167:ARG:O	2.73	0.42
1:B:1245:GLY:O	1:B:1246:SER:C	2.57	0.42
1:B:1448:LYS:HE2	1:B:1466:TYR:CG	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1044:SER:C	1:A:1046:ASP:H	2.24	0.42
1:B:1069:PRO:HG2	1:B:1339:MET:HE2	2.01	0.42
1:B:1148:ASP:OD2	1:B:1168:ARG:NH2	2.36	0.42
1:B:1009:GLU:HG2	1:B:1118:GLN:NE2	2.35	0.41
1:B:1012:GLN:HA	1:B:1012:GLN:OE1	2.19	0.41
1:B:1198:ASP:HA	1:B:1534:THR:O	2.20	0.41
1:B:1336:ALA:O	1:B:1340:HIS:HD2	2.03	0.41
1:A:1125:ILE:HD13	1:A:1270:ILE:CD1	2.50	0.41
1:B:1443:LEU:HD11	1:B:1486:PRO:HG3	2.02	0.41
1:A:1022:LEU:HD11	1:A:1261:GLN:HB3	2.01	0.41
1:A:1490:ALA:HB3	1:A:1527:PRO:HA	2.02	0.41
1:B:1376:PRO:O	1:B:1377:ALA:HB2	2.21	0.41
1:A:1133:ILE:HG21	1:A:1171:ASP:OD1	2.20	0.41
1:A:1420:LEU:HA	1:A:1420:LEU:HD13	1.74	0.41
1:A:1555:ILE:O	1:A:1555:ILE:CG2	2.69	0.41
1:B:1450:LYS:O	1:B:1454:ILE:HG13	2.20	0.41
1:A:1239:GLY:HA2	1:A:1244:GLN:NE2	2.35	0.41
1:A:1247:MET:O	1:A:1248:ALA:C	2.58	0.41
1:A:1307:ASP:OD1	1:A:1307:ASP:N	2.53	0.41
1:B:1313:PHE:HE2	1:B:1318:CYS:SG	2.44	0.41
1:A:1073:GLY:HA2	4:A:172:HOH:O	2.19	0.41
1:B:1047:VAL:CG1	1:B:1294:LEU:HD21	2.51	0.41
1:B:1449:ASP:O	1:B:1452:ALA:HB3	2.20	0.41
1:A:1017:LYS:H	1:A:1261:GLN:NE2	2.18	0.41
1:A:1066:THR:HB	1:A:1362:ASN:ND2	2.34	0.41
1:A:1140:HIS:C	1:A:1140:HIS:ND1	2.74	0.41
1:A:1313:PHE:CE1	1:A:1317:LYS:HD3	2.56	0.41
1:A:1422:LEU:O	1:A:1426:VAL:HG23	2.20	0.41
1:B:1265:ASN:N	1:B:1265:ASN:HD22	2.17	0.41
1:B:1269:PHE:HD1	1:B:1269:PHE:HA	1.71	0.41
1:B:1336:ALA:O	1:B:1340:HIS:CD2	2.74	0.41
1:B:1360:PHE:C	1:B:1362:ASN:N	2.74	0.41
1:A:1151:LEU:O	1:A:1152:GLN:C	2.59	0.41
1:A:1343:VAL:HG13	1:A:1344:PRO:HD2	2.02	0.41
1:A:1491:LYS:HB3	1:A:1528:ILE:CG1	2.50	0.41
1:A:1552:ASP:OD1	1:A:1552:ASP:N	2.54	0.41
1:B:1061:LEU:HD22	1:B:1313:PHE:CE1	2.56	0.41
1:B:1369:ASN:CG	1:B:1458:ILE:HA	2.41	0.41
1:A:1170:ILE:CG1	1:A:1171:ASP:N	2.84	0.41
1:A:1175:ARG:C	1:A:1177:LEU:N	2.74	0.41
1:A:1330:ILE:CG2	1:A:1379:VAL:HG22	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1029:GLN:H	1:B:1050:ARG:HH22	1.68	0.41
1:B:1193:ARG:HA	4:B:25:HOH:O	2.21	0.41
1:B:1412:TRP:CE3	1:B:1413:ALA:HB2	2.54	0.41
1:B:1417:GLU:HA	1:B:1420:LEU:CD2	2.38	0.41
1:B:1461:ALA:CA	1:B:1509:PHE:CE1	3.04	0.41
1:B:1456:THR:HB	1:B:1457:GLU:H	1.64	0.41
1:A:1017:LYS:HD3	1:A:1021:GLU:OE2	2.20	0.40
1:A:1172:LEU:O	1:A:1199:ILE:HD13	2.21	0.40
1:A:1316:VAL:HG12	1:A:1317:LYS:N	2.36	0.40
1:B:1293:LYS:C	1:B:1295:ALA:N	2.74	0.40
1:B:1323:PHE:C	1:B:1324:LYS:HG3	2.41	0.40
1:A:1333:THR:OG1	1:A:1336:ALA:HB3	2.21	0.40
1:B:1319:ARG:CZ	1:B:1443:LEU:HD13	2.51	0.40
1:B:1466:TYR:CD2	1:B:1513:VAL:HG11	2.56	0.40
1:A:1022:LEU:CD1	1:A:1261:GLN:HB3	2.51	0.40
1:A:1064:ALA:HB2	1:A:1331:VAL:HB	2.02	0.40
1:A:1221:ARG:HH11	1:A:1221:ARG:HD2	1.78	0.40
1:A:1354:GLU:OE2	1:A:1354:GLU:HA	2.21	0.40
1:A:1524:LEU:HA	1:A:1524:LEU:HD23	1.87	0.40
1:B:1116:TYR:HA	1:B:1263:LEU:HD12	2.03	0.40
1:A:1022:LEU:HD11	1:A:1261:GLN:OE1	2.21	0.40
1:A:1066:THR:N	1:A:1362:ASN:HD21	2.19	0.40
1:A:1097:ARG:HE	1:A:1097:ARG:HB2	1.61	0.40
1:A:1105:PHE:CD1	1:A:1105:PHE:N	2.89	0.40
1:A:1199:ILE:O	1:A:1200:SER:C	2.60	0.40
1:A:1379:VAL:CG1	1:A:1380:ALA:N	2.84	0.40
1:A:1459:TYR:N	1:A:1459:TYR:CD1	2.87	0.40
1:B:1232:ASP:N	1:B:1232:ASP:OD2	2.55	0.40
1:B:1337:LEU:HD12	1:B:1337:LEU:N	2.36	0.40
1:A:1363:LEU:CD1	1:A:1367:ILE:HD11	2.51	0.40
1:A:1389:GLU:O	1:A:1391:GLU:N	2.54	0.40
1:A:1451:ILE:HG12	1:A:1489:MET:HE1	2.02	0.40
1:B:1237:THR:H	1:B:1240:ASP:HB2	1.87	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)
1:A:1007:ASP:OD1	2:A:278:SO4:O3[3_665]	1.60	0.60

