



## Full wwPDB EM Validation Report ⓘ

Dec 13, 2025 – 01:01 PM EST

PDB ID : 9E8H / pdb\_00009e8h  
EMDB ID : EMD-47720  
Title : Human proteasome in resting state conformation bound to TXNL1 in backward conformation  
Authors : Arkinson, C.; Gee, C.L.; Martin, A.  
Deposited on : 2024-11-05  
Resolution : 2.90 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

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

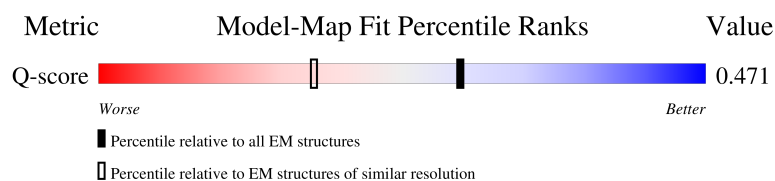
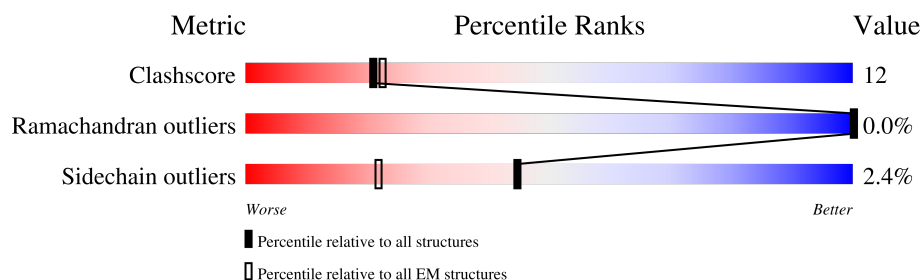
EMDB validation analysis : 0.0.1.dev129  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.47

# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.90 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.



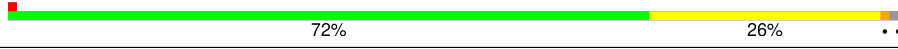
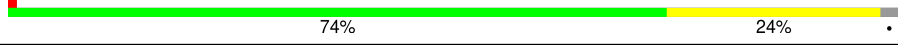
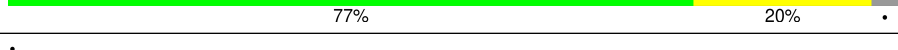
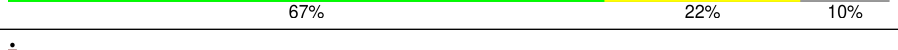
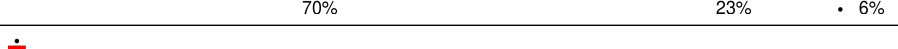
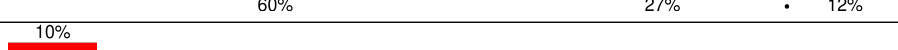
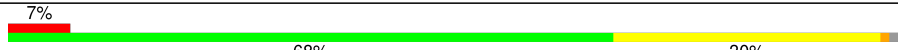
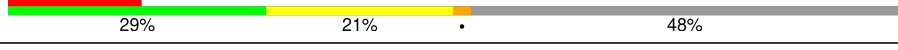
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 210492                      | 15764                       | -                                                        |
| Ramachandran outliers | 207382                      | 16835                       | -                                                        |
| Sidechain outliers    | 206894                      | 16415                       | -                                                        |
| Q-score               | -                           | 25397                       | 13054 ( 2.40 - 3.40 )                                    |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain  |
|-----|-------|--------|-------------------|
| 1   | A     | 433    | <br>9% 66% 24% 9% |
| 2   | B     | 440    | <br>9% 70% 22% 8% |
| 3   | C     | 406    | <br>67% 22% 10%   |
| 4   | D     | 418    | <br>66% 25% 9%    |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 5   | E     | 389    |    |
| 6   | F     | 439    |    |
| 7   | G     | 246    |    |
| 8   | H     | 234    |    |
| 9   | I     | 261    |    |
| 10  | J     | 248    |    |
| 11  | K     | 241    |    |
| 12  | L     | 263    |    |
| 13  | M     | 255    |    |
| 14  | U     | 953    |    |
| 15  | V     | 534    |    |
| 16  | W     | 456    |  |
| 17  | X     | 422    |  |
| 18  | Y     | 389    |  |
| 19  | Z     | 324    |  |
| 20  | a     | 376    |  |
| 21  | b     | 377    |  |
| 22  | c     | 424    |  |
| 23  | d     | 350    |  |
| 24  | e     | 65     |  |
| 25  | f     | 908    |  |
| 26  | g     | 601    |  |
| 27  | u     | 289    |  |

## 2 Entry composition

There are 31 unique types of molecules in this entry. The entry contains 71304 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 26S proteasome regulatory subunit 7.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | A     | 395      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3107  | 1956 | 547 | 586 | 18 |         |       |

- Molecule 2 is a protein called 26S proteasome regulatory subunit 4.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | B     | 405      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3192  | 2012 | 546 | 619 | 15 |         |       |

- Molecule 3 is a protein called 26S protease regulatory subunit 8.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 3   | C     | 366      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2895  | 1824 | 518 | 536 | 17 |         |       |

- Molecule 4 is a protein called 26S proteasome regulatory subunit 6B.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | D     | 380      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3039  | 1923 | 524 | 579 | 13 |         |       |

- Molecule 5 is a protein called 26S protease regulatory subunit 10B.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 5   | E     | 354      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2797  | 1761 | 495 | 525 | 16 |         |       |

- Molecule 6 is a protein called 26S proteasome regulatory subunit 6A.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 6   | F     | 351      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2743  | 1733 | 472 | 522 | 16 |         |       |

- Molecule 7 is a protein called Proteasome subunit alpha type-6.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 7   | G     | 242      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1886  | 1197 | 315 | 361 | 13 |         |       |

- Molecule 8 is a protein called Proteasome subunit alpha type-2.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 8   | H     | 230      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1793  | 1147 | 302 | 338 | 6 |         |       |

- Molecule 9 is a protein called Proteasome subunit alpha type-4.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 9   | I     | 236      | Total | C    | N   | O   | S  | 1       | 0     |
|     |       |          | 1841  | 1161 | 316 | 354 | 10 |         |       |

- Molecule 10 is a protein called Proteasome subunit alpha type-7.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 10  | J     | 239      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1887  | 1183 | 334 | 365 | 5 |         |       |

- Molecule 11 is a protein called Proteasome subunit alpha type-5.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 11  | K     | 234      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1790  | 1125 | 295 | 359 | 11 |         |       |

- Molecule 12 is a protein called Proteasome subunit alpha type-1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 12  | L     | 237      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1864  | 1167 | 335 | 351 | 11 |         |       |

- Molecule 13 is a protein called Proteasome subunit alpha type-3.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 13  | M     | 240      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1881  | 1193 | 321 | 356 | 11 |         |       |

- Molecule 14 is a protein called 26S proteasome non-ATPase regulatory subunit 1.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 14  | U     | 838      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6515  | 4135 | 1106 | 1230 | 44 |         |       |

- Molecule 15 is a protein called 26S proteasome non-ATPase regulatory subunit 3.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 15  | V     | 470      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3841  | 2438 | 685 | 704 | 14 |         |       |

- Molecule 16 is a protein called 26S proteasome non-ATPase regulatory subunit 12.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 16  | W     | 438      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3570  | 2261 | 609 | 677 | 23 |         |       |

- Molecule 17 is a protein called 26S proteasome non-ATPase regulatory subunit 11.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 17  | X     | 419      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3317  | 2105 | 564 | 636 | 12 |         |       |

- Molecule 18 is a protein called 26S proteasome non-ATPase regulatory subunit 6.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 18  | Y     | 386      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3179  | 2025 | 542 | 595 | 17 |         |       |

- Molecule 19 is a protein called 26S proteasome non-ATPase regulatory subunit 7.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 19  | Z     | 286      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2285  | 1461 | 392 | 427 | 5 |         |       |

- Molecule 20 is a protein called 26S proteasome non-ATPase regulatory subunit 13.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 20  | a     | 373      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2995  | 1911 | 510 | 559 | 15 |         |       |

- Molecule 21 is a protein called 26S proteasome non-ATPase regulatory subunit 4.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21  | b     | 189      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1446  | 903 | 259 | 277 | 7 |         |       |

- Molecule 22 is a protein called 26S proteasome non-ATPase regulatory subunit 14.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 22  | c     | 290      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2282  | 1447 | 392 | 424 | 19 |         |       |

There are 114 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment        | Reference  |
|-------|---------|----------|--------|----------------|------------|
| c     | 311     | LEU      | -      | expression tag | UNP O00487 |
| c     | 312     | ILE      | -      | expression tag | UNP O00487 |
| c     | 313     | ASN      | -      | expression tag | UNP O00487 |
| c     | 314     | HIS      | -      | expression tag | UNP O00487 |
| c     | 315     | HIS      | -      | expression tag | UNP O00487 |
| c     | 316     | HIS      | -      | expression tag | UNP O00487 |
| c     | 317     | HIS      | -      | expression tag | UNP O00487 |
| c     | 318     | HIS      | -      | expression tag | UNP O00487 |
| c     | 319     | HIS      | -      | expression tag | UNP O00487 |
| c     | 320     | ASP      | -      | expression tag | UNP O00487 |
| c     | 321     | TYR      | -      | expression tag | UNP O00487 |
| c     | 322     | ASP      | -      | expression tag | UNP O00487 |
| c     | 323     | ILE      | -      | expression tag | UNP O00487 |
| c     | 324     | PRO      | -      | expression tag | UNP O00487 |
| c     | 325     | THR      | -      | expression tag | UNP O00487 |
| c     | 326     | THR      | -      | expression tag | UNP O00487 |
| c     | 327     | ALA      | -      | expression tag | UNP O00487 |
| c     | 328     | SER      | -      | expression tag | UNP O00487 |
| c     | 329     | GLU      | -      | expression tag | UNP O00487 |
| c     | 330     | ASN      | -      | expression tag | UNP O00487 |
| c     | 331     | LEU      | -      | expression tag | UNP O00487 |
| c     | 332     | TYR      | -      | expression tag | UNP O00487 |
| c     | 333     | PHE      | -      | expression tag | UNP O00487 |
| c     | 334     | GLN      | -      | expression tag | UNP O00487 |
| c     | 335     | GLY      | -      | expression tag | UNP O00487 |
| c     | 336     | GLU      | -      | expression tag | UNP O00487 |
| c     | 337     | LEU      | -      | expression tag | UNP O00487 |
| c     | 338     | GLY      | -      | expression tag | UNP O00487 |
| c     | 339     | MET      | -      | expression tag | UNP O00487 |
| c     | 340     | ARG      | -      | expression tag | UNP O00487 |
| c     | 341     | GLY      | -      | expression tag | UNP O00487 |

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| Chain | Residue | Modelled | Actual | Comment        | Reference  |
|-------|---------|----------|--------|----------------|------------|
| c     | 342     | SER      | -      | expression tag | UNP O00487 |
| c     | 343     | ALA      | -      | expression tag | UNP O00487 |
| c     | 344     | GLY      | -      | expression tag | UNP O00487 |
| c     | 345     | LYS      | -      | expression tag | UNP O00487 |
| c     | 346     | ALA      | -      | expression tag | UNP O00487 |
| c     | 347     | GLY      | -      | expression tag | UNP O00487 |
| c     | 348     | GLU      | -      | expression tag | UNP O00487 |
| c     | 349     | GLY      | -      | expression tag | UNP O00487 |
| c     | 350     | GLU      | -      | expression tag | UNP O00487 |
| c     | 351     | ILE      | -      | expression tag | UNP O00487 |
| c     | 352     | PRO      | -      | expression tag | UNP O00487 |
| c     | 353     | ALA      | -      | expression tag | UNP O00487 |
| c     | 354     | PRO      | -      | expression tag | UNP O00487 |
| c     | 355     | LEU      | -      | expression tag | UNP O00487 |
| c     | 356     | ALA      | -      | expression tag | UNP O00487 |
| c     | 357     | GLY      | -      | expression tag | UNP O00487 |
| c     | 358     | THR      | -      | expression tag | UNP O00487 |
| c     | 359     | VAL      | -      | expression tag | UNP O00487 |
| c     | 360     | SER      | -      | expression tag | UNP O00487 |
| c     | 361     | LYS      | -      | expression tag | UNP O00487 |
| c     | 362     | ILE      | -      | expression tag | UNP O00487 |
| c     | 363     | LEU      | -      | expression tag | UNP O00487 |
| c     | 364     | VAL      | -      | expression tag | UNP O00487 |
| c     | 365     | LYS      | -      | expression tag | UNP O00487 |
| c     | 366     | GLU      | -      | expression tag | UNP O00487 |
| c     | 367     | GLY      | -      | expression tag | UNP O00487 |
| c     | 368     | ASP      | -      | expression tag | UNP O00487 |
| c     | 369     | THR      | -      | expression tag | UNP O00487 |
| c     | 370     | VAL      | -      | expression tag | UNP O00487 |
| c     | 371     | LYS      | -      | expression tag | UNP O00487 |
| c     | 372     | ALA      | -      | expression tag | UNP O00487 |
| c     | 373     | GLY      | -      | expression tag | UNP O00487 |
| c     | 374     | GLN      | -      | expression tag | UNP O00487 |
| c     | 375     | THR      | -      | expression tag | UNP O00487 |
| c     | 376     | VAL      | -      | expression tag | UNP O00487 |
| c     | 377     | LEU      | -      | expression tag | UNP O00487 |
| c     | 378     | VAL      | -      | expression tag | UNP O00487 |
| c     | 379     | LEU      | -      | expression tag | UNP O00487 |
| c     | 380     | GLU      | -      | expression tag | UNP O00487 |
| c     | 381     | ALA      | -      | expression tag | UNP O00487 |
| c     | 382     | MET      | -      | expression tag | UNP O00487 |
| c     | 383     | LYS      | -      | expression tag | UNP O00487 |

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| Chain | Residue | Modelled | Actual | Comment        | Reference  |
|-------|---------|----------|--------|----------------|------------|
| c     | 384     | MET      | -      | expression tag | UNP O00487 |
| c     | 385     | GLU      | -      | expression tag | UNP O00487 |
| c     | 386     | THR      | -      | expression tag | UNP O00487 |
| c     | 387     | GLU      | -      | expression tag | UNP O00487 |
| c     | 388     | ILE      | -      | expression tag | UNP O00487 |
| c     | 389     | ASN      | -      | expression tag | UNP O00487 |
| c     | 390     | ALA      | -      | expression tag | UNP O00487 |
| c     | 391     | PRO      | -      | expression tag | UNP O00487 |
| c     | 392     | THR      | -      | expression tag | UNP O00487 |
| c     | 393     | ASP      | -      | expression tag | UNP O00487 |
| c     | 394     | GLY      | -      | expression tag | UNP O00487 |
| c     | 395     | LYS      | -      | expression tag | UNP O00487 |
| c     | 396     | VAL      | -      | expression tag | UNP O00487 |
| c     | 397     | GLU      | -      | expression tag | UNP O00487 |
| c     | 398     | LYS      | -      | expression tag | UNP O00487 |
| c     | 399     | VAL      | -      | expression tag | UNP O00487 |
| c     | 400     | LEU      | -      | expression tag | UNP O00487 |
| c     | 401     | VAL      | -      | expression tag | UNP O00487 |
| c     | 402     | LYS      | -      | expression tag | UNP O00487 |
| c     | 403     | GLU      | -      | expression tag | UNP O00487 |
| c     | 404     | ARG      | -      | expression tag | UNP O00487 |
| c     | 405     | ASP      | -      | expression tag | UNP O00487 |
| c     | 406     | ALA      | -      | expression tag | UNP O00487 |
| c     | 407     | VAL      | -      | expression tag | UNP O00487 |
| c     | 408     | GLN      | -      | expression tag | UNP O00487 |
| c     | 409     | GLY      | -      | expression tag | UNP O00487 |
| c     | 410     | GLY      | -      | expression tag | UNP O00487 |
| c     | 411     | GLN      | -      | expression tag | UNP O00487 |
| c     | 412     | GLY      | -      | expression tag | UNP O00487 |
| c     | 413     | LEU      | -      | expression tag | UNP O00487 |
| c     | 414     | ILE      | -      | expression tag | UNP O00487 |
| c     | 415     | LYS      | -      | expression tag | UNP O00487 |
| c     | 416     | ILE      | -      | expression tag | UNP O00487 |
| c     | 417     | GLY      | -      | expression tag | UNP O00487 |
| c     | 418     | VAL      | -      | expression tag | UNP O00487 |
| c     | 419     | HIS      | -      | expression tag | UNP O00487 |
| c     | 420     | HIS      | -      | expression tag | UNP O00487 |
| c     | 421     | HIS      | -      | expression tag | UNP O00487 |
| c     | 422     | HIS      | -      | expression tag | UNP O00487 |
| c     | 423     | HIS      | -      | expression tag | UNP O00487 |
| c     | 424     | HIS      | -      | expression tag | UNP O00487 |

- Molecule 23 is a protein called 26S proteasome non-ATPase regulatory subunit 8.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 23  | d     | 265      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2166  | 1402 | 355 | 400 | 9 |         |       |

- Molecule 24 is a protein called 26S proteasome complex subunit SEM1.

| Mol | Chain | Residues | Atoms |     |    |     | AltConf | Trace |
|-----|-------|----------|-------|-----|----|-----|---------|-------|
| 24  | e     | 50       | Total | C   | N  | O   | 0       | 0     |
|     |       |          | 425   | 260 | 65 | 100 |         |       |

- Molecule 25 is a protein called 26S proteasome non-ATPase regulatory subunit 2.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 25  | f     | 831      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6433  | 4071 | 1089 | 1228 | 45 |         |       |

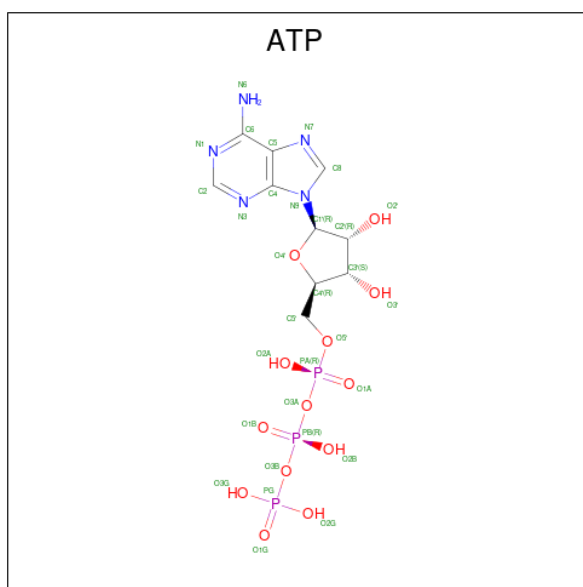
- Molecule 26 is a protein called Isoform 2 of NEDD8 ultimate buster 1.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 26  | g     | 91       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 736   | 466 | 134 | 135 | 1 |         |       |

- Molecule 27 is a protein called Thioredoxin-like protein 1.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 27  | u     | 151      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1210  | 765 | 194 | 243 | 8 |         |       |

- Molecule 28 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: C<sub>10</sub>H<sub>16</sub>N<sub>5</sub>O<sub>13</sub>P<sub>3</sub>) (labeled as "Ligand of Interest" by depositor).



| Mol | Chain | Residues | Atoms       |         |        |         |        | AltConf |
|-----|-------|----------|-------------|---------|--------|---------|--------|---------|
| 28  | A     | 1        | Total<br>31 | C<br>10 | N<br>5 | O<br>13 | P<br>3 | 0       |
| 28  | B     | 1        | Total<br>31 | C<br>10 | N<br>5 | O<br>13 | P<br>3 | 0       |
| 28  | D     | 1        | Total<br>31 | C<br>10 | N<br>5 | O<br>13 | P<br>3 | 0       |
| 28  | E     | 1        | Total<br>31 | C<br>10 | N<br>5 | O<br>13 | P<br>3 | 0       |
| 28  | F     | 1        | Total<br>31 | C<br>10 | N<br>5 | O<br>13 | P<br>3 | 0       |

- Molecule 29 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

| Mol | Chain | Residues | Atoms      |         | AltConf |
|-----|-------|----------|------------|---------|---------|
| 29  | A     | 1        | Total<br>1 | Mg<br>1 | 0       |
| 29  | B     | 1        | Total<br>1 | Mg<br>1 | 0       |
| 29  | C     | 1        | Total<br>1 | Mg<br>1 | 0       |
| 29  | D     | 1        | Total<br>1 | Mg<br>1 | 0       |
| 29  | E     | 1        | Total<br>1 | Mg<br>1 | 0       |
| 29  | F     | 1        | Total<br>1 | Mg<br>1 | 0       |

- 
- The diagram illustrates the chemical structure of Adenosine Diphosphate (ADP). It consists of an adenine base (a purine ring system with atoms N1, N3, N6, N7, N9 and carbons C2, C4, C5, C6, C8) attached to a ribose sugar (a five-membered ring with carbons C1', C2', C3', C4', C5' and an oxygen atom O4'). The ribose sugar is linked to a diphosphate group. The first phosphate group is connected to the 5' carbon of the ribose (C5') via an oxygen atom (O5'). This phosphate group is also bonded to a hydroxyl group (OH) and an oxygen atom (O1A) which is part of a pyrophosphate bridge. The second phosphate group is connected to the first via an oxygen atom (O3A) and is also bonded to two hydroxyl groups (OH and OH) and an oxygen atom (O1B). The structure is color-coded: the adenine base is blue, the ribose sugar is black, and the phosphate groups are red/purple.

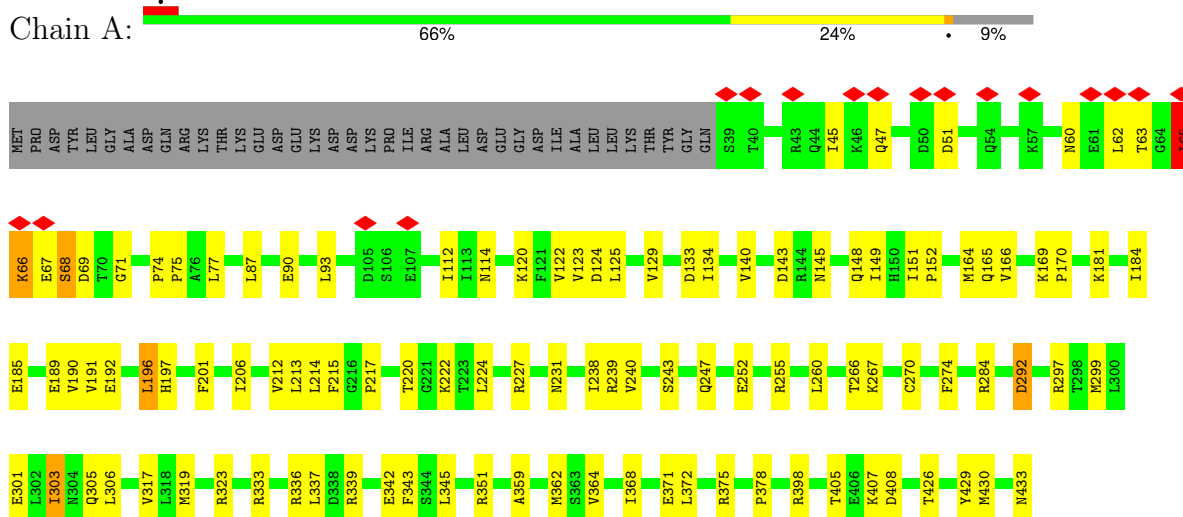
- Molecule 31 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

| Mol | Chain | Residues | Atoms           | AltConf |
|-----|-------|----------|-----------------|---------|
| 31  | c     | 1        | Total Zn<br>1 1 | 0       |

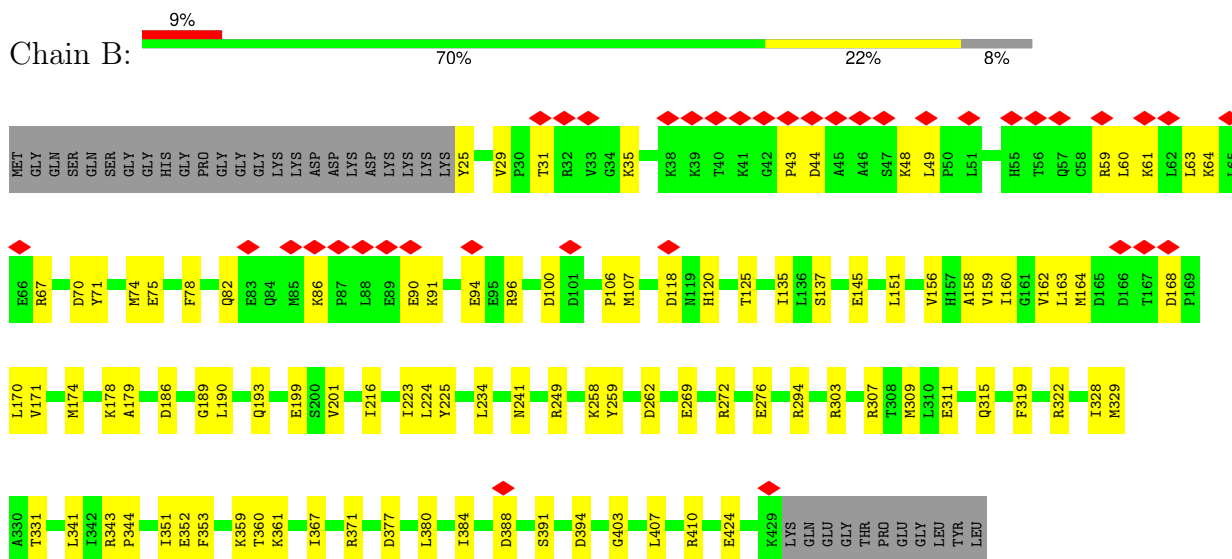
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

