



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2024 – 09:26 PM EDT

PDB ID : 2GHO
Title : Recombinant *Thermus aquaticus* RNA polymerase for Structural Studies
Authors : Lamour, V.; Darst, S.A.
Deposited on : 2006-03-27
Resolution : 5.00 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Xtriage (Phenix) : 1.20.1
EDS : 2.36.2
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) : 2.36.2

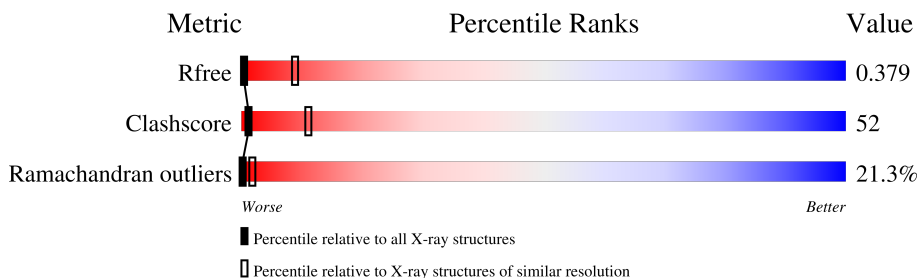
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 5.00 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 | 1140 (6.20-3.80) |
| Clashscore | 141614 | 1000 (6.16-3.82) |
| Ramachandran outliers | 138981 | 1146 (6.20-3.80) |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|--|
| 1 | A | 314 | 48% (green), 19% (yellow), 6% (orange), 27% (grey) |
| 1 | B | 314 | 51% (green), 17% (yellow), 2% (orange), 28% (grey) |
| 2 | C | 1119 | 63% (green), 29% (yellow), 7% (orange) |
| 3 | D | 1233 | 48% (green), 33% (yellow), 15% (orange), 4% (grey) |

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11060 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 DNA-directed RNA polymerase subunit alpha.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|---------|-------|
| | | | Total | C | N | O | | | |
| 1 | A | 230 | 920 | 460 | 230 | 230 | 0 | 0 | 0 |
| 1 | B | 225 | 900 | 450 | 225 | 225 | 0 | 0 | 0 |

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|---------|---------|-------|
| | | | Total | C | N | O | | | |
| 2 | C | 1114 | 4456 | 2228 | 1114 | 1114 | 0 | 0 | 0 |

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta',DNA-directed RNA polymerase subunit beta'.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|---------|---------|-------|
| | | | Total | C | N | O | | | |
| 3 | D | 1196 | 4784 | 2392 | 1196 | 1196 | 0 | 0 | 0 |

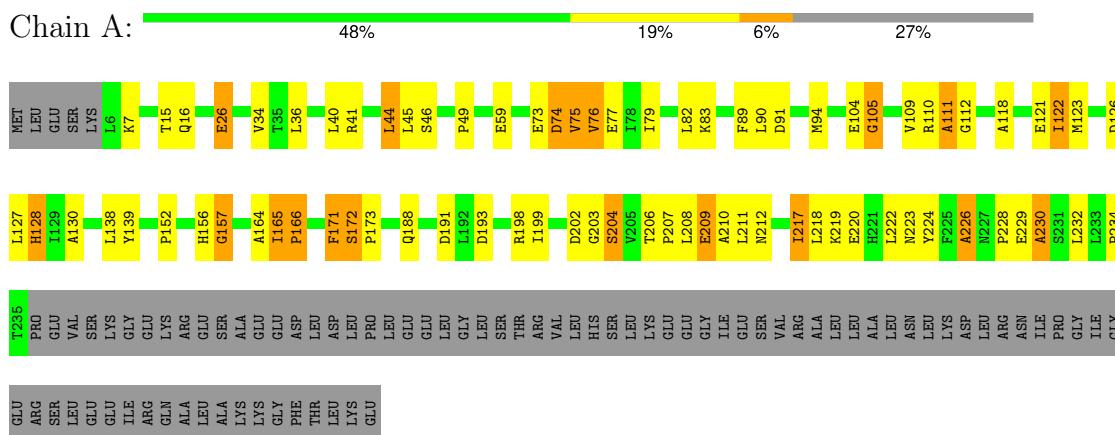
There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|------------|
| D | 159 | GLY | - | linker | UNP Q9KWU6 |
| D | 160 | GLY | - | linker | UNP Q9KWU6 |

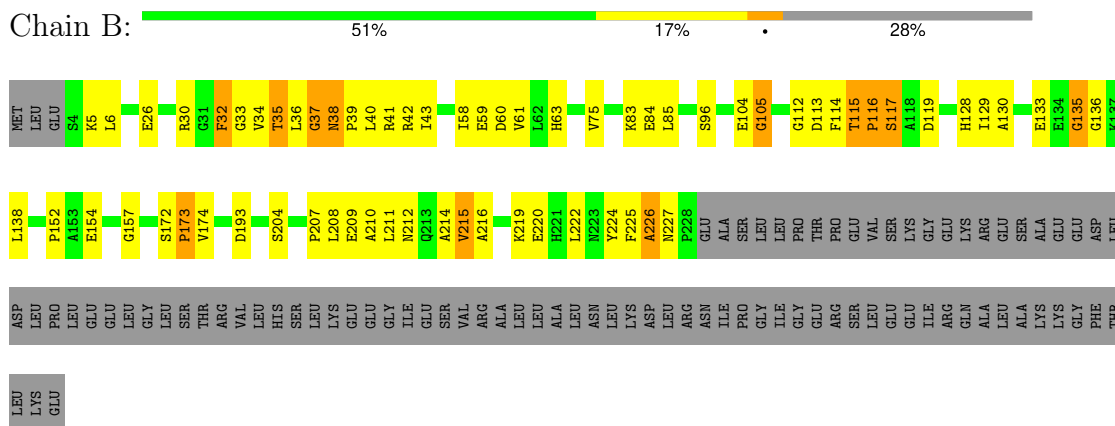
3 Residue-property plots

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. 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.

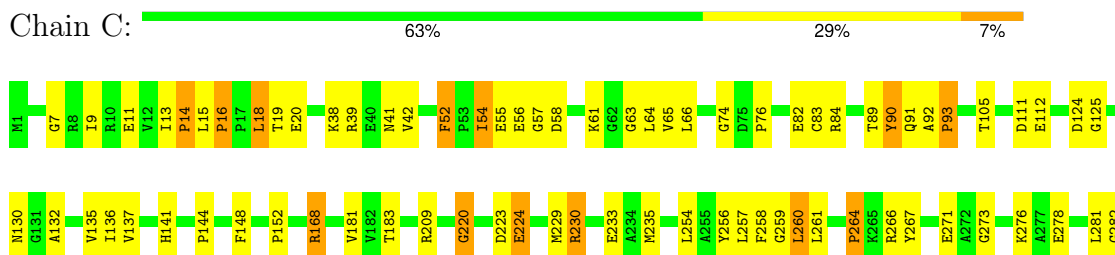
- Molecule 1: DNA-directed RNA polymerase subunit alpha

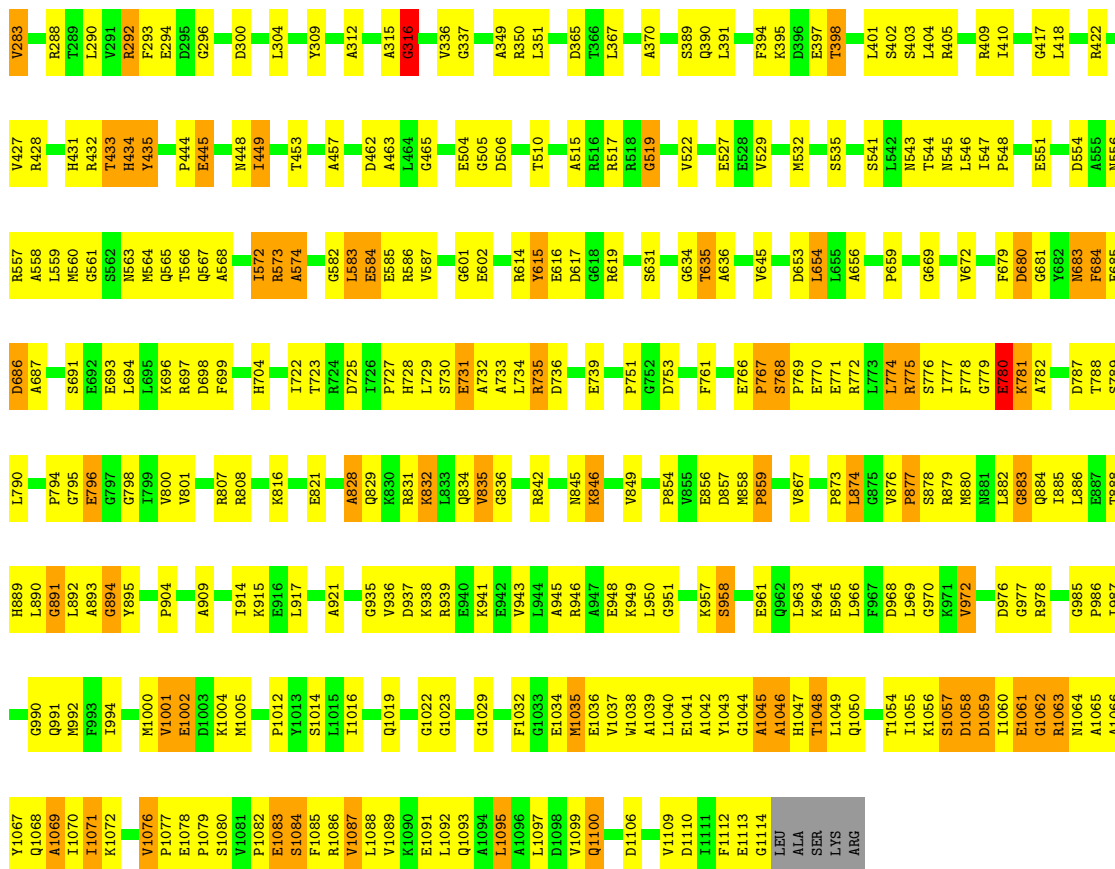


- Molecule 1: DNA-directed RNA polymerase subunit alpha

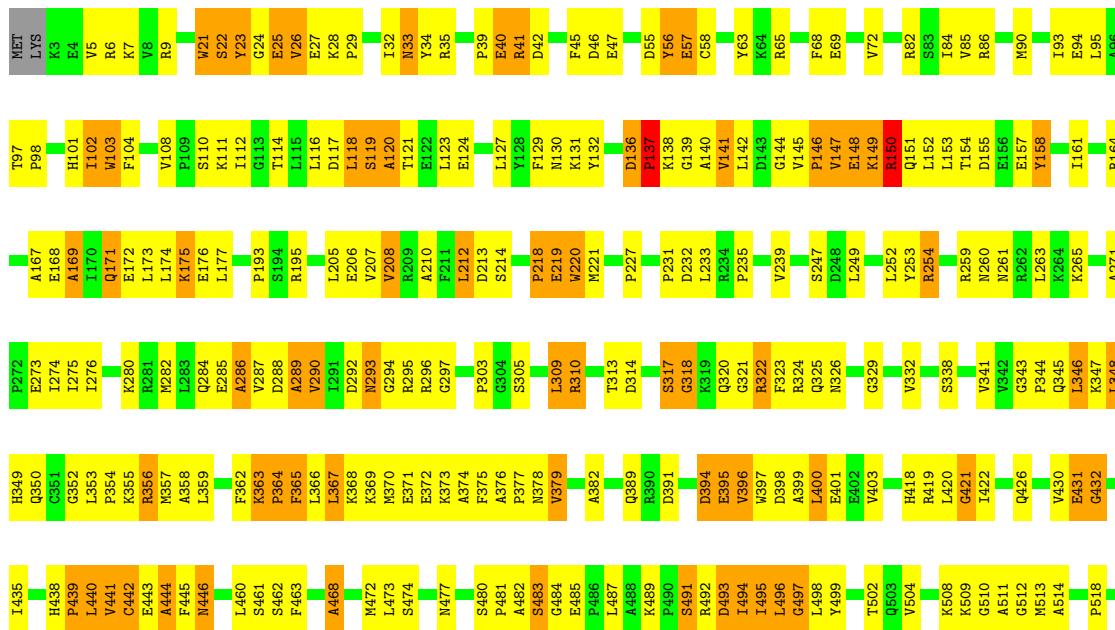


- Molecule 2: DNA-directed RNA polymerase subunit beta





• Molecule 3: DNA-directed RNA polymerase subunit beta',DNA-directed RNA polymerase subunit beta'



| | | | | | | | |
|-------|-------|-------|-------|-------|------|------|------|
| V1446 | V1259 | Q1353 | V1259 | A887 | G790 | L680 | L522 |
| L1447 | L1260 | L1363 | L1260 | E888 | A791 | R681 | A523 |
| T1448 | E1261 | H1364 | E1261 | E889 | T792 | Q682 | A524 |
| E1449 | F1262 | D1365 | F1262 | G890 | T793 | G690 | Y525 |
| A1450 | F1263 | K1366 | F1263 | P800 | A794 | I702 | E526 |
| A1451 | E1264 | H1367 | E1264 | L901 | A798 | Q703 | E527 |
| I1452 | A1265 | I1368 | A1265 | T902 | D799 | L704 | E528 |
| A1453 | I1266 | E1369 | I1266 | C903 | S800 | M611 | E529 |
| G1454 | I1370 | I1370 | I1370 | K1269 | G801 | D612 | V530 |
| K1455 | V1371 | V1371 | V1371 | R906 | Y802 | V613 | A531 |
| L1459 | V1372 | R1372 | V1372 | Y907 | L803 | A616 | L532 |
| L1462 | Q1374 | Q1374 | Q1374 | G908 | T804 | A715 | N533 |
| K1463 | M1375 | M1375 | M1375 | C913 | R805 | A716 | A534 |
| E1464 | L1376 | L1376 | L1376 | Y914 | K806 | F717 | P535 |
| N1465 | K1377 | K1377 | K1377 | G915 | L807 | F718 | I536 |
| V1466 | Y1378 | Y1378 | Y1378 | D917 | V808 | F720 | V538 |
| I1467 | D1386 | D1386 | D1386 | S919 | V809 | A621 | A539 |
| L1468 | L1390 | L1390 | L1390 | N920 | D809 | D622 | S544 |
| G1469 | E1391 | E1391 | E1391 | Y924 | V810 | P725 | V545 |
| L1471 | L1395 | L1395 | L1395 | A929 | A811 | F726 | G546 |
| I1472 | E1396 | E1396 | E1396 | Y930 | H812 | N727 | R547 |
| A1474 | K1397 | K1397 | K1397 | I938 | E813 | Q626 | L548 |
| G1475 | W1398 | W1398 | W1398 | P841 | I814 | A627 | D556 |
| G1477 | V1400 | V1400 | V1400 | G942 | V815 | F628 | E557 |
| Q1489 | E1401 | E1401 | E1401 | Q944 | D820 | L629 | A558 |
| E1501 | R1406 | R1406 | R1406 | T949 | C821 | G652 | L559 |
| ALA | E1410 | E1410 | E1410 | PHE | G822 | M633 | L560 |
| VAL | V1413 | V1413 | V1413 | HIS | Q734 | K634 | L567 |
| GLU | E1414 | E1414 | E1414 | THR | M825 | K635 | A561 |
| LYS | V1415 | V1415 | V1415 | GLY | K845 | T636 | V562 |
| GLU | V1423 | V1423 | V1423 | VAL | R846 | L643 | A563 |
| LYS | T1425 | T1425 | T1425 | ALA | S847 | L644 | H564 |
| ALA | K1426 | K1426 | K1426 | GLY | D848 | Y645 | G565 |
| PRO | S1427 | S1427 | S1427 | THR | I849 | Y646 | L566 |
| ARG | A1428 | A1428 | A1428 | ASP | E850 | G647 | L567 |
| ARG | L1429 | L1429 | L1429 | ILE | G851 | A642 | D568 |
| VAL | W1434 | W1434 | W1434 | GLY | G852 | L643 | L569 |
| ARG | L1435 | L1435 | L1435 | VAL | L853 | L643 | Q570 |
| GLN | S1436 | S1436 | S1436 | ALA | Y854 | T652 | G571 |
| PRO | L1437 | L1437 | L1437 | VAL | R860 | G655 | L578 |
| GLY | A1438 | A1438 | A1438 | GLY | E861 | G659 | G579 |
| LYS | S1439 | S1439 | S1439 | THR | A864 | I660 | R580 |
| LYS | F1440 | F1440 | F1440 | GLY | L865 | L650 | E583 |
| LEU | Q1441 | Q1441 | Q1441 | VAL | G866 | T652 | T584 |
| | M1442 | M1442 | M1442 | VAL | E870 | G675 | G587 |
| | T1443 | T1443 | T1443 | GLY | S876 | L777 | L590 |
| | H1444 | H1444 | H1444 | THR | L877 | E778 | F591 |
| | H1445 | H1445 | H1445 | ASP | L879 | Y779 | A592 |
| | | | | ILE | F780 | F780 | A593 |
| | | | | T1253 | D879 | D662 | I594 |
| | | | | Q1254 | V880 | Q670 | V595 |
| | | | | G1255 | H881 | A597 | G596 |
| | | | | R1258 | F882 | E674 | A598 |
| | | | | | L883 | | V599 |