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	547/557 (98%)	437 (80%)	90 (16%)	20 (4%)	2 19
1	B	546/557 (98%)	385 (70%)	107 (20%)	54 (10%)	0 2
All	All	1093/1114 (98%)	822 (75%)	197 (18%)	74 (7%)	1 7

All (74) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1015	LYS
1	A	1304	PHE
1	A	1533	MET
1	A	1556	THR
1	B	1056	ASP
1	B	1065	ILE
1	B	1187	LYS
1	B	1294	LEU
1	B	1304	PHE
1	B	1325	PRO
1	B	1330	ILE
1	B	1332	ALA
1	B	1376	PRO
1	B	1456	THR
1	B	1509	PHE
1	A	1200	SER
1	A	1303	GLY
1	A	1401	LYS
1	A	1474	ILE
1	B	1077	THR
1	B	1087	ARG
1	B	1108	LYS
1	B	1134	HIS
1	B	1222	PHE
1	B	1252	LYS

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Mol	Chain	Res	Type
1	B	1267	PRO
1	B	1306	ALA
1	B	1317	LYS
1	B	1398	LEU
1	B	1401	LYS
1	B	1403	GLY
1	B	1494	TYR
1	B	1554	VAL
1	A	1072	GLU
1	A	1352	ASN
1	A	1400	ALA
1	B	1067	PRO
1	B	1076	THR
1	B	1156	VAL
1	B	1326	ASP
1	B	1362	ASN
1	B	1399	CYS
1	B	1452	ALA
1	B	1500	MET
1	A	1274	PRO
1	B	1015	LYS
1	B	1026	LEU
1	B	1244	GLN
1	B	1440	LEU
1	B	1492	THR
1	A	1531	ALA
1	B	1112	ALA
1	B	1195	THR
1	B	1221	ARG
1	B	1274	PRO
1	B	1550	ASP
1	B	1551	ALA
1	A	1222	PHE
1	A	1310	ALA
1	A	1381	ILE
1	A	1523	ARG
1	A	1529	THR
1	B	1072	GLU
1	B	1113	GLY
1	B	1215	LEU
1	B	1260	VAL
1	B	1453	LYS