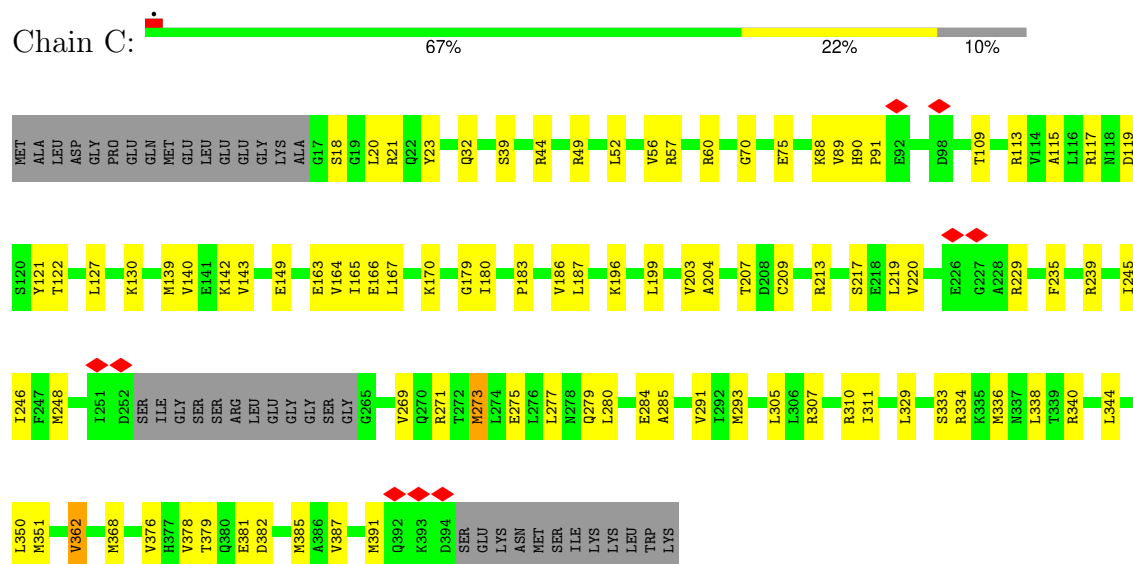
#### • Molecule 1: 26S proteasome regulatory subunit 7



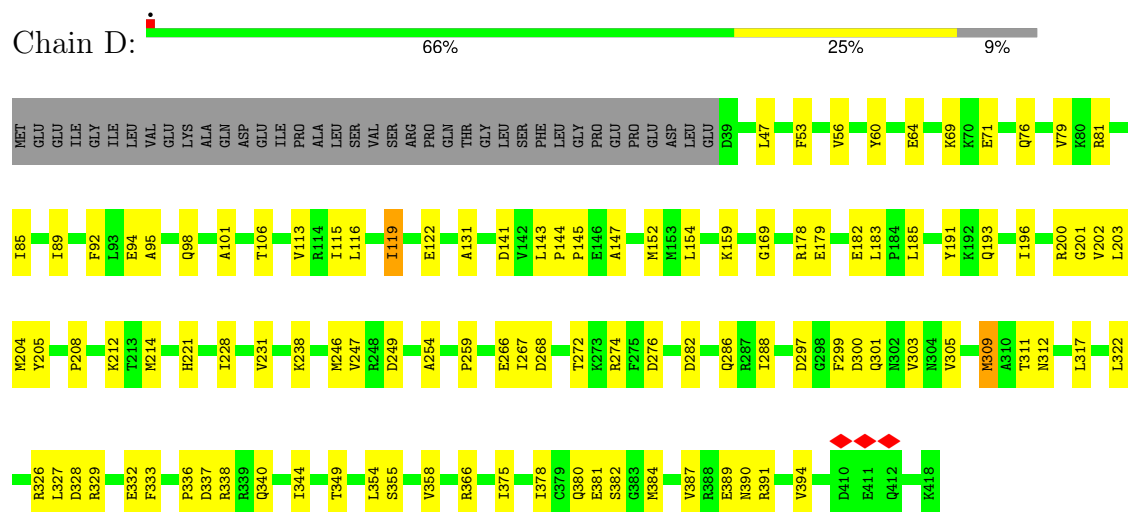
#### • Molecule 2: 26S proteasome regulatory subunit 4



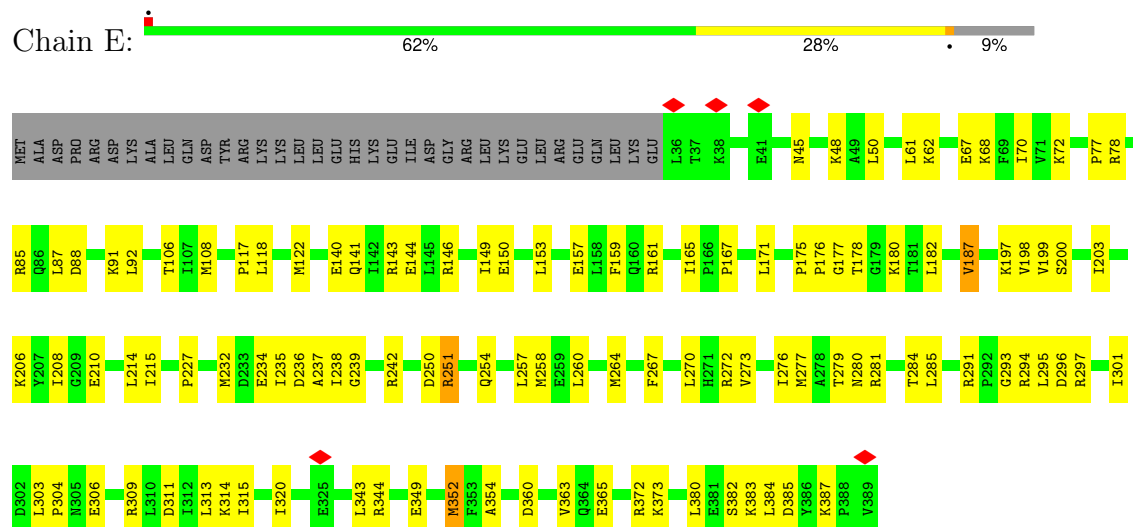
#### • Molecule 3: 26S protease regulatory subunit 8



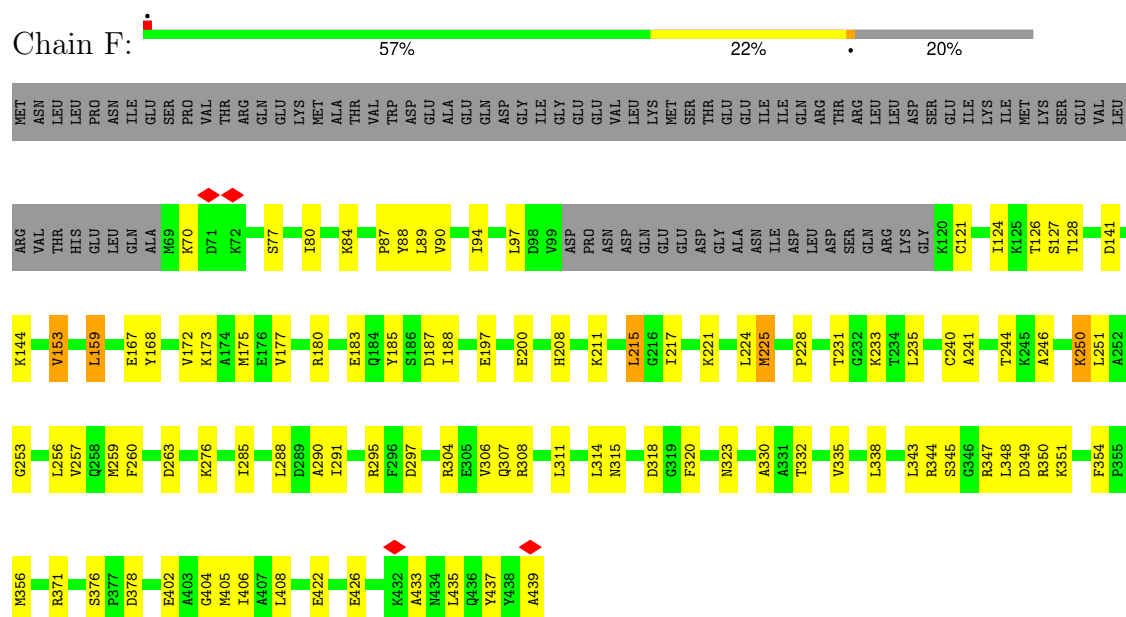
• Molecule 4: 26S proteasome regulatory subunit 6B



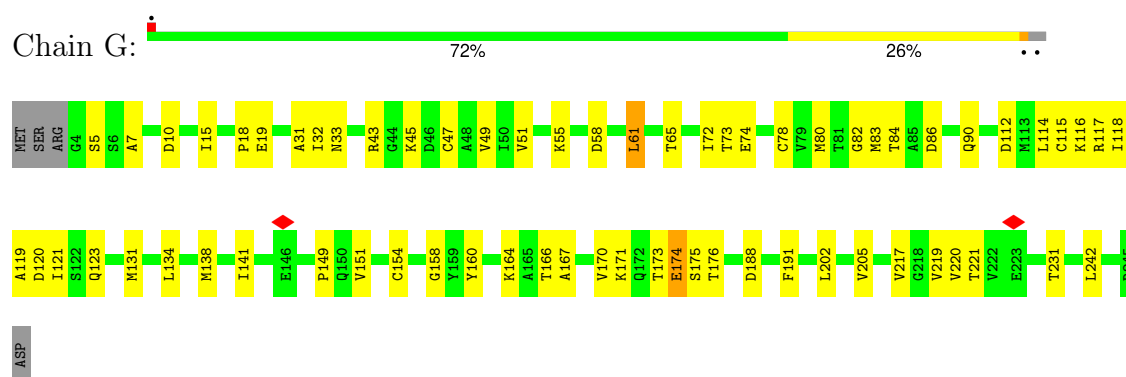
• Molecule 5: 26S protease regulatory subunit 10B



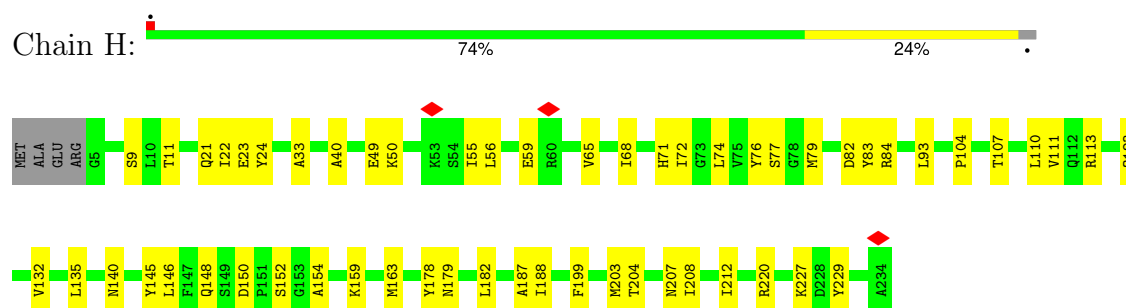
- Molecule 6: 26S proteasome regulatory subunit 6A



- Molecule 7: Proteasome subunit alpha type-6

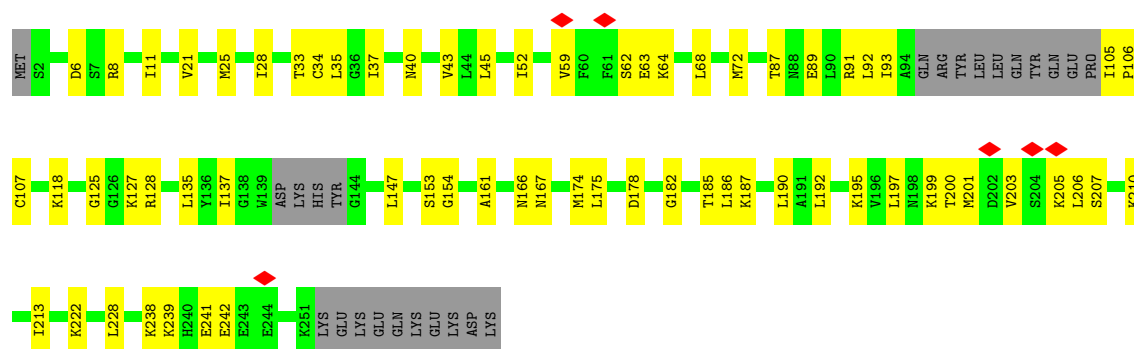


- Molecule 8: Proteasome subunit alpha type-2

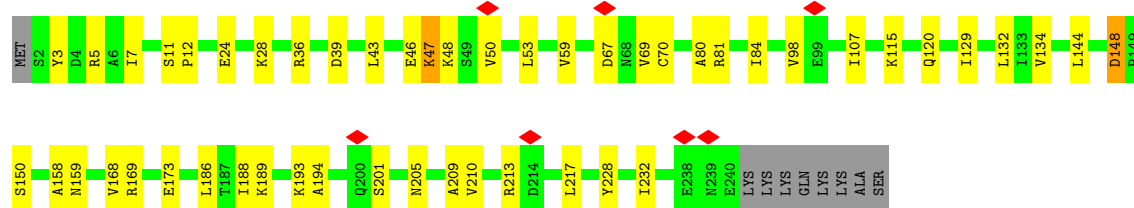


- Molecule 9: Proteasome subunit alpha type-4

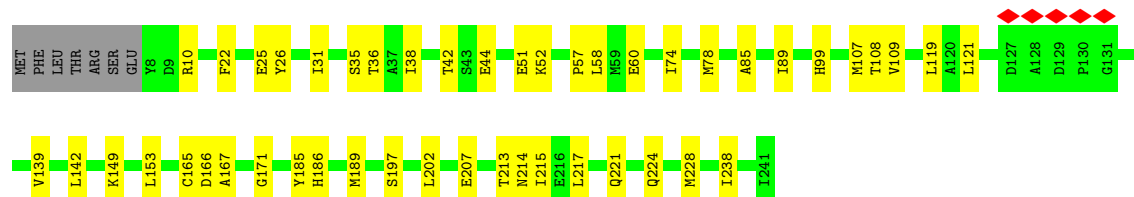
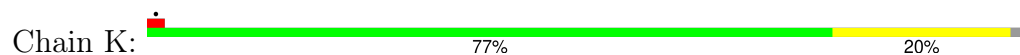




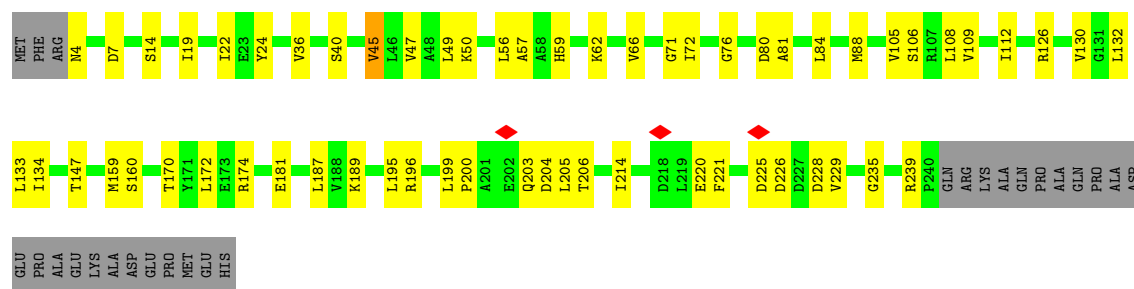
• Molecule 10: Proteasome subunit alpha type-7



• Molecule 11: Proteasome subunit alpha type-5



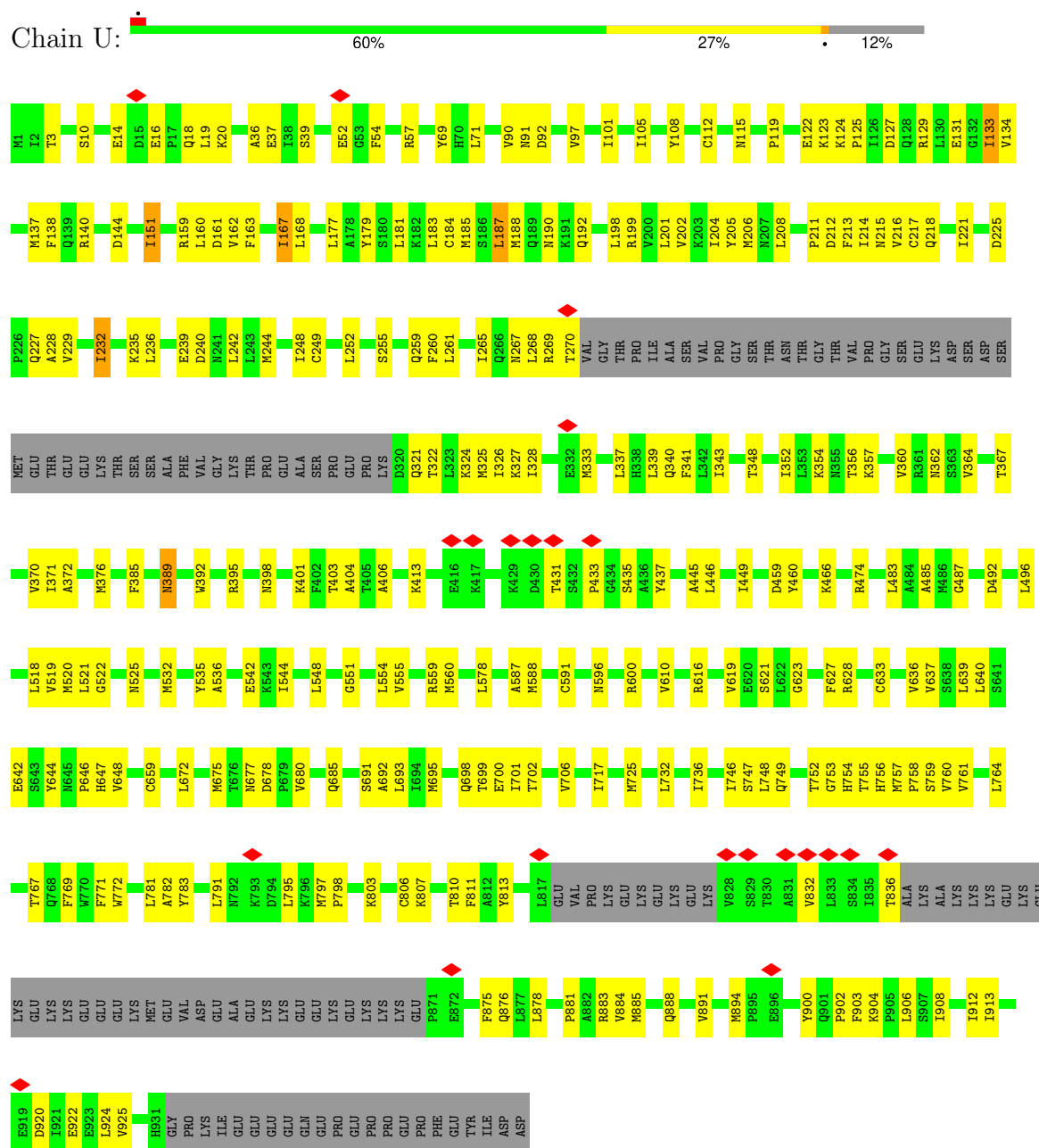
• Molecule 12: Proteasome subunit alpha type-1



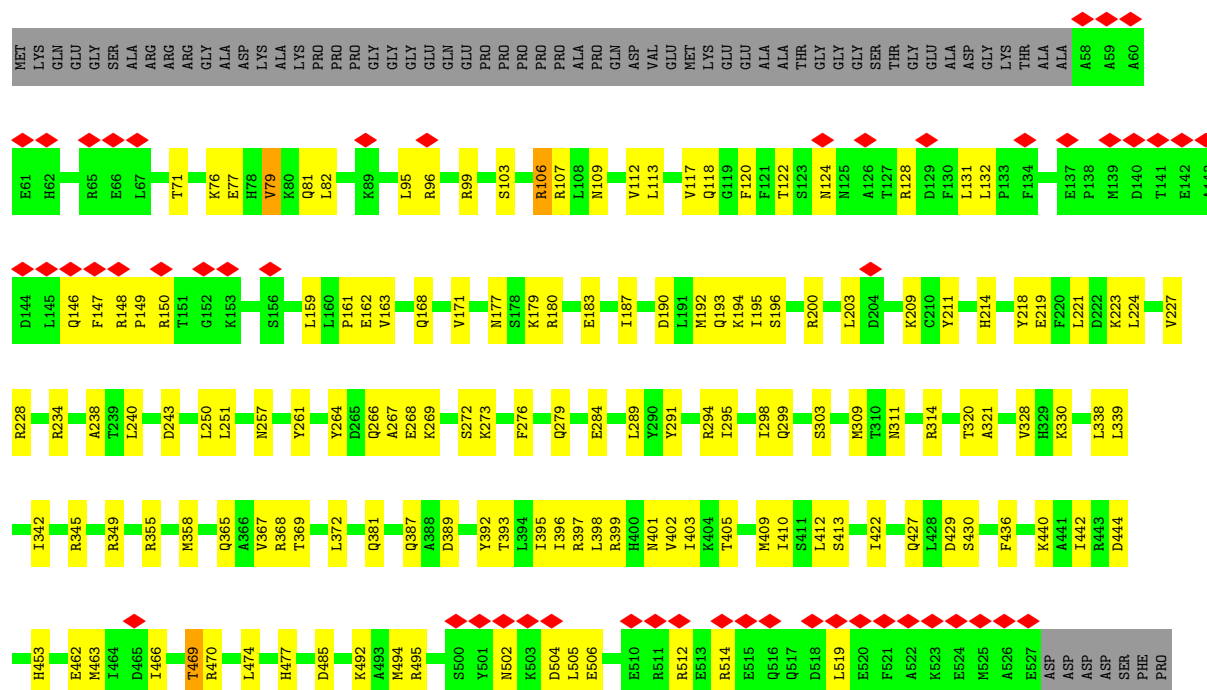
• Molecule 13: Proteasome subunit alpha type-3



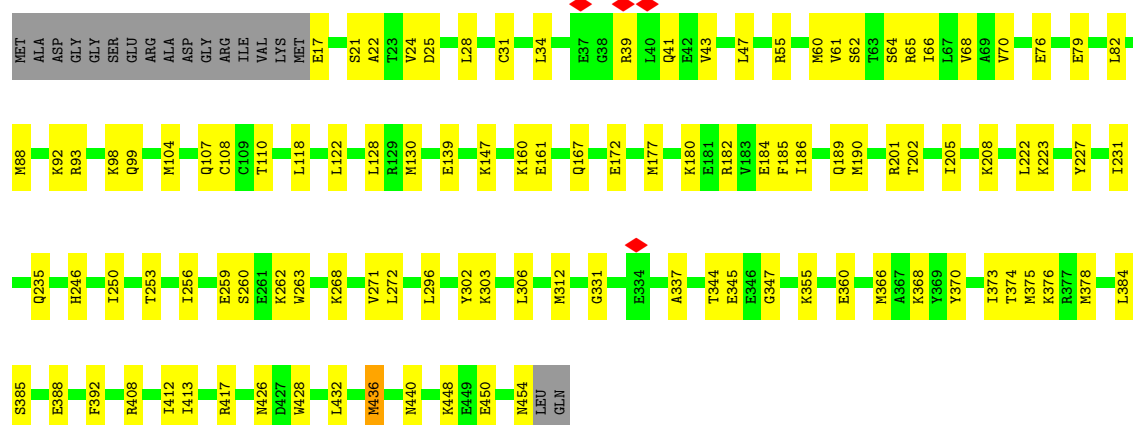
- Molecule 14: 26S proteasome non-ATPase regulatory subunit 1



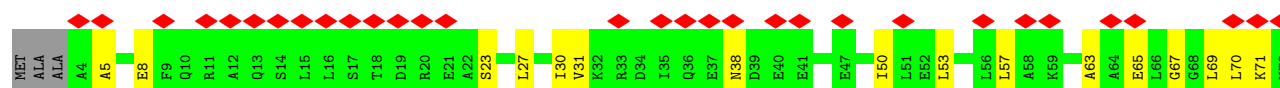
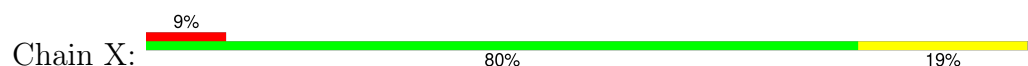
- Molecule 15: 26S proteasome non-ATPase regulatory subunit 3

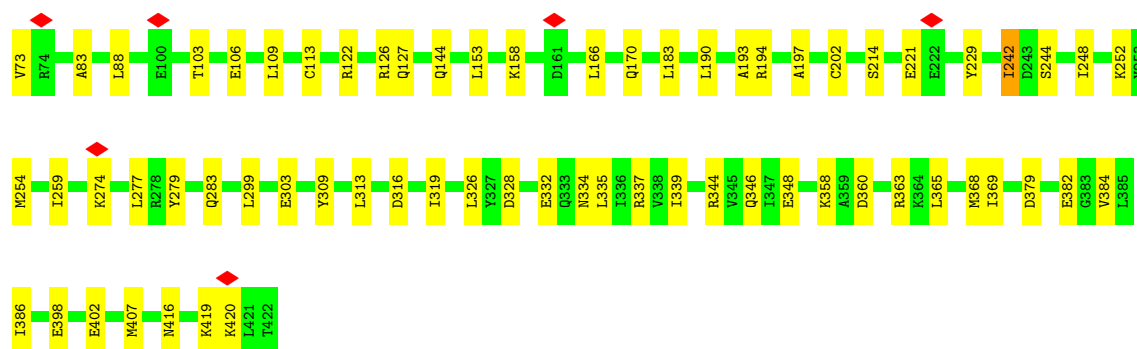


• Molecule 16: 26S proteasome non-ATPase regulatory subunit 12



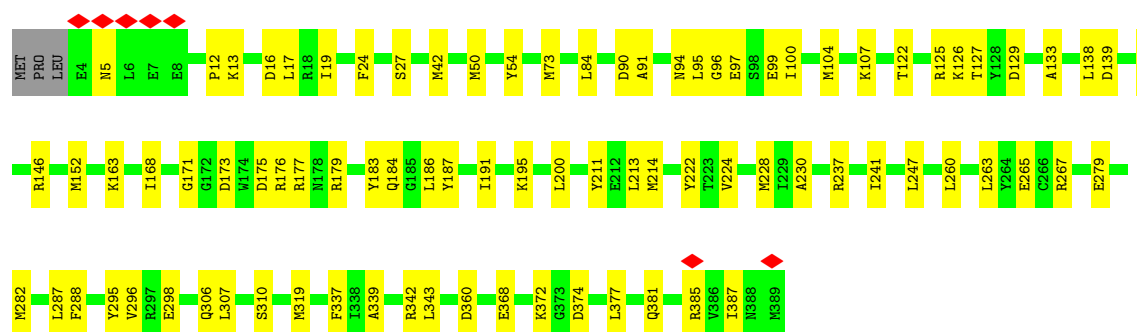
• Molecule 17: 26S proteasome non-ATPase regulatory subunit 11