4 Data and refinement statistics

| Property | Value | Source |
|---|---|------------------|
| Space group | P 41 21 2 | Depositor |
| Cell constants a, b, c, α , β , γ | 202.80Å 202.80Å 326.80Å 90.00° 90.00° 90.00° | Depositor |
| Resolution (Å) | 25.00 – 5.00 24.99 – 4.10 | Depositor EDS |
| % Data completeness (in resolution range) | 87.1 (25.00-5.00) 80.7 (24.99-4.10) | Depositor EDS |
| R_{merge} | (Not available) | Depositor |
| R_{sym} | 0.08 | Depositor |
| $\langle I/\sigma(I) \rangle$ ¹ | 2.05 (at 4.10Å) | Xtrriage |
| Refinement program | CNS | Depositor |
| R, R_{free} | 0.336 , 0.337 0.385 , 0.379 | Depositor DCC |
| R_{free} test set | 3069 reflections (7.06%) | wwPDB-VP |
| Wilson B-factor (Å ²) | 138.4 | Xtrriage |
| Anisotropy | 0.324 | Xtrriage |
| Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²) | 0.04 , -9.6 | EDS |
| L-test for twinning ² | $\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$ | Xtrriage |
| Estimated twinning fraction | No twinning to report. | Xtrriage |
| F_o, F_c correlation | 0.79 | EDS |
| Total number of atoms | 11060 | wwPDB-VP |
| Average B, all atoms (Å ²) | 193.0 | wwPDB-VP |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.59% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

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

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|-----------------|-------------|-----------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 1 | A | 0.35 | 0/919 | 0.77 | 0/1147 |
| 1 | B | 0.40 | 0/899 | 0.78 | 0/1122 |
| 2 | C | 0.55 | 7/4455 (0.2%) | 0.93 | 9/5567 (0.2%) |
| 3 | D | 0.56 | 8/4782 (0.2%) | 1.03 | 22/5974 (0.4%) |
| All | All | 0.53 | 15/11055 (0.1%) | 0.95 | 31/13810 (0.2%) |

All (15) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 2 | C | 704 | HIS | C-N | 11.46 | 1.60 | 1.34 |
| 3 | D | 943 | THR | C-N | -9.94 | 1.11 | 1.34 |
| 2 | C | 828 | ALA | C-N | 7.47 | 1.51 | 1.34 |
| 3 | D | 137 | PRO | N-CA | -7.25 | 1.34 | 1.47 |
| 3 | D | 1435 | LEU | C-N | -6.64 | 1.18 | 1.34 |
| 2 | C | 1057 | SER | C-N | 6.22 | 1.48 | 1.34 |
| 3 | D | 139 | GLY | N-CA | -6.19 | 1.36 | 1.46 |
| 2 | C | 141 | HIS | C-N | 5.86 | 1.47 | 1.34 |
| 2 | C | 768 | SER | N-CA | 5.76 | 1.57 | 1.46 |
| 2 | C | 769 | PRO | N-CA | 5.71 | 1.56 | 1.47 |
| 3 | D | 138 | LYS | N-CA | -5.69 | 1.34 | 1.46 |
| 2 | C | 130 | ASN | C-N | -5.45 | 1.23 | 1.33 |
| 3 | D | 138 | LYS | C-N | -5.20 | 1.23 | 1.33 |
| 3 | D | 142 | LEU | N-CA | 5.19 | 1.56 | 1.46 |
| 3 | D | 138 | LYS | CA-C | -5.16 | 1.39 | 1.52 |

All (31) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|--------|-------------|----------|
| 3 | D | 137 | PRO | CA-C-N | -15.02 | 84.17 | 117.20 |
| 3 | D | 137 | PRO | O-C-N | 10.21 | 139.04 | 122.70 |
| 2 | C | 781 | LYS | C-N-CA | -9.35 | 98.32 | 121.70 |
| 3 | D | 140 | ALA | C-N-CA | 9.26 | 144.84 | 121.70 |
| 3 | D | 151 | GLN | CA-C-N | -9.15 | 97.06 | 117.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|--------|-------|-------------|----------|
| 3 | D | 141 | VAL | N-CA-C | 9.04 | 135.41 | 111.00 |
| 2 | C | 772 | ARG | CA-C-N | -7.93 | 99.74 | 117.20 |
| 3 | D | 943 | THR | O-C-N | -7.68 | 110.40 | 122.70 |
| 3 | D | 137 | PRO | C-N-CA | 7.40 | 140.20 | 121.70 |
| 3 | D | 1459 | LEU | O-C-N | -6.88 | 111.69 | 122.70 |
| 2 | C | 780 | GLU | N-CA-C | -6.88 | 92.44 | 111.00 |
| 3 | D | 137 | PRO | CA-C-O | 6.88 | 136.70 | 120.20 |
| 3 | D | 150 | ARG | C-N-CA | -6.77 | 104.78 | 121.70 |
| 3 | D | 1319 | VAL | N-CA-C | 6.59 | 128.79 | 111.00 |
| 3 | D | 1313 | VAL | N-CA-C | -6.54 | 93.35 | 111.00 |
| 2 | C | 316 | GLY | N-CA-C | 6.52 | 129.40 | 113.10 |
| 3 | D | 151 | GLN | O-C-N | 6.04 | 132.36 | 122.70 |
| 3 | D | 1321 | ALA | N-CA-C | 6.04 | 127.30 | 111.00 |
| 3 | D | 943 | THR | C-N-CA | 6.02 | 136.75 | 121.70 |
| 3 | D | 138 | LYS | C-N-CA | -5.98 | 109.75 | 122.30 |
| 2 | C | 772 | ARG | O-C-N | 5.97 | 132.25 | 122.70 |
| 3 | D | 147 | VAL | C-N-CA | 5.93 | 136.54 | 121.70 |
| 3 | D | 446 | ASN | N-CA-C | -5.82 | 95.30 | 111.00 |
| 2 | C | 828 | ALA | O-C-N | -5.78 | 113.46 | 122.70 |
| 3 | D | 322 | ARG | O-C-N | -5.66 | 113.65 | 122.70 |
| 2 | C | 1076 | VAL | N-CA-C | 5.59 | 126.09 | 111.00 |
| 3 | D | 138 | LYS | CA-C-N | -5.46 | 105.29 | 116.20 |
| 3 | D | 1314 | LYS | N-CA-C | 5.42 | 125.64 | 111.00 |
| 2 | C | 224 | GLU | N-CA-C | -5.24 | 96.85 | 111.00 |
| 3 | D | 1279 | GLY | N-CA-C | 5.19 | 126.08 | 113.10 |
| 2 | C | 220 | GLY | N-CA-C | -5.04 | 100.51 | 113.10 |

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 | 920 | 0 | 246 | 39 | 0 |
| 1 | B | 900 | 0 | 242 | 34 | 0 |
| 2 | C | 4456 | 0 | 1247 | 227 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 3 | D | 4784 | 0 | 1309 | 435 | 0 |
| All | All | 11060 | 0 | 3044 | 732 | 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 52.