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Mol	Chain	Res	Type
1	B	1486	PRO
1	B	1033	VAL
1	A	1554	VAL
1	A	1316	VAL
1	B	1154	GLY
1	B	1161	PRO
1	B	1331	VAL

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	432/440 (98%)	401 (93%)	31 (7%)	12	41
1	B	431/440 (98%)	397 (92%)	34 (8%)	10	38
All	All	863/880 (98%)	798 (92%)	65 (8%)	11	40

All (65) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1008	ILE
1	A	1016	MET
1	A	1020	MET
1	A	1044	SER
1	A	1062	VAL
1	A	1072	GLU
1	A	1074	LYS
1	A	1094	VAL
1	A	1124	ASP
1	A	1174	ASP
1	A	1215	LEU
1	A	1244	GLN
1	A	1274	PRO
1	A	1277	ASN
1	A	1286	ILE
1	A	1307	ASP

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Mol	Chain	Res	Type
1	A	1353	LEU
1	A	1356	LEU
1	A	1381	ILE
1	A	1398	LEU
1	A	1420	LEU
1	A	1438	HIS
1	A	1443	LEU
1	A	1449	ASP
1	A	1487	VAL
1	A	1512	THR
1	A	1513	VAL
1	A	1523	ARG
1	A	1526	VAL
1	A	1546	ASN
1	A	1552	ASP
1	B	1020	MET
1	B	1050	ARG
1	B	1059	LEU
1	B	1065	ILE
1	B	1072	GLU
1	B	1094	VAL
1	B	1124	ASP
1	B	1193	ARG
1	B	1195	THR
1	B	1200	SER
1	B	1215	LEU
1	B	1229	TYR
1	B	1232	ASP
1	B	1244	GLN
1	B	1260	VAL
1	B	1266	THR
1	B	1269	PHE
1	B	1277	ASN
1	B	1280	HIS
1	B	1285	ILE
1	B	1290	THR
1	B	1311	GLU
1	B	1313	PHE
1	B	1330	ILE
1	B	1353	LEU
1	B	1356	LEU
1	B	1382	ASN

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Mol	Chain	Res	Type
1	B	1462	ASP
1	B	1499	ASP
1	B	1518	LEU
1	B	1523	ARG
1	B	1529	THR
1	B	1535	MET
1	B	1546	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1029	GLN
1	A	1140	HIS
1	A	1149	ASN
1	A	1150	HIS
1	A	1189	ASN
1	A	1244	GLN
1	A	1261	GLN
1	A	1265	ASN
1	A	1277	ASN
1	A	1283	ASN
1	A	1362	ASN
1	A	1465	ASN
1	B	1029	GLN
1	B	1118	GLN
1	B	1140	HIS
1	B	1150	HIS
1	B	1153	GLN
1	B	1189	ASN
1	B	1244	GLN
1	B	1265	ASN
1	B	1277	ASN
1	B	1369	ASN
1	B	1382	ASN
1	B	1393	ASN

5.3.3 RNA

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 13 ligands modelled in this entry, 2 are monoatomic - leaving 11 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	SO4	B	281	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	A	278	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	A	274	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	B	279	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	A	275	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	A	277	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	A	276	-	4,4,4	0.68	0	6,6,6	0.49	0
2	SO4	B	272	-	4,4,4	0.69	0	6,6,6	0.49	0
2	SO4	A	271	-	4,4,4	0.68	0	6,6,6	0.49	0
2	SO4	B	280	-	4,4,4	0.68	0	6,6,6	0.49	0
2	SO4	A	273	-	4,4,4	0.68	0	6,6,6	0.49	0

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.

8 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	278	SO4	2	1
2	A	274	SO4	3	0
2	B	279	SO4	1	0
2	A	275	SO4	4	0
2	A	277	SO4	2	0
2	B	272	SO4	1	0
2	B	280	SO4	1	0
2	A	273	SO4	4	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.