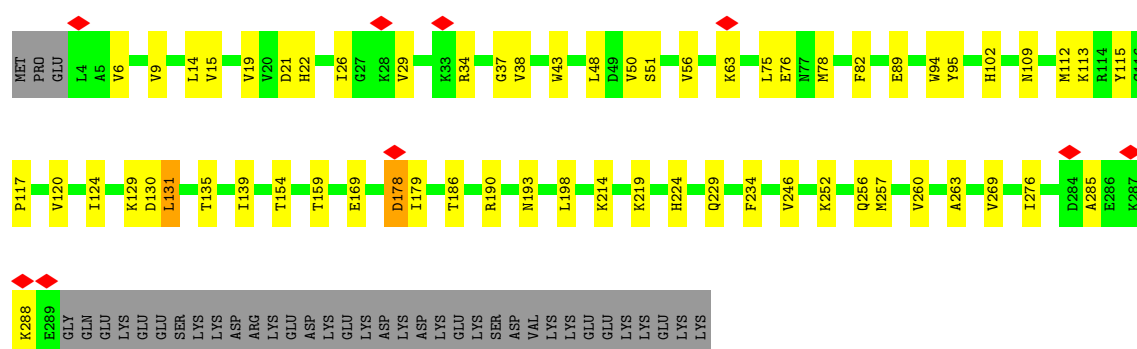
- Molecule 18: 26S proteasome non-ATPase regulatory subunit 6

Chain Y: 77% 22%



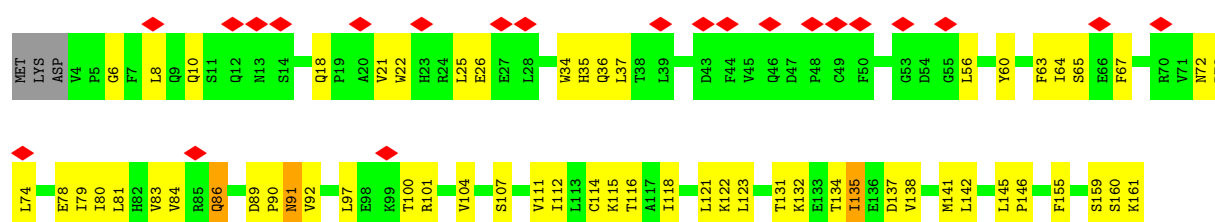
- Molecule 19: 26S proteasome non-ATPase regulatory subunit 7

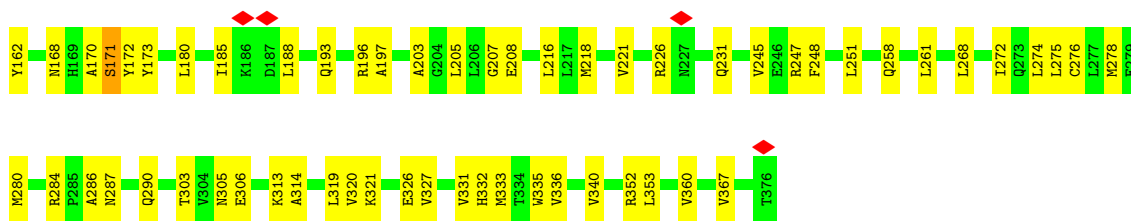
Chain Z: 69% 19% 12%



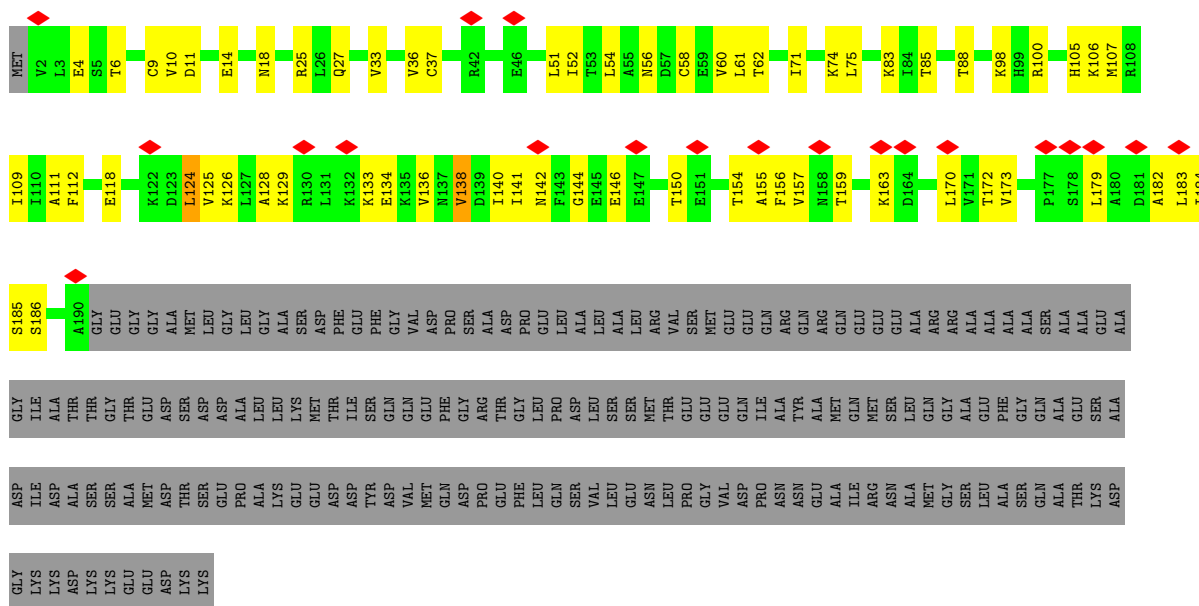
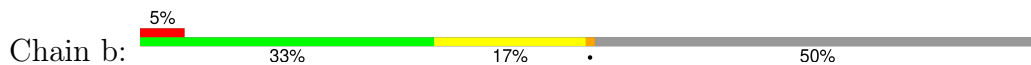
- Molecule 20: 26S proteasome non-ATPase regulatory subunit 13

Chain a: 7% 68% 30%

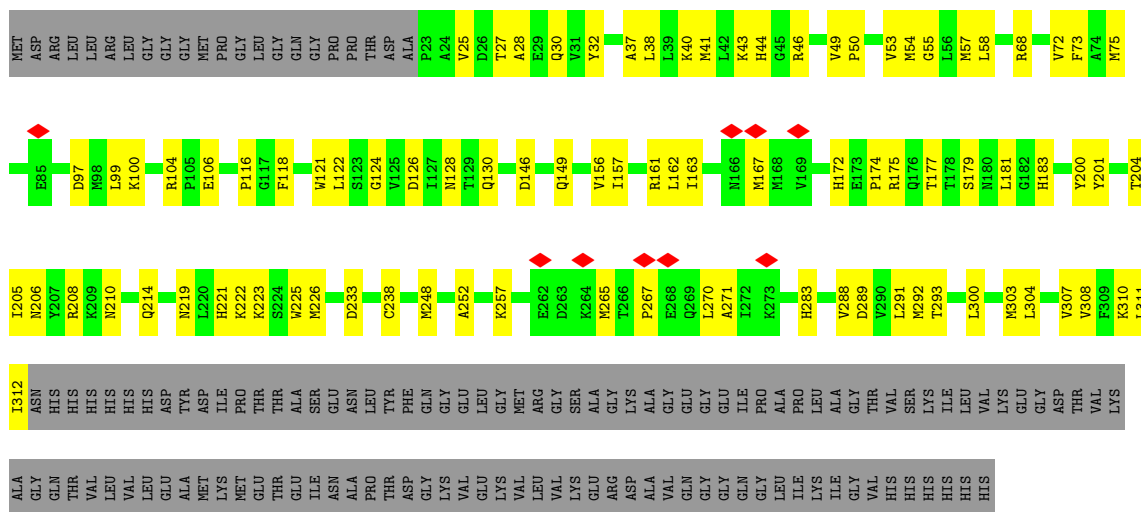




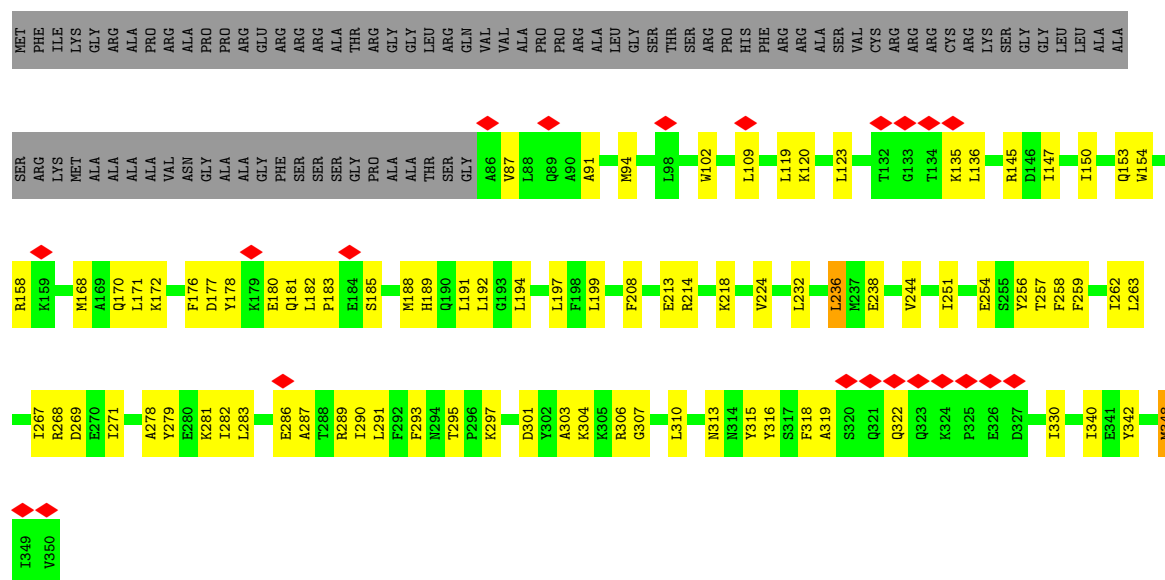
• Molecule 21: 26S proteasome non-ATPase regulatory subunit 4



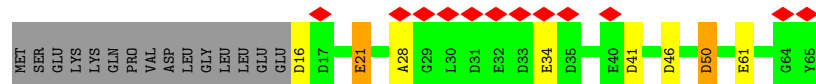
• Molecule 22: 26S proteasome non-ATPase regulatory subunit 14



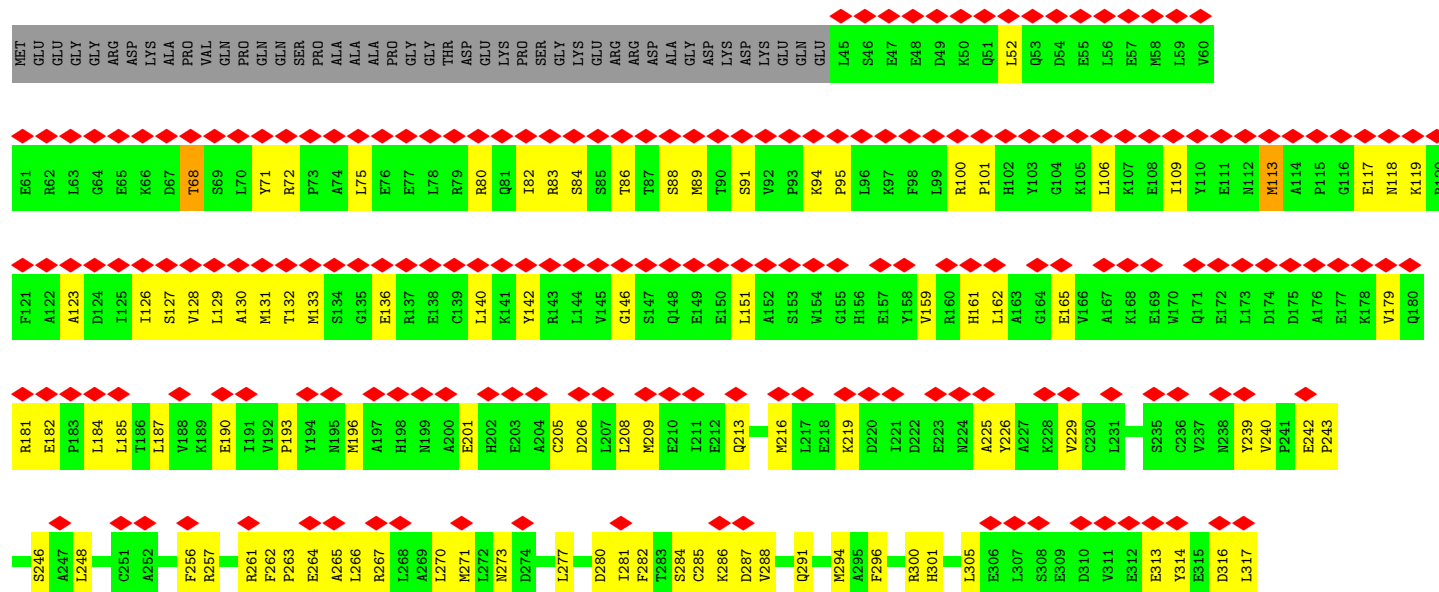
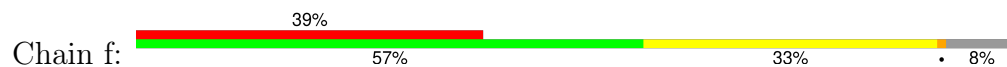
• Molecule 23: 26S proteasome non-ATPase regulatory subunit 8

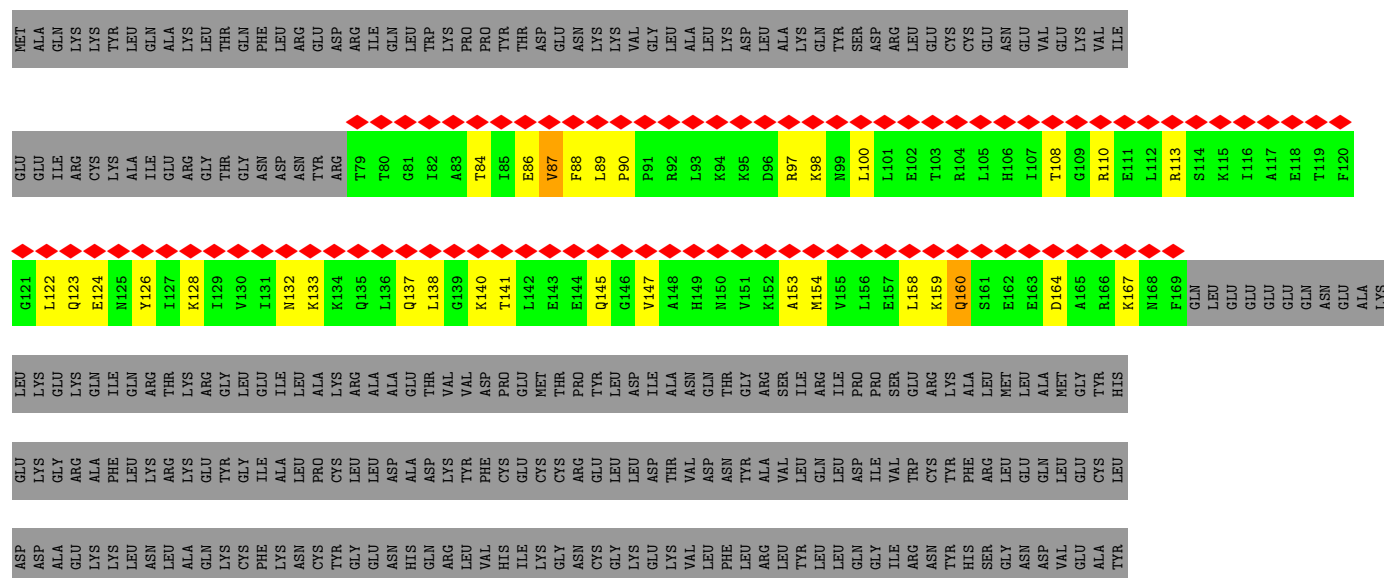


• Molecule 24: 26S proteasome complex subunit SEM1

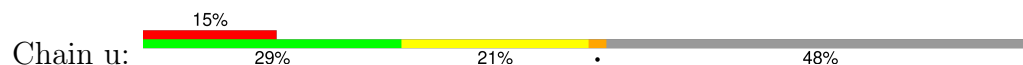


• Molecule 25: 26S proteasome non-ATPase regulatory subunit 2





- Molecule 27: Thioredoxin-like protein 1



|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| E254 | E255 | E256 | T257 | T258 | T259 | I260 | S261 | Y262 | F263 | T264 | F265 | T268 | P269 | V270 | GLN  | ALA  | THR  | ASN  | MET  | ASN  | ASP  | PHE  | LYS  | ARG  | VAL  | VAL  | GLY  | LYS  | GLU  | SER  | THR  | HIS  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |
| D186 | N187 | G188 | Q189 | K192 | K195 | I196 | F197 | I198 | R202 | S203 | M204 | E207 | E208 | A209 | E210 | R211 | S212 | E213 | E214 | T215 | Q216 | A217 | L218 | F219 | L220 | D223 | D224 | I225 | K226 | E227 | D228 | Q229 | I230 | V231 | P232 | L233 | K234 | Y235 | V236 | Q239 | N240 | V241 | N242 | S243 | V244 | I246 | F247 | V248 | Q249 | N251 |      |      |      |      |     |     |     |     |     |     |     |     |     |
| K121 | G122 | D125 | L126 | M127 | P128 | F129 | I130 | N131 | K132 | A133 | G134 | G135 | E136 | G137 | L138 | M139 | D142 | E143 | F146 | D147 | N148 | G149 | L150 | R151 | K152 | D153 | T154 | T155 | F156 | L157 | D160 | C161 | D162 | E163 | Q164 | L165 | L166 | I167 | T168 | V169 | A170 | F171 | N172 | Q173 | K176 | L177 | Y178 | S179 | M180 | K181 | F182 | Q183 | G184 | P185 |     |     |     |     |     |     |     |     |     |
| MET  | VAL  | HIS  | GLN  | CYS  | GLN  | GLY  | THR  | ALA  | ALA  | THR  | THR  | PRO  | THR  | PHE  | LEU  | PHE  | PHE  | ARG  | ASN  | LYS  | VAL  | VAL  | ARG  | ILE  | ASP  | GLN  | TYR  | MET  | GLN  | ARG  | GLY  | CYS  | ALA  | ASP  | VAL  | GLY  | LEU  | ARG  | ILE  | ALA  | ALA  | PRO  | LYS  | ASN  | SER  | MET  | SER  | ASN  | LYS  | TYR  | PRO  | GLY  | GLN  | ASN  | ALA | VAL | PHE | LEU | GLU | ASP | VAL | ILE | ASP |

## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 53010                                   | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | TFS KRIOS                               | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 50                                      | Depositor |
| Minimum defocus (nm)                 | 500                                     | Depositor |
| Maximum defocus (nm)                 | 1700                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | GATAN K3 (6k x 4k)                      | Depositor |
| Maximum map value                    | 0.991                                   | Depositor |
| Minimum map value                    | -0.391                                  | Depositor |
| Average map value                    | 0.003                                   | Depositor |
| Map value standard deviation         | 0.038                                   | Depositor |
| Recommended contour level            | 0.15                                    | Depositor |
| Map size ( $\text{\AA}$ )            | 356.32, 356.32, 356.32                  | wwPDB     |
| Map dimensions                       | 340, 340, 340                           | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.048, 1.048, 1.048                     | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, ZN, ATP, ADP

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     | 0.19         | 0/3159      | 0.34        | 0/4265         |
| 2   | B     | 0.11         | 0/3241      | 0.28        | 0/4372         |
| 3   | C     | 0.11         | 0/2933      | 0.27        | 0/3946         |
| 4   | D     | 0.11         | 0/3089      | 0.25        | 0/4168         |
| 5   | E     | 0.12         | 0/2842      | 0.26        | 0/3832         |
| 6   | F     | 0.12         | 0/2781      | 0.26        | 0/3748         |
| 7   | G     | 0.11         | 0/1920      | 0.26        | 0/2595         |
| 8   | H     | 0.11         | 0/1832      | 0.26        | 0/2481         |
| 9   | I     | 0.13         | 0/1867      | 0.27        | 0/2509         |
| 10  | J     | 0.14         | 0/1913      | 0.27        | 0/2581         |
| 11  | K     | 0.11         | 0/1818      | 0.27        | 0/2455         |
| 12  | L     | 0.11         | 0/1899      | 0.26        | 0/2567         |
| 13  | M     | 0.10         | 0/1916      | 0.27        | 0/2580         |
| 14  | U     | 0.13         | 0/6630      | 0.33        | 0/8977         |
| 15  | V     | 0.11         | 0/3913      | 0.29        | 0/5277         |
| 16  | W     | 0.11         | 0/3618      | 0.27        | 0/4868         |
| 17  | X     | 0.11         | 0/3363      | 0.27        | 0/4534         |
| 18  | Y     | 0.10         | 0/3237      | 0.24        | 0/4360         |
| 19  | Z     | 0.12         | 0/2328      | 0.26        | 0/3156         |
| 20  | a     | 0.12         | 0/3053      | 0.31        | 0/4133         |
| 21  | b     | 0.12         | 0/1466      | 0.31        | 0/1986         |
| 22  | c     | 0.12         | 0/2325      | 0.29        | 0/3143         |
| 23  | d     | 0.12         | 0/2212      | 0.33        | 0/2988         |
| 24  | e     | 0.12         | 0/437       | 0.33        | 0/595          |
| 25  | f     | 0.13         | 0/6542      | 0.37        | 1/8856 (0.0%)  |
| 26  | g     | 0.21         | 0/743       | 0.44        | 0/994          |
| 27  | u     | 0.16         | 0/1235      | 0.48        | 0/1669         |
| All | All   | 0.12         | 0/72312     | 0.30        | 1/97635 (0.0%) |

There are no bond length outliers.

All (1) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|------|-------------|----------|
| 25  | f     | 836 | GLU  | CA-CB-CG | 5.27 | 124.65      | 114.10   |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts [i](#)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 3107  | 0        | 3160     | 97      | 0            |
| 2   | B     | 3192  | 0        | 3276     | 81      | 0            |
| 3   | C     | 2895  | 0        | 3007     | 71      | 0            |
| 4   | D     | 3039  | 0        | 3075     | 82      | 0            |
| 5   | E     | 2797  | 0        | 2856     | 95      | 0            |
| 6   | F     | 2743  | 0        | 2820     | 81      | 0            |
| 7   | G     | 1886  | 0        | 1891     | 44      | 0            |
| 8   | H     | 1793  | 0        | 1787     | 38      | 0            |
| 9   | I     | 1841  | 0        | 1872     | 41      | 0            |
| 10  | J     | 1887  | 0        | 1905     | 31      | 0            |
| 11  | K     | 1790  | 0        | 1773     | 30      | 0            |
| 12  | L     | 1864  | 0        | 1852     | 42      | 0            |
| 13  | M     | 1881  | 0        | 1868     | 40      | 0            |
| 14  | U     | 6515  | 0        | 6547     | 195     | 0            |
| 15  | V     | 3841  | 0        | 3889     | 98      | 0            |
| 16  | W     | 3570  | 0        | 3685     | 66      | 0            |
| 17  | X     | 3317  | 0        | 3413     | 56      | 0            |
| 18  | Y     | 3179  | 0        | 3174     | 59      | 0            |
| 19  | Z     | 2285  | 0        | 2320     | 46      | 0            |
| 20  | a     | 2995  | 0        | 3012     | 85      | 0            |
| 21  | b     | 1446  | 0        | 1490     | 51      | 0            |
| 22  | c     | 2282  | 0        | 2306     | 67      | 0            |
| 23  | d     | 2166  | 0        | 2196     | 64      | 0            |
| 24  | e     | 425   | 0        | 328      | 8       | 0            |
| 25  | f     | 6433  | 0        | 6458     | 229     | 0            |
| 26  | g     | 736   | 0        | 784      | 24      | 0            |
| 27  | u     | 1210  | 0        | 1162     | 53      | 0            |
| 28  | A     | 31    | 0        | 12       | 1       | 0            |
| 28  | B     | 31    | 0        | 12       | 2       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 28  | D     | 31    | 0        | 12       | 4       | 0            |
| 28  | E     | 31    | 0        | 12       | 2       | 0            |
| 28  | F     | 31    | 0        | 12       | 4       | 0            |
| 29  | A     | 1     | 0        | 0        | 0       | 0            |
| 29  | B     | 1     | 0        | 0        | 0       | 0            |
| 29  | C     | 1     | 0        | 0        | 0       | 0            |
| 29  | D     | 1     | 0        | 0        | 0       | 0            |
| 29  | E     | 1     | 0        | 0        | 0       | 0            |
| 29  | F     | 1     | 0        | 0        | 0       | 0            |
| 30  | C     | 27    | 0        | 12       | 1       | 0            |
| 31  | c     | 1     | 0        | 0        | 0       | 0            |
| All | All   | 71304 | 0        | 71978    | 1669    | 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 12.