All (732) 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) |
|----------------|----------------|--------------------------|-------------------|
| 3:D:145:VAL:O | 3:D:146:PRO:O | 1.56 | 1.19 |
| 2:C:775:ARG:O | 2:C:778:PHE:N | 1.88 | 1.05 |
| 3:D:1438:ALA:O | 3:D:1440:PHE:N | 1.98 | 0.94 |
| 2:C:775:ARG:O | 2:C:779:GLY:N | 2.00 | 0.94 |
| 3:D:917:ASP:C | 3:D:919:SER:H | 1.68 | 0.87 |
| 3:D:918:LEU:C | 3:D:920:MET:H | 1.76 | 0.86 |
| 2:C:554:ASP:N | 2:C:880:MET:O | 2.09 | 0.84 |
| 3:D:101:HIS:O | 3:D:103:TRP:N | 2.11 | 0.84 |
| 3:D:1423:GLY:O | 3:D:1425:THR:N | 2.14 | 0.81 |
| 2:C:52:PHE:C | 2:C:54:ILE:H | 1.84 | 0.81 |
| 3:D:798:ALA:O | 3:D:800:SER:N | 2.13 | 0.80 |
| 2:C:74:GLY:HA3 | 2:C:93:PRO:O | 1.80 | 0.80 |
| 3:D:22:SER:O | 3:D:24:GLY:N | 2.12 | 0.80 |
| 3:D:145:VAL:C | 3:D:146:PRO:O | 2.19 | 0.80 |
| 2:C:1039:ALA:O | 2:C:1042:ALA:N | 2.14 | 0.80 |
| 3:D:218:PRO:O | 3:D:220:TRP:N | 2.14 | 0.79 |
| 3:D:650:LEU:C | 3:D:652:THR:H | 1.86 | 0.79 |
| 3:D:420:LEU:O | 3:D:422:ILE:N | 2.15 | 0.79 |
| 3:D:801:GLY:O | 3:D:804:THR:N | 2.17 | 0.78 |
| 3:D:1270:ALA:O | 3:D:1272:ALA:N | 2.17 | 0.78 |
| 2:C:734:LEU:O | 2:C:736:ASP:N | 2.18 | 0.77 |
| 3:D:887:ALA:C | 3:D:890:GLY:H | 1.90 | 0.75 |
| 2:C:18:LEU:O | 2:C:20:GLU:N | 2.20 | 0.74 |
| 3:D:917:ASP:C | 3:D:919:SER:N | 2.39 | 0.74 |
| 3:D:461:SER:C | 3:D:463:PHE:N | 2.39 | 0.73 |
| 3:D:401:GLU:C | 3:D:403:VAL:H | 1.89 | 0.73 |
| 2:C:257:LEU:O | 2:C:259:GLY:N | 2.21 | 0.73 |
| 3:D:26:VAL:C | 3:D:28:LYS:H | 1.92 | 0.73 |
| 3:D:900:PRO:O | 3:D:902:THR:N | 2.21 | 0.73 |
| 3:D:887:ALA:O | 3:D:890:GLY:N | 2.22 | 0.72 |
| 3:D:212:LEU:O | 3:D:214:SER:N | 2.21 | 0.72 |
| 3:D:318:GLY:C | 3:D:321:GLY:H | 1.93 | 0.72 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 2:C:312:ALA:O | 2:C:316:GLY:HA3 | 1.90 | 0.71 |
| 3:D:1376:LEU:O | 3:D:1378:TYR:N | 2.23 | 0.71 |
| 2:C:349:ALA:C | 2:C:351:LEU:H | 1.93 | 0.71 |
| 3:D:84:ILE:O | 3:D:86:ARG:N | 2.24 | 0.71 |
| 3:D:420:LEU:C | 3:D:422:ILE:H | 1.93 | 0.71 |
| 3:D:468:ALA:O | 3:D:472:MET:N | 2.20 | 0.71 |
| 2:C:18:LEU:C | 2:C:20:GLU:H | 1.95 | 0.70 |
| 3:D:119:SER:O | 3:D:121:THR:N | 2.24 | 0.70 |
| 2:C:679:PHE:O | 2:C:681:GLY:N | 2.25 | 0.70 |
| 3:D:650:LEU:O | 3:D:652:THR:N | 2.24 | 0.70 |
| 1:A:89:PHE:O | 1:A:91:ASP:N | 2.25 | 0.69 |
| 3:D:495:ILE:O | 3:D:496:LEU:C | 2.30 | 0.69 |
| 3:D:622:ASP:O | 3:D:623:LEU:C | 2.30 | 0.69 |
| 3:D:394:ASP:O | 3:D:396:VAL:N | 2.26 | 0.69 |
| 3:D:418:HIS:O | 3:D:421:GLY:N | 2.25 | 0.68 |
| 3:D:401:GLU:C | 3:D:403:VAL:N | 2.47 | 0.68 |
| 2:C:566:THR:C | 2:C:568:ALA:H | 1.96 | 0.68 |
| 3:D:145:VAL:O | 3:D:146:PRO:C | 2.29 | 0.68 |
| 3:D:321:GLY:O | 3:D:323:PHE:N | 2.27 | 0.68 |
| 2:C:774:LEU:O | 2:C:776:SER:N | 2.27 | 0.68 |
| 3:D:930:VAL:O | 3:D:931:GLY:C | 2.30 | 0.68 |
| 2:C:52:PHE:O | 2:C:54:ILE:N | 2.27 | 0.67 |
| 3:D:918:LEU:C | 3:D:920:MET:N | 2.48 | 0.67 |
| 2:C:775:ARG:C | 2:C:778:PHE:H | 1.97 | 0.67 |
| 3:D:1372:VAL:O | 3:D:1375:MET:N | 2.25 | 0.67 |
| 1:B:37:GLY:O | 1:B:40:LEU:N | 2.27 | 0.67 |
| 2:C:1093:GLN:C | 2:C:1095:LEU:H | 1.98 | 0.67 |
| 3:D:431:GLU:O | 3:D:432:GLY:O | 2.13 | 0.67 |
| 3:D:626:GLN:O | 3:D:629:LEU:N | 2.28 | 0.67 |
| 1:A:121:GLU:O | 1:A:123:MET:N | 2.28 | 0.66 |
| 3:D:231:PRO:C | 3:D:233:LEU:H | 1.99 | 0.66 |
| 3:D:487:LEU:C | 3:D:489:LYS:H | 1.98 | 0.66 |
| 2:C:1039:ALA:O | 2:C:1040:LEU:C | 2.35 | 0.66 |
| 3:D:526:GLU:O | 3:D:529:GLU:N | 2.23 | 0.66 |
| 2:C:254:LEU:C | 2:C:256:TYR:H | 1.99 | 0.66 |
| 2:C:795:GLY:O | 2:C:796:GLU:O | 2.14 | 0.65 |
| 3:D:605:ALA:O | 3:D:607:GLU:N | 2.29 | 0.65 |
| 3:D:1443:THR:O | 3:D:1444:THR:C | 2.34 | 0.65 |
| 2:C:1043:TYR:C | 2:C:1045:ALA:H | 1.99 | 0.65 |
| 3:D:399:ALA:O | 3:D:401:GLU:N | 2.29 | 0.65 |
| 2:C:1014:SER:N | 2:C:1019:GLN:O | 2.20 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 3:D:439:PRO:O | 3:D:441:VAL:N | 2.29 | 0.65 |
| 2:C:267:TYR:O | 2:C:273:GLY:HA3 | 1.97 | 0.65 |
| 3:D:847:SER:O | 3:D:848:ASP:C | 2.36 | 0.65 |
| 3:D:167:ALA:O | 3:D:168:GLU:C | 2.35 | 0.64 |
| 3:D:112:ILE:C | 3:D:114:THR:H | 2.01 | 0.64 |
| 3:D:641:ASP:O | 3:D:644:LYS:N | 2.29 | 0.64 |
| 3:D:639:LEU:O | 3:D:640:LEU:C | 2.35 | 0.64 |
| 3:D:642:ALA:O | 3:D:643:LEU:C | 2.36 | 0.64 |
| 1:B:112:GLY:C | 1:B:114:PHE:H | 2.01 | 0.64 |
| 3:D:397:TRP:O | 3:D:398:ASP:C | 2.35 | 0.64 |
| 3:D:1427:SER:O | 3:D:1429:LEU:N | 2.31 | 0.64 |
| 1:B:172:SER:O | 1:B:174:VAL:N | 2.31 | 0.64 |
| 2:C:774:LEU:O | 2:C:777:ILE:N | 2.25 | 0.63 |
| 3:D:1434:TRP:O | 3:D:1437:ALA:N | 2.31 | 0.63 |
| 3:D:546:GLY:O | 3:D:548:LEU:N | 2.32 | 0.63 |
| 3:D:309:LEU:O | 3:D:310:ARG:O | 2.17 | 0.63 |
| 3:D:934:ALA:O | 3:D:935:ALA:C | 2.36 | 0.63 |
| 3:D:801:GLY:O | 3:D:803:LEU:N | 2.31 | 0.63 |
| 3:D:1423:GLY:O | 3:D:1424:VAL:C | 2.37 | 0.63 |
| 1:A:75:VAL:O | 1:A:79:ILE:N | 2.28 | 0.63 |
| 2:C:877:PRO:O | 2:C:879:ARG:O | 2.16 | 0.63 |
| 3:D:157:GLU:O | 3:D:158:TYR:O | 2.17 | 0.63 |
| 3:D:363:LYS:O | 3:D:364:PRO:O | 2.16 | 0.63 |
| 3:D:364:PRO:O | 3:D:366:LEU:N | 2.32 | 0.63 |
| 3:D:932:VAL:O | 3:D:933:VAL:C | 2.37 | 0.63 |
| 3:D:1262:LEU:O | 3:D:1263:PHE:C | 2.37 | 0.62 |
| 2:C:52:PHE:C | 2:C:54:ILE:N | 2.50 | 0.62 |
| 3:D:702:ILE:C | 3:D:704:LEU:H | 2.01 | 0.62 |
| 3:D:929:ALA:O | 3:D:930:VAL:C | 2.37 | 0.62 |
| 2:C:1047:HIS:O | 2:C:1049:LEU:N | 2.32 | 0.62 |
| 3:D:730:TYR:O | 3:D:731:VAL:C | 2.37 | 0.62 |
| 3:D:461:SER:C | 3:D:463:PHE:H | 2.01 | 0.62 |
| 1:A:110:ARG:O | 1:A:112:GLY:N | 2.32 | 0.62 |
| 2:C:16:PRO:C | 2:C:18:LEU:H | 2.03 | 0.62 |
| 2:C:1001:VAL:O | 2:C:1004:LYS:N | 2.33 | 0.62 |
| 2:C:948:GLU:O | 2:C:951:GLY:N | 2.21 | 0.62 |
| 2:C:543:ASN:C | 2:C:545:ASN:H | 2.03 | 0.62 |
| 2:C:582:GLY:O | 2:C:584:GLU:N | 2.32 | 0.62 |
| 3:D:420:LEU:C | 3:D:422:ILE:N | 2.53 | 0.62 |
| 3:D:495:ILE:O | 3:D:497:GLY:N | 2.32 | 0.61 |
| 3:D:1262:LEU:O | 3:D:1265:ALA:N | 2.32 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 3:D:1316:GLY:O | 3:D:1317:ASP:O | 2.19 | 0.61 |
| 3:D:643:LEU:O | 3:D:644:LYS:C | 2.38 | 0.61 |
| 3:D:63:TYR:C | 3:D:65:ARG:H | 2.03 | 0.61 |
| 3:D:620:LEU:O | 3:D:621:LYS:C | 2.38 | 0.61 |
| 2:C:1000:MET:O | 2:C:1002:GLU:N | 2.33 | 0.61 |
| 3:D:45:PHE:O | 3:D:46:ASP:C | 2.39 | 0.61 |
| 2:C:504:GLU:O | 2:C:506:ASP:N | 2.34 | 0.61 |
| 3:D:623:LEU:O | 3:D:627:ALA:N | 2.34 | 0.61 |
| 2:C:1058:ASP:O | 2:C:1060:ILE:N | 2.34 | 0.61 |
| 3:D:650:LEU:C | 3:D:652:THR:N | 2.54 | 0.61 |
| 3:D:1427:SER:O | 3:D:1428:ALA:C | 2.38 | 0.61 |
| 3:D:659:GLY:O | 3:D:661:ASP:N | 2.34 | 0.60 |
| 3:D:935:ALA:O | 3:D:936:GLU:C | 2.40 | 0.60 |
| 3:D:620:LEU:O | 3:D:623:LEU:N | 2.34 | 0.60 |
| 3:D:801:GLY:O | 3:D:802:TYR:C | 2.40 | 0.60 |
| 3:D:1261:GLU:O | 3:D:1265:ALA:N | 2.33 | 0.60 |
| 3:D:324:ARG:O | 3:D:326:ASN:N | 2.34 | 0.60 |
| 2:C:349:ALA:O | 2:C:351:LEU:N | 2.34 | 0.60 |
| 2:C:845:ASN:O | 2:C:846:LYS:C | 2.38 | 0.60 |
| 2:C:1032:PHE:O | 3:D:329:GLY:HA2 | 2.02 | 0.60 |
| 2:C:1034:GLU:O | 2:C:1035:MET:C | 2.38 | 0.60 |
| 3:D:592:ALA:O | 3:D:595:VAL:N | 2.35 | 0.59 |
| 3:D:900:PRO:C | 3:D:902:THR:N | 2.55 | 0.59 |
| 1:A:74:ASP:O | 1:A:75:VAL:C | 2.41 | 0.59 |
| 3:D:289:ALA:O | 3:D:293:ASN:N | 2.35 | 0.59 |
| 3:D:508:LYS:O | 3:D:510:GLY:N | 2.32 | 0.59 |
| 3:D:853:LEU:O | 3:D:854:TYR:C | 2.40 | 0.59 |
| 3:D:171:GLN:O | 3:D:173:LEU:N | 2.36 | 0.59 |
| 3:D:1335:LEU:O | 3:D:1336:LEU:C | 2.41 | 0.59 |
| 3:D:511:ALA:O | 3:D:513:MET:N | 2.36 | 0.59 |
| 3:D:641:ASP:O | 3:D:642:ALA:C | 2.41 | 0.59 |
| 3:D:373:LYS:O | 3:D:375:PHE:N | 2.36 | 0.59 |