All (1669) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:65:ILE:HD11   | 1:A:74:PRO:CA     | 1.33                     | 1.53              |
| 1:A:65:ILE:CD1    | 1:A:74:PRO:HA     | 1.04                     | 1.51              |
| 1:A:65:ILE:CD1    | 1:A:74:PRO:CA     | 1.88                     | 1.33              |
| 1:A:65:ILE:HD13   | 1:A:75:PRO:CD     | 1.72                     | 1.20              |
| 1:A:65:ILE:HD13   | 1:A:75:PRO:HD2    | 1.37                     | 1.02              |
| 1:A:65:ILE:HD13   | 1:A:74:PRO:HA     | 1.21                     | 1.02              |
| 1:A:65:ILE:HD11   | 1:A:74:PRO:CB     | 1.90                     | 1.01              |
| 1:A:65:ILE:HD12   | 1:A:74:PRO:HA     | 1.38                     | 0.99              |
| 27:u:125:ASP:HB2  | 27:u:127:MET:HE1  | 1.54                     | 0.89              |
| 1:A:65:ILE:CD1    | 1:A:74:PRO:CB     | 2.47                     | 0.88              |
| 1:A:333:ARG:HH12  | 28:F:501:ATP:H5'1 | 1.40                     | 0.85              |
| 27:u:180:MET:HG2  | 27:u:233:LEU:HD11 | 1.58                     | 0.84              |
| 2:B:74:MET:HE1    | 25:f:609:VAL:HG23 | 1.57                     | 0.84              |
| 1:A:359:ALA:HA    | 1:A:362:MET:HG3   | 1.59                     | 0.83              |
| 18:Y:279:GLU:HG3  | 18:Y:296:VAL:HG21 | 1.58                     | 0.83              |
| 20:a:185:ILE:HD11 | 20:a:221:VAL:HG22 | 1.59                     | 0.82              |
| 1:A:65:ILE:HD11   | 1:A:74:PRO:HA     | 0.88                     | 0.81              |
| 4:D:106:THR:HG21  | 5:E:78:ARG:HG3    | 1.61                     | 0.81              |
| 26:g:88:PHE:HB2   | 26:g:154:MET:HG2  | 1.60                     | 0.81              |
| 1:A:65:ILE:HD13   | 1:A:74:PRO:CA     | 1.83                     | 0.81              |
| 1:A:65:ILE:CD1    | 1:A:75:PRO:CD     | 2.56                     | 0.80              |
| 25:f:784:ASP:O    | 25:f:786:GLN:NE2  | 2.14                     | 0.79              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 20:a:321:LYS:HB2  | 20:a:335:TRP:HB3  | 1.62                     | 0.79              |
| 1:A:252:GLU:OE2   | 1:A:255:ARG:NH1   | 2.16                     | 0.79              |
| 19:Z:252:LYS:NZ   | 22:c:238:CYS:SG   | 2.58                     | 0.77              |
| 2:B:67:ARG:NH2    | 25:f:604:GLY:O    | 2.17                     | 0.76              |
| 4:D:200:ARG:HH21  | 4:D:299:PHE:HB3   | 1.49                     | 0.76              |
| 20:a:78:GLU:HA    | 20:a:81:LEU:HD23  | 1.69                     | 0.75              |
| 1:A:65:ILE:HD13   | 1:A:75:PRO:HD3    | 1.69                     | 0.75              |
| 15:V:429:ASP:OD1  | 15:V:430:SER:N    | 2.20                     | 0.74              |
| 14:U:588:MET:HE3  | 14:U:764:LEU:HD22 | 1.70                     | 0.73              |
| 15:V:192:MET:HE3  | 15:V:195:ILE:HD11 | 1.70                     | 0.73              |
| 27:u:235:TYR:O    | 27:u:239:GLN:NE2  | 2.21                     | 0.73              |
| 2:B:410:ARG:NH2   | 18:Y:90:ASP:OD2   | 2.21                     | 0.72              |
| 1:A:75:PRO:HB2    | 25:f:680:ARG:HH21 | 1.54                     | 0.72              |
| 2:B:107:MET:HG2   | 2:B:160:ILE:HD11  | 1.72                     | 0.72              |
| 3:C:57:ARG:HB3    | 15:V:505:LEU:HD21 | 1.73                     | 0.71              |
| 8:H:11:THR:HG23   | 8:H:21:GLN:HB3    | 1.73                     | 0.71              |
| 27:u:224:ASP:HB3  | 27:u:231:VAL:HG12 | 1.73                     | 0.71              |
| 6:F:197:GLU:HG3   | 6:F:350:ARG:HE    | 1.54                     | 0.71              |
| 25:f:479:LEU:HD13 | 25:f:514:VAL:HG12 | 1.73                     | 0.71              |
| 4:D:349:THR:HB    | 4:D:354:LEU:HD11  | 1.73                     | 0.71              |
| 13:M:66:LEU:HD13  | 13:M:214:SER:HB3  | 1.73                     | 0.71              |
| 27:u:138:LEU:HD12 | 27:u:166:LEU:HD23 | 1.73                     | 0.71              |
| 9:I:178:ASP:OD2   | 9:I:195:LYS:NZ    | 2.24                     | 0.71              |
| 22:c:310:LYS:HG2  | 22:c:312:ILE:HG22 | 1.73                     | 0.70              |
| 25:f:574:GLU:OE2  | 25:f:574:GLU:N    | 2.21                     | 0.70              |
| 5:E:234:GLU:HG2   | 6:F:311:LEU:HD22  | 1.72                     | 0.70              |
| 20:a:135:ILE:HD11 | 20:a:159:SER:HA   | 1.72                     | 0.70              |
| 8:H:93:LEU:HD13   | 8:H:113:ARG:HB3   | 1.73                     | 0.70              |
| 14:U:749:GLN:HE21 | 14:U:753:GLY:HA2  | 1.56                     | 0.70              |
| 1:A:65:ILE:HD11   | 1:A:74:PRO:N      | 2.06                     | 0.69              |
| 3:C:333:SER:HB2   | 3:C:338:LEU:HD11  | 1.74                     | 0.69              |
| 6:F:233:LYS:NZ    | 28:F:501:ATP:O2G  | 2.25                     | 0.69              |
| 10:J:46:GLU:HG2   | 10:J:48:LYS:H     | 1.57                     | 0.69              |
| 14:U:137:MET:HE1  | 14:U:140:ARG:HH21 | 1.58                     | 0.69              |
| 25:f:89:MET:SD    | 25:f:89:MET:N     | 2.63                     | 0.69              |
| 1:A:65:ILE:CD1    | 1:A:75:PRO:HD3    | 2.22                     | 0.69              |
| 3:C:207:THR:OG1   | 3:C:209:CYS:SG    | 2.50                     | 0.69              |
| 3:C:32:GLN:HG2    | 4:D:47:LEU:HD21   | 1.74                     | 0.69              |
| 18:Y:374:ASP:HA   | 18:Y:377:LEU:HD12 | 1.73                     | 0.69              |
| 14:U:757:MET:HE3  | 14:U:758:PRO:HD3  | 1.73                     | 0.69              |
| 16:W:440:ASN:ND2  | 22:c:226:MET:SD   | 2.66                     | 0.69              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 14:U:151:ILE:HG21 | 14:U:179:TYR:HE1  | 1.58                     | 0.69              |
| 19:Z:78:MET:HE3   | 19:Z:82:PHE:HE1   | 1.57                     | 0.69              |
| 16:W:108:CYS:HB3  | 16:W:128:LEU:HD11 | 1.75                     | 0.68              |
| 2:B:67:ARG:HH12   | 25:f:239:TYR:HA   | 1.59                     | 0.68              |
| 14:U:431:THR:HG22 | 14:U:433:PRO:HD2  | 1.75                     | 0.68              |
| 20:a:360:VAL:HG22 | 22:c:308:VAL:HG13 | 1.73                     | 0.68              |
| 22:c:267:PRO:HA   | 22:c:270:LEU:HG   | 1.75                     | 0.68              |
| 3:C:20:LEU:HB3    | 3:C:23:TYR:HB3    | 1.75                     | 0.68              |
| 14:U:520:MET:HE3  | 14:U:525:ASN:HD21 | 1.58                     | 0.68              |
| 11:K:167:ALA:HB3  | 12:L:56:LEU:HD13  | 1.75                     | 0.68              |
| 1:A:398:ARG:NH1   | 2:B:199:GLU:OE1   | 2.26                     | 0.68              |
| 14:U:542:GLU:OE1  | 22:c:32:TYR:OH    | 2.11                     | 0.68              |
| 5:E:383:LYS:NZ    | 5:E:385:ASP:O     | 2.26                     | 0.67              |
| 25:f:300:ARG:O    | 25:f:300:ARG:NH1  | 2.26                     | 0.67              |
| 16:W:271:VAL:HG22 | 16:W:306:LEU:HD22 | 1.76                     | 0.67              |
| 1:A:90:GLU:OE2    | 2:B:120:HIS:NE2   | 2.27                     | 0.67              |
| 14:U:249:CYS:HB3  | 14:U:328:ILE:HG21 | 1.76                     | 0.67              |
| 14:U:532:MET:HE1  | 14:U:555:VAL:HG21 | 1.75                     | 0.67              |
| 14:U:797:MET:HE2  | 14:U:925:VAL:HG11 | 1.76                     | 0.67              |
| 9:I:167:ASN:HB2   | 9:I:200:THR:HG23  | 1.76                     | 0.67              |
| 7:G:141:ILE:HG22  | 7:G:151:VAL:HG22  | 1.77                     | 0.67              |
| 9:I:207:SER:OG    | 9:I:210:LYS:NZ    | 2.27                     | 0.67              |
| 6:F:288:LEU:HD22  | 6:F:330:ALA:HB1   | 1.76                     | 0.67              |
| 7:G:65:THR:HG21   | 13:M:159:GLY:H    | 1.58                     | 0.66              |
| 25:f:374:SER:HB2  | 25:f:398:TRP:HH2  | 1.60                     | 0.66              |
| 5:E:176:PRO:HD2   | 5:E:384:LEU:HD23  | 1.78                     | 0.66              |
| 7:G:158:GLY:O     | 8:H:84:ARG:NH2    | 2.28                     | 0.66              |
| 25:f:301:HIS:O    | 25:f:301:HIS:ND1  | 2.26                     | 0.66              |
| 11:K:85:ALA:HB2   | 11:K:139:VAL:HG21 | 1.77                     | 0.66              |
| 15:V:219:GLU:HA   | 15:V:224:LEU:HD21 | 1.76                     | 0.66              |
| 8:H:148:GLN:HG3   | 8:H:163:MET:HE1   | 1.78                     | 0.66              |
| 28:E:402:ATP:O1G  | 6:F:347:ARG:NH2   | 2.29                     | 0.66              |
| 19:Z:224:HIS:HE1  | 20:a:218:MET:SD   | 2.19                     | 0.66              |
| 27:u:139:ASN:ND2  | 27:u:164:GLN:O    | 2.23                     | 0.66              |
| 9:I:154:GLY:O     | 10:J:81:ARG:NH2   | 2.27                     | 0.65              |
| 3:C:166:GLU:HG3   | 3:C:207:THR:HG22  | 1.79                     | 0.65              |
| 12:L:200:PRO:O    | 12:L:239:ARG:NH2  | 2.26                     | 0.65              |
| 27:u:127:MET:SD   | 27:u:128:PRO:HD3  | 2.37                     | 0.65              |
| 16:W:256:ILE:HG23 | 16:W:262:LYS:HB3  | 1.78                     | 0.65              |
| 23:d:197:LEU:HD22 | 23:d:256:TYR:HD2  | 1.62                     | 0.65              |
| 27:u:251:ASN:HB3  | 27:u:258:THR:HG23 | 1.79                     | 0.65              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 11:K:42:THR:HG22  | 11:K:44:GLU:H     | 1.61                     | 0.65              |
| 3:C:381:GLU:OE1   | 17:X:194:ARG:NH1  | 2.28                     | 0.65              |
| 15:V:195:ILE:HG22 | 15:V:203:LEU:HD21 | 1.78                     | 0.65              |
| 18:Y:99:GLU:N     | 18:Y:99:GLU:OE2   | 2.29                     | 0.65              |
| 6:F:84:LYS:NZ     | 6:F:88:TYR:OH     | 2.30                     | 0.65              |
| 15:V:345:ARG:NE   | 24:e:46:ASP:OD2   | 2.28                     | 0.65              |
| 19:Z:179:ILE:HG21 | 22:c:214:GLN:HE21 | 1.60                     | 0.65              |
| 1:A:213:LEU:HB2   | 1:A:337:LEU:HD13  | 1.79                     | 0.64              |
| 9:I:33:THR:OG1    | 9:I:166:ASN:O     | 2.14                     | 0.64              |
| 21:b:9:CYS:HB2    | 21:b:111:ALA:HA   | 1.79                     | 0.64              |
| 1:A:65:ILE:CD1    | 1:A:74:PRO:HB3    | 2.26                     | 0.64              |
| 21:b:98:LYS:HG2   | 27:u:211:ARG:HH12 | 1.62                     | 0.64              |
| 3:C:89:VAL:HG12   | 3:C:91:PRO:HD2    | 1.80                     | 0.64              |
| 5:E:239:GLY:HA2   | 5:E:257:LEU:HD13  | 1.78                     | 0.64              |
| 5:E:67:GLU:OE1    | 22:c:46:ARG:NH2   | 2.30                     | 0.64              |
| 25:f:341:GLU:O    | 25:f:773:LYS:NZ   | 2.28                     | 0.64              |
| 15:V:309:MET:HE2  | 15:V:328:VAL:HG13 | 1.79                     | 0.64              |
| 20:a:197:ALA:HB2  | 20:a:221:VAL:HG12 | 1.80                     | 0.64              |
| 5:E:280:ASN:OD1   | 6:F:295:ARG:NH2   | 2.29                     | 0.64              |
| 25:f:216:MET:HA   | 25:f:219:LYS:HE2  | 1.80                     | 0.64              |
| 5:E:199:VAL:HG11  | 6:F:315:ASN:HD22  | 1.61                     | 0.64              |
| 12:L:47:VAL:HG12  | 12:L:195:LEU:HD22 | 1.80                     | 0.64              |
| 27:u:179:SER:HA   | 27:u:233:LEU:HD13 | 1.79                     | 0.64              |
| 4:D:389:GLU:OE2   | 4:D:391:ARG:NH1   | 2.31                     | 0.63              |
| 19:Z:19:VAL:HG21  | 19:Z:124:ILE:HD12 | 1.80                     | 0.63              |
| 15:V:412:LEU:HD22 | 18:Y:339:ALA:HA   | 1.79                     | 0.63              |
| 21:b:157:VAL:HG21 | 21:b:170:LEU:HB2  | 1.80                     | 0.63              |
| 27:u:163:GLU:O    | 27:u:258:THR:OG1  | 2.12                     | 0.63              |
| 5:E:385:ASP:OD1   | 5:E:387:LYS:NZ    | 2.28                     | 0.63              |
| 8:H:68:ILE:HD11   | 8:H:74:LEU:HG     | 1.79                     | 0.63              |
| 11:K:221:GLN:NE2  | 11:K:224:GLN:OE1  | 2.32                     | 0.63              |
| 13:M:108:LEU:HD22 | 13:M:139:SER:HB3  | 1.80                     | 0.63              |
| 15:V:279:GLN:OE1  | 15:V:279:GLN:N    | 2.21                     | 0.63              |
| 22:c:265:MET:HE1  | 22:c:270:LEU:HD23 | 1.80                     | 0.63              |
| 6:F:251:LEU:HD23  | 6:F:285:ILE:HG12  | 1.80                     | 0.63              |
| 15:V:399:ARG:NH1  | 23:d:238:GLU:OE1  | 2.31                     | 0.63              |
| 14:U:213:PHE:HD2  | 14:U:244:MET:HE3  | 1.63                     | 0.63              |
| 7:G:51:VAL:HG22   | 7:G:217:VAL:HG22  | 1.80                     | 0.63              |
| 14:U:811:PHE:CD1  | 14:U:888:GLN:HG2  | 2.33                     | 0.63              |
| 16:W:223:LYS:HE2  | 16:W:253:THR:HG22 | 1.80                     | 0.63              |
| 20:a:275:LEU:HD23 | 20:a:278:MET:HE2  | 1.80                     | 0.63              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 19:Z:169:GLU:OE2  | 22:c:221:HIS:NE2  | 2.31                     | 0.63              |
| 25:f:404:ASP:CG   | 25:f:405:HIS:H    | 2.06                     | 0.63              |
| 9:I:35:LEU:HD12   | 9:I:197:LEU:HD13  | 1.81                     | 0.62              |
| 17:X:50:ILE:HD11  | 17:X:73:VAL:HG21  | 1.81                     | 0.62              |
| 26:g:113:ARG:NH2  | 26:g:124:GLU:OE1  | 2.32                     | 0.62              |
| 4:D:203:LEU:HD22  | 4:D:322:LEU:HD11  | 1.81                     | 0.62              |
| 4:D:312:ASN:OD1   | 5:E:242:ARG:NH2   | 2.30                     | 0.62              |
| 11:K:228:MET:HA   | 11:K:228:MET:HE3  | 1.80                     | 0.62              |
| 27:u:187:ASN:ND2  | 27:u:189:GLN:OE1  | 2.30                     | 0.62              |
| 7:G:45:LYS:HB3    | 7:G:188:ASP:HB3   | 1.81                     | 0.62              |
| 15:V:192:MET:HE3  | 15:V:192:MET:HA   | 1.82                     | 0.62              |
| 16:W:24:VAL:HG22  | 16:W:28:LEU:HG    | 1.81                     | 0.62              |
| 17:X:126:ARG:HH11 | 17:X:126:ARG:HG2  | 1.63                     | 0.62              |
| 25:f:720:GLU:HG3  | 25:f:807:ARG:HH21 | 1.64                     | 0.62              |
| 13:M:83:ASP:HB3   | 13:M:131:PHE:HD1  | 1.65                     | 0.62              |
| 17:X:183:LEU:HD13 | 17:X:221:GLU:HG2  | 1.81                     | 0.62              |
| 22:c:49:VAL:HG22  | 22:c:116:PRO:HB3  | 1.79                     | 0.62              |
| 25:f:71:TYR:HB3   | 25:f:72:ARG:HH21  | 1.65                     | 0.62              |
| 13:M:41:CYS:HB3   | 13:M:189:ILE:HG13 | 1.82                     | 0.62              |
| 15:V:161:PRO:HG2  | 15:V:200:ARG:HE   | 1.63                     | 0.62              |
| 27:u:130:ILE:HA   | 27:u:171:PHE:HB3  | 1.80                     | 0.62              |
| 3:C:368:MET:HE2   | 4:D:196:ILE:HG21  | 1.82                     | 0.62              |
| 15:V:289:LEU:HD13 | 15:V:311:ASN:HB3  | 1.81                     | 0.62              |
| 18:Y:298:GLU:OE1  | 18:Y:342:ARG:NH2  | 2.32                     | 0.62              |
| 20:a:180:LEU:HD13 | 20:a:221:VAL:HG21 | 1.82                     | 0.62              |
| 4:D:214:MET:HE1   | 28:D:501:ATP:C5   | 2.34                     | 0.62              |
| 21:b:51:LEU:HD11  | 21:b:75:LEU:HG    | 1.80                     | 0.62              |
| 1:A:345:LEU:HD23  | 1:A:430:MET:HE3   | 1.82                     | 0.62              |
| 1:A:371:GLU:N     | 1:A:371:GLU:OE1   | 2.32                     | 0.61              |
| 2:B:31:THR:OG1    | 2:B:118:ASP:OD2   | 2.14                     | 0.61              |
| 20:a:331:VAL:HG12 | 20:a:333:MET:HE3  | 1.81                     | 0.61              |
| 23:d:301:ASP:OD1  | 23:d:301:ASP:N    | 2.33                     | 0.61              |
| 9:I:11:ILE:HG22   | 10:J:7:ILE:HG23   | 1.82                     | 0.61              |
| 14:U:235:LYS:NZ   | 14:U:239:GLU:OE1  | 2.33                     | 0.61              |
| 22:c:38:LEU:HA    | 22:c:41:MET:HE2   | 1.82                     | 0.61              |
| 25:f:538:ILE:HG21 | 25:f:562:LEU:HB2  | 1.82                     | 0.61              |
| 3:C:376:VAL:HG13  | 4:D:193:GLN:HB3   | 1.83                     | 0.61              |
| 5:E:200:SER:HB2   | 5:E:237:ALA:HB3   | 1.82                     | 0.61              |
| 25:f:242:GLU:HG3  | 25:f:243:PRO:HA   | 1.82                     | 0.61              |
| 5:E:199:VAL:HG11  | 6:F:315:ASN:ND2   | 2.16                     | 0.61              |
| 6:F:304:ARG:HA    | 6:F:307:GLN:HE21  | 1.65                     | 0.61              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:F:251:LEU:HD21  | 6:F:256:LEU:HD11  | 1.82                     | 0.61              |
| 25:f:496:ASP:OD1  | 25:f:496:ASP:N    | 2.33                     | 0.61              |
| 1:A:65:ILE:HD11   | 1:A:74:PRO:CG     | 2.31                     | 0.61              |
| 14:U:832:VAL:HG13 | 14:U:836:THR:HG21 | 1.82                     | 0.61              |
| 2:B:60:LEU:HA     | 2:B:63:LEU:HB2    | 1.81                     | 0.61              |
| 6:F:200:GLU:OE2   | 6:F:350:ARG:NH2   | 2.33                     | 0.61              |
| 10:J:69:VAL:HG11  | 10:J:107:ILE:HG21 | 1.82                     | 0.61              |
| 4:D:208:PRO:HB2   | 5:E:291:ARG:HD3   | 1.83                     | 0.61              |
| 15:V:168:GLN:NE2  | 15:V:190:ASP:OD2  | 2.18                     | 0.61              |
| 3:C:246:ILE:HB    | 3:C:291:VAL:HG23  | 1.81                     | 0.61              |
| 6:F:437:TYR:OH    | 11:K:25:GLU:OE2   | 2.18                     | 0.61              |
| 18:Y:265:GLU:OE1  | 18:Y:267:ARG:NH2  | 2.33                     | 0.61              |
| 25:f:609:VAL:HA   | 25:f:612:LEU:HD12 | 1.83                     | 0.61              |
| 1:A:212:VAL:HG22  | 1:A:339:ARG:HB2   | 1.82                     | 0.60              |
| 15:V:146:GLN:HB3  | 15:V:148:ARG:HE   | 1.66                     | 0.60              |
| 1:A:125:LEU:HD21  | 1:A:134:ILE:HG13  | 1.82                     | 0.60              |
| 20:a:170:ALA:HB2  | 20:a:208:GLU:H    | 1.66                     | 0.60              |
| 10:J:201:SER:OG   | 10:J:205:ASN:OD1  | 2.20                     | 0.60              |
| 14:U:10:SER:OG    | 23:d:170:GLN:NE2  | 2.34                     | 0.60              |
| 14:U:431:THR:O    | 14:U:435:SER:OG   | 2.16                     | 0.60              |
| 16:W:360:GLU:HG3  | 16:W:392:PHE:HE1  | 1.64                     | 0.60              |
| 25:f:316:ASP:OD1  | 25:f:316:ASP:N    | 2.35                     | 0.60              |
| 25:f:659:LEU:HD21 | 25:f:797:LEU:HD11 | 1.81                     | 0.60              |
| 6:F:318:ASP:O     | 6:F:347:ARG:NH1   | 2.34                     | 0.60              |
| 21:b:155:ALA:O    | 21:b:159:THR:OG1  | 2.17                     | 0.60              |
| 25:f:288:VAL:HG11 | 25:f:313:GLU:HG3  | 1.83                     | 0.60              |
| 5:E:153:LEU:HD13  | 5:E:227:PRO:HB2   | 1.84                     | 0.60              |
| 10:J:168:VAL:HG13 | 10:J:194:ALA:HB1  | 1.84                     | 0.60              |
| 14:U:560:MET:HA   | 14:U:560:MET:HE3  | 1.84                     | 0.60              |
| 21:b:58:CYS:SG    | 21:b:88:THR:OG1   | 2.59                     | 0.60              |
| 5:E:272:ARG:HG2   | 5:E:272:ARG:HH11  | 1.65                     | 0.60              |
| 14:U:105:ILE:HD11 | 14:U:137:MET:HG2  | 1.84                     | 0.60              |
| 21:b:173:VAL:HG11 | 21:b:179:LEU:HB2  | 1.83                     | 0.60              |
| 25:f:409:SER:O    | 25:f:819:TYR:OH   | 2.17                     | 0.60              |
| 10:J:132:LEU:HD22 | 10:J:144:LEU:HD11 | 1.83                     | 0.60              |
| 20:a:173:TYR:HE1  | 20:a:216:LEU:HD12 | 1.66                     | 0.60              |
| 26:g:108:THR:HG23 | 26:g:110:ARG:H    | 1.66                     | 0.60              |
| 4:D:185:LEU:HD22  | 4:D:259:PRO:HB3   | 1.82                     | 0.60              |
| 5:E:171:LEU:HB2   | 5:E:295:LEU:HD13  | 1.84                     | 0.60              |
| 20:a:258:GLN:HG2  | 20:a:261:LEU:HG   | 1.84                     | 0.60              |
| 25:f:82:ILE:HG21  | 25:f:128:VAL:HG21 | 1.84                     | 0.60              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 14:U:677:ASN:OD1  | 15:V:512:ARG:NH2  | 2.36                     | 0.59              |
| 23:d:145:ARG:NH2  | 23:d:183:PRO:O    | 2.35                     | 0.59              |
| 1:A:123:VAL:HG12  | 6:F:87:PRO:HB3    | 1.84                     | 0.59              |
| 4:D:178:ARG:HA    | 4:D:182:GLU:HG2   | 1.82                     | 0.59              |
| 14:U:685:GLN:HE22 | 14:U:725:MET:HG3  | 1.66                     | 0.59              |
| 25:f:80:ARG:HH12  | 25:f:84:SER:HB2   | 1.68                     | 0.59              |
| 3:C:219:LEU:HD12  | 4:D:286:GLN:HG3   | 1.83                     | 0.59              |
| 4:D:282:ASP:OD2   | 5:E:251:ARG:NH2   | 2.29                     | 0.59              |
| 14:U:115:ASN:O    | 14:U:123:LYS:NZ   | 2.36                     | 0.59              |
| 14:U:370:VAL:HG11 | 14:U:404:ALA:HA   | 1.84                     | 0.59              |
| 14:U:3:THR:N      | 23:d:177:ASP:OD1  | 2.31                     | 0.59              |
| 14:U:406:ALA:HA   | 14:U:445:ALA:HB2  | 1.84                     | 0.59              |
| 6:F:376:SER:OG    | 6:F:378:ASP:OD1   | 2.18                     | 0.59              |
| 13:M:52:LEU:HA    | 13:M:209:PHE:HA   | 1.85                     | 0.59              |
| 13:M:73:VAL:HG22  | 13:M:139:SER:HB2  | 1.83                     | 0.59              |
| 20:a:60:TYR:CD2   | 20:a:64:ILE:HD11  | 2.37                     | 0.59              |
| 25:f:861:THR:OG1  | 25:f:881:GLU:OE2  | 2.19                     | 0.59              |
| 1:A:112:ILE:HG12  | 1:A:122:VAL:HG22  | 1.85                     | 0.59              |
| 1:A:214:LEU:HD22  | 1:A:343:PHE:HE1   | 1.67                     | 0.59              |
| 20:a:284:ARG:HG3  | 20:a:284:ARG:HH11 | 1.67                     | 0.59              |
| 25:f:546:SER:O    | 25:f:550:LEU:HD23 | 2.02                     | 0.59              |
| 27:u:127:MET:O    | 27:u:132:LYS:NZ   | 2.36                     | 0.59              |
| 6:F:77:SER:HA     | 6:F:80:ILE:HD12   | 1.84                     | 0.59              |
| 15:V:131:LEU:HD12 | 15:V:171:VAL:HG21 | 1.84                     | 0.59              |
| 25:f:507:ASP:HB3  | 25:f:510:SER:HB3  | 1.84                     | 0.59              |
| 5:E:306:GLU:OE2   | 7:G:55:LYS:NZ     | 2.36                     | 0.59              |
| 10:J:148:ASP:OD2  | 10:J:150:SER:OG   | 2.20                     | 0.59              |
| 16:W:25:ASP:OD1   | 16:W:65:ARG:NH1   | 2.32                     | 0.59              |
| 25:f:675:PHE:HA   | 25:f:678:LEU:HD12 | 1.84                     | 0.59              |
| 19:Z:21:ASP:OD1   | 22:c:104:ARG:NH2  | 2.36                     | 0.58              |
| 21:b:100:ARG:NH2  | 27:u:207:GLU:OE2  | 2.36                     | 0.58              |
| 22:c:50:PRO:HA    | 22:c:116:PRO:HG2  | 1.85                     | 0.58              |
| 25:f:688:ARG:HE   | 25:f:720:GLU:HB2  | 1.68                     | 0.58              |
| 19:Z:260:VAL:HG13 | 22:c:292:MET:HE3  | 1.85                     | 0.58              |
| 14:U:328:ILE:HD11 | 14:U:795:LEU:HD11 | 1.84                     | 0.58              |
| 22:c:307:VAL:HA   | 22:c:310:LYS:HE3  | 1.84                     | 0.58              |
| 25:f:342:PRO:HB3  | 25:f:388:ASP:HA   | 1.85                     | 0.58              |
| 2:B:59:ARG:NH1    | 25:f:209:MET:SD   | 2.77                     | 0.58              |
| 19:Z:214:LYS:HB3  | 19:Z:219:LYS:HB2  | 1.86                     | 0.58              |
| 25:f:94:LYS:HG2   | 25:f:95:PRO:HD3   | 1.84                     | 0.58              |
| 26:g:84:THR:HG23  | 26:g:100:LEU:HD21 | 1.85                     | 0.58              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:E:254:GLN:O     | 5:E:258:MET:HG2   | 2.03                     | 0.58              |
| 15:V:436:PHE:HE1  | 23:d:290:ILE:HG23 | 1.68                     | 0.58              |
| 17:X:242:ILE:HD11 | 17:X:244:SER:HB2  | 1.85                     | 0.58              |
| 20:a:185:ILE:O    | 20:a:193:GLN:NE2  | 2.36                     | 0.58              |
| 25:f:240:VAL:HG11 | 25:f:248:LEU:HD12 | 1.84                     | 0.58              |
| 3:C:113:ARG:NH2   | 4:D:94:GLU:OE1    | 2.37                     | 0.58              |
| 4:D:238:LYS:HD3   | 5:E:210:GLU:HG2   | 1.85                     | 0.58              |
| 7:G:72:ILE:HG21   | 7:G:114:LEU:HD21  | 1.84                     | 0.58              |
| 14:U:367:THR:O    | 14:U:371:ILE:HG13 | 2.04                     | 0.58              |
| 2:B:309:MET:HE3   | 2:B:309:MET:HA    | 1.84                     | 0.58              |
| 14:U:357:LYS:O    | 14:U:360:VAL:HG12 | 2.03                     | 0.58              |
| 5:E:88:ASP:OD2    | 5:E:91:LYS:NZ     | 2.35                     | 0.58              |
| 5:E:203:ILE:HD12  | 5:E:215:ILE:HD11  | 1.86                     | 0.58              |
| 14:U:747:SER:OG   | 14:U:749:GLN:O    | 2.21                     | 0.58              |
| 15:V:251:LEU:HD23 | 15:V:276:PHE:HD1  | 1.68                     | 0.58              |
| 4:D:89:ILE:O      | 4:D:106:THR:OG1   | 2.16                     | 0.58              |
| 13:M:69:VAL:HA    | 13:M:92:ARG:HG3   | 1.84                     | 0.58              |
| 19:Z:113:LYS:NZ   | 19:Z:117:PRO:O    | 2.28                     | 0.58              |
| 25:f:705:ASN:OD1  | 25:f:705:ASN:N    | 2.33                     | 0.58              |
| 4:D:56:VAL:HG21   | 14:U:596:ASN:HB3  | 1.85                     | 0.58              |
| 16:W:312:MET:HE2  | 16:W:368:LYS:HE3  | 1.86                     | 0.58              |
| 4:D:266:GLU:HB3   | 5:E:258:MET:HE2   | 1.85                     | 0.57              |
| 4:D:384:MET:HE2   | 5:E:297:ARG:NH2   | 2.19                     | 0.57              |
| 5:E:175:PRO:HG2   | 5:E:303:LEU:HG    | 1.84                     | 0.57              |
| 15:V:261:TYR:O    | 23:d:214:ARG:NH1  | 2.37                     | 0.57              |
| 28:D:501:ATP:OI1G | 5:E:294:ARG:NH1   | 2.30                     | 0.57              |
| 18:Y:152:MET:HE2  | 18:Y:152:MET:HA   | 1.86                     | 0.57              |
| 24:e:50:ASP:OD1   | 24:e:50:ASP:N     | 2.34                     | 0.57              |
| 27:u:195:LYS:HB2  | 27:u:247:PHE:HB3  | 1.84                     | 0.57              |
| 4:D:147:ALA:HA    | 5:E:62:LYS:HD2    | 1.84                     | 0.57              |
| 6:F:224:LEU:HB2   | 6:F:348:LEU:HD13  | 1.85                     | 0.57              |
| 8:H:203:MET:HE3   | 8:H:208:ILE:HG21  | 1.85                     | 0.57              |
| 10:J:36:ARG:NH1   | 11:K:60:GLU:OE2   | 2.37                     | 0.57              |
| 11:K:38:ILE:HD12  | 11:K:202:LEU:HG   | 1.85                     | 0.57              |
| 14:U:894:MET:SD   | 14:U:902:PRO:HD3  | 2.44                     | 0.57              |
| 16:W:374:THR:HG22 | 16:W:376:LYS:H    | 1.69                     | 0.57              |
| 19:Z:14:LEU:HD11  | 22:c:40:LYS:HG3   | 1.85                     | 0.57              |
| 25:f:285:CYS:O    | 25:f:291:GLN:NE2  | 2.36                     | 0.57              |
| 6:F:141:ASP:HB3   | 6:F:144:LYS:HG3   | 1.85                     | 0.57              |
| 7:G:80:MET:SD     | 7:G:138:MET:HG3   | 2.45                     | 0.57              |
| 9:I:190:LEU:HD21  | 9:I:213:ILE:HG21  | 1.85                     | 0.57              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 23:d:120:LYS:HA   | 23:d:123:LEU:HD12 | 1.86                     | 0.57              |
| 2:B:388:ASP:N     | 2:B:388:ASP:OD1   | 2.37                     | 0.57              |
| 14:U:161:ASP:OD1  | 14:U:161:ASP:N    | 2.37                     | 0.57              |
| 14:U:199:ARG:NH2  | 14:U:225:ASP:OD1  | 2.36                     | 0.57              |
| 20:a:134:THR:O    | 20:a:138:VAL:HG12 | 2.05                     | 0.57              |
| 12:L:204:ASP:OD1  | 12:L:205:LEU:N    | 2.37                     | 0.57              |
| 15:V:103:SER:HA   | 15:V:106:ARG:HH12 | 1.69                     | 0.57              |
| 17:X:122:ARG:HB3  | 17:X:122:ARG:NH1  | 2.19                     | 0.57              |
| 2:B:343:ARG:NH1   | 2:B:344:PRO:O     | 2.34                     | 0.57              |
| 15:V:409:MET:O    | 15:V:413:SER:OG   | 2.17                     | 0.57              |
| 25:f:487:LEU:HD21 | 25:f:820:GLY:HA2  | 1.87                     | 0.57              |
| 3:C:239:ARG:NH2   | 3:C:284:GLU:OE1   | 2.37                     | 0.57              |
| 22:c:55:GLY:HA2   | 22:c:75:MET:HG2   | 1.87                     | 0.57              |
| 23:d:87:VAL:O     | 23:d:91:ALA:N     | 2.37                     | 0.57              |
| 25:f:478:ARG:O    | 25:f:482:ILE:HD12 | 2.05                     | 0.57              |
| 18:Y:282:MET:HE3  | 18:Y:288:PHE:CD1  | 2.40                     | 0.57              |
| 3:C:277:LEU:HD13  | 3:C:310:ARG:HG3   | 1.87                     | 0.56              |
| 4:D:272:THR:HG22  | 4:D:274:ARG:H     | 1.70                     | 0.56              |
| 14:U:701:ILE:HG13 | 14:U:810:THR:HA   | 1.87                     | 0.56              |
| 14:U:756:HIS:CE1  | 14:U:758:PRO:HG2  | 2.40                     | 0.56              |
| 16:W:184:GLU:HG2  | 16:W:222:LEU:HD21 | 1.86                     | 0.56              |
| 17:X:144:GLN:OE1  | 17:X:144:GLN:N    | 2.29                     | 0.56              |
| 25:f:342:PRO:HB2  | 25:f:389:LYS:HG3  | 1.87                     | 0.56              |
| 2:B:96:ARG:NH1    | 2:B:100:ASP:OD2   | 2.37                     | 0.56              |
| 14:U:52:GLU:OE1   | 14:U:57:ARG:NH1   | 2.37                     | 0.56              |
| 1:A:77:LEU:O      | 2:B:137:SER:OG    | 2.22                     | 0.56              |
| 3:C:196:LYS:N     | 30:C:501:ADP:O1B  | 2.35                     | 0.56              |
| 6:F:224:LEU:HD23  | 6:F:351:LYS:HG2   | 1.85                     | 0.56              |
| 14:U:20:LYS:HD2   | 14:U:54:PHE:HE1   | 1.69                     | 0.56              |
| 14:U:392:TRP:HD1  | 14:U:395:ARG:HH21 | 1.53                     | 0.56              |
| 20:a:112:ILE:HD11 | 20:a:141:MET:HB2  | 1.86                     | 0.56              |
| 21:b:133:LYS:NZ   | 27:u:164:GLN:OE1  | 2.35                     | 0.56              |
| 22:c:300:LEU:HD11 | 23:d:340:ILE:HG13 | 1.87                     | 0.56              |
| 27:u:204:MET:SD   | 27:u:204:MET:N    | 2.78                     | 0.56              |
| 1:A:405:THR:OG1   | 1:A:408:ASP:OD1   | 2.23                     | 0.56              |
| 4:D:203:LEU:HB2   | 4:D:327:LEU:HD13  | 1.86                     | 0.56              |
| 14:U:229:VAL:HG11 | 14:U:252:LEU:HD11 | 1.88                     | 0.56              |
| 27:u:189:GLN:HE21 | 27:u:257:THR:HG23 | 1.71                     | 0.56              |
| 2:B:272:ARG:NH1   | 2:B:276:GLU:OE2   | 2.38                     | 0.56              |
| 7:G:90:GLN:HG3    | 7:G:134:LEU:HD23  | 1.87                     | 0.56              |
| 21:b:133:LYS:NZ   | 21:b:134:GLU:OE2  | 2.36                     | 0.56              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:47:GLN:NE2    | 1:A:51:ASP:OD2    | 2.39                     | 0.56              |
| 14:U:213:PHE:HB3  | 14:U:232:ILE:HD11 | 1.87                     | 0.56              |
| 15:V:355:ARG:NH2  | 24:e:28:ALA:O     | 2.39                     | 0.56              |
| 18:Y:186:LEU:HD22 | 18:Y:213:LEU:HD13 | 1.88                     | 0.56              |
| 20:a:247:ARG:O    | 20:a:251:LEU:HD12 | 2.06                     | 0.56              |
| 1:A:166:VAL:HG22  | 1:A:239:ARG:HG2   | 1.86                     | 0.56              |
| 1:A:351:ARG:NH1   | 1:A:378:PRO:O     | 2.38                     | 0.56              |
| 14:U:610:VAL:HG22 | 19:Z:178:ASP:HB2  | 1.88                     | 0.56              |
| 18:Y:142:PHE:HE2  | 18:Y:176:ARG:HD3  | 1.71                     | 0.56              |
| 1:A:426:THR:O     | 1:A:430:MET:HG3   | 2.06                     | 0.56              |
| 20:a:36:GLN:HG3   | 21:b:18:ASN:HD21  | 1.69                     | 0.56              |
| 25:f:372:LEU:HD21 | 25:f:409:SER:HB2  | 1.87                     | 0.56              |
| 25:f:607:LEU:O    | 25:f:611:GLN:NE2  | 2.38                     | 0.56              |
| 14:U:90:VAL:HB    | 14:U:101:ILE:HD11 | 1.87                     | 0.56              |
| 17:X:334:ASN:OD1  | 17:X:337:ARG:NH2  | 2.39                     | 0.56              |
| 18:Y:42:MET:HE3   | 18:Y:42:MET:HA    | 1.88                     | 0.56              |
| 25:f:597:VAL:HG12 | 25:f:659:LEU:HD23 | 1.87                     | 0.56              |
| 17:X:252:LYS:HD2  | 17:X:283:GLN:HB3  | 1.87                     | 0.56              |
| 1:A:364:VAL:HB    | 1:A:368:ILE:HG13  | 1.88                     | 0.55              |
| 14:U:137:MET:HE3  | 14:U:137:MET:HA   | 1.89                     | 0.55              |
| 3:C:273:MET:HB3   | 3:C:305:LEU:HD21  | 1.87                     | 0.55              |
| 12:L:88:MET:HE3   | 12:L:108:LEU:HD21 | 1.88                     | 0.55              |
| 20:a:91:ASN:OD1   | 20:a:91:ASN:N     | 2.37                     | 0.55              |
| 25:f:470:VAL:HB   | 25:f:504:VAL:HG21 | 1.87                     | 0.55              |
| 14:U:764:LEU:O    | 14:U:767:THR:OG1  | 2.24                     | 0.55              |
| 3:C:143:VAL:HG22  | 3:C:213:ARG:HH11  | 1.71                     | 0.55              |
| 6:F:433:ALA:HB1   | 6:F:435:LEU:HD13  | 1.87                     | 0.55              |
| 10:J:47:LYS:HG2   | 10:J:50:VAL:HG22  | 1.88                     | 0.55              |
| 14:U:37:GLU:OE1   | 15:V:266:GLN:NE2  | 2.25                     | 0.55              |
| 14:U:431:THR:HB   | 14:U:435:SER:HB3  | 1.88                     | 0.55              |
| 16:W:272:LEU:HD22 | 16:W:302:TYR:HE2  | 1.71                     | 0.55              |
| 25:f:450:ILE:HG23 | 25:f:822:VAL:HG11 | 1.87                     | 0.55              |
| 3:C:90:HIS:HB3    | 3:C:91:PRO:HD3    | 1.89                     | 0.55              |
| 3:C:273:MET:HG3   | 3:C:293:MET:SD    | 2.46                     | 0.55              |
| 15:V:440:LYS:NZ   | 15:V:444:ASP:OD2  | 2.37                     | 0.55              |
| 3:C:334:ARG:NH1   | 18:Y:173:ASP:OD2  | 2.40                     | 0.55              |
| 7:G:86:ASP:OD2    | 13:M:120:HIS:NE2  | 2.37                     | 0.55              |
| 15:V:349:ARG:NH2  | 24:e:41:ASP:OD2   | 2.40                     | 0.55              |
| 16:W:296:LEU:HB3  | 16:W:303:LYS:HB2  | 1.87                     | 0.55              |
| 20:a:138:VAL:HG13 | 20:a:155:PHE:HE2  | 1.72                     | 0.55              |
| 25:f:286:LYS:HE3  | 25:f:286:LYS:HA   | 1.87                     | 0.55              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:f:463:LEU:HD13 | 25:f:497:VAL:HG22 | 1.88                     | 0.55              |
| 25:f:658:ALA:HA   | 25:f:697:ILE:HD13 | 1.89                     | 0.55              |
| 3:C:18:SER:HB3    | 3:C:21:ARG:HB3    | 1.88                     | 0.55              |
| 6:F:311:LEU:HD23  | 6:F:314:LEU:HD12  | 1.87                     | 0.55              |
| 13:M:65:ARG:HH21  | 13:M:78:ALA:HA    | 1.71                     | 0.55              |
| 14:U:389:ASN:N    | 14:U:389:ASN:ND2  | 2.55                     | 0.55              |
| 19:Z:63:LYS:NZ    | 27:u:254:GLU:O    | 2.40                     | 0.55              |
| 23:d:236:LEU:HD11 | 23:d:263:LEU:HD11 | 1.89                     | 0.55              |
| 16:W:408:ARG:NH1  | 17:X:346:GLN:OE1  | 2.37                     | 0.55              |
| 18:Y:263:LEU:O    | 18:Y:306:GLN:NE2  | 2.39                     | 0.55              |
| 2:B:309:MET:HE2   | 2:B:341:LEU:HD13  | 1.89                     | 0.55              |
| 12:L:80:ASP:OD2   | 12:L:126:ARG:NH1  | 2.33                     | 0.55              |
| 6:F:439:ALA:HB1   | 12:L:62:LYS:HE3   | 1.89                     | 0.55              |
| 8:H:65:VAL:O      | 8:H:220:ARG:NH1   | 2.39                     | 0.55              |
| 18:Y:104:MET:HE3  | 18:Y:127:THR:HA   | 1.89                     | 0.55              |
| 23:d:319:ALA:HB1  | 23:d:322:GLN:HE22 | 1.72                     | 0.55              |
| 2:B:170:LEU:HG    | 2:B:174:MET:HE3   | 1.89                     | 0.54              |
| 2:B:223:ILE:HG13  | 2:B:329:MET:HB2   | 1.89                     | 0.54              |
| 5:E:118:LEU:HD13  | 5:E:214:LEU:HD11  | 1.90                     | 0.54              |
| 12:L:72:ILE:HG21  | 12:L:88:MET:HE1   | 1.89                     | 0.54              |
| 14:U:698:GLN:HB3  | 14:U:706:VAL:HG21 | 1.89                     | 0.54              |
| 20:a:168:ASN:OD1  | 20:a:171:SER:OG   | 2.21                     | 0.54              |
| 25:f:127:SER:HB3  | 25:f:142:TYR:HB2  | 1.89                     | 0.54              |
| 25:f:799:VAL:HG21 | 25:f:821:LEU:HG   | 1.89                     | 0.54              |
| 22:c:265:MET:HE1  | 22:c:270:LEU:HA   | 1.88                     | 0.54              |
| 4:D:81:ARG:NH2    | 22:c:149:GLN:OE1  | 2.38                     | 0.54              |
| 4:D:268:ASP:OD1   | 4:D:311:THR:OG1   | 2.24                     | 0.54              |
| 16:W:385:SER:HB3  | 16:W:388:GLU:HG3  | 1.90                     | 0.54              |
| 5:E:270:LEU:HG    | 5:E:273:VAL:HB    | 1.90                     | 0.54              |
| 7:G:117:ARG:O     | 7:G:121:ILE:HD12  | 2.07                     | 0.54              |
| 7:G:164:LYS:NZ    | 8:H:55:ILE:O      | 2.36                     | 0.54              |
| 14:U:229:VAL:HG21 | 14:U:260:PHE:HZ   | 1.72                     | 0.54              |
| 2:B:269:GLU:OE2   | 2:B:272:ARG:NE    | 2.40                     | 0.54              |
| 15:V:506:GLU:OE2  | 15:V:514:ARG:NH2  | 2.41                     | 0.54              |
| 20:a:8:LEU:HD11   | 20:a:26:GLU:HB2   | 1.90                     | 0.54              |
| 25:f:350:LYS:HB3  | 25:f:353:LEU:HD23 | 1.90                     | 0.54              |
| 2:B:67:ARG:NH1    | 25:f:239:TYR:HA   | 2.22                     | 0.54              |
| 6:F:406:ILE:HD13  | 6:F:422:GLU:HG2   | 1.90                     | 0.54              |
| 25:f:321:MET:HE2  | 25:f:321:MET:C    | 2.33                     | 0.54              |
| 6:F:318:ASP:OD1   | 6:F:344:ARG:NH2   | 2.41                     | 0.54              |
| 8:H:188:ILE:HD11  | 8:H:212:ILE:HG21  | 1.90                     | 0.54              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 18:Y:307:LEU:HD23 | 18:Y:319:MET:HE3  | 1.90                     | 0.54              |
| 25:f:902:LYS:CD   | 25:f:902:LYS:H    | 2.21                     | 0.54              |
| 15:V:120:PHE:HE1  | 15:V:147:PHE:HE1  | 1.56                     | 0.54              |
| 20:a:274:LEU:HD21 | 20:a:313:LYS:HB3  | 1.90                     | 0.54              |
| 5:E:122:MET:HG2   | 5:E:198:VAL:HB    | 1.88                     | 0.54              |
| 6:F:180:ARG:NH1   | 6:F:244:THR:O     | 2.40                     | 0.54              |
| 15:V:180:ARG:HB3  | 15:V:183:GLU:HB2  | 1.90                     | 0.54              |
| 23:d:287:ALA:HB1  | 23:d:291:LEU:HD23 | 1.90                     | 0.54              |
| 8:H:107:THR:O     | 8:H:111:VAL:HG23  | 2.08                     | 0.54              |
| 15:V:79:VAL:HA    | 15:V:82:LEU:HD12  | 1.90                     | 0.54              |
| 16:W:60:MET:C     | 16:W:60:MET:HE3   | 2.32                     | 0.54              |
| 20:a:188:LEU:O    | 20:a:193:GLN:NE2  | 2.41                     | 0.54              |
| 1:A:238:ILE:HG21  | 1:A:260:LEU:HD11  | 1.91                     | 0.53              |
| 4:D:201:GLY:HA3   | 4:D:327:LEU:HD23  | 1.90                     | 0.53              |
| 8:H:72:ILE:HG21   | 8:H:110:LEU:HD22  | 1.91                     | 0.53              |
| 9:I:8:ARG:HH21    | 10:J:5:ARG:HD2    | 1.71                     | 0.53              |
| 10:J:209:ALA:HB1  | 10:J:217:LEU:HD11 | 1.90                     | 0.53              |
| 13:M:5:THR:HG23   | 13:M:7:TYR:H      | 1.73                     | 0.53              |
| 16:W:190:MET:HB3  | 16:W:202:THR:HG23 | 1.89                     | 0.53              |
| 20:a:101:ARG:HG3  | 20:a:114:CYS:HB3  | 1.90                     | 0.53              |
| 22:c:130:GLN:HG2  | 22:c:162:LEU:HG   | 1.89                     | 0.53              |
| 1:A:266:THR:O     | 25:f:355:ASN:ND2  | 2.41                     | 0.53              |
| 14:U:168:LEU:HD21 | 14:U:204:ILE:HG12 | 1.90                     | 0.53              |
| 17:X:57:LEU:HD21  | 17:X:65:GLU:HB2   | 1.90                     | 0.53              |
| 18:Y:97:GLU:HA    | 18:Y:100:ILE:HD12 | 1.90                     | 0.53              |
| 20:a:112:ILE:HD13 | 20:a:138:VAL:HG23 | 1.89                     | 0.53              |
| 22:c:37:ALA:O     | 22:c:41:MET:HG3   | 2.08                     | 0.53              |
| 25:f:460:ASP:OD2  | 25:f:494:ARG:NH1  | 2.41                     | 0.53              |
| 1:A:165:GLN:HA    | 1:A:238:ILE:HA    | 1.89                     | 0.53              |
| 2:B:361:LYS:HB3   | 2:B:384:ILE:HD12  | 1.91                     | 0.53              |
| 3:C:187:LEU:HD12  | 3:C:293:MET:HB3   | 1.91                     | 0.53              |
| 6:F:126:THR:OG1   | 6:F:128:THR:OG1   | 2.24                     | 0.53              |