| 2:C:798:GLY:HA3 | 2:C:828:ALA:O | 2.02 | 0.59 |
| 2:C:1038:TRP:O | 2:C:1042:ALA:N | 2.35 | 0.59 |
| 3:D:637:ALA:O | 3:D:640:LEU:N | 2.35 | 0.59 |
| 3:D:583:GLU:O | 3:D:584:THR:O | 2.21 | 0.59 |
| 3:D:1426:LYS:O | 3:D:1427:SER:O | 2.20 | 0.59 |
| 2:C:561:GLY:HA3 | 2:C:842:ARG:O | 2.03 | 0.58 |
| 3:D:355:LYS:O | 3:D:356:ARG:C | 2.41 | 0.58 |
| 3:D:362:PHE:O | 3:D:363:LYS:C | 2.41 | 0.58 |
| 2:C:683:ASN:O | 2:C:687:ALA:N | 2.33 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 3:D:171:GLN:C | 3:D:173:LEU:N | 2.55 | 0.58 |
| 3:D:876:SER:O | 3:D:879:ASP:N | 2.36 | 0.58 |
| 3:D:941:PRO:C | 3:D:943:THR:N | 2.55 | 0.58 |
| 1:A:44:LEU:O | 1:A:46:SER:N | 2.35 | 0.58 |
| 3:D:622:ASP:O | 3:D:626:GLN:N | 2.33 | 0.58 |
| 3:D:1466:VAL:O | 3:D:1469:GLY:N | 2.36 | 0.58 |
| 2:C:563:ASN:C | 2:C:565:GLN:H | 2.06 | 0.58 |
| 2:C:1054:THR:C | 2:C:1056:LYS:H | 2.07 | 0.58 |
| 3:D:40:GLU:O | 3:D:41:ARG:C | 2.42 | 0.58 |
| 3:D:219:GLU:O | 3:D:221:MET:N | 2.36 | 0.58 |
| 3:D:849:ILE:O | 3:D:852:GLY:N | 2.36 | 0.58 |
| 2:C:1045:ALA:O | 2:C:1046:ALA:C | 2.42 | 0.58 |
| 3:D:596:GLY:O | 3:D:599:VAL:N | 2.32 | 0.58 |
| 3:D:26:VAL:C | 3:D:28:LYS:N | 2.57 | 0.58 |
| 3:D:916:TYR:O | 3:D:918:LEU:N | 2.37 | 0.57 |
| 2:C:775:ARG:O | 2:C:778:PHE:CA | 2.51 | 0.57 |
| 3:D:730:TYR:O | 3:D:732:MET:N | 2.37 | 0.57 |
| 2:C:1093:GLN:C | 2:C:1095:LEU:N | 2.58 | 0.57 |
| 3:D:231:PRO:O | 3:D:233:LEU:N | 2.37 | 0.57 |
| 3:D:877:LEU:O | 3:D:878:GLU:C | 2.42 | 0.57 |
| 2:C:858:MET:O | 2:C:859:PRO:C | 2.42 | 0.57 |
| 3:D:1471:LEU:O | 3:D:1472:ILE:O | 2.23 | 0.57 |
| 1:B:224:TYR:C | 1:B:226:ALA:H | 2.08 | 0.57 |
| 2:C:410:ILE:N | 2:C:453:THR:O | 2.37 | 0.57 |
| 2:C:1066:ALA:O | 2:C:1067:TYR:C | 2.42 | 0.57 |
| 3:D:205:LEU:O | 3:D:208:VAL:N | 2.37 | 0.57 |
| 2:C:563:ASN:O | 2:C:565:GLN:N | 2.28 | 0.57 |
| 2:C:723:THR:C | 2:C:725:ASP:H | 2.08 | 0.57 |
| 3:D:357:MET:O | 3:D:359:LEU:N | 2.38 | 0.57 |
| 3:D:860:ARG:O | 3:D:861:GLU:O | 2.22 | 0.57 |
| 1:B:37:GLY:O | 1:B:38:ASN:C | 2.43 | 0.56 |
| 2:C:1041:GLU:O | 2:C:1042:ALA:C | 2.43 | 0.56 |
| 3:D:55:ASP:O | 3:D:57:GLU:N | 2.38 | 0.56 |
| 3:D:401:GLU:O | 3:D:403:VAL:N | 2.38 | 0.56 |
| 1:A:208:LEU:O | 1:A:211:LEU:N | 2.39 | 0.56 |
| 3:D:620:LEU:O | 3:D:624:VAL:N | 2.38 | 0.56 |
| 3:D:647:GLY:O | 3:D:651:SER:N | 2.22 | 0.56 |
| 3:D:1344:VAL:O | 3:D:1345:GLU:C | 2.43 | 0.56 |
| 3:D:1450:ALA:O | 3:D:1451:ALA:C | 2.43 | 0.56 |
| 1:A:74:ASP:O | 1:A:77:GLU:N | 2.39 | 0.56 |
| 2:C:292:ARG:O | 2:C:294:GLU:N | 2.38 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 2:C:1047:HIS:C | 2:C:1049:LEU:N | 2.58 | 0.56 |
| 3:D:25:GLU:O | 3:D:27:GLU:N | 2.34 | 0.56 |
| 1:B:209:GLU:O | 1:B:210:ALA:C | 2.42 | 0.56 |
| 3:D:635:LYS:O | 3:D:636:THR:C | 2.42 | 0.56 |
| 2:C:941:LYS:O | 2:C:945:ALA:N | 2.36 | 0.56 |
| 3:D:441:VAL:O | 3:D:443:GLU:N | 2.39 | 0.56 |
| 3:D:493:ASP:O | 3:D:494:ILE:C | 2.44 | 0.56 |
| 1:A:171:PHE:O | 1:A:172:SER:C | 2.44 | 0.56 |
| 3:D:119:SER:O | 3:D:121:THR:O | 2.24 | 0.56 |
| 3:D:396:VAL:O | 3:D:399:ALA:N | 2.38 | 0.56 |
| 3:D:805:ARG:O | 3:D:806:LYS:C | 2.43 | 0.56 |
| 1:A:208:LEU:O | 1:A:209:GLU:C | 2.44 | 0.56 |
| 2:C:431:HIS:O | 2:C:433:THR:N | 2.39 | 0.56 |
| 2:C:558:ALA:O | 2:C:561:GLY:N | 2.38 | 0.56 |
| 2:C:882:LEU:O | 2:C:884:GLN:N | 2.38 | 0.56 |
| 3:D:623:LEU:O | 3:D:624:VAL:C | 2.44 | 0.56 |
| 3:D:1390:LEU:O | 3:D:1391:GLU:C | 2.43 | 0.56 |
| 1:A:209:GLU:O | 1:A:210:ALA:C | 2.45 | 0.56 |
| 2:C:1093:GLN:O | 2:C:1095:LEU:N | 2.30 | 0.56 |
| 1:A:74:ASP:O | 1:A:76:VAL:N | 2.39 | 0.56 |
| 2:C:527:GLU:C | 2:C:529:VAL:H | 2.09 | 0.56 |
| 3:D:102:ILE:C | 3:D:104:PHE:H | 2.09 | 0.55 |
| 3:D:499:TYR:O | 3:D:502:THR:N | 2.29 | 0.55 |
| 3:D:743:GLN:O | 3:D:744:ILE:C | 2.45 | 0.55 |
| 3:D:876:SER:O | 3:D:877:LEU:C | 2.44 | 0.55 |
| 3:D:1365:ASP:O | 3:D:1366:LYS:C | 2.44 | 0.55 |
| 3:D:441:VAL:O | 3:D:442:CYS:C | 2.44 | 0.55 |
| 1:A:218:LEU:O | 1:A:219:LYS:C | 2.44 | 0.55 |
| 2:C:561:GLY:O | 2:C:563:ASN:O | 2.24 | 0.55 |
| 2:C:882:LEU:O | 2:C:885:ILE:N | 2.36 | 0.55 |
| 3:D:371:GLU:C | 3:D:373:LYS:H | 2.08 | 0.55 |
| 3:D:171:GLN:C | 3:D:173:LEU:H | 2.09 | 0.55 |
| 3:D:1395:LEU:O | 3:D:1398:TRP:N | 2.39 | 0.55 |
| 3:D:1466:VAL:C | 3:D:1468:LEU:N | 2.57 | 0.55 |
| 2:C:82:GLU:O | 2:C:84:ARG:N | 2.39 | 0.55 |
| 2:C:1070:ILE:O | 2:C:1072:LYS:N | 2.40 | 0.55 |
| 3:D:284:GLN:O | 3:D:286:ALA:N | 2.40 | 0.55 |
| 3:D:637:ALA:O | 3:D:638:ARG:C | 2.44 | 0.55 |
| 3:D:1425:THR:O | 3:D:1426:LYS:C | 2.44 | 0.55 |
| 3:D:174:LEU:O | 3:D:175:LYS:C | 2.46 | 0.55 |
| 3:D:626:GLN:O | 3:D:627:ALA:C | 2.44 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 3:D:648:PHE:O | 3:D:649:THR:C | 2.44 | 0.55 |
| 2:C:966:LEU:O | 2:C:969:LEU:N | 2.40 | 0.55 |
| 3:D:1350:ASP:O | 3:D:1351:GLU:C | 2.45 | 0.55 |
| 2:C:891:GLY:O | 2:C:892:LEU:C | 2.45 | 0.55 |
| 3:D:102:ILE:O | 3:D:104:PHE:N | 2.40 | 0.55 |
| 3:D:259:ARG:O | 3:D:261:ASN:N | 2.40 | 0.55 |
| 3:D:645:TYR:O | 3:D:648:PHE:N | 2.40 | 0.55 |
| 3:D:1342:GLU:O | 3:D:1345:GLU:N | 2.40 | 0.55 |
| 2:C:1054:THR:O | 2:C:1056:LYS:N | 2.41 | 0.54 |
| 3:D:592:ALA:O | 3:D:593:ARG:C | 2.46 | 0.54 |
| 3:D:932:VAL:O | 3:D:935:ALA:N | 2.40 | 0.54 |
| 3:D:1349:VAL:O | 3:D:1350:ASP:C | 2.45 | 0.54 |
| 3:D:799:ASP:O | 3:D:800:SER:C | 2.46 | 0.54 |
| 3:D:292:ASP:O | 3:D:293:ASN:C | 2.46 | 0.54 |
| 3:D:1341:PRO:O | 3:D:1342:GLU:C | 2.45 | 0.54 |
| 2:C:1047:HIS:O | 2:C:1050:GLN:N | 2.40 | 0.54 |
| 1:B:112:GLY:O | 1:B:114:PHE:N | 2.41 | 0.54 |
| 2:C:948:GLU:C | 2:C:950:LEU:N | 2.59 | 0.54 |
| 3:D:364:PRO:O | 3:D:367:LEU:N | 2.39 | 0.54 |
| 3:D:129:PHE:O | 3:D:131:LYS:N | 2.41 | 0.54 |
| 3:D:252:LEU:C | 3:D:254:ARG:N | 2.57 | 0.54 |
| 3:D:367:LEU:O | 3:D:370:MET:N | 2.40 | 0.54 |
| 2:C:543:ASN:C | 2:C:545:ASN:N | 2.60 | 0.54 |
| 2:C:556:ASN:C | 2:C:558:ALA:H | 2.10 | 0.54 |
| 3:D:564:HIS:O | 3:D:566:LEU:N | 2.40 | 0.54 |
| 3:D:275:ILE:O | 3:D:276:ILE:C | 2.47 | 0.53 |
| 3:D:941:PRO:O | 3:D:943:THR:N | 2.40 | 0.53 |
| 3:D:1447:LEU:O | 3:D:1448:THR:C | 2.46 | 0.53 |
| 1:A:209:GLU:O | 1:A:212:ASN:N | 2.41 | 0.53 |
| 3:D:348:LEU:O | 3:D:350:GLN:N | 2.41 | 0.53 |
| 3:D:743:GLN:O | 3:D:745:ARG:N | 2.41 | 0.53 |
| 3:D:792:ASP:O | 3:D:794:ALA:N | 2.42 | 0.53 |
| 3:D:815:VAL:H | 3:D:908:GLY:HA2 | 1.72 | 0.53 |
| 3:D:742:GLN:O | 3:D:743:GLN:C | 2.46 | 0.53 |
| 3:D:933:VAL:O | 3:D:934:ALA:C | 2.46 | 0.53 |
| 2:C:876:VAL:O | 2:C:879:ARG:O | 2.26 | 0.53 |
| 3:D:559:LEU:O | 3:D:561:ALA:N | 2.42 | 0.53 |
| 3:D:1266:ARG:O | 3:D:1268:PRO:N | 2.42 | 0.53 |
| 3:D:318:GLY:CA | 3:D:321:GLY:H | 2.21 | 0.53 |
| 2:C:517:ARG:O | 2:C:519:GLY:N | 2.42 | 0.53 |
| 3:D:33:ASN:O | 3:D:35:ARG:N | 2.42 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 3:D:1448:THR:O | 3:D:1449:GLU:C | 2.47 | 0.53 |
| 3:D:702:ILE:C | 3:D:704:LEU:N | 2.61 | 0.53 |
| 2:C:82:GLU:C | 2:C:84:ARG:H | 2.09 | 0.53 |
| 3:D:811:ALA:O | 3:D:931:GLY:HA3 | 2.09 | 0.53 |
| 1:B:34:VAL:O | 1:B:35:THR:C | 2.47 | 0.53 |
| 2:C:731:GLU:C | 2:C:733:ALA:N | 2.61 | 0.53 |
| 2:C:968:ASP:C | 2:C:970:GLY:H | 2.11 | 0.53 |
| 3:D:205:LEU:O | 3:D:207:VAL:N | 2.42 | 0.53 |
| 3:D:1399:ASP:C | 3:D:1401:GLU:H | 2.12 | 0.53 |
| 2:C:13:ILE:O | 2:C:14:PRO:O | 2.27 | 0.52 |
| 2:C:680:ASP:O | 2:C:681:GLY:C | 2.47 | 0.52 |
| 2:C:775:ARG:C | 2:C:777:ILE:N | 2.59 | 0.52 |
| 2:C:1047:HIS:O | 2:C:1048:THR:C | 2.45 | 0.52 |
| 2:C:1088:LEU:O | 2:C:1089:VAL:C | 2.47 | 0.52 |
| 2:C:1068:GLN:O | 2:C:1071:ILE:N | 2.43 | 0.52 |
| 3:D:121:THR:C | 3:D:123:LEU:H | 2.12 | 0.52 |
| 3:D:118:LEU:O | 3:D:119:SER:C | 2.48 | 0.52 |