| 6:F:439:ALA:HB2   | 12:L:76:GLY:H     | 1.73                     | 0.53              |
| 14:U:244:MET:HB2  | 14:U:903:PHE:CE2  | 2.43                     | 0.53              |
| 13:M:68:ASN:OD1   | 13:M:224:HIS:ND1  | 2.38                     | 0.53              |
| 25:f:463:LEU:O    | 25:f:467:SER:OG   | 2.16                     | 0.53              |
| 25:f:652:VAL:O    | 25:f:656:GLY:N    | 2.42                     | 0.53              |
| 2:B:70:ASP:O      | 2:B:74:MET:HG3    | 2.08                     | 0.53              |
| 4:D:179:GLU:O     | 4:D:191:TYR:OH    | 2.25                     | 0.53              |
| 5:E:178:THR:HB    | 5:E:301:ILE:HG22  | 1.91                     | 0.53              |
| 5:E:304:PRO:HB2   | 5:E:309:ARG:HG2   | 1.90                     | 0.53              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:J:39:ASP:HA    | 10:J:213:ARG:HH22 | 1.73                     | 0.53              |
| 14:U:385:PHE:O    | 14:U:389:ASN:ND2  | 2.42                     | 0.53              |
| 18:Y:12:PRO:O     | 18:Y:146:ARG:NH1  | 2.40                     | 0.53              |
| 20:a:22:TRP:O     | 20:a:26:GLU:N     | 2.38                     | 0.53              |
| 27:u:197:PHE:HB2  | 27:u:245:THR:HB   | 1.90                     | 0.53              |
| 4:D:380:GLN:NE2   | 5:E:165:ILE:O     | 2.26                     | 0.53              |
| 6:F:172:VAL:HA    | 6:F:175:MET:HE3   | 1.90                     | 0.53              |
| 11:K:215:ILE:HD11 | 11:K:238:ILE:HD11 | 1.90                     | 0.53              |
| 15:V:463:MET:HE2  | 15:V:463:MET:HA   | 1.90                     | 0.53              |
| 20:a:278:MET:SD   | 20:a:319:LEU:HB3  | 2.48                     | 0.53              |
| 25:f:181:ARG:HE   | 25:f:185:LEU:HG   | 1.74                     | 0.53              |
| 1:A:429:TYR:O     | 1:A:433:ASN:ND2   | 2.31                     | 0.53              |
| 5:E:50:LEU:HD23   | 6:F:159:LEU:HD11  | 1.91                     | 0.53              |
| 6:F:89:LEU:HD21   | 6:F:126:THR:HB    | 1.89                     | 0.53              |
| 14:U:159:ARG:HH21 | 14:U:162:VAL:HG23 | 1.72                     | 0.53              |
| 21:b:109:ILE:HG22 | 21:b:138:VAL:HG23 | 1.90                     | 0.53              |
| 3:C:115:ALA:HB2   | 3:C:127:LEU:HD21  | 1.91                     | 0.53              |
| 5:E:352:MET:HE2   | 5:E:352:MET:HA    | 1.91                     | 0.53              |
| 14:U:183:LEU:HD22 | 14:U:187:LEU:HD22 | 1.91                     | 0.53              |
| 14:U:646:PRO:HB3  | 14:U:680:VAL:HG21 | 1.91                     | 0.53              |
| 22:c:44:HIS:CE1   | 22:c:53:VAL:HB    | 2.43                     | 0.53              |
| 25:f:333:LEU:HD22 | 25:f:829:MET:SD   | 2.49                     | 0.53              |
| 1:A:297:ARG:CZ    | 6:F:306:VAL:HG21  | 2.39                     | 0.53              |
| 6:F:338:LEU:HD12  | 6:F:343:LEU:HD21  | 1.91                     | 0.53              |
| 14:U:16:GLU:HB3   | 14:U:19:LEU:HD12  | 1.89                     | 0.53              |
| 15:V:470:ARG:NH1  | 15:V:474:LEU:HD21 | 2.24                     | 0.53              |
| 16:W:66:ILE:O     | 16:W:70:VAL:HG23  | 2.09                     | 0.53              |
| 18:Y:125:ARG:NH1  | 18:Y:129:ASP:OD2  | 2.42                     | 0.53              |
| 18:Y:237:ARG:HA   | 18:Y:241:ILE:HB   | 1.90                     | 0.53              |
| 5:E:197:LYS:HG2   | 6:F:320:PHE:CZ    | 2.44                     | 0.53              |
| 12:L:40:SER:HB3   | 12:L:187:LEU:HD22 | 1.90                     | 0.53              |
| 14:U:127:ASP:OD1  | 14:U:129:ARG:N    | 2.42                     | 0.53              |
| 15:V:269:LYS:O    | 15:V:273:LYS:HG2  | 2.09                     | 0.53              |
| 20:a:112:ILE:HD12 | 20:a:142:LEU:HD13 | 1.91                     | 0.53              |
| 8:H:71:HIS:NE2    | 8:H:104:PRO:HB2   | 2.24                     | 0.52              |
| 20:a:132:LYS:NZ   | 20:a:162:TYR:OH   | 2.28                     | 0.52              |
| 21:b:150:THR:O    | 21:b:154:THR:OG1  | 2.22                     | 0.52              |
| 23:d:171:LEU:HD21 | 23:d:191:LEU:HD13 | 1.91                     | 0.52              |
| 25:f:219:LYS:HD3  | 25:f:219:LYS:N    | 2.24                     | 0.52              |
| 25:f:524:MET:HG2  | 25:f:794:ALA:HB1  | 1.90                     | 0.52              |
| 27:u:148:ASN:HA   | 27:u:151:ARG:HH21 | 1.74                     | 0.52              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:125:LEU:HD23  | 1:A:149:ILE:HB    | 1.90                     | 0.52              |
| 3:C:187:LEU:HB2   | 3:C:311:ILE:HD13  | 1.91                     | 0.52              |
| 15:V:77:GLU:OE2   | 15:V:81:GLN:NE2   | 2.41                     | 0.52              |
| 17:X:190:LEU:HD21 | 17:X:214:SER:HA   | 1.91                     | 0.52              |
| 25:f:270:LEU:HD12 | 25:f:301:HIS:CD2  | 2.44                     | 0.52              |
| 26:g:164:ASP:HA   | 26:g:167:LYS:HE3  | 1.91                     | 0.52              |
| 19:Z:193:ASN:N    | 19:Z:193:ASN:HD22 | 2.06                     | 0.52              |
| 20:a:303:THR:HG22 | 20:a:305:ASN:H    | 1.73                     | 0.52              |
| 21:b:33:VAL:HG23  | 21:b:112:PHE:CE1  | 2.44                     | 0.52              |
| 27:u:192:LYS:O    | 27:u:220:LEU:N    | 2.42                     | 0.52              |
| 4:D:381:GLU:OE1   | 5:E:297:ARG:NH2   | 2.41                     | 0.52              |
| 5:E:206:LYS:HB2   | 6:F:260:PHE:HB3   | 1.90                     | 0.52              |
| 8:H:22:ILE:HD13   | 8:H:152:SER:HB2   | 1.92                     | 0.52              |
| 8:H:59:GLU:CD     | 8:H:59:GLU:H      | 2.16                     | 0.52              |
| 15:V:109:ASN:H    | 15:V:112:VAL:HB   | 1.75                     | 0.52              |
| 17:X:31:VAL:HG21  | 17:X:53:LEU:HD23  | 1.91                     | 0.52              |
| 23:d:178:TYR:HB2  | 23:d:182:LEU:HD12 | 1.91                     | 0.52              |
| 25:f:267:ARG:HH11 | 25:f:783:SER:HB3  | 1.74                     | 0.52              |
| 4:D:214:MET:HE1   | 28:D:501:ATP:C4   | 2.43                     | 0.52              |
| 14:U:160:LEU:HA   | 14:U:163:PHE:HB3  | 1.90                     | 0.52              |
| 25:f:482:ILE:HG21 | 25:f:518:THR:HA   | 1.90                     | 0.52              |
| 25:f:870:THR:O    | 25:f:872:VAL:N    | 2.41                     | 0.52              |
| 3:C:248:MET:HB2   | 3:C:269:VAL:HG13  | 1.92                     | 0.52              |
| 14:U:16:GLU:HG3   | 14:U:19:LEU:H     | 1.73                     | 0.52              |
| 14:U:885:MET:HB2  | 14:U:888:GLN:HG3  | 1.91                     | 0.52              |
| 18:Y:96:GLY:O     | 18:Y:100:ILE:HG13 | 2.10                     | 0.52              |
| 20:a:173:TYR:CE1  | 20:a:216:LEU:HD12 | 2.44                     | 0.52              |
| 23:d:283:LEU:HB2  | 23:d:315:TYR:HE1  | 1.75                     | 0.52              |
| 25:f:106:LEU:HD23 | 25:f:109:ILE:HD13 | 1.92                     | 0.52              |
| 25:f:280:ASP:O    | 25:f:284:SER:OG   | 2.26                     | 0.52              |
| 25:f:665:GLU:O    | 25:f:669:GLU:HG3  | 2.10                     | 0.52              |
| 2:B:201:VAL:HG11  | 2:B:328:ILE:HD11  | 1.91                     | 0.52              |
| 6:F:304:ARG:HA    | 6:F:307:GLN:NE2   | 2.24                     | 0.52              |
| 16:W:55:ARG:NH2   | 16:W:93:ARG:HD3   | 2.24                     | 0.52              |
| 18:Y:84:LEU:HD13  | 18:Y:107:LYS:HA   | 1.91                     | 0.52              |
| 25:f:71:TYR:HB3   | 25:f:72:ARG:NH2   | 2.25                     | 0.52              |
| 25:f:205:CYS:SG   | 25:f:229:VAL:HG23 | 2.49                     | 0.52              |
| 2:B:234:LEU:HD22  | 28:B:501:ATP:H2'  | 1.91                     | 0.52              |
| 14:U:813:TYR:CZ   | 14:U:883:ARG:HD2  | 2.45                     | 0.52              |
| 21:b:27:GLN:HA    | 21:b:27:GLN:HE21  | 1.73                     | 0.52              |
| 25:f:72:ARG:HH22  | 25:f:75:LEU:HD12  | 1.75                     | 0.52              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 14:U:588:MET:HA   | 14:U:591:CYS:SG   | 2.50                     | 0.52              |
| 19:Z:130:ASP:OD1  | 19:Z:130:ASP:N    | 2.38                     | 0.52              |
| 2:B:193:GLN:HG3   | 2:B:351:ILE:HG22  | 1.91                     | 0.52              |
| 4:D:204:MET:HE3   | 4:D:333:PHE:CZ    | 2.44                     | 0.52              |
| 4:D:384:MET:HE2   | 5:E:297:ARG:HH22  | 1.73                     | 0.52              |
| 5:E:182:LEU:HD22  | 28:E:402:ATP:H2'  | 1.92                     | 0.52              |
| 9:I:201:MET:HG3   | 9:I:206:LEU:HD12  | 1.92                     | 0.52              |
| 11:K:99:HIS:HB2   | 11:K:107:MET:HE2  | 1.91                     | 0.52              |
| 15:V:177:ASN:O    | 15:V:179:LYS:NZ   | 2.34                     | 0.52              |
| 25:f:301:HIS:CD2  | 25:f:787:LEU:HD11 | 2.45                     | 0.52              |
| 25:f:669:GLU:OE1  | 25:f:670:MET:HE2  | 2.10                     | 0.52              |
| 3:C:203:VAL:O     | 3:C:207:THR:HG23  | 2.11                     | 0.51              |
| 3:C:273:MET:HE1   | 3:C:291:VAL:HG13  | 1.91                     | 0.51              |
| 4:D:378:ILE:O     | 4:D:382:SER:OG    | 2.24                     | 0.51              |
| 5:E:264:MET:HE2   | 5:E:294:ARG:HB3   | 1.92                     | 0.51              |
| 18:Y:195:LYS:HA   | 18:Y:230:ALA:HB1  | 1.92                     | 0.51              |
| 27:u:176:LYS:HZ3  | 27:u:270:VAL:HG22 | 1.74                     | 0.51              |
| 14:U:240:ASP:O    | 14:U:242:LEU:N    | 2.42                     | 0.51              |
| 15:V:162:GLU:HA   | 15:V:162:GLU:OE1  | 2.09                     | 0.51              |
| 15:V:320:THR:OG1  | 15:V:321:ALA:N    | 2.43                     | 0.51              |
| 23:d:191:LEU:HA   | 23:d:194:LEU:HD12 | 1.93                     | 0.51              |
| 25:f:679:LEU:HD23 | 25:f:687:ARG:HB2  | 1.92                     | 0.51              |
| 27:u:189:GLN:HG2  | 27:u:257:THR:O    | 2.10                     | 0.51              |
| 8:H:203:MET:HA    | 8:H:207:ASN:HD21  | 1.76                     | 0.51              |
| 9:I:87:THR:O      | 9:I:91:ARG:HG3    | 2.10                     | 0.51              |
| 19:Z:263:ALA:HB1  | 22:c:288:VAL:HG13 | 1.93                     | 0.51              |
| 2:B:29:VAL:HG11   | 25:f:750:GLN:HB3  | 1.92                     | 0.51              |
| 4:D:159:LYS:HG2   | 4:D:221:HIS:HA    | 1.93                     | 0.51              |
| 15:V:122:THR:HG21 | 15:V:150:ARG:HB2  | 1.92                     | 0.51              |
| 25:f:902:LYS:H    | 25:f:902:LYS:HD2  | 1.74                     | 0.51              |
| 6:F:168:TYR:HB2   | 6:F:173:LYS:HD2   | 1.93                     | 0.51              |
| 9:I:72:MET:HE1    | 9:I:107:CYS:HA    | 1.92                     | 0.51              |
| 14:U:177:LEU:HD21 | 14:U:204:ILE:HG21 | 1.91                     | 0.51              |
| 14:U:268:LEU:HD22 | 14:U:322:THR:HG23 | 1.91                     | 0.51              |
| 15:V:504:ASP:OD1  | 15:V:504:ASP:N    | 2.40                     | 0.51              |
| 19:Z:179:ILE:HG21 | 22:c:214:GLN:NE2  | 2.26                     | 0.51              |
| 25:f:348:ILE:HG13 | 25:f:381:VAL:HG21 | 1.92                     | 0.51              |
| 14:U:536:ALA:HB1  | 14:U:578:LEU:HD21 | 1.91                     | 0.51              |
| 22:c:54:MET:HE2   | 22:c:75:MET:HG3   | 1.91                     | 0.51              |
| 22:c:210:ASN:O    | 22:c:214:GLN:HB2  | 2.10                     | 0.51              |
| 25:f:447:ALA:HA   | 25:f:450:ILE:HD12 | 1.93                     | 0.51              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 26:g:108:THR:HA   | 26:g:141:THR:HA   | 1.93                     | 0.51              |
| 9:I:222:LYS:NZ    | 9:I:222:LYS:HB3   | 2.26                     | 0.51              |
| 4:D:101:ALA:HB2   | 4:D:115:ILE:HD11  | 1.91                     | 0.51              |
| 7:G:141:ILE:HD12  | 7:G:220:VAL:HG22  | 1.93                     | 0.51              |
| 14:U:249:CYS:SG   | 14:U:325:MET:HG3  | 2.51                     | 0.51              |
| 14:U:732:LEU:O    | 14:U:736:ILE:HG13 | 2.11                     | 0.51              |
| 25:f:390:LEU:HD23 | 25:f:391:LEU:HG   | 1.93                     | 0.51              |
| 3:C:52:LEU:HD21   | 4:D:69:LYS:HG3    | 1.92                     | 0.51              |
| 5:E:200:SER:HB3   | 5:E:238:ILE:HG12  | 1.93                     | 0.51              |
| 11:K:186:HIS:NE2  | 11:K:189:MET:HB3  | 2.25                     | 0.51              |
| 15:V:71:THR:HG22  | 15:V:107:ARG:HH11 | 1.76                     | 0.51              |
| 18:Y:214:MET:HE1  | 18:Y:222:TYR:CD2  | 2.46                     | 0.51              |
| 19:Z:109:ASN:O    | 19:Z:113:LYS:N    | 2.43                     | 0.51              |
| 25:f:755:ASP:OD2  | 25:f:758:ASN:ND2  | 2.42                     | 0.51              |
| 25:f:131:MET:HG2  | 25:f:161:HIS:CD2  | 2.46                     | 0.51              |
| 25:f:404:ASP:OD2  | 25:f:405:HIS:N    | 2.43                     | 0.51              |
| 25:f:405:HIS:ND1  | 25:f:813:LYS:O    | 2.44                     | 0.51              |
| 1:A:362:MET:HE3   | 2:B:216:ILE:HG23  | 1.93                     | 0.50              |
| 9:I:63:GLU:HG2    | 9:I:64:LYS:HG2    | 1.93                     | 0.50              |
| 16:W:331:GLY:HA3  | 16:W:337:ALA:HB2  | 1.92                     | 0.50              |
| 25:f:689:ALA:HA   | 25:f:692:LEU:HD23 | 1.93                     | 0.50              |
| 1:A:169:LYS:HB2   | 1:A:231:ASN:HA    | 1.93                     | 0.50              |
| 10:J:189:LYS:HB3  | 10:J:193:LYS:NZ   | 2.26                     | 0.50              |
| 14:U:333:MET:HE3  | 14:U:795:LEU:HD13 | 1.93                     | 0.50              |
| 14:U:521:LEU:HD12 | 14:U:554:LEU:HB3  | 1.93                     | 0.50              |
| 17:X:103:THR:N    | 17:X:106:GLU:OE2  | 2.41                     | 0.50              |
| 26:g:89:LEU:HD13  | 26:g:90:PRO:HD2   | 1.92                     | 0.50              |
| 6:F:314:LEU:O     | 6:F:347:ARG:NH1   | 2.45                     | 0.50              |
| 9:I:68:LEU:HD12   | 9:I:72:MET:HG2    | 1.93                     | 0.50              |
| 14:U:214:ILE:HD13 | 14:U:248:ILE:HG12 | 1.93                     | 0.50              |
| 15:V:358:MET:HE2  | 15:V:358:MET:HA   | 1.93                     | 0.50              |
| 1:A:274:PHE:HB2   | 1:A:319:MET:HG3   | 1.93                     | 0.50              |
| 2:B:71:TYR:HA     | 2:B:74:MET:HG3    | 1.92                     | 0.50              |
| 6:F:405:MET:HE2   | 6:F:405:MET:HA    | 1.92                     | 0.50              |
| 14:U:535:TYR:HE1  | 14:U:544:ILE:HG21 | 1.75                     | 0.50              |
| 25:f:585:GLU:N    | 25:f:585:GLU:OE2  | 2.45                     | 0.50              |
| 14:U:627:PHE:HE1  | 14:U:749:GLN:HB2  | 1.76                     | 0.50              |
| 14:U:798:PRO:HA   | 14:U:924:LEU:HA   | 1.94                     | 0.50              |
| 18:Y:168:ILE:HD13 | 18:Y:177:ARG:HA   | 1.94                     | 0.50              |
| 19:Z:257:MET:HE1  | 23:d:342:TYR:HE2  | 1.77                     | 0.50              |
| 25:f:550:LEU:HD12 | 25:f:587:PHE:CG   | 2.46                     | 0.50              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 27:u:195:LYS:HG3  | 27:u:247:PHE:HD2  | 1.77                     | 0.50              |
| 28:B:501:ATP:O3G  | 3:C:307:ARG:NH1   | 2.35                     | 0.50              |
| 11:K:35:SER:HB2   | 11:K:51:GLU:HG3   | 1.93                     | 0.50              |
| 27:u:180:MET:HE2  | 27:u:263:PHE:HE1  | 1.76                     | 0.50              |
| 14:U:623:GLY:HA2  | 14:U:659:CYS:HB2  | 1.92                     | 0.50              |
| 25:f:512:MET:HE3  | 25:f:515:ALA:HB3  | 1.94                     | 0.50              |
| 2:B:249:ARG:HH22  | 3:C:279:GLN:HB2   | 1.77                     | 0.50              |
| 4:D:116:LEU:HB3   | 4:D:119:ILE:HD13  | 1.94                     | 0.50              |
| 4:D:212:LYS:NZ    | 28:D:501:ATP:O1B  | 2.38                     | 0.50              |
| 7:G:138:MET:HB3   | 7:G:154:CYS:HB3   | 1.94                     | 0.50              |
| 14:U:466:LYS:HB2  | 14:U:466:LYS:NZ   | 2.27                     | 0.50              |
| 25:f:267:ARG:HD2  | 25:f:783:SER:HB3  | 1.94                     | 0.50              |
| 1:A:303:ILE:HG23  | 1:A:336:ARG:CZ    | 2.42                     | 0.50              |
| 3:C:70:GLY:HA3    | 4:D:113:VAL:HG12  | 1.93                     | 0.50              |
| 3:C:235:PHE:CE2   | 3:C:279:GLN:HG2   | 2.47                     | 0.50              |
| 5:E:260:LEU:O     | 5:E:264:MET:HG3   | 2.12                     | 0.50              |
| 14:U:900:TYR:OH   | 14:U:922:GLU:OE1  | 2.29                     | 0.50              |
| 20:a:6:GLY:O      | 20:a:10:GLN:N     | 2.36                     | 0.50              |
| 25:f:378:ASN:HD21 | 25:f:388:ASP:CG   | 2.19                     | 0.50              |
| 25:f:698:SER:HB2  | 25:f:703:ARG:HH21 | 1.77                     | 0.50              |
| 1:A:143:ASP:OD1   | 1:A:148:GLN:N     | 2.45                     | 0.49              |
| 7:G:73:THR:OG1    | 7:G:74:GLU:N      | 2.45                     | 0.49              |
| 8:H:77:SER:HB2    | 8:H:163:MET:HG3   | 1.94                     | 0.49              |
| 17:X:303:GLU:HA   | 17:X:303:GLU:OE1  | 2.12                     | 0.49              |
| 19:Z:198:LEU:HD11 | 22:c:304:LEU:HD13 | 1.93                     | 0.49              |
| 21:b:4:GLU:HA     | 21:b:106:LYS:H    | 1.77                     | 0.49              |
| 25:f:388:ASP:CG   | 25:f:390:LEU:H    | 2.20                     | 0.49              |
| 25:f:784:ASP:HB2  | 25:f:893:ILE:HD12 | 1.94                     | 0.49              |
| 4:D:354:LEU:HD23  | 4:D:394:VAL:HB    | 1.94                     | 0.49              |
| 5:E:380:LEU:HD22  | 6:F:335:VAL:HG11  | 1.94                     | 0.49              |
| 13:M:206:ASP:OD1  | 13:M:206:ASP:N    | 2.45                     | 0.49              |
| 14:U:642:GLU:HB3  | 15:V:502:ASN:HD22 | 1.77                     | 0.49              |
| 15:V:303:SER:HA   | 15:V:339:LEU:HD11 | 1.93                     | 0.49              |
| 25:f:151:LEU:HD21 | 25:f:187:LEU:HD22 | 1.95                     | 0.49              |
| 5:E:272:ARG:HG2   | 5:E:272:ARG:NH1   | 2.27                     | 0.49              |
| 6:F:402:GLU:HG2   | 6:F:426:GLU:HG2   | 1.94                     | 0.49              |
| 14:U:587:ALA:HB2  | 14:U:621:SER:HB3  | 1.94                     | 0.49              |
| 15:V:264:TYR:OH   | 15:V:294:ARG:NH1  | 2.45                     | 0.49              |
| 17:X:344:ARG:HD3  | 17:X:386:ILE:HG12 | 1.93                     | 0.49              |
| 23:d:135:LYS:NZ   | 23:d:136:LEU:O    | 2.42                     | 0.49              |
| 23:d:301:ASP:HA   | 23:d:304:LYS:HE2  | 1.94                     | 0.49              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:f:72:ARG:NH1   | 25:f:117:GLU:O    | 2.45                     | 0.49              |
| 25:f:407:MET:HE2  | 25:f:440:ILE:HD11 | 1.94                     | 0.49              |
| 5:E:117:PRO:HG3   | 6:F:94:ILE:HA     | 1.93                     | 0.49              |
| 5:E:250:ASP:O     | 5:E:254:GLN:HG3   | 2.11                     | 0.49              |
| 14:U:459:ASP:OD1  | 14:U:460:TYR:N    | 2.45                     | 0.49              |
| 16:W:186:ILE:O    | 16:W:190:MET:HG3  | 2.13                     | 0.49              |
| 17:X:365:LEU:HD23 | 17:X:368:MET:HE2  | 1.95                     | 0.49              |
| 19:Z:38:VAL:HG21  | 19:Z:75:LEU:HG    | 1.95                     | 0.49              |
| 21:b:51:LEU:HD12  | 21:b:71:ILE:HG23  | 1.94                     | 0.49              |
| 2:B:63:LEU:HD13   | 25:f:239:TYR:HB2  | 1.94                     | 0.49              |
| 4:D:71:GLU:HG3    | 14:U:644:TYR:CE1  | 2.48                     | 0.49              |
| 5:E:149:ILE:HD13  | 5:E:276:ILE:HD11  | 1.93                     | 0.49              |
| 14:U:628:ARG:NH2  | 14:U:755:THR:OG1  | 2.43                     | 0.49              |
| 15:V:367:VAL:HA   | 15:V:402:VAL:HG22 | 1.92                     | 0.49              |
| 15:V:502:ASN:HA   | 15:V:505:LEU:HD13 | 1.94                     | 0.49              |
| 20:a:245:VAL:HG12 | 20:a:272:ILE:HG23 | 1.94                     | 0.49              |
| 19:Z:224:HIS:NE2  | 20:a:340:VAL:HG13 | 2.27                     | 0.49              |