| 2:C:433:THR:O | 2:C:435:TYR:N | 2.43 | 0.52 |
| 2:C:1070:ILE:C | 2:C:1072:LYS:N | 2.61 | 0.52 |
| 3:D:633:MET:O | 3:D:634:GLU:C | 2.48 | 0.52 |
| 3:D:1371:VAL:O | 3:D:1372:VAL:C | 2.47 | 0.52 |
| 2:C:18:LEU:C | 2:C:20:GLU:N | 2.59 | 0.52 |
| 2:C:74:GLY:CA | 2:C:93:PRO:O | 2.57 | 0.52 |
| 2:C:551:GLU:O | 3:D:773:GLY:HA2 | 2.10 | 0.52 |
| 3:D:397:TRP:O | 3:D:400:LEU:N | 2.43 | 0.52 |
| 3:D:1425:THR:O | 3:D:1427:SER:N | 2.43 | 0.52 |
| 1:A:156:HIS:O | 1:A:157:GLY:O | 2.28 | 0.52 |
| 3:D:805:ARG:O | 3:D:808:VAL:N | 2.43 | 0.52 |
| 3:D:1462:LEU:C | 3:D:1464:GLU:N | 2.63 | 0.52 |
| 2:C:751:PRO:C | 2:C:753:ASP:H | 2.13 | 0.52 |
| 2:C:780:GLU:O | 2:C:782:ALA:N | 2.43 | 0.52 |
| 2:C:1000:MET:O | 2:C:1001:VAL:C | 2.48 | 0.52 |
| 3:D:287:VAL:O | 3:D:288:ASP:C | 2.48 | 0.52 |
| 3:D:524:ALA:O | 3:D:525:TYR:C | 2.46 | 0.52 |
| 3:D:1466:VAL:O | 3:D:1467:ILE:C | 2.48 | 0.52 |
| 1:B:37:GLY:O | 1:B:39:PRO:N | 2.43 | 0.52 |
| 2:C:82:GLU:C | 2:C:84:ARG:N | 2.63 | 0.52 |
| 2:C:349:ALA:C | 2:C:351:LEU:N | 2.62 | 0.52 |
| 2:C:684:PHE:O | 2:C:686:ASP:N | 2.37 | 0.52 |
| 3:D:546:GLY:C | 3:D:548:LEU:N | 2.62 | 0.52 |
| 2:C:634:GLY:O | 2:C:635:THR:C | 2.48 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 3:D:728:PRO:O | 3:D:729:LEU:C | 2.48 | 0.51 |
| 3:D:1336:LEU:O | 3:D:1337:GLU:C | 2.48 | 0.51 |
| 1:A:164:ALA:O | 1:A:165:ILE:C | 2.48 | 0.51 |
| 2:C:16:PRO:O | 2:C:18:LEU:N | 2.42 | 0.51 |
| 2:C:566:THR:C | 2:C:568:ALA:N | 2.64 | 0.51 |
| 2:C:1062:GLY:O | 2:C:1066:ALA:N | 2.38 | 0.51 |
| 3:D:729:LEU:O | 3:D:730:TYR:C | 2.48 | 0.51 |
| 2:C:948:GLU:O | 2:C:950:LEU:N | 2.44 | 0.51 |
| 3:D:136:ASP:O | 3:D:137:PRO:O | 2.29 | 0.51 |
| 3:D:736:GLY:O | 3:D:737:ALA:C | 2.47 | 0.51 |
| 3:D:745:ARG:O | 3:D:747:LEU:N | 2.44 | 0.51 |
| 2:C:582:GLY:C | 2:C:584:GLU:N | 2.64 | 0.51 |
| 3:D:379:VAL:O | 3:D:382:ALA:N | 2.42 | 0.51 |
| 3:D:474:SER:O | 3:D:477:ASN:O | 2.28 | 0.51 |
| 2:C:563:ASN:C | 2:C:565:GLN:N | 2.64 | 0.51 |
| 1:B:225:PHE:O | 1:B:226:ALA:O | 2.29 | 0.51 |
| 3:D:371:GLU:C | 3:D:373:LYS:N | 2.64 | 0.51 |
| 3:D:399:ALA:O | 3:D:400:LEU:C | 2.49 | 0.51 |
| 3:D:597:GLU:O | 3:D:600:GLY:N | 2.44 | 0.51 |
| 3:D:792:ASP:C | 3:D:794:ALA:N | 2.61 | 0.51 |
| 3:D:916:TYR:H | 3:D:924:VAL:H | 1.58 | 0.51 |
| 3:D:1367:HIS:O | 3:D:1368:ILE:C | 2.49 | 0.51 |
| 2:C:964:LYS:O | 2:C:965:GLU:C | 2.49 | 0.51 |
| 3:D:364:PRO:O | 3:D:365:PHE:C | 2.48 | 0.51 |
| 3:D:366:LEU:O | 3:D:367:LEU:C | 2.49 | 0.51 |
| 3:D:929:ALA:O | 3:D:932:VAL:N | 2.44 | 0.51 |
| 3:D:124:GLU:O | 3:D:127:LEU:N | 2.36 | 0.51 |
| 3:D:444:ALA:C | 3:D:446:ASN:H | 2.14 | 0.51 |
| 3:D:637:ALA:O | 3:D:639:LEU:N | 2.43 | 0.51 |
| 2:C:1037:VAL:O | 2:C:1041:GLU:N | 2.30 | 0.50 |
| 3:D:231:PRO:C | 3:D:233:LEU:N | 2.65 | 0.50 |
| 3:D:396:VAL:O | 3:D:397:TRP:C | 2.50 | 0.50 |
| 2:C:582:GLY:O | 2:C:583:LEU:C | 2.50 | 0.50 |
| 3:D:617:LYS:O | 3:D:618:ASN:C | 2.49 | 0.50 |
| 3:D:491:SER:O | 3:D:493:ASP:N | 2.44 | 0.50 |
| 2:C:1044:GLY:C | 2:C:1046:ALA:H | 2.14 | 0.50 |
| 3:D:148:GLU:O | 3:D:150:ARG:N | 2.44 | 0.50 |
| 2:C:834:GLN:O | 2:C:835:VAL:C | 2.49 | 0.50 |
| 2:C:888:THR:O | 2:C:990:GLY:HA3 | 2.11 | 0.50 |
| 3:D:259:ARG:C | 3:D:261:ASN:H | 2.14 | 0.50 |
| 3:D:318:GLY:O | 3:D:321:GLY:N | 2.44 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 3:D:559:LEU:C | 3:D:561:ALA:N | 2.62 | 0.50 |
| 1:A:127:LEU:O | 1:A:128:HIS:C | 2.50 | 0.50 |
| 2:C:402:SER:O | 2:C:403:SER:C | 2.50 | 0.50 |
| 3:D:440:LEU:O | 3:D:441:VAL:C | 2.50 | 0.50 |
| 3:D:461:SER:O | 3:D:463:PHE:N | 2.43 | 0.50 |
| 3:D:777:LEU:O | 3:D:780:PHE:N | 2.45 | 0.50 |
| 3:D:397:TRP:O | 3:D:399:ALA:N | 2.45 | 0.50 |
| 3:D:849:ILE:O | 3:D:850:GLU:C | 2.48 | 0.50 |
| 1:B:152:PRO:C | 1:B:154:GLU:H | 2.15 | 0.50 |
| 3:D:590:LEU:O | 3:D:591:PHE:C | 2.49 | 0.50 |
| 3:D:715:ALA:C | 3:D:717:PHE:N | 2.64 | 0.50 |
| 3:D:483:SER:O | 3:D:485:GLU:N | 2.45 | 0.50 |
| 3:D:916:TYR:N | 3:D:924:VAL:H | 2.10 | 0.50 |
| 2:C:1060:ILE:O | 2:C:1061:GLU:C | 2.51 | 0.49 |
| 3:D:439:PRO:O | 3:D:440:LEU:C | 2.51 | 0.49 |
| 3:D:632:GLY:O | 3:D:633:MET:C | 2.51 | 0.49 |
| 3:D:1348:LEU:O | 3:D:1349:VAL:C | 2.51 | 0.49 |
| 3:D:1449:GLU:O | 3:D:1450:ALA:C | 2.49 | 0.49 |
| 2:C:515:ALA:O | 2:C:522:VAL:O | 2.30 | 0.49 |
| 2:C:653:ASP:O | 2:C:654:LEU:C | 2.51 | 0.49 |
| 2:C:556:ASN:O | 2:C:558:ALA:N | 2.46 | 0.49 |
| 2:C:697:ARG:O | 2:C:698:ASP:C | 2.51 | 0.49 |
| 3:D:219:GLU:C | 3:D:221:MET:N | 2.65 | 0.49 |
| 3:D:557:GLU:O | 3:D:558:ALA:C | 2.51 | 0.49 |
| 3:D:730:TYR:O | 3:D:733:ALA:N | 2.45 | 0.49 |
| 3:D:811:ALA:C | 3:D:813:GLU:H | 2.14 | 0.49 |
| 1:A:219:LYS:O | 1:A:222:LEU:N | 2.45 | 0.49 |
| 1:B:116:PRO:O | 1:B:117:SER:O | 2.31 | 0.49 |
| 2:C:389:SER:O | 2:C:391:LEU:N | 2.46 | 0.49 |
| 2:C:572:ILE:C | 2:C:574:ALA:H | 2.15 | 0.49 |
| 2:C:766:GLU:O | 2:C:767:PRO:O | 2.29 | 0.49 |
| 3:D:1336:LEU:O | 3:D:1339:LYS:N | 2.46 | 0.49 |
| 3:D:1466:VAL:O | 3:D:1468:LEU:N | 2.45 | 0.49 |
| 3:D:418:HIS:O | 3:D:419:ARG:C | 2.51 | 0.49 |
| 2:C:543:ASN:O | 2:C:545:ASN:N | 2.45 | 0.49 |
| 2:C:694:LEU:O | 2:C:698:ASP:N | 2.45 | 0.49 |
| 2:C:1088:LEU:O | 2:C:1091:GLU:N | 2.46 | 0.49 |
| 2:C:1043:TYR:C | 2:C:1045:ALA:N | 2.66 | 0.49 |
| 3:D:154:THR:O | 3:D:157:GLU:N | 2.44 | 0.49 |
| 3:D:808:VAL:O | 3:D:810:VAL:N | 2.46 | 0.49 |
| 3:D:487:LEU:C | 3:D:489:LYS:N | 2.65 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 2:C:254:LEU:C | 2:C:256:TYR:N | 2.67 | 0.49 |
| 2:C:282:GLY:O | 2:C:283:VAL:O | 2.31 | 0.49 |
| 2:C:572:ILE:O | 2:C:574:ALA:N | 2.37 | 0.49 |
| 2:C:89:THR:O | 2:C:90:TYR:C | 2.50 | 0.48 |
| 2:C:92:ALA:O | 2:C:93:PRO:C | 2.51 | 0.48 |
| 3:D:813:GLU:O | 3:D:814:ILE:C | 2.51 | 0.48 |
| 2:C:831:ARG:O | 2:C:832:LYS:O | 2.31 | 0.48 |
| 3:D:480:SER:O | 3:D:481:PRO:C | 2.51 | 0.48 |
| 1:B:41:ARG:C | 1:B:43:ILE:H | 2.16 | 0.48 |
| 2:C:731:GLU:O | 2:C:733:ALA:N | 2.46 | 0.48 |
| 2:C:1035:MET:O | 2:C:1036:GLU:C | 2.50 | 0.48 |
| 3:D:399:ALA:C | 3:D:401:GLU:N | 2.65 | 0.48 |
| 3:D:811:ALA:C | 3:D:813:GLU:N | 2.66 | 0.48 |
| 3:D:880:VAL:O | 3:D:881:HIS:C | 2.52 | 0.48 |
| 2:C:1044:GLY:O | 2:C:1046:ALA:N | 2.42 | 0.48 |
| 3:D:934:ALA:O | 3:D:935:ALA:O | 2.31 | 0.48 |
| 2:C:787:ASP:O | 2:C:789:SER:N | 2.46 | 0.48 |
| 2:C:831:ARG:O | 2:C:832:LYS:C | 2.52 | 0.48 |
| 3:D:569:LEU:O | 3:D:587:GLY:N | 2.42 | 0.48 |
| 3:D:642:ALA:O | 3:D:646:TYR:N | 2.45 | 0.48 |
| 3:D:1434:TRP:O | 3:D:1435:LEU:C | 2.51 | 0.48 |
| 3:D:1444:THR:O | 3:D:1445:HIS:C | 2.52 | 0.48 |
| 2:C:462:ASP:O | 2:C:463:ALA:C | 2.51 | 0.48 |
| 3:D:84:ILE:C | 3:D:86:ARG:H | 2.17 | 0.48 |
| 3:D:480:SER:C | 3:D:482:ALA:N | 2.65 | 0.48 |
| 3:D:493:ASP:C | 3:D:495:ILE:N | 2.62 | 0.48 |
| 3:D:680:LEU:C | 3:D:682:GLN:H | 2.17 | 0.48 |
| 2:C:448:ASN:O | 2:C:449:ILE:C | 2.51 | 0.48 |
| 3:D:1347:TYR:O | 3:D:1348:LEU:C | 2.52 | 0.48 |
| 1:B:105:GLY:HA2 | 1:B:135:GLY:HA2 | 1.96 | 0.48 |
| 3:D:461:SER:O | 3:D:462:SER:C | 2.50 | 0.48 |
| 3:D:1445:HIS:O | 3:D:1446:VAL:C | 2.51 | 0.48 |
| 2:C:775:ARG:O | 2:C:778:PHE:C | 2.52 | 0.48 |
| 2:C:1066:ALA:O | 2:C:1069:ALA:N | 2.47 | 0.48 |
| 2:C:1083:GLU:O | 2:C:1085:PHE:N | 2.47 | 0.48 |
| 3:D:592:ALA:O | 3:D:596:GLY:N | 2.46 | 0.48 |
| 3:D:1424:VAL:O | 3:D:1425:THR:O | 2.32 | 0.48 |
| 2:C:1043:TYR:O | 2:C:1045:ALA:N | 2.45 | 0.47 |
| 3:D:605:ALA:C | 3:D:607:GLU:N | 2.66 | 0.47 |
| 2:C:168:ARG:O | 2:C:264:PRO:O | 2.32 | 0.47 |
| 2:C:775:ARG:C | 2:C:778:PHE:N | 2.59 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 2:C:948:GLU:C | 2:C:950:LEU:H | 2.16 | 0.47 |
| 3:D:792:ASP:C | 3:D:794:ALA:H | 2.17 | 0.47 |
| 3:D:900:PRO:C | 3:D:902:THR:H | 2.15 | 0.47 |
| 1:B:114:PHE:O | 1:B:115:THR:C | 2.52 | 0.47 |
| 2:C:961:GLU:C | 2:C:963:LEU:N | 2.66 | 0.47 |
| 3:D:557:GLU:O | 3:D:560:LEU:N | 2.47 | 0.47 |
| 3:D:1369:GLU:O | 3:D:1370:ILE:C | 2.52 | 0.47 |
| 2:C:135:VAL:O | 2:C:137:VAL:N | 2.47 | 0.47 |
| 3:D:1462:LEU:O | 3:D:1464:GLU:N | 2.47 | 0.47 |
| 2:C:1064:ASN:O | 2:C:1065:ALA:C | 2.52 | 0.47 |
| 3:D:318:GLY:HA2 | 3:D:321:GLY:H | 1.79 | 0.47 |
| 3:D:430:VAL:O | 3:D:431:GLU:O | 2.32 | 0.47 |
| 1:B:152:PRO:C | 1:B:154:GLU:N | 2.67 | 0.47 |
| 3:D:56:TYR:O | 3:D:57:GLU:O | 2.33 | 0.47 |
| 3:D:112:ILE:C | 3:D:114:THR:N | 2.68 | 0.47 |
| 3:D:371:GLU:O | 3:D:373:LYS:N | 2.48 | 0.47 |
| 3:D:596:GLY:O | 3:D:597:GLU:C | 2.53 | 0.47 |
| 3:D:605:ALA:O | 3:D:606:GLN:C | 2.52 | 0.47 |
| 3:D:680:LEU:C | 3:D:682:GLN:N | 2.68 | 0.47 |
| 3:D:787:ARG:C | 3:D:790:GLY:H | 2.18 | 0.47 |
| 2:C:448:ASN:O | 2:C:449:ILE:O | 2.33 | 0.47 |
| 3:D:21:TRP:C | 3:D:23:TYR:H | 2.17 | 0.47 |
| 3:D:431:GLU:C | 3:D:432:GLY:O | 2.53 | 0.47 |
| 3:D:642:ALA:O | 3:D:645:TYR:N | 2.47 | 0.47 |
| 3:D:648:PHE:O | 3:D:651:SER:N | 2.48 | 0.47 |
| 3:D:783:SER:O | 3:D:784:HIS:C | 2.50 | 0.47 |
| 2:C:545:ASN:O | 2:C:547:ILE:N | 2.47 | 0.47 |
| 2:C:614:ARG:O | 2:C:615:TYR:O | 2.33 | 0.47 |
| 3:D:21:TRP:O | 3:D:23:TYR:N | 2.48 | 0.47 |
| 3:D:318:GLY:C | 3:D:320:GLN:N | 2.66 | 0.47 |
| 3:D:368:LYS:O | 3:D:369:LYS:C | 2.52 | 0.47 |
| 3:D:557:GLU:O | 3:D:559:LEU:N | 2.48 | 0.47 |
| 3:D:715:ALA:C | 3:D:717:PHE:H | 2.18 | 0.47 |
| 1:A:229:GLU:O | 1:A:230:ALA:C | 2.53 | 0.46 |
| 2:C:891:GLY:O | 2:C:893:ALA:N | 2.48 | 0.46 |
| 3:D:773:GLY:O | 3:D:774:LEU:C | 2.53 | 0.46 |
| 3:D:900:PRO:O | 3:D:901:LEU:C | 2.53 | 0.46 |
| 1:A:219:LYS:O | 1:A:220:GLU:C | 2.52 | 0.46 |
| 2:C:1062:GLY:O | 2:C:1065:ALA:N | 2.48 | 0.46 |
| 3:D:347:LYS:O | 3:D:348:LEU:C | 2.53 | 0.46 |
| 3:D:805:ARG:O | 3:D:807:LEU:N | 2.48 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 3:D:1261:GLU:O | 3:D:1265:ALA:CA | 2.63 | 0.46 |
| 2:C:836:GLY:N | 2:C:849:VAL:O | 2.49 | 0.46 |
| 3:D:635:LYS:O | 3:D:637:ALA:N | 2.49 | 0.46 |
| 3:D:736:GLY:O | 3:D:737:ALA:O | 2.34 | 0.46 |
| 3:D:941:PRO:O | 3:D:942:GLY:C | 2.52 | 0.46 |
| 3:D:1434:TRP:O | 3:D:1438:ALA:N | 2.45 | 0.46 |
| 3:D:559:LEU:O | 3:D:560:LEU:C | 2.52 | 0.46 |
| 3:D:1258:ARG:O | 3:D:1259:VAL:C | 2.54 | 0.46 |
| 3:D:1369:GLU:O | 3:D:1372:VAL:N | 2.48 | 0.46 |
| 2:C:733:ALA:O | 2:C:734:LEU:C | 2.52 | 0.46 |
| 3:D:593:ARG:O | 3:D:594:ILE:C | 2.53 | 0.46 |
| 2:C:601:GLY:HA3 | 2:C:615:TYR:CA | 2.46 | 0.46 |
| 2:C:1100:GLN:N | 3:D:9:ARG:O | 2.49 | 0.46 |
| 3:D:887:ALA:C | 3:D:890:GLY:N | 2.65 | 0.46 |
| 1:B:112:GLY:C | 1:B:114:PHE:N | 2.66 | 0.46 |
| 2:C:730:SER:O | 2:C:733:ALA:N | 2.36 | 0.46 |
| 3:D:148:GLU:O | 3:D:149:LYS:C | 2.54 | 0.46 |
| 2:C:13:ILE:C | 2:C:14:PRO:O | 2.54 | 0.45 |
| 3:D:45:PHE:O | 3:D:47:GLU:N | 2.49 | 0.45 |
| 3:D:745:ARG:O | 3:D:746:GLN:C | 2.54 | 0.45 |
| 3:D:906:ARG:O | 3:D:908:GLY:N | 2.44 | 0.45 |
| 1:B:172:SER:O | 1:B:173:PRO:C | 2.54 | 0.45 |
| 3:D:1451:ALA:O | 3:D:1452:ILE:C | 2.54 | 0.45 |
| 2:C:917:LEU:O | 2:C:921:ALA:N | 2.49 | 0.45 |
| 1:A:110:ARG:O | 1:A:111:ALA:C | 2.55 | 0.45 |
| 2:C:1086:ARG:O | 2:C:1087:VAL:C | 2.55 | 0.45 |
| 3:D:628:PHE:O | 3:D:629:LEU:C | 2.55 | 0.45 |
| 2:C:972:VAL:O | 2:C:987:ILE:N | 2.43 | 0.45 |
| 3:D:625:TYR:O | 3:D:626:GLN:C | 2.54 | 0.45 |
| 3:D:702:ILE:O | 3:D:704:LEU:N | 2.50 | 0.45 |
| 3:D:777:LEU:O | 3:D:779:TYR:N | 2.50 | 0.45 |
| 2:C:545:ASN:C | 2:C:547:ILE:N | 2.69 | 0.45 |
| 2:C:669:GLY:HA3 | 2:C:994:ILE:O | 2.16 | 0.45 |
| 2:C:727:PRO:C | 2:C:729:LEU:H | 2.20 | 0.45 |
| 3:D:63:TYR:C | 3:D:65:ARG:N | 2.69 | 0.45 |
| 3:D:807:LEU:O | 3:D:808:VAL:C | 2.54 | 0.45 |
| 2:C:976:ASP:O | 2:C:978:ARG:N | 2.50 | 0.45 |
| 3:D:284:GLN:C | 3:D:286:ALA:N | 2.69 | 0.45 |
| 3:D:641:ASP:O | 3:D:643:LEU:N | 2.49 | 0.45 |
| 1:B:211:LEU:O | 1:B:212:ASN:C | 2.55 | 0.45 |
| 2:C:566:THR:O | 2:C:568:ALA:N | 2.49 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 3:D:117:ASP:O | 3:D:118:LEU:C | 2.54 | 0.45 |
| 3:D:263:LEU:C | 3:D:265:LYS:N | 2.70 | 0.45 |
| 3:D:394:ASP:O | 3:D:395:GLU:C | 2.55 | 0.45 |
| 3:D:493:ASP:O | 3:D:495:ILE:N | 2.50 | 0.45 |
| 3:D:820:ASP:C | 3:D:822:GLY:N | 2.69 | 0.45 |
| 3:D:1260:ILE:O | 3:D:1261:GLU:C | 2.54 | 0.45 |
| 3:D:1399:ASP:C | 3:D:1401:GLU:N | 2.70 | 0.45 |
| 1:A:34:VAL:C | 1:A:36:LEU:N | 2.68 | 0.45 |
| 2:C:733:ALA:C | 2:C:735:ARG:N | 2.69 | 0.45 |
| 2:C:1041:GLU:O | 2:C:1043:TYR:O | 2.35 | 0.44 |
| 3:D:1369:GLU:O | 3:D:1371:VAL:N | 2.50 | 0.44 |
| 3:D:1446:VAL:O | 3:D:1447:LEU:C | 2.55 | 0.44 |
| 2:C:397:GLU:O | 2:C:398:THR:C | 2.55 | 0.44 |
| 2:C:401:LEU:O | 2:C:404:LEU:N | 2.49 | 0.44 |
| 3:D:114:THR:C | 3:D:116:LEU:N | 2.71 | 0.44 |
| 3:D:259:ARG:C | 3:D:261:ASN:N | 2.71 | 0.44 |
| 1:A:26:GLU:O | 1:A:193:ASP:O | 2.35 | 0.44 |
| 1:B:83:LYS:C | 1:B:85:LEU:N | 2.70 | 0.44 |
| 3:D:317:SER:O | 3:D:318:GLY:C | 2.56 | 0.44 |
| 3:D:438:HIS:O | 3:D:439:PRO:O | 2.35 | 0.44 |
| 3:D:1345:GLU:O | 3:D:1346:ARG:C | 2.55 | 0.44 |
| 1:A:217:ILE:O | 1:A:218:LEU:C | 2.54 | 0.44 |
| 1:B:105:GLY:HA2 | 1:B:136:GLY:H | 1.82 | 0.44 |
| 2:C:672:VAL:O | 2:C:992:MET:N | 2.46 | 0.44 |
| 3:D:535:PRO:O | 3:D:536:ILE:C | 2.56 | 0.44 |
| 3:D:913:CYS:O | 3:D:915:GLY:N | 2.51 | 0.44 |
| 3:D:1462:LEU:O | 3:D:1463:LYS:C | 2.55 | 0.44 |
| 2:C:564:MET:C | 2:C:566:THR:N | 2.69 | 0.44 |
| 2:C:1034:GLU:O | 2:C:1037:VAL:N | 2.50 | 0.44 |
| 3:D:850:GLU:O | 3:D:854:TYR:N | 2.40 | 0.44 |
| 3:D:889:ALA:O | 3:D:890:GLY:O | 2.34 | 0.44 |
| 1:B:219:LYS:O | 1:B:220:GLU:C | 2.56 | 0.44 |
| 2:C:694:LEU:O | 2:C:699:PHE:N | 2.47 | 0.44 |
| 3:D:546:GLY:C | 3:D:548:LEU:H | 2.20 | 0.44 |
| 1:B:32:PHE:O | 1:B:33:GLY:C | 2.55 | 0.44 |
| 1:B:105:GLY:HA2 | 1:B:135:GLY:CA | 2.47 | 0.44 |
| 2:C:427:VAL:O | 2:C:428:ARG:C | 2.55 | 0.44 |
| 3:D:1437:ALA:O | 3:D:1438:ALA:O | 2.35 | 0.44 |
| 2:C:1054:THR:C | 2:C:1056:LYS:N | 2.71 | 0.44 |
| 3:D:473:LEU:O | 3:D:474:SER:C | 2.56 | 0.44 |
| 3:D:715:ALA:O | 3:D:717:PHE:N | 2.51 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 3:D:729:LEU:O | 3:D:730:TYR:O | 2.36 | 0.44 |
| 3:D:864:ALA:O | 3:D:866:GLY:N | 2.51 | 0.44 |
| 3:D:1440:PHE:O | 3:D:1441:GLN:C | 2.56 | 0.44 |
| 1:A:109:VAL:N | 1:A:130:ALA:O | 2.44 | 0.43 |
| 1:A:122:ILE:O | 1:A:123:MET:C | 2.56 | 0.43 |
| 2:C:684:PHE:C | 2:C:686:ASP:H | 2.20 | 0.43 |
| 3:D:314:ASP:O | 3:D:317:SER:N | 2.51 | 0.43 |
| 3:D:850:GLU:C | 3:D:852:GLY:H | 2.20 | 0.43 |
| 2:C:1070:ILE:C | 2:C:1072:LYS:H | 2.21 | 0.43 |
| 2:C:401:LEU:O | 2:C:402:SER:C | 2.56 | 0.43 |
| 2:C:691:SER:C | 2:C:693:GLU:N | 2.71 | 0.43 |
| 3:D:22:SER:O | 3:D:90:MET:O | 2.36 | 0.43 |
| 3:D:659:GLY:O | 3:D:660:ILE:C | 2.56 | 0.43 |
| 2:C:731:GLU:O | 2:C:732:ALA:C | 2.55 | 0.43 |
| 1:A:202:ASP:O | 1:A:204:SER:N | 2.52 | 0.43 |
| 2:C:583:LEU:O | 2:C:586:ARG:N | 2.52 | 0.43 |
| 2:C:845:ASN:O | 2:C:846:LYS:O | 2.37 | 0.43 |
| 3:D:627:ALA:O | 3:D:628:PHE:C | 2.57 | 0.43 |
| 2:C:891:GLY:HA3 | 2:C:991:GLN:H | 1.84 | 0.43 |
| 3:D:670:GLN:O | 3:D:674:GLU:N | 2.50 | 0.43 |
| 3:D:941:PRO:C | 3:D:943:THR:H | 2.21 | 0.43 |
| 1:A:44:LEU:C | 1:A:46:SER:H | 2.22 | 0.43 |
| 1:B:211:LEU:O | 1:B:214:ALA:N | 2.51 | 0.43 |
| 2:C:1092:LEU:O | 2:C:1095:LEU:N | 2.52 | 0.43 |
| 3:D:112:ILE:O | 3:D:114:THR:N | 2.50 | 0.43 |
| 3:D:119:SER:O | 3:D:120:ALA:C | 2.57 | 0.43 |
| 3:D:544:SER:O | 3:D:547:ARG:N | 2.52 | 0.43 |
| 2:C:229:MET:O | 2:C:230:ARG:O | 2.37 | 0.43 |