| 20:a:303:THR:HB   | 20:a:306:GLU:HG3  | 1.94                     | 0.49              |
| 25:f:404:ASP:CG   | 25:f:405:HIS:N    | 2.71                     | 0.49              |
| 25:f:600:TYR:CE1  | 25:f:608:LYS:HE3  | 2.47                     | 0.49              |
| 25:f:682:GLY:HA3  | 25:f:686:LEU:HD12 | 1.93                     | 0.49              |
| 25:f:753:ALA:HA   | 25:f:759:LEU:HD22 | 1.93                     | 0.49              |
| 4:D:303:VAL:HG22  | 4:D:305:VAL:HG23  | 1.95                     | 0.49              |
| 9:I:125:GLY:O     | 9:I:127:LYS:NZ    | 2.41                     | 0.49              |
| 19:Z:186:THR:O    | 19:Z:190:ARG:HG2  | 2.13                     | 0.49              |
| 19:Z:234:PHE:HZ   | 20:a:353:LEU:HG   | 1.77                     | 0.49              |
| 20:a:258:GLN:HG3  | 20:a:261:LEU:H    | 1.78                     | 0.49              |
| 20:a:275:LEU:HA   | 20:a:278:MET:HG3  | 1.95                     | 0.49              |
| 22:c:175:ARG:HD3  | 22:c:201:TYR:CE1  | 2.48                     | 0.49              |
| 23:d:197:LEU:HD23 | 23:d:259:PHE:HB2  | 1.93                     | 0.49              |
| 23:d:262:ILE:HD12 | 23:d:262:ILE:H    | 1.77                     | 0.49              |
| 26:g:132:ASN:O    | 26:g:132:ASN:CG   | 2.54                     | 0.49              |
| 5:E:281:ARG:NH1   | 6:F:295:ARG:O     | 2.46                     | 0.49              |
| 17:X:70:LEU:HD21  | 17:X:113:CYS:SG   | 2.53                     | 0.49              |
| 19:Z:9:VAL:HG21   | 19:Z:120:VAL:HG11 | 1.95                     | 0.49              |
| 22:c:118:PHE:O    | 22:c:121:TRP:NE1  | 2.44                     | 0.49              |
| 22:c:161:ARG:HB3  | 22:c:201:TYR:CZ   | 2.48                     | 0.49              |
| 25:f:514:VAL:O    | 25:f:518:THR:OG1  | 2.30                     | 0.49              |
| 27:u:177:LEU:HD21 | 27:u:244:VAL:HG21 | 1.94                     | 0.49              |
| 1:A:164:MET:HE2   | 1:A:260:LEU:HD13  | 1.95                     | 0.49              |
| 2:B:43:PRO:HB2    | 2:B:48:LYS:HE2    | 1.94                     | 0.49              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:C:163:GLU:HA    | 3:C:167:LEU:HD22  | 1.93                     | 0.49              |
| 9:I:6:ASP:OD2     | 10:J:3:TYR:OH     | 2.30                     | 0.49              |
| 14:U:327:LYS:HZ1  | 14:U:333:MET:HE2  | 1.77                     | 0.49              |
| 14:U:876:GLN:HG2  | 14:U:878:LEU:HD22 | 1.94                     | 0.49              |
| 22:c:210:ASN:OD1  | 22:c:210:ASN:N    | 2.46                     | 0.49              |
| 1:A:181:LYS:O     | 1:A:185:GLU:HG3   | 2.13                     | 0.49              |
| 10:J:158:ALA:HB3  | 11:K:58:LEU:HD22  | 1.95                     | 0.49              |
| 10:J:173:GLU:HG2  | 11:K:57:PRO:HD2   | 1.95                     | 0.49              |
| 12:L:45:VAL:HG13  | 12:L:187:LEU:HD23 | 1.95                     | 0.49              |
| 15:V:372:LEU:HD21 | 15:V:403:ILE:HG13 | 1.94                     | 0.49              |
| 21:b:61:LEU:HD22  | 21:b:74:LYS:HE3   | 1.94                     | 0.49              |
| 25:f:119:LYS:NZ   | 25:f:146:GLY:HA2  | 2.28                     | 0.49              |
| 1:A:140:VAL:HG21  | 1:A:149:ILE:HG12  | 1.94                     | 0.48              |
| 5:E:177:GLY:N     | 6:F:344:ARG:HD2   | 2.28                     | 0.48              |
| 6:F:124:ILE:HD13  | 6:F:153:VAL:HG11  | 1.95                     | 0.48              |
| 6:F:175:MET:HB2   | 6:F:250:LYS:O     | 2.12                     | 0.48              |
| 9:I:40:ASN:ND2    | 9:I:182:GLY:O     | 2.43                     | 0.48              |
| 12:L:72:ILE:HD12  | 12:L:132:LEU:HD22 | 1.95                     | 0.48              |
| 15:V:267:ALA:HB3  | 15:V:295:ILE:HD11 | 1.94                     | 0.48              |
| 16:W:375:MET:SD   | 16:W:413:ILE:HD11 | 2.52                     | 0.48              |
| 17:X:259:ILE:HG22 | 17:X:326:LEU:HD21 | 1.95                     | 0.48              |
| 25:f:399:LEU:HD11 | 25:f:440:ILE:HD12 | 1.94                     | 0.48              |
| 1:A:140:VAL:HB    | 1:A:149:ILE:HG23  | 1.95                     | 0.48              |
| 10:J:228:TYR:O    | 10:J:232:ILE:HD12 | 2.13                     | 0.48              |
| 14:U:212:ASP:OD2  | 14:U:215:ASN:ND2  | 2.46                     | 0.48              |
| 21:b:142:ASN:O    | 21:b:146:GLU:HB3  | 2.13                     | 0.48              |
| 23:d:176:PHE:HZ   | 23:d:192:LEU:HD21 | 1.78                     | 0.48              |
| 25:f:287:ASP:OD2  | 25:f:901:ARG:NH1  | 2.45                     | 0.48              |
| 1:A:170:PRO:O     | 1:A:231:ASN:ND2   | 2.37                     | 0.48              |
| 14:U:759:SER:HA   | 14:U:782:ALA:HA   | 1.95                     | 0.48              |
| 15:V:291:TYR:OH   | 24:e:21:GLU:OE2   | 2.31                     | 0.48              |
| 17:X:416:ASN:HA   | 17:X:419:LYS:HE3  | 1.94                     | 0.48              |
| 20:a:80:ILE:HA    | 20:a:83:VAL:HB    | 1.95                     | 0.48              |
| 25:f:159:VAL:HA   | 25:f:162:LEU:HB3  | 1.96                     | 0.48              |
| 25:f:419:LEU:HD12 | 25:f:420:TRP:N    | 2.28                     | 0.48              |
| 2:B:190:LEU:HB3   | 2:B:193:GLN:HB2   | 1.95                     | 0.48              |
| 12:L:81:ALA:HB2   | 12:L:130:VAL:HG21 | 1.94                     | 0.48              |
| 22:c:146:ASP:HB3  | 22:c:156:VAL:HB   | 1.95                     | 0.48              |
| 25:f:702:PRO:HD3  | 25:f:736:THR:HG21 | 1.94                     | 0.48              |
| 2:B:60:LEU:HD21   | 25:f:853:VAL:HG11 | 1.94                     | 0.48              |
| 10:J:39:ASP:OD1   | 10:J:39:ASP:N     | 2.47                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 11:K:74:ILE:HD12  | 11:K:109:VAL:HG22 | 1.95                     | 0.48              |
| 12:L:71:GLY:HA3   | 12:L:221:PHE:CZ   | 2.48                     | 0.48              |
| 14:U:14:GLU:N     | 14:U:14:GLU:OE1   | 2.46                     | 0.48              |
| 14:U:36:ALA:O     | 14:U:39:SER:OG    | 2.27                     | 0.48              |
| 16:W:448:LYS:HE3  | 19:Z:154:THR:HB   | 1.96                     | 0.48              |
| 25:f:72:ARG:NH2   | 25:f:118:ASN:HA   | 2.29                     | 0.48              |
| 25:f:559:PRO:HB2  | 25:f:594:LEU:HD23 | 1.95                     | 0.48              |
| 1:A:120:LYS:HE3   | 6:F:167:GLU:OE2   | 2.13                     | 0.48              |
| 3:C:139:MET:O     | 4:D:326:ARG:NH2   | 2.46                     | 0.48              |
| 5:E:180:LYS:HB2   | 5:E:180:LYS:HE3   | 1.54                     | 0.48              |
| 12:L:132:LEU:HB2  | 12:L:147:THR:HB   | 1.96                     | 0.48              |
| 14:U:904:LYS:NZ   | 14:U:908:ILE:HG21 | 2.29                     | 0.48              |
| 16:W:426:ASN:ND2  | 22:c:233:ASP:OD1  | 2.43                     | 0.48              |
| 17:X:252:LYS:NZ   | 17:X:316:ASP:OD2  | 2.41                     | 0.48              |
| 17:X:382:GLU:HB2  | 17:X:384:VAL:HG22 | 1.96                     | 0.48              |
| 23:d:281:LYS:HD2  | 23:d:315:TYR:CD2  | 2.48                     | 0.48              |
| 25:f:347:ASP:O    | 25:f:350:LYS:NZ   | 2.44                     | 0.48              |
| 27:u:178:TYR:HE2  | 27:u:268:THR:HG22 | 1.77                     | 0.48              |
| 8:H:33:ALA:O      | 8:H:77:SER:OG     | 2.23                     | 0.48              |
| 8:H:150:ASP:OD1   | 8:H:154:ALA:N     | 2.47                     | 0.48              |
| 16:W:227:TYR:O    | 16:W:231:ILE:HG12 | 2.13                     | 0.48              |
| 21:b:9:CYS:HA     | 21:b:52:ILE:HG23  | 1.96                     | 0.48              |
| 22:c:124:GLY:O    | 22:c:128:ASN:ND2  | 2.43                     | 0.48              |
| 23:d:176:PHE:CZ   | 23:d:192:LEU:HD21 | 2.48                     | 0.48              |
| 25:f:587:PHE:O    | 25:f:591:ALA:N    | 2.38                     | 0.48              |
| 3:C:117:ARG:HG3   | 3:C:122:THR:HB    | 1.95                     | 0.48              |
| 3:C:164:VAL:HG13  | 3:C:183:PRO:HB2   | 1.96                     | 0.48              |
| 5:E:236:ASP:OD2   | 6:F:295:ARG:NH1   | 2.45                     | 0.48              |
| 13:M:169:ARG:NH1  | 13:M:170:GLN:OE1  | 2.47                     | 0.48              |
| 14:U:198:LEU:O    | 14:U:202:VAL:HG23 | 2.12                     | 0.48              |
| 15:V:298:ILE:HA   | 15:V:397:ARG:HH22 | 1.79                     | 0.48              |
| 22:c:122:LEU:HD22 | 22:c:126:ASP:HB3  | 1.96                     | 0.48              |
| 25:f:113:MET:HE2  | 25:f:118:ASN:HD22 | 1.79                     | 0.48              |
| 25:f:803:PHE:CZ   | 25:f:810:ILE:HG13 | 2.48                     | 0.48              |
| 4:D:205:TYR:HA    | 4:D:311:THR:O     | 2.14                     | 0.48              |
| 4:D:267:ILE:HG23  | 4:D:317:LEU:HD21  | 1.96                     | 0.48              |
| 5:E:87:LEU:HD23   | 5:E:92:LEU:HD11   | 1.96                     | 0.48              |
| 11:K:166:ASP:HB3  | 11:K:185:TYR:CZ   | 2.49                     | 0.48              |
| 14:U:137:MET:HE1  | 14:U:140:ARG:HE   | 1.79                     | 0.48              |
| 14:U:341:PHE:HD1  | 14:U:881:PRO:HB2  | 1.78                     | 0.48              |
| 16:W:167:GLN:HE21 | 16:W:201:ARG:HD2  | 1.78                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 18:Y:337:PHE:HB2  | 18:Y:343:LEU:HD12 | 1.94                     | 0.48              |
| 25:f:68:THR:HA    | 25:f:71:TYR:HD1   | 1.79                     | 0.48              |
| 25:f:408:LEU:HD13 | 25:f:439:TYR:HD1  | 1.79                     | 0.48              |
| 5:E:106:THR:HB    | 22:c:50:PRO:HG3   | 1.95                     | 0.48              |
| 5:E:175:PRO:HD2   | 5:E:178:THR:HG21  | 1.96                     | 0.48              |
| 7:G:120:ASP:OD1   | 8:H:84:ARG:NH1    | 2.46                     | 0.48              |
| 22:c:122:LEU:HB2  | 22:c:200:TYR:CE2  | 2.49                     | 0.48              |
| 9:I:135:LEU:HD22  | 9:I:147:LEU:HD11  | 1.95                     | 0.47              |
| 11:K:10:ARG:HD3   | 11:K:22:PHE:CD2   | 2.49                     | 0.47              |
| 15:V:342:ILE:HD11 | 15:V:368:ARG:HD2  | 1.95                     | 0.47              |
| 15:V:367:VAL:HG21 | 15:V:398:LEU:HD13 | 1.95                     | 0.47              |
| 16:W:31:CYS:HB3   | 16:W:43:VAL:HG13  | 1.95                     | 0.47              |
| 18:Y:282:MET:HE1  | 18:Y:295:TYR:CB   | 2.44                     | 0.47              |
| 20:a:112:ILE:O    | 20:a:116:THR:OG1  | 2.31                     | 0.47              |
| 21:b:98:LYS:HB3   | 27:u:211:ARG:HH22 | 1.79                     | 0.47              |
| 2:B:259:TYR:HB2   | 2:B:262:ASP:OD1   | 2.14                     | 0.47              |
| 2:B:391:SER:OG    | 2:B:394:ASP:OD1   | 2.32                     | 0.47              |
| 7:G:171:LYS:O     | 7:G:175:SER:OG    | 2.25                     | 0.47              |
| 9:I:105:ILE:HG13  | 9:I:106:PRO:HD2   | 1.95                     | 0.47              |
| 11:K:78:MET:HE3   | 11:K:85:ALA:HB3   | 1.94                     | 0.47              |
| 13:M:173:LYS:O    | 13:M:177:GLU:HG3  | 2.14                     | 0.47              |
| 14:U:339:LEU:O    | 14:U:343:ILE:HG22 | 2.14                     | 0.47              |
| 15:V:223:LYS:O    | 15:V:261:TYR:OH   | 2.27                     | 0.47              |
| 16:W:366:MET:O    | 16:W:370:TYR:HB2  | 2.14                     | 0.47              |
| 16:W:412:ILE:HG23 | 20:a:327:VAL:HG21 | 1.95                     | 0.47              |
| 23:d:185:SER:HB3  | 23:d:188:MET:HB3  | 1.95                     | 0.47              |
| 25:f:88:SER:HB2   | 25:f:91:SER:HB2   | 1.94                     | 0.47              |
| 26:g:140:LYS:O    | 26:g:145:GLN:NE2  | 2.38                     | 0.47              |
| 27:u:198:ILE:HG21 | 27:u:241:VAL:HG12 | 1.96                     | 0.47              |
| 4:D:200:ARG:NH2   | 4:D:299:PHE:HB3   | 2.26                     | 0.47              |
| 5:E:372:ARG:HB3   | 13:M:170:GLN:NE2  | 2.29                     | 0.47              |
| 6:F:177:VAL:HB    | 6:F:250:LYS:HE2   | 1.96                     | 0.47              |
| 12:L:49:LEU:HB2   | 12:L:195:LEU:HD21 | 1.96                     | 0.47              |
| 12:L:170:THR:O    | 12:L:174:ARG:HG3  | 2.14                     | 0.47              |
| 13:M:116:ALA:HB2  | 13:M:151:ILE:HD13 | 1.96                     | 0.47              |
| 14:U:3:THR:HG23   | 23:d:177:ASP:OD1  | 2.14                     | 0.47              |
| 23:d:310:LEU:HD23 | 23:d:316:TYR:CZ   | 2.49                     | 0.47              |
| 25:f:449:GLY:HA2  | 25:f:488:ALA:HB2  | 1.95                     | 0.47              |
| 2:B:106:PRO:HG3   | 3:C:121:TYR:CD1   | 2.49                     | 0.47              |
| 3:C:379:THR:OG1   | 3:C:382:ASP:OD2   | 2.32                     | 0.47              |
| 5:E:149:ILE:HD11  | 5:E:187:VAL:HG21  | 1.95                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 13:M:54:LEU:HB2   | 13:M:58:TYR:HE2   | 1.79                     | 0.47              |
| 16:W:450:GLU:O    | 16:W:454:ASN:HB2  | 2.14                     | 0.47              |
| 17:X:348:GLU:HB3  | 17:X:358:LYS:HZ1  | 1.79                     | 0.47              |
| 20:a:160:SER:HB2  | 20:a:172:TYR:CE1  | 2.49                     | 0.47              |
| 25:f:193:PRO:HA   | 25:f:196:MET:HE2  | 1.97                     | 0.47              |
| 14:U:904:LYS:HG2  | 14:U:912:ILE:HG23 | 1.95                     | 0.47              |
| 21:b:126:LYS:HA   | 21:b:129:LYS:HD2  | 1.97                     | 0.47              |
| 26:g:126:TYR:C    | 26:g:158:LEU:HB2  | 2.39                     | 0.47              |
| 27:u:185:PRO:HG3  | 27:u:259:ARG:HB2  | 1.95                     | 0.47              |
| 1:A:66:LYS:H      | 1:A:66:LYS:HG3    | 1.47                     | 0.47              |
| 1:A:164:MET:HE3   | 1:A:240:VAL:HG13  | 1.95                     | 0.47              |
| 6:F:244:THR:HG22  | 6:F:246:ALA:H     | 1.79                     | 0.47              |
| 14:U:190:ASN:O    | 14:U:192:GLN:N    | 2.47                     | 0.47              |
| 14:U:699:THR:HG22 | 14:U:700:GLU:H    | 1.79                     | 0.47              |
| 16:W:17:GLU:N     | 16:W:17:GLU:OE1   | 2.47                     | 0.47              |
| 20:a:64:ILE:HA    | 20:a:67:PHE:CE2   | 2.49                     | 0.47              |
| 20:a:226:ARG:O    | 20:a:231:GLN:NE2  | 2.47                     | 0.47              |
| 21:b:112:PHE:CD2  | 21:b:141:ILE:HD11 | 2.49                     | 0.47              |
| 26:g:110:ARG:HG3  | 26:g:138:LEU:HB3  | 1.96                     | 0.47              |
| 1:A:217:PRO:HD2   | 1:A:220:THR:HG21  | 1.96                     | 0.47              |
| 1:A:284:ARG:HG3   | 1:A:299:MET:HE1   | 1.96                     | 0.47              |
| 2:B:179:ALA:HB1   | 2:B:241:ASN:HA    | 1.97                     | 0.47              |
| 2:B:359:LYS:NZ    | 2:B:359:LYS:HB3   | 2.30                     | 0.47              |
| 7:G:5:SER:OG      | 7:G:19:GLU:OE1    | 2.30                     | 0.47              |
| 8:H:71:HIS:CE1    | 8:H:140:ASN:HD21  | 2.33                     | 0.47              |
| 10:J:67:ASP:OD1   | 10:J:67:ASP:N     | 2.48                     | 0.47              |
| 12:L:36:VAL:HG22  | 12:L:160:SER:HB2  | 1.96                     | 0.47              |
| 13:M:50:GLU:HB2   | 13:M:197:ILE:HG23 | 1.96                     | 0.47              |
| 14:U:228:ALA:O    | 14:U:232:ILE:HG22 | 2.14                     | 0.47              |
| 14:U:748:LEU:HD23 | 14:U:760:VAL:HG22 | 1.95                     | 0.47              |
| 14:U:904:LYS:HZ1  | 14:U:908:ILE:HG21 | 1.79                     | 0.47              |
| 19:Z:234:PHE:CD1  | 20:a:352:ARG:HD2  | 2.49                     | 0.47              |
| 20:a:203:ALA:O    | 20:a:207:GLY:N    | 2.48                     | 0.47              |
| 20:a:331:VAL:CG1  | 20:a:333:MET:HE3  | 2.45                     | 0.47              |
| 21:b:25:ARG:NH1   | 21:b:144:GLY:HA2  | 2.29                     | 0.47              |
| 22:c:163:ILE:HG23 | 22:c:174:PRO:HB3  | 1.96                     | 0.47              |
| 23:d:232:LEU:HD21 | 23:d:244:VAL:HG13 | 1.96                     | 0.47              |
| 25:f:126:ILE:O    | 25:f:130:ALA:N    | 2.43                     | 0.47              |
| 25:f:430:ASP:OD2  | 26:g:158:LEU:HD13 | 2.14                     | 0.47              |
| 25:f:761:MET:HE2  | 25:f:761:MET:N    | 2.30                     | 0.47              |
| 2:B:178:LYS:HD3   | 3:C:285:ALA:HB1   | 1.97                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:D:205:TYR:CZ    | 4:D:332:GLU:HB2   | 2.50                     | 0.47              |
| 7:G:115:CYS:HA    | 7:G:118:ILE:HB    | 1.97                     | 0.47              |
| 8:H:76:TYR:HB3    | 8:H:83:TYR:CD1    | 2.50                     | 0.47              |
| 16:W:64:SER:O     | 16:W:68:VAL:HG13  | 2.13                     | 0.47              |
| 16:W:231:ILE:O    | 16:W:235:GLN:HB2  | 2.15                     | 0.47              |
| 19:Z:124:ILE:HG12 | 19:Z:135:THR:HG22 | 1.96                     | 0.47              |
| 25:f:418:LEU:HD13 | 25:f:425:GLY:HA2  | 1.97                     | 0.47              |
| 25:f:442:SER:HA   | 25:f:445:LEU:HB2  | 1.97                     | 0.47              |
| 25:f:531:ASN:N    | 25:f:565:ASN:HD21 | 2.13                     | 0.47              |
| 27:u:136:GLU:H    | 27:u:168:THR:HG22 | 1.80                     | 0.47              |
| 17:X:126:ARG:HG2  | 17:X:126:ARG:NH1  | 2.26                     | 0.47              |
| 17:X:313:LEU:HD23 | 17:X:319:ILE:HG21 | 1.94                     | 0.47              |
| 23:d:254:GLU:O    | 23:d:257:THR:HG22 | 2.15                     | 0.47              |
| 25:f:388:ASP:OD2  | 25:f:391:LEU:N    | 2.46                     | 0.47              |
| 25:f:611:GLN:O    | 25:f:615:ILE:HG13 | 2.15                     | 0.47              |
| 1:A:65:ILE:HD13   | 1:A:74:PRO:CB     | 2.35                     | 0.47              |
| 2:B:75:GLU:OE2    | 25:f:677:HIS:NE2  | 2.34                     | 0.47              |
| 16:W:177:MET:O    | 16:W:182:ARG:NH2  | 2.34                     | 0.47              |
| 16:W:344:THR:HG23 | 16:W:347:GLY:H    | 1.80                     | 0.47              |
| 20:a:25:LEU:HD21  | 20:a:63:PHE:CE2   | 2.50                     | 0.47              |
| 23:d:295:THR:HG22 | 23:d:297:LYS:H    | 1.80                     | 0.47              |
| 2:B:59:ARG:HB2    | 25:f:206:ASP:OD1  | 2.15                     | 0.46              |
| 3:C:340:ARG:NH1   | 18:Y:211:TYR:OH   | 2.32                     | 0.46              |
| 14:U:227:GLN:HG2  | 14:U:267:ASN:ND2  | 2.30                     | 0.46              |
| 23:d:188:MET:HG3  | 23:d:189:HIS:N    | 2.30                     | 0.46              |
| 25:f:119:LYS:HZ1  | 25:f:146:GLY:HA2  | 1.80                     | 0.46              |
| 27:u:164:GLN:HE22 | 27:u:210:GLU:CD   | 2.23                     | 0.46              |
| 2:B:272:ARG:O     | 2:B:276:GLU:HG3   | 2.15                     | 0.46              |
| 4:D:309:MET:HG3   | 4:D:327:LEU:HD11  | 1.98                     | 0.46              |
| 5:E:232:MET:HE2   | 5:E:232:MET:HB3   | 1.74                     | 0.46              |
| 14:U:389:ASN:N    | 14:U:389:ASN:HD22 | 2.14                     | 0.46              |
| 14:U:672:LEU:HD23 | 14:U:675:MET:HE3  | 1.96                     | 0.46              |
| 14:U:791:LEU:HB2  | 14:U:913:ILE:HG13 | 1.97                     | 0.46              |
| 15:V:159:LEU:HD22 | 15:V:163:VAL:HG21 | 1.97                     | 0.46              |
| 15:V:330:LYS:HD3  | 15:V:389:ASP:OD1  | 2.15                     | 0.46              |
| 20:a:34:TRP:O     | 20:a:37:LEU:HG    | 2.15                     | 0.46              |
| 20:a:73:PRO:HB2   | 20:a:107:SER:HB2  | 1.97                     | 0.46              |
| 25:f:52:LEU:HB3   | 25:f:95:PRO:HG2   | 1.97                     | 0.46              |
| 25:f:609:VAL:O    | 25:f:613:LEU:HG   | 2.16                     | 0.46              |
| 27:u:148:ASN:HA   | 27:u:151:ARG:NH2  | 2.30                     | 0.46              |
| 4:D:355:SER:O     | 4:D:358:VAL:HG12  | 2.15                     | 0.46              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:F:276:LYS:HG3   | 6:F:323:ASN:HD21  | 1.81                     | 0.46              |
| 7:G:171:LYS:HB3   | 7:G:205:VAL:HG11  | 1.97                     | 0.46              |
| 12:L:105:VAL:O    | 12:L:109:VAL:HG23 | 2.15                     | 0.46              |
| 14:U:108:TYR:CD2  | 14:U:134:VAL:HG11 | 2.51                     | 0.46              |