| 2:C:1112:PHE:O | 2:C:1114:GLY:N | 2.52 | 0.43 |
| 3:D:444:ALA:O | 3:D:446:ASN:N | 2.51 | 0.43 |
| 1:A:34:VAL:C | 1:A:36:LEU:H | 2.22 | 0.43 |
| 2:C:404:LEU:O | 2:C:405:ARG:C | 2.54 | 0.43 |
| 3:D:289:ALA:O | 3:D:290:VAL:C | 2.57 | 0.43 |
| 3:D:341:VAL:N | 3:D:435:ILE:O | 2.51 | 0.43 |
| 3:D:362:PHE:O | 3:D:364:PRO:N | 2.52 | 0.43 |
| 3:D:624:VAL:O | 3:D:625:TYR:C | 2.56 | 0.43 |
| 3:D:1474:ALA:O | 3:D:1477:GLY:N | 2.48 | 0.43 |
| 2:C:545:ASN:C | 2:C:547:ILE:H | 2.21 | 0.43 |
| 2:C:891:GLY:O | 2:C:894:GLY:N | 2.52 | 0.43 |
| 1:A:104:GLU:O | 1:A:105:GLY:C | 2.57 | 0.42 |
| 3:D:444:ALA:C | 3:D:446:ASN:N | 2.70 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 3:D:645:TYR:O | 3:D:646:TYR:C | 2.57 | 0.42 |
| 2:C:1037:VAL:O | 2:C:1038:TRP:C | 2.55 | 0.42 |
| 3:D:167:ALA:C | 3:D:169:ALA:N | 2.71 | 0.42 |
| 3:D:175:LYS:O | 3:D:177:LEU:N | 2.53 | 0.42 |
| 3:D:557:GLU:C | 3:D:559:LEU:N | 2.72 | 0.42 |
| 3:D:724:TYR:C | 3:D:726:PHE:H | 2.21 | 0.42 |
| 3:D:1351:GLU:O | 3:D:1352:ILE:C | 2.56 | 0.42 |
| 3:D:526:GLU:C | 3:D:528:GLY:N | 2.73 | 0.42 |
| 2:C:914:ILE:O | 2:C:915:LYS:C | 2.57 | 0.42 |
| 2:C:1040:LEU:O | 2:C:1043:TYR:O | 2.37 | 0.42 |
| 2:C:775:ARG:C | 2:C:777:ILE:H | 2.21 | 0.42 |
| 3:D:101:HIS:O | 3:D:102:ILE:C | 2.58 | 0.42 |
| 3:D:252:LEU:O | 3:D:253:TYR:C | 2.57 | 0.42 |
| 3:D:917:ASP:O | 3:D:919:SER:N | 2.51 | 0.42 |
| 1:A:76:VAL:O | 1:A:77:GLU:C | 2.56 | 0.42 |
| 1:A:82:LEU:O | 1:A:83:LYS:C | 2.58 | 0.42 |
| 1:A:164:ALA:O | 1:A:166:PRO:N | 2.52 | 0.42 |
| 2:C:276:LYS:C | 2:C:278:GLU:H | 2.23 | 0.42 |
| 2:C:365:ASP:C | 2:C:367:LEU:H | 2.22 | 0.42 |
| 2:C:1058:ASP:O | 2:C:1059:ASP:C | 2.58 | 0.42 |
| 3:D:252:LEU:O | 3:D:254:ARG:N | 2.52 | 0.42 |
| 1:B:224:TYR:C | 1:B:226:ALA:N | 2.71 | 0.42 |
| 2:C:1082:PRO:O | 2:C:1083:GLU:O | 2.38 | 0.42 |
| 3:D:93:ILE:O | 3:D:95:LEU:N | 2.52 | 0.42 |
| 3:D:247:SER:C | 3:D:249:LEU:H | 2.23 | 0.42 |
| 3:D:756:LYS:N | 3:D:760:GLU:O | 2.36 | 0.42 |
| 3:D:811:ALA:O | 3:D:813:GLU:N | 2.52 | 0.42 |
| 2:C:16:PRO:C | 2:C:18:LEU:N | 2.71 | 0.42 |
| 2:C:233:GLU:C | 2:C:235:MET:H | 2.22 | 0.42 |
| 2:C:943:VAL:O | 2:C:946:ARG:N | 2.50 | 0.42 |
| 3:D:102:ILE:C | 3:D:104:PHE:N | 2.72 | 0.42 |
| 3:D:568:ASP:O | 3:D:570:GLN:N | 2.41 | 0.42 |
| 3:D:717:PHE:O | 3:D:720:PHE:N | 2.53 | 0.42 |
| 3:D:814:ILE:CA | 3:D:908:GLY:HA2 | 2.50 | 0.42 |
| 3:D:1262:LEU:O | 3:D:1264:GLU:N | 2.51 | 0.42 |
| 1:A:206:THR:O | 1:A:207:PRO:C | 2.58 | 0.42 |
| 2:C:259:GLY:O | 2:C:260:LEU:O | 2.37 | 0.42 |
| 3:D:616:GLU:O | 3:D:617:LYS:O | 2.38 | 0.42 |
| 3:D:640:LEU:O | 3:D:641:ASP:O | 2.37 | 0.42 |
| 3:D:845:LYS:O | 3:D:846:ARG:C | 2.57 | 0.42 |
| 3:D:1372:VAL:O | 3:D:1373:ARG:C | 2.58 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 3:D:208:VAL:C | 3:D:210:ALA:N | 2.72 | 0.42 |
| 3:D:378:ASN:O | 3:D:379:VAL:C | 2.59 | 0.42 |
| 3:D:528:GLY:O | 3:D:532:LEU:O | 2.38 | 0.42 |
| 3:D:610:GLN:O | 3:D:612:ASP:N | 2.53 | 0.42 |
| 3:D:1342:GLU:O | 3:D:1343:ALA:C | 2.58 | 0.42 |
| 3:D:1344:VAL:O | 3:D:1347:TYR:N | 2.52 | 0.42 |
| 1:A:75:VAL:O | 1:A:76:VAL:C | 2.58 | 0.41 |
| 2:C:696:LYS:C | 2:C:698:ASP:H | 2.23 | 0.41 |
| 2:C:731:GLU:C | 2:C:733:ALA:H | 2.21 | 0.41 |
| 3:D:522:LEU:C | 3:D:524:ALA:N | 2.72 | 0.41 |
| 3:D:1395:LEU:O | 3:D:1396:GLU:C | 2.58 | 0.41 |
| 2:C:556:ASN:C | 2:C:558:ALA:N | 2.73 | 0.41 |
| 2:C:873:PRO:O | 2:C:874:LEU:C | 2.59 | 0.41 |
| 3:D:286:ALA:O | 3:D:287:VAL:C | 2.58 | 0.41 |
| 3:D:343:GLY:O | 3:D:344:PRO:C | 2.58 | 0.41 |
| 3:D:480:SER:O | 3:D:482:ALA:N | 2.53 | 0.41 |
| 3:D:806:LYS:O | 3:D:807:LEU:C | 2.58 | 0.41 |
| 3:D:1366:LYS:O | 3:D:1367:HIS:C | 2.57 | 0.41 |
| 1:A:34:VAL:O | 1:A:36:LEU:N | 2.54 | 0.41 |
| 1:B:128:HIS:O | 1:B:130:ALA:N | 2.53 | 0.41 |
| 1:B:215:VAL:O | 1:B:219:LYS:N | 2.41 | 0.41 |
| 2:C:583:LEU:O | 2:C:585:GLU:N | 2.53 | 0.41 |
| 2:C:957:LYS:O | 2:C:958:SER:O | 2.39 | 0.41 |
| 3:D:84:ILE:C | 3:D:86:ARG:N | 2.70 | 0.41 |
| 2:C:434:HIS:O | 2:C:435:TYR:C | 2.57 | 0.41 |
| 2:C:730:SER:O | 2:C:732:ALA:N | 2.53 | 0.41 |
| 2:C:937:ASP:O | 2:C:938:LYS:C | 2.59 | 0.41 |
| 3:D:354:PRO:O | 3:D:355:LYS:C | 2.58 | 0.41 |
| 1:B:207:PRO:O | 1:B:208:LEU:C | 2.59 | 0.41 |
| 2:C:56:GLU:O | 2:C:57:GLY:C | 2.59 | 0.41 |
| 2:C:963:LEU:O | 2:C:966:LEU:N | 2.54 | 0.41 |
| 3:D:808:VAL:O | 3:D:809:ASP:C | 2.57 | 0.41 |
| 3:D:1472:ILE:C | 3:D:1474:ALA:H | 2.24 | 0.41 |
| 2:C:1070:ILE:O | 2:C:1071:ILE:C | 2.59 | 0.41 |
| 3:D:347:LYS:O | 3:D:348:LEU:O | 2.38 | 0.41 |
| 3:D:659:GLY:O | 3:D:662:ASP:N | 2.41 | 0.41 |
| 3:D:1347:TYR:O | 3:D:1348:LEU:O | 2.38 | 0.41 |
| 3:D:1428:ALA:O | 3:D:1429:LEU:C | 2.58 | 0.41 |
| 1:B:104:GLU:O | 1:B:136:GLY:O | 2.39 | 0.41 |
| 2:C:889:HIS:O | 2:C:890:LEU:C | 2.59 | 0.41 |
| 2:C:1062:GLY:O | 2:C:1063:ARG:C | 2.58 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 3:D:313:THR:O | 3:D:314:ASP:C | 2.59 | 0.41 |
| 1:B:215:VAL:O | 1:B:216:ALA:C | 2.59 | 0.41 |
| 2:C:444:PRO:O | 2:C:445:GLU:C | 2.59 | 0.41 |
| 2:C:586:ARG:O | 2:C:587:VAL:C | 2.57 | 0.41 |
| 3:D:25:GLU:C | 3:D:27:GLU:H | 2.19 | 0.41 |
| 3:D:345:GLN:O | 3:D:346:LEU:C | 2.59 | 0.41 |
| 3:D:529:GLU:C | 3:D:531:ALA:H | 2.23 | 0.41 |
| 3:D:878:GLU:O | 3:D:879:ASP:C | 2.59 | 0.41 |
| 3:D:882:PHE:O | 3:D:883:LEU:C | 2.57 | 0.41 |
| 3:D:933:VAL:O | 3:D:934:ALA:O | 2.39 | 0.41 |
| 1:A:224:TYR:C | 1:A:226:ALA:H | 2.24 | 0.41 |
| 2:C:938:LYS:O | 2:C:939:ARG:C | 2.60 | 0.41 |
| 2:C:985:GLY:O | 2:C:986:PRO:C | 2.58 | 0.41 |
| 3:D:93:ILE:O | 3:D:94:GLU:C | 2.59 | 0.41 |
| 3:D:804:THR:O | 3:D:805:ARG:O | 2.39 | 0.41 |
| 3:D:847:SER:O | 3:D:850:GLU:N | 2.54 | 0.41 |
| 3:D:1349:VAL:O | 3:D:1352:ILE:N | 2.54 | 0.41 |
| 2:C:883:GLY:O | 2:C:886:LEU:N | 2.53 | 0.41 |
| 3:D:460:LEU:O | 3:D:461:SER:C | 2.59 | 0.41 |
| 3:D:493:ASP:O | 3:D:496:LEU:N | 2.55 | 0.41 |
| 3:D:546:GLY:O | 3:D:547:ARG:C | 2.60 | 0.41 |
| 3:D:1350:ASP:O | 3:D:1353:GLN:N | 2.54 | 0.41 |
| 2:C:558:ALA:O | 2:C:559:LEU:C | 2.59 | 0.40 |
| 2:C:943:VAL:C | 2:C:945:ALA:N | 2.72 | 0.40 |
| 3:D:280:LYS:C | 3:D:282:MET:N | 2.75 | 0.40 |
| 3:D:559:LEU:O | 3:D:562:VAL:N | 2.54 | 0.40 |
| 2:C:560:MET:O | 2:C:563:ASN:O | 2.40 | 0.40 |
| 3:D:219:GLU:C | 3:D:221:MET:H | 2.23 | 0.40 |
| 3:D:889:ALA:O | 3:D:890:GLY:C | 2.59 | 0.40 |
| 1:A:40:LEU:O | 1:A:41:ARG:C | 2.60 | 0.40 |
| 1:A:171:PHE:O | 1:A:173:PRO:N | 2.55 | 0.40 |
| 1:B:58:ILE:O | 1:B:59:GLU:C | 2.59 | 0.40 |
| 1:B:83:LYS:O | 1:B:84:GLU:C | 2.60 | 0.40 |
| 2:C:15:LEU:O | 2:C:16:PRO:O | 2.39 | 0.40 |
| 2:C:854:PRO:C | 2:C:856:GLU:H | 2.25 | 0.40 |
| 2:C:1083:GLU:O | 2:C:1084:SER:C | 2.60 | 0.40 |
| 3:D:645:TYR:O | 3:D:647:GLY:N | 2.54 | 0.40 |
| 3:D:1453:ALA:O | 3:D:1454:GLY:C | 2.59 | 0.40 |
| 1:B:219:LYS:O | 1:B:222:LEU:N | 2.50 | 0.40 |
| 2:C:573:ARG:O | 2:C:574:ALA:O | 2.39 | 0.40 |
| 2:C:696:LYS:C | 2:C:698:ASP:N | 2.75 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---------------|---------------|--------------------------|-------------------|
| 3:D:497:GLY:O | 3:D:499:TYR:N | 2.54 | 0.40 |
| 3:D:845:LYS:O | 3:D:846:ARG:O | 2.38 | 0.40 |
| 3:D:397:TRP:C | 3:D:399:ALA:N | 2.73 | 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 | 228/314 (73%) | 138 (60%) | 48 (21%) | 42 (18%) | 0 | 2 |
| 1 | B | 223/314 (71%) | 133 (60%) | 58 (26%) | 32 (14%) | 0 | 4 |
| 2 | C | 1112/1119 (99%) | 640 (58%) | 275 (25%) | 197 (18%) | 0 | 3 |
| 3 | D | 1192/1233 (97%) | 536 (45%) | 339 (28%) | 317 (27%) | 0 | 0 |
| All | All | 2755/2980 (92%) | 1447 (52%) | 720 (26%) | 588 (21%) | 0 | 2 |

All (588) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 7 | LYS |
| 1 | A | 45 | LEU |
| 1 | A | 59 | GLU |
| 1 | A | 74 | ASP |
| 1 | A | 75 | VAL |
| 1 | A | 90 | LEU |
| 1 | A | 94 | MET |
| 1 | A | 111 | ALA |
| 1 | A | 118 | ALA |
| 1 | A | 138 | LEU |
| 1 | A | 188 | GLN |
| 1 | A | 191 | ASP |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 198 | ARG |
| 1 | A | 203 | GLY |
| 1 | A | 226 | ALA |
| 1 | A | 230 | ALA |
| 1 | B | 36 | LEU |
| 1 | B | 38 | ASN |
| 1 | B | 63 | HIS |
| 1 | B | 113 | ASP |
| 1 | B | 116 | PRO |
| 1 | B | 117 | SER |
| 1 | B | 133 | GLU |
| 1 | B | 173 | PRO |
| 1 | B | 226 | ALA |
| 2 | C | 19 | THR |
| 2 | C | 42 | VAL |
| 2 | C | 55 | GLU |
| 2 | C | 61 | LYS |
| 2 | C | 63 | GLY |
| 2 | C | 111 | ASP |
| 2 | C | 124 | ASP |
| 2 | C | 132 | ALA |
| 2 | C | 183 | THR |
| 2 | C | 230 | ARG |
| 2 | C | 258 | PHE |
| 2 | C | 260 | LEU |
| 2 | C | 261 | LEU |
| 2 | C | 264 | PRO |
| 2 | C | 266 | ARG |
| 2 | C | 283 | VAL |
| 2 | C | 293 | PHE |
| 2 | C | 300 | ASP |
| 2 | C | 309 | TYR |
| 2 | C | 315 | ALA |
| 2 | C | 316 | GLY |
| 2 | C | 394 | PHE |
| 2 | C | 395 | LYS |
| 2 | C | 422 | ARG |
| 2 | C | 434 | HIS |
| 2 | C | 449 | ILE |
| 2 | C | 510 | THR |
| 2 | C | 574 | ALA |
| 2 | C | 615 | TYR |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | C | 619 | ARG |
| 2 | C | 635 | THR |
| 2 | C | 636 | ALA |
| 2 | C | 656 | ALA |
| 2 | C | 680 | ASP |
| 2 | C | 686 | ASP |
| 2 | C | 731 | GLU |
| 2 | C | 735 | ARG |
| 2 | C | 767 | PRO |
| 2 | C | 768 | SER |
| 2 | C | 770 | GLU |
| 2 | C | 775 | ARG |
| 2 | C | 780 | GLU |
| 2 | C | 788 | THR |
| 2 | C | 790 | LEU |
| 2 | C | 796 | GLU |
| 2 | C | 800 | VAL |
| 2 | C | 801 | VAL |
| 2 | C | 816 | LYS |
| 2 | C | 832 | LYS |
| 2 | C | 972 | VAL |
| 2 | C | 1001 | VAL |
| 2 | C | 1045 | ALA |
| 2 | C | 1046 | ALA |
| 2 | C | 1055 | ILE |
| 2 | C | 1059 | ASP |
| 2 | C | 1069 | ALA |
| 2 | C | 1076 | VAL |
| 2 | C | 1077 | PRO |
| 2 | C | 1078 | GLU |
| 2 | C | 1083 | GLU |
| 2 | C | 1084 | SER |
| 2 | C | 1095 | LEU |
| 2 | C | 1113 | GLU |
| 3 | D | 23 | TYR |
| 3 | D | 25 | GLU |
| 3 | D | 29 | PRO |
| 3 | D | 32 | ILE |
| 3 | D | 34 | TYR |
| 3 | D | 40 | GLU |
| 3 | D | 41 | ARG |
| 3 | D | 57 | GLU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 82 | ARG |
| 3 | D | 85 | VAL |
| 3 | D | 102 | ILE |
| 3 | D | 103 | TRP |
| 3 | D | 120 | ALA |
| 3 | D | 130 | ASN |
| 3 | D | 137 | PRO |
| 3 | D | 146 | PRO |
| 3 | D | 147 | VAL |
| 3 | D | 149 | LYS |
| 3 | D | 158 | TYR |
| 3 | D | 164 | ARG |
| 3 | D | 208 | VAL |
| 3 | D | 212 | LEU |
| 3 | D | 219 | GLU |
| 3 | D | 232 | ASP |
| 3 | D | 239 | VAL |
| 3 | D | 254 | ARG |
| 3 | D | 295 | ARG |
| 3 | D | 310 | ARG |
| 3 | D | 322 | ARG |
| 3 | D | 325 | GLN |
| 3 | D | 348 | LEU |
| 3 | D | 349 | HIS |
| 3 | D | 356 | ARG |
| 3 | D | 358 | ALA |
| 3 | D | 364 | PRO |
| 3 | D | 365 | PHE |
| 3 | D | 367 | LEU |
| 3 | D | 374 | ALA |
| 3 | D | 379 | VAL |
| 3 | D | 395 | GLU |
| 3 | D | 396 | VAL |
| 3 | D | 421 | GLY |
| 3 | D | 426 | GLN |
| 3 | D | 431 | GLU |
| 3 | D | 439 | PRO |
| 3 | D | 440 | LEU |
| 3 | D | 442 | CYS |
| 3 | D | 444 | ALA |
| 3 | D | 468 | ALA |
| 3 | D | 492 | ARG |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 493 | ASP |
| 3 | D | 495 | ILE |
| 3 | D | 496 | LEU |
| 3 | D | 504 | VAL |
| 3 | D | 514 | ALA |
| 3 | D | 532 | LEU |
| 3 | D | 533 | ASN |
| 3 | D | 536 | ILE |
| 3 | D | 584 | THR |
| 3 | D | 606 | GLN |
| 3 | D | 611 | MET |
| 3 | D | 613 | VAL |
| 3 | D | 617 | LYS |
| 3 | D | 619 | SER |
| 3 | D | 624 | VAL |
| 3 | D | 641 | ASP |
| 3 | D | 645 | TYR |
| 3 | D | 648 | PHE |
| 3 | D | 651 | SER |
| 3 | D | 655 | GLY |
| 3 | D | 660 | ILE |
| 3 | D | 713 | THR |
| 3 | D | 730 | TYR |
| 3 | D | 731 | VAL |
| 3 | D | 737 | ALA |
| 3 | D | 742 | GLN |
| 3 | D | 743 | GLN |
| 3 | D | 799 | ASP |
| 3 | D | 800 | SER |
| 3 | D | 802 | TYR |
| 3 | D | 805 | ARG |
| 3 | D | 808 | VAL |
| 3 | D | 846 | ARG |
| 3 | D | 861 | GLU |
| 3 | D | 865 | LEU |
| 3 | D | 890 | GLY |
| 3 | D | 901 | LEU |
| 3 | D | 903 | CYS |
| 3 | D | 917 | ASP |
| 3 | D | 933 | VAL |
| 3 | D | 936 | GLU |
| 3 | D | 943 | THR |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 1255 | GLY |
| 3 | D | 1262 | LEU |
| 3 | D | 1271 | LYS |
| 3 | D | 1296 | SER |
| 3 | D | 1313 | VAL |
| 3 | D | 1314 | LYS |
| 3 | D | 1317 | ASP |
| 3 | D | 1327 | ARG |
| 3 | D | 1335 | LEU |
| 3 | D | 1336 | LEU |
| 3 | D | 1339 | LYS |
| 3 | D | 1348 | LEU |
| 3 | D | 1349 | VAL |
| 3 | D | 1377 | LYS |
| 3 | D | 1424 | VAL |
| 3 | D | 1425 | THR |
| 3 | D | 1427 | SER |
| 3 | D | 1428 | ALA |
| 3 | D | 1438 | ALA |
| 3 | D | 1439 | SER |
| 3 | D | 1441 | GLN |
| 3 | D | 1448 | THR |
| 3 | D | 1450 | ALA |
| 3 | D | 1452 | ILE |
| 3 | D | 1472 | ILE |
| 1 | A | 73 | GLU |
| 1 | A | 105 | GLY |
| 1 | A | 122 | ILE |
| 1 | A | 128 | HIS |
| 1 | A | 152 | PRO |
| 1 | A | 157 | GLY |
| 1 | A | 166 | PRO |
| 1 | A | 199 | ILE |
| 1 | A | 232 | LEU |
| 1 | B | 30 | ARG |
| 1 | B | 37 | GLY |
| 1 | B | 42 | ARG |
| 1 | B | 60 | ASP |
| 1 | B | 105 | GLY |
| 1 | B | 119 | ASP |
| 1 | B | 129 | ILE |
| 1 | B | 204 | SER |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | C | 7 | GLY |
| 2 | C | 11 | GLU |
| 2 | C | 14 | PRO |
| 2 | C | 18 | LEU |
| 2 | C | 38 | LYS |
| 2 | C | 41 | ASN |
| 2 | C | 66 | LEU |
| 2 | C | 83 | CYS |
| 2 | C | 90 | TYR |
| 2 | C | 148 | PHE |
| 2 | C | 288 | ARG |
| 2 | C | 290 | LEU |
| 2 | C | 336 | VAL |
| 2 | C | 337 | GLY |
| 2 | C | 350 | ARG |
| 2 | C | 390 | GLN |
| 2 | C | 409 | ARG |
| 2 | C | 432 | ARG |
| 2 | C | 433 | THR |
| 2 | C | 435 | TYR |
| 2 | C | 445 | GLU |
| 2 | C | 457 | ALA |
| 2 | C | 465 | GLY |
| 2 | C | 505 | GLY |
| 2 | C | 541 | SER |
| 2 | C | 557 | ARG |
| 2 | C | 572 | ILE |
| 2 | C | 573 | ARG |
| 2 | C | 583 | LEU |
| 2 | C | 584 | GLU |
| 2 | C | 602 | GLU |
| 2 | C | 616 | GLU |
| 2 | C | 654 | LEU |
| 2 | C | 659 | PRO |
| 2 | C | 684 | PHE |
| 2 | C | 685 | GLU |
| 2 | C | 722 | ILE |
| 2 | C | 771 | GLU |
| 2 | C | 774 | LEU |
| 2 | C | 808 | ARG |
| 2 | C | 821 | GLU |
| 2 | C | 867 | VAL |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | C | 874 | LEU |
| 2 | C | 877 | PRO |
| 2 | C | 883 | GLY |
| 2 | C | 909 | ALA |
| 2 | C | 936 | VAL |
| 2 | C | 977 | GLY |
| 2 | C | 1016 | ILE |
| 2 | C | 1022 | GLY |
| 2 | C | 1048 | THR |
| 2 | C | 1057 | SER |
| 2 | C | 1080 | SER |
| 3 | D | 5 | VAL |
| 3 | D | 26 | VAL |
| 3 | D | 33 | ASN |
| 3 | D | 39 | PRO |
| 3 | D | 58 | CYS |
| 3 | D | 68 | PHE |
| 3 | D | 97 | THR |
| 3 | D | 111 | LYS |
| 3 | D | 136 | ASP |
| 3 | D | 148 | GLU |
| 3 | D | 150 | ARG |
| 3 | D | 155 | ASP |
| 3 | D | 195 | ARG |
| 3 | D | 206 | GLU |
| 3 | D | 213 | ASP |
| 3 | D | 218 | PRO |
| 3 | D | 220 | TRP |
| 3 | D | 235 | PRO |
| 3 | D | 260 | ASN |
| 3 | D | 285 | GLU |
| 3 | D | 293 | ASN |
| 3 | D | 294 | GLY |
| 3 | D | 305 | SER |
| 3 | D | 309 | LEU |
| 3 | D | 318 | GLY |
| 3 | D | 338 | SER |
| 3 | D | 352 | GLY |
| 3 | D | 400 | LEU |
| 3 | D | 432 | GLY |
| 3 | D | 441 | VAL |
| 3 | D | 484 | GLY |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 497 | GLY |
| 3 | D | 512 | GLY |
| 3 | D | 538 | VAL |
| 3 | D | 539 | ALA |
| 3 | D | 547 | ARG |
| 3 | D | 565 | GLY |
| 3 | D | 592 | ALA |
| 3 | D | 596 | GLY |
| 3 | D | 607 | GLU |
| 3 | D | 626 | GLN |
| 3 | D | 637 | ALA |
| 3 | D | 728 | PRO |
| 3 | D | 729 | LEU |
| 3 | D | 735 | SER |
| 3 | D | 744 | ILE |
| 3 | D | 778 | GLU |
| 3 | D | 798 | ALA |
| 3 | D | 807 | LEU |
| 3 | D | 814 | ILE |
| 3 | D | 848 | ASP |
| 3 | D | 849 | ILE |
| 3 | D | 870 | GLU |
| 3 | D | 907 | TYR |
| 3 | D | 915 | GLY |
| 3 | D | 930 | VAL |
| 3 | D | 934 | ALA |
| 3 | D | 935 | ALA |
| 3 | D | 938 | ILE |
| 3 | D | 944 | GLN |
| 3 | D | 1265 | ALA |
| 3 | D | 1322 | GLY |
| 3 | D | 1328 | GLY |
| 3 | D | 1332 | PRO |
| 3 | D | 1337 | GLU |
| 3 | D | 1363 | LEU |
| 3 | D | 1367 | HIS |
| 3 | D | 1370 | ILE |
| 3 | D | 1371 | VAL |
| 3 | D | 1372 | VAL |
| 3 | D | 1391 | GLU |
| 3 | D | 1444 | THR |
| 3 | D | 1446 | VAL |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 1455 | LYS |
| 3 | D | 1464 | GLU |
| 3 | D | 1465 | ASN |
| 3 | D | 1475 | GLY |
| 3 | D | 1489 | GLN |
| 1 | A | 15 | THR |
| 1 | A | 44 | LEU |
| 1 | A | 204 | SER |
| 1 | A | 209 | GLU |
| 1 | A | 234 | PRO |
| 1 | B | 32 | PHE |
| 1 | B | 61 | VAL |
| 1 | B | 75 | VAL |
| 1 | B | 96 | SER |
| 1 | B | 157 | GLY |
| 1 | B | 193 | ASP |
| 2 | C | 16 | PRO |
| 2 | C | 54 | ILE |
| 2 | C | 58 | ASP |
| 2 | C | 64 | LEU |
| 2 | C | 112 | GLU |
| 2 | C | 144 | PRO |
| 2 | C | 168 | ARG |
| 2 | C | 209 | ARG |
| 2 | C | 271 | GLU |
| 2 | C | 281 | LEU |
| 2 | C | 304 | LEU |
| 2 | C | 370 | ALA |
| 2 | C | 398 | THR |
| 2 | C | 532 | MET |
| 2 | C | 567 | GLN |
| 2 | C | 617 | ASP |
| 2 | C | 683 | ASN |
| 2 | C | 728 | HIS |
| 2 | C | 739 | GLU |
| 2 | C | 781 | LYS |
| 2 | C | 794 | PRO |
| 2 | C | 846 | LYS |
| 2 | C | 857 | ASP |
| 2 | C | 859 | PRO |
| 2 | C | 1058 | ASP |
| 2 | C | 1061 | GLU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | C | 1063 | ARG |
| 2 | C | 1087 | VAL |
| 2 | C | 1110 | ASP |
| 3 | D | 6 | ARG |
| 3 | D | 7 | LYS |
| 3 | D | 22 | SER |
| 3 | D | 56 | TYR |
| 3 | D | 72 | VAL |
| 3 | D | 108 | VAL |
| 3 | D | 132 | TYR |
| 3 | D | 152 | LEU |
| 3 | D | 153 | LEU |
| 3 | D | 169 | ALA |
| 3 | D | 172 | GLU |
| 3 | D | 175 | LYS |
| 3 | D | 227 | PRO |
| 3 | D | 273 | GLU |
| 3 | D | 332 | VAL |
| 3 | D | 353 | LEU |
| 3 | D | 377 | PRO |
| 3 | D | 391 | ASP |
| 3 | D | 483 | SER |
| 3 | D | 491 | SER |
| 3 | D | 498 | LEU |
| 3 | D | 509 | LYS |
| 3 | D | 556 | ASP |
| 3 | D | 597 | GLU |
| 3 | D | 602 | GLU |
| 3 | D | 605 | ALA |
| 3 | D | 634 | GLU |
| 3 | D | 638 | ARG |
| 3 | D | 642 | ALA |
| 3 | D | 646 | TYR |
| 3 | D | 732 | MET |
| 3 | D | 746 | GLN |
| 3 | D | 793 | THR |
| 3 | D | 806 | LYS |
| 3 | D | 809 | ASP |
| 3 | D | 847 | SER |
| 3 | D | 1277 | ILE |
| 3 | D | 1287 | GLU |
| 3 | D | 1333 | HIS |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 1343 | ALA |
| 3 | D | 1366 | LYS |
| 3 | D | 1369 | GLU |
| 3 | D | 1373 | ARG |
| 3 | D | 1406 | ARG |
| 3 | D | 1413 | VAL |
| 3 | D | 1451 | ALA |
| 1 | A | 26 | GLU |
| 1 | A | 126 | ASP |
| 1 | A | 139 | TYR |
| 1 | A | 171 | PHE |
| 1 | A | 223 | ASN |
| 1 | B | 5 | LYS |
| 1 | B | 138 | LEU |
| 2 | C | 39 | ARG |
| 2 | C | 76 | PRO |
| 2 | C | 223 | ASP |
| 2 | C | 224 | GLU |
| 2 | C | 519 | GLY |
| 2 | C | 829 | GLN |
| 2 | C | 878 | SER |
| 2 | C | 891 | GLY |
| 2 | C | 958 | SER |
| 2 | C | 1002 | GLU |
| 2 | C | 1079 | PRO |
| 2 | C | 1099 | VAL |
| 3 | D | 21 | TRP |
| 3 | D | 42 | ASP |
| 3 | D | 69 | GLU |
| 3 | D | 119 | SER |
| 3 | D | 161 | ILE |
| 3 | D | 171 | GLN |
| 3 | D | 193 | PRO |
| 3 | D | 271 | ALA |
| 3 | D | 290 | VAL |
| 3 | D | 296 | ARG |
| 3 | D | 297 | GLY |
| 3 | D | 363 | LYS |
| 3 | D | 372 | GLU |
| 3 | D | 376 | ALA |
| 3 | D | 394 | ASP |
| 3 | D | 580 | ARG |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 629 | LEU |
| 3 | D | 636 | THR |
| 3 | D | 639 | LEU |
| 3 | D | 644 | LYS |
| 3 | D | 670 | GLN |
| 3 | D | 724 | TYR |
| 3 | D | 745 | ARG |
| 3 | D | 750 | MET |
| 3 | D | 794 | ALA |
| 3 | D | 804 | THR |
| 3 | D | 810 | VAL |
| 3 | D | 852 | GLY |
| 3 | D | 914 | TYR |
| 3 | D | 1267 | ARG |
| 3 | D | 1307 | LYS |
| 3 | D | 1334 | GLN |
| 3 | D | 1395 | LEU |
| 3 | D | 1410 | GLU |
| 3 | D | 1426 | LYS |
| 1 | A | 165 | ILE |
| 1 | A | 172 | SER |
| 1 | B | 6 | LEU |
| 1 | B | 26 | GLU |
| 1 | B | 35 | THR |
| 2 | C | 91 | GLN |
| 2 | C | 93 | PRO |
| 2 | C | 105 | THR |
| 2 | C | 181 | VAL |
| 2 | C | 220 | GLY |
| 2 | C | 418 | LEU |
| 2 | C | 544 | THR |
| 2 | C | 546 | LEU |
| 2 | C | 895 | TYR |
| 2 | C | 904 | PRO |
| 2 | C | 949 | LYS |
| 2 | C | 1005 | MET |
| 2 | C | 1012 | PRO |
| 2 | C | 1035 | MET |
| 2 | C | 1097 | LEU |
| 2 | C | 1100 | GLN |
| 2 | C | 1106 | ASP |
| 2 | C | 1109 | VAL |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | D | 110 | SER |
| 3 | D | 141 | VAL |
| 3 | D | 176 | GLU |
| 3 | D | 286 | ALA |
| 3 | D | 289 | ALA |
| 3 | D | 303 | PRO |
| 3 | D | 317 | SER |
| 3 | D | 346 | LEU |
| 3 | D | 389 | GLN |
| 3 | D | 445 | PHE |
| 3 | D | 557 | GLU |
| 3 | D | 558 | ALA |
| 3 | D | 578 | LEU |
| 3 | D | 621 | LYS |
| 3 | D | 627 | ALA |
| 3 | D | 690 | GLY |
| 3 | D | 703 | GLN |
| 3 | D | 825 | ASN |
| 3 | D | 931 | GLY |
| 3 | D | 1272 | ALA |
| 3 | D | 1350 | ASP |
| 3 | D | 1386 | ASP |
| 3 | D | 1449 | GLU |
| 1 | A | 16 | GLN |
| 1 | A | 217 | ILE |
| 1 | B | 227 | ASN |
| 2 | C | 65 | VAL |
| 2 | C | 152 | PRO |
| 2 | C | 292 | ARG |
| 2 | C | 631 | SER |
| 2 | C | 761 | PHE |
| 2 | C | 807 | ARG |
| 2 | C | 835 | VAL |
| 2 | C | 935 | GLY |
| 2 | C | 1062 | GLY |
| 2 | C | 1071 | ILE |
| 3 | D | 98 | PRO |
| 3 | D | 118 | LEU |
| 3 | D | 144 | GLY |
| 3 | D | 494 | ILE |
| 3 | D | 932 | VAL |
| 3 | D | 1263 | PHE |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 3 | D | 1268 | PRO |
| 3 | D | 1345 | GLU |
| 1 | A | 76 | VAL |
| 1 | B | 115 | THR |
| 1 | B | 135 | GLY |
| 2 | C | 9 | ILE |
| 2 | C | 52 | PHE |
| 2 | C | 417 | GLY |
| 2 | C | 535 | SER |
| 2 | C | 548 | PRO |
| 3 | D | 562 | VAL |
| 3 | D | 1415 | VAL |
| 1 | A | 228 | PRO |
| 2 | C | 1029 | GLY |
| 3 | D | 274 | ILE |
| 3 | D | 518 | PRO |
| 3 | D | 776 | VAL |
| 3 | D | 900 | PRO |
| 1 | A | 49 | PRO |
| 1 | B | 215 | VAL |
| 2 | C | 296 | GLY |
| 2 | C | 1023 | GLY |
| 3 | D | 595 | VAL |
| 3 | D | 725 | PRO |
| 2 | C | 125 | GLY |
| 2 | C | 136 | ILE |
| 2 | C | 894 | GLY |
| 3 | D | 594 | ILE |
| 2 | C | 645 | VAL |
| 3 | D | 1259 | VAL |

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 3 | D | 2 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1 | D | 1435:LEU | C | 1436:SER | N | 1.18 |
| 1 | D | 943:THR | C | 944:GLN | N | 1.11 |

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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

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

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

6.3 Carbohydrates [i](#)

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

6.4 Ligands [i](#)

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

6.5 Other polymers [i](#)

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