| 14:U:124:LYS:HD2  | 14:U:124:LYS:C    | 2.40                     | 0.46              |
| 14:U:184:CYS:HA   | 14:U:188:MET:HG3  | 1.96                     | 0.46              |
| 15:V:95:LEU:O     | 15:V:99:ARG:N     | 2.46                     | 0.46              |
| 18:Y:13:LYS:HE3   | 18:Y:13:LYS:HB3   | 1.70                     | 0.46              |
| 25:f:448:CYS:O    | 25:f:451:VAL:HG12 | 2.14                     | 0.46              |
| 1:A:120:LYS:HB2   | 6:F:90:VAL:HB     | 1.97                     | 0.46              |
| 1:A:190:VAL:HG21  | 1:A:339:ARG:HG3   | 1.97                     | 0.46              |
| 4:D:272:THR:HG21  | 5:E:251:ARG:HD2   | 1.96                     | 0.46              |
| 5:E:203:ILE:HD11  | 5:E:238:ILE:HD13  | 1.97                     | 0.46              |
| 10:J:188:ILE:HD11 | 10:J:210:VAL:HG11 | 1.97                     | 0.46              |
| 14:U:619:VAL:HG21 | 14:U:648:VAL:HG13 | 1.97                     | 0.46              |
| 14:U:920:ASP:OD2  | 14:U:920:ASP:N    | 2.48                     | 0.46              |
| 25:f:388:ASP:OD1  | 25:f:389:LYS:N    | 2.49                     | 0.46              |
| 25:f:535:THR:O    | 25:f:539:LEU:HG   | 2.15                     | 0.46              |
| 26:g:122:LEU:HD23 | 26:g:122:LEU:HA   | 1.80                     | 0.46              |
| 1:A:196:LEU:HB3   | 1:A:197:HIS:CD2   | 2.50                     | 0.46              |
| 8:H:135:LEU:HD22  | 8:H:146:LEU:HD11  | 1.96                     | 0.46              |
| 9:I:174:MET:HE1   | 9:I:199:LYS:HB3   | 1.97                     | 0.46              |
| 16:W:107:GLN:O    | 16:W:110:THR:OG1  | 2.31                     | 0.46              |
| 1:A:133:ASP:OD2   | 2:B:25:TYR:HB3    | 2.16                     | 0.46              |
| 1:A:152:PRO:HG2   | 2:B:25:TYR:CE2    | 2.50                     | 0.46              |
| 1:A:252:GLU:OE1   | 6:F:259:MET:HG3   | 2.16                     | 0.46              |
| 3:C:49:ARG:HE     | 4:D:64:GLU:CD     | 2.23                     | 0.46              |
| 3:C:119:ASP:OD1   | 3:C:119:ASP:N     | 2.43                     | 0.46              |
| 5:E:161:ARG:NH2   | 16:W:139:GLU:OE1  | 2.44                     | 0.46              |
| 7:G:51:VAL:HG12   | 7:G:202:LEU:HD22  | 1.97                     | 0.46              |
| 7:G:166:THR:OG1   | 7:G:167:ALA:N     | 2.49                     | 0.46              |
| 14:U:521:LEU:CD1  | 14:U:554:LEU:HB3  | 2.45                     | 0.46              |
| 21:b:111:ALA:HB3  | 21:b:140:ILE:HG12 | 1.98                     | 0.46              |
| 22:c:57:MET:HA    | 22:c:72:VAL:HG12  | 1.97                     | 0.46              |
| 27:u:180:MET:O    | 27:u:231:VAL:HG22 | 2.15                     | 0.46              |
| 9:I:21:VAL:HG11   | 9:I:153:SER:HB3   | 1.96                     | 0.46              |
| 12:L:226:ASP:OD1  | 12:L:226:ASP:N    | 2.49                     | 0.46              |
| 12:L:228:ASP:OD2  | 12:L:228:ASP:N    | 2.49                     | 0.46              |
| 23:d:286:GLU:HA   | 23:d:289:ARG:HH22 | 1.80                     | 0.46              |
| 1:A:323:ARG:HE    | 1:A:323:ARG:HB3   | 1.56                     | 0.46              |
| 1:A:372:LEU:HD13  | 1:A:375:ARG:HH21  | 1.81                     | 0.46              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:D:169:GLY:O     | 4:D:340:GLN:HG3   | 2.16                     | 0.46              |
| 7:G:84:THR:HB     | 13:M:156:VAL:HG22 | 1.98                     | 0.46              |
| 9:I:72:MET:HB2    | 9:I:72:MET:HE3    | 1.62                     | 0.46              |
| 12:L:84:LEU:O     | 12:L:88:MET:HG3   | 2.15                     | 0.46              |
| 14:U:906:LEU:HD12 | 14:U:912:ILE:HD13 | 1.97                     | 0.46              |
| 15:V:218:TYR:HA   | 15:V:221:LEU:HB2  | 1.97                     | 0.46              |
| 16:W:312:MET:HE3  | 16:W:312:MET:HA   | 1.98                     | 0.46              |
| 23:d:267:ILE:O    | 23:d:271:ILE:HG22 | 2.15                     | 0.46              |
| 25:f:262:PHE:CD1  | 25:f:285:CYS:HB2  | 2.51                     | 0.46              |
| 25:f:486:GLY:HA2  | 25:f:525:ILE:HD11 | 1.98                     | 0.46              |
| 26:g:123:GLN:OE1  | 26:g:126:TYR:N    | 2.48                     | 0.46              |
| 3:C:271:ARG:O     | 3:C:275:GLU:HG3   | 2.15                     | 0.46              |
| 13:M:83:ASP:OD2   | 13:M:129:ARG:NH2  | 2.39                     | 0.46              |
| 14:U:205:TYR:HB3  | 14:U:216:VAL:HG22 | 1.96                     | 0.46              |
| 14:U:235:LYS:HD2  | 14:U:235:LYS:O    | 2.16                     | 0.46              |
| 17:X:69:LEU:O     | 17:X:73:VAL:HG23  | 2.16                     | 0.46              |
| 18:Y:24:PHE:O     | 18:Y:27:SER:OG    | 2.26                     | 0.46              |
| 25:f:130:ALA:HA   | 25:f:133:MET:SD   | 2.56                     | 0.46              |
| 25:f:474:SER:HB3  | 25:f:477:MET:HG2  | 1.98                     | 0.46              |
| 3:C:20:LEU:H      | 3:C:20:LEU:HD12   | 1.81                     | 0.46              |
| 5:E:235:ILE:HG22  | 5:E:279:THR:HB    | 1.97                     | 0.46              |
| 15:V:442:ILE:HG21 | 23:d:278:ALA:HA   | 1.97                     | 0.46              |
| 16:W:260:SER:HA   | 16:W:263:TRP:NE1  | 2.31                     | 0.46              |
| 17:X:274:LYS:HA   | 17:X:277:LEU:HD12 | 1.97                     | 0.46              |
| 18:Y:122:THR:O    | 18:Y:126:LYS:HG2  | 2.16                     | 0.46              |
| 18:Y:224:VAL:O    | 18:Y:228:MET:HG3  | 2.16                     | 0.46              |
| 20:a:97:LEU:HD11  | 20:a:121:LEU:HD21 | 1.98                     | 0.46              |
| 21:b:118:GLU:CD   | 21:b:118:GLU:H    | 2.24                     | 0.46              |
| 2:B:407:LEU:HD21  | 3:C:167:LEU:HD23  | 1.97                     | 0.45              |
| 3:C:75:GLU:OE1    | 3:C:130:LYS:HD3   | 2.17                     | 0.45              |
| 3:C:217:SER:HB3   | 3:C:220:VAL:HG22  | 1.97                     | 0.45              |
| 4:D:212:LYS:HE3   | 4:D:311:THR:O     | 2.16                     | 0.45              |
| 6:F:224:LEU:HD11  | 6:F:332:THR:HG22  | 1.97                     | 0.45              |
| 12:L:203:GLN:O    | 12:L:239:ARG:NH2  | 2.48                     | 0.45              |
| 13:M:53:VAL:HG22  | 13:M:208:ALA:O    | 2.17                     | 0.45              |
| 15:V:113:LEU:O    | 15:V:117:VAL:HG22 | 2.16                     | 0.45              |
| 16:W:21:SER:OG    | 16:W:22:ALA:N     | 2.46                     | 0.45              |
| 16:W:344:THR:OG1  | 16:W:345:GLU:N    | 2.49                     | 0.45              |
| 20:a:276:CYS:O    | 20:a:280:MET:HG3  | 2.15                     | 0.45              |
| 17:X:70:LEU:HD23  | 17:X:109:LEU:HD12 | 1.99                     | 0.45              |
| 22:c:100:LYS:HB2  | 22:c:100:LYS:HE2  | 1.58                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:f:300:ARG:HG3  | 25:f:782:HIS:CD2  | 2.51                     | 0.45              |
| 25:f:793:VAL:HA   | 25:f:796:LEU:HB2  | 1.97                     | 0.45              |
| 1:A:114:ASN:OD1   | 1:A:120:LYS:HD3   | 2.16                     | 0.45              |
| 8:H:159:LYS:HD2   | 8:H:178:TYR:HE2   | 1.82                     | 0.45              |
| 12:L:7:ASP:HB2    | 12:L:24:TYR:CE2   | 2.52                     | 0.45              |
| 14:U:327:LYS:NZ   | 14:U:333:MET:HE2  | 2.32                     | 0.45              |
| 15:V:124:ASN:HA   | 15:V:128:ARG:HD3  | 1.99                     | 0.45              |
| 15:V:393:THR:HG21 | 23:d:213:GLU:OE1  | 2.16                     | 0.45              |
| 15:V:410:ILE:HD13 | 15:V:422:ILE:HG12 | 1.97                     | 0.45              |
| 19:Z:14:LEU:HD22  | 22:c:43:LYS:HD3   | 1.97                     | 0.45              |
| 20:a:245:VAL:HG12 | 20:a:272:ILE:HG12 | 1.99                     | 0.45              |
| 23:d:168:MET:HG3  | 23:d:172:LYS:NZ   | 2.31                     | 0.45              |
| 23:d:258:PHE:CE2  | 23:d:262:ILE:HD11 | 2.51                     | 0.45              |
| 25:f:314:TYR:O    | 25:f:318:THR:HG23 | 2.16                     | 0.45              |
| 25:f:512:MET:HE1  | 25:f:558:LEU:HD21 | 1.98                     | 0.45              |
| 25:f:836:GLU:O    | 25:f:837:LEU:HB2  | 2.16                     | 0.45              |
| 1:A:71:GLY:HA3    | 2:B:162:VAL:H     | 1.81                     | 0.45              |
| 5:E:237:ALA:HB1   | 6:F:308:ARG:HG2   | 1.99                     | 0.45              |
| 9:I:89:GLU:O      | 9:I:93:ILE:HG13   | 2.16                     | 0.45              |
| 9:I:185:THR:OG1   | 9:I:186:LEU:N     | 2.49                     | 0.45              |
| 14:U:218:GLN:CD   | 14:U:752:THR:HG21 | 2.42                     | 0.45              |
| 14:U:352:ILE:O    | 14:U:356:THR:HG23 | 2.16                     | 0.45              |
| 18:Y:54:TYR:HD2   | 18:Y:73:MET:HE1   | 1.80                     | 0.45              |
| 20:a:89:ASP:HB3   | 20:a:92:VAL:HG22  | 1.99                     | 0.45              |
| 21:b:107:MET:HG3  | 21:b:136:VAL:HG22 | 1.98                     | 0.45              |
| 25:f:704:LEU:HD12 | 25:f:740:ARG:HH12 | 1.81                     | 0.45              |
| 26:g:86:GLU:O     | 26:g:153:ALA:N    | 2.46                     | 0.45              |
| 2:B:371:ARG:NH1   | 3:C:179:GLY:HA2   | 2.32                     | 0.45              |
| 3:C:350:LEU:HB3   | 3:C:387:VAL:HG11  | 1.97                     | 0.45              |
| 13:M:51:LYS:HE2   | 13:M:51:LYS:HB3   | 1.85                     | 0.45              |
| 18:Y:184:GLN:HB3  | 18:Y:200:LEU:HD13 | 1.98                     | 0.45              |
| 20:a:137:ASP:O    | 20:a:141:MET:HG3  | 2.17                     | 0.45              |
| 24:e:61:GLU:OE1   | 24:e:61:GLU:N     | 2.45                     | 0.45              |
| 25:f:829:MET:HE3  | 25:f:829:MET:HA   | 1.99                     | 0.45              |
| 27:u:224:ASP:HB3  | 27:u:231:VAL:CG1  | 2.45                     | 0.45              |
| 5:E:140:GLU:OE1   | 5:E:143:ARG:NH2   | 2.49                     | 0.45              |
| 5:E:349:GLU:HA    | 5:E:349:GLU:OE1   | 2.16                     | 0.45              |
| 7:G:58:ASP:N      | 7:G:58:ASP:OD1    | 2.47                     | 0.45              |
| 7:G:138:MET:O     | 7:G:154:CYS:N     | 2.50                     | 0.45              |
| 11:K:121:LEU:HD12 | 12:L:126:ARG:HH21 | 1.81                     | 0.45              |
| 15:V:453:HIS:HB2  | 23:d:279:TYR:HE1  | 1.82                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 20:a:314:ALA:HB1  | 20:a:320:VAL:HG22 | 1.98                     | 0.45              |
| 21:b:85:THR:HG23  | 21:b:85:THR:O     | 2.17                     | 0.45              |
| 21:b:125:VAL:O    | 21:b:129:LYS:HG3  | 2.16                     | 0.45              |
| 23:d:150:ILE:O    | 23:d:154:TRP:N    | 2.44                     | 0.45              |
| 25:f:485:LEU:HD23 | 25:f:489:TYR:HE2  | 1.81                     | 0.45              |
| 1:A:65:ILE:HD13   | 1:A:74:PRO:C      | 2.40                     | 0.45              |
| 4:D:154:LEU:HD21  | 5:E:267:PHE:HE2   | 1.81                     | 0.45              |
| 5:E:311:ASP:O     | 5:E:315:ILE:HG13  | 2.17                     | 0.45              |
| 7:G:43:ARG:HG3    | 7:G:149:PRO:HB2   | 1.99                     | 0.45              |
| 8:H:68:ILE:HD12   | 8:H:110:LEU:HD21  | 1.98                     | 0.45              |
| 8:H:79:MET:H      | 8:H:132:VAL:HG12  | 1.81                     | 0.45              |
| 14:U:267:ASN:O    | 14:U:270:THR:OG1  | 2.34                     | 0.45              |
| 17:X:229:TYR:CE2  | 17:X:254:MET:HG2  | 2.51                     | 0.45              |
| 17:X:335:LEU:O    | 17:X:339:ILE:HG12 | 2.16                     | 0.45              |
| 21:b:124:LEU:HD23 | 21:b:124:LEU:HA   | 1.79                     | 0.45              |
| 22:c:58:LEU:HD21  | 22:c:73:PHE:HE2   | 1.81                     | 0.45              |
| 25:f:573:ILE:O    | 25:f:577:LEU:N    | 2.31                     | 0.45              |
| 5:E:141:GLN:HG2   | 5:E:301:ILE:HD13  | 1.99                     | 0.45              |
| 7:G:173:THR:HG23  | 7:G:174:GLU:OE1   | 2.16                     | 0.45              |
| 8:H:9:SER:OG      | 8:H:11:THR:O      | 2.33                     | 0.45              |
| 14:U:133:ILE:O    | 14:U:137:MET:N    | 2.41                     | 0.45              |
| 17:X:8:GLU:HB2    | 17:X:30:ILE:HD11  | 1.98                     | 0.45              |
| 23:d:282:ILE:HD13 | 23:d:287:ALA:HB2  | 1.99                     | 0.45              |
| 25:f:740:ARG:O    | 25:f:744:MET:HG3  | 2.17                     | 0.45              |
| 25:f:869:THR:HG23 | 25:f:871:PRO:HD2  | 1.99                     | 0.45              |
| 1:A:190:VAL:HG11  | 1:A:212:VAL:HG23  | 1.99                     | 0.45              |
| 2:B:44:ASP:HB2    | 2:B:48:LYS:HG2    | 1.98                     | 0.45              |
| 14:U:129:ARG:O    | 14:U:133:ILE:HG22 | 2.17                     | 0.45              |
| 14:U:372:ALA:O    | 14:U:376:MET:HG3  | 2.17                     | 0.45              |
| 25:f:805:ASP:HB3  | 25:f:809:ILE:HG12 | 1.98                     | 0.45              |
| 26:g:137:GLN:OE1  | 26:g:137:GLN:N    | 2.39                     | 0.45              |
| 1:A:201:PHE:CE2   | 6:F:405:MET:HE1   | 2.52                     | 0.45              |
| 6:F:185:TYR:HA    | 6:F:188:ILE:HD12  | 1.97                     | 0.45              |
| 14:U:69:TYR:HE1   | 15:V:240:LEU:HD11 | 1.81                     | 0.45              |
| 15:V:477:HIS:ND1  | 23:d:342:TYR:OH   | 2.39                     | 0.45              |
| 16:W:268:LYS:O    | 16:W:272:LEU:HB2  | 2.16                     | 0.45              |
| 20:a:290:GLN:OE1  | 20:a:332:HIS:NE2  | 2.50                     | 0.45              |
| 23:d:192:LEU:HD12 | 23:d:192:LEU:HA   | 1.80                     | 0.45              |
| 25:f:83:ARG:HD3   | 25:f:86:THR:HB    | 1.98                     | 0.45              |
| 25:f:437:GLU:HG3  | 25:f:440:ILE:HG12 | 1.98                     | 0.45              |
| 25:f:581:GLU:HA   | 25:f:588:ARG:HD2  | 1.99                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:f:838:ARG:N    | 25:f:838:ARG:HE   | 2.14                     | 0.45              |
| 1:A:292:ASP:CG    | 2:B:307:ARG:HH22  | 2.26                     | 0.44              |
| 3:C:385:MET:HE3   | 3:C:385:MET:HB3   | 1.77                     | 0.44              |
| 5:E:146:ARG:HH21  | 5:E:150:GLU:CD    | 2.24                     | 0.44              |
| 5:E:208:ILE:HD13  | 5:E:208:ILE:HA    | 1.77                     | 0.44              |
| 6:F:402:GLU:O     | 6:F:406:ILE:HG13  | 2.17                     | 0.44              |
| 7:G:58:ASP:OD2    | 13:M:173:LYS:NZ   | 2.31                     | 0.44              |
| 12:L:133:LEU:HD23 | 12:L:133:LEU:HA   | 1.87                     | 0.44              |
| 15:V:209:LYS:HD2  | 15:V:209:LYS:HA   | 1.72                     | 0.44              |
| 15:V:224:LEU:HD12 | 15:V:257:ASN:OD1  | 2.16                     | 0.44              |
| 15:V:392:TYR:O    | 15:V:396:ILE:HG12 | 2.18                     | 0.44              |
| 16:W:21:SER:O     | 16:W:24:VAL:HG12  | 2.18                     | 0.44              |
| 17:X:326:LEU:HD23 | 17:X:326:LEU:HA   | 1.78                     | 0.44              |
| 20:a:35:HIS:CD2   | 21:b:14:GLU:HB3   | 2.53                     | 0.44              |
| 22:c:177:THR:O    | 22:c:177:THR:OG1  | 2.35                     | 0.44              |
| 3:C:142:LYS:NZ    | 4:D:297:ASP:OD1   | 2.49                     | 0.44              |
| 3:C:279:GLN:NE2   | 3:C:284:GLU:OE1   | 2.50                     | 0.44              |
| 4:D:183:LEU:HD12  | 4:D:183:LEU:HA    | 1.89                     | 0.44              |
| 9:I:203:VAL:HG12  | 9:I:205:LYS:H     | 1.82                     | 0.44              |
| 10:J:80:ALA:O     | 10:J:84:ILE:HG13  | 2.18                     | 0.44              |
| 14:U:492:ASP:OD1  | 14:U:492:ASP:N    | 2.49                     | 0.44              |
| 17:X:360:ASP:OD1  | 17:X:363:ARG:NH2  | 2.44                     | 0.44              |
| 19:Z:22:HIS:CD2   | 19:Z:26:ILE:HD12  | 2.52                     | 0.44              |
| 25:f:541:THR:O    | 25:f:545:LYS:HG2  | 2.17                     | 0.44              |
| 4:D:267:ILE:HG22  | 4:D:311:THR:HB    | 2.00                     | 0.44              |
| 6:F:180:ARG:NH1   | 6:F:241:ALA:O     | 2.50                     | 0.44              |
| 7:G:18:PRO:HA     | 8:H:24:TYR:CD1    | 2.52                     | 0.44              |
| 12:L:50:LYS:HB3   | 12:L:59:HIS:HB3   | 1.99                     | 0.44              |
| 14:U:401:LYS:HE3  | 14:U:401:LYS:HB3  | 1.83                     | 0.44              |
| 14:U:748:LEU:HD12 | 14:U:748:LEU:H    | 1.81                     | 0.44              |
| 20:a:18:GLN:HB2   | 20:a:21:VAL:HG23  | 1.98                     | 0.44              |
| 21:b:128:ALA:HB2  | 21:b:156:PHE:CD1  | 2.53                     | 0.44              |
| 25:f:266:LEU:HB2  | 25:f:294:MET:HE2  | 2.00                     | 0.44              |
| 26:g:97:ARG:HB3   | 26:g:98:LYS:HE2   | 1.98                     | 0.44              |
| 27:u:176:LYS:HB2  | 27:u:268:THR:O    | 2.18                     | 0.44              |
| 2:B:168:ASP:HB3   | 2:B:171:VAL:HG23  | 1.99                     | 0.44              |
| 10:J:120:GLN:HG3  | 11:K:135:ARG:HG3  | 2.00                     | 0.44              |
| 14:U:255:SER:HB2  | 14:U:754:HIS:HB2  | 2.00                     | 0.44              |
| 21:b:100:ARG:NH1  | 21:b:105:HIS:O    | 2.50                     | 0.44              |
| 25:f:119:LYS:O    | 25:f:119:LYS:HG2  | 2.18                     | 0.44              |
| 25:f:161:HIS:O    | 25:f:165:GLU:HG2  | 2.18                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:f:472:HIS:ND1  | 25:f:473:ASN:OD1  | 2.51                     | 0.44              |
| 25:f:694:LEU:HD23 | 25:f:710:LEU:HG   | 1.99                     | 0.44              |
| 26:g:87:VAL:HG12  | 26:g:153:ALA:HB3  | 2.00                     | 0.44              |
| 1:A:201:PHE:HE2   | 6:F:405:MET:HE1   | 1.82                     | 0.44              |
| 2:B:178:LYS:HB2   | 3:C:285:ALA:HB2   | 1.99                     | 0.44              |
| 3:C:204:ALA:HB2   | 3:C:245:ILE:HD12  | 2.00                     | 0.44              |
| 15:V:190:ASP:HA   | 15:V:193:GLN:OE1  | 2.18                     | 0.44              |
| 16:W:373:ILE:HA   | 20:a:326:GLU:HB3  | 2.00                     | 0.44              |
| 17:X:71:LYS:HE2   | 17:X:71:LYS:HB3   | 1.88                     | 0.44              |
| 18:Y:5:ASN:OD1    | 18:Y:5:ASN:N      | 2.50                     | 0.44              |
| 18:Y:91:ALA:HA    | 18:Y:95:LEU:HB2   | 1.99                     | 0.44              |
| 2:B:107:MET:HE3   | 2:B:151:LEU:HD13  | 1.98                     | 0.44              |
| 3:C:56:VAL:O      | 3:C:60:ARG:HG3    | 2.17                     | 0.44              |
| 4:D:202:VAL:HG22  | 4:D:329:ARG:HB3   | 1.99                     | 0.44              |
| 6:F:256:LEU:HD12  | 6:F:291:ILE:HD13  | 1.99                     | 0.44              |
| 9:I:161:ALA:HB1   | 9:I:175:LEU:HD22  | 2.00                     | 0.44              |
| 9:I:238:LYS:O     | 9:I:242:GLU:HG3   | 2.17                     | 0.44              |
| 10:J:134:VAL:HG12 | 10:J:144:LEU:HD13 | 1.99                     | 0.44              |
| 12:L:19:ILE:HD12  | 12:L:22:ILE:HD12  | 1.99                     | 0.44              |
| 13:M:162:GLY:HA3  | 13:M:176:ILE:HG21 | 1.99                     | 0.44              |
| 14:U:163:PHE:O    | 14:U:167:ILE:HD12 | 2.17                     | 0.44              |
| 14:U:321:GLN:HA   | 14:U:324:LYS:HE2  | 2.00                     | 0.44              |
| 16:W:62:SER:O     | 16:W:66:ILE:HD12  | 2.17                     | 0.44              |
| 2:B:78:PHE:O      | 2:B:82:GLN:HG2    | 2.18                     | 0.44              |
| 4:D:106:THR:HB    | 5:E:77:PRO:HB3    | 2.00                     | 0.44              |
| 7:G:123:GLN:NE2   | 8:H:82:ASP:OD1    | 2.47                     | 0.44              |
| 10:J:186:LEU:HD23 | 10:J:186:LEU:HA   | 1.79                     | 0.44              |
| 13:M:144:ASP:N    | 13:M:144:ASP:OD1  | 2.50                     | 0.44              |
| 16:W:41:GLN:HE21  | 16:W:41:GLN:HB3   | 1.55                     | 0.44              |
| 16:W:185:PHE:O    | 16:W:189:GLN:HG3  | 2.18                     | 0.44              |
| 19:Z:34:ARG:HH21  | 19:Z:102:HIS:CD2  | 2.36                     | 0.44              |
| 23:d:348:MET:HE3  | 23:d:348:MET:HB3  | 1.81                     | 0.44              |
| 25:f:305:LEU:HD23 | 25:f:305:LEU:HA   | 1.72                     | 0.44              |
| 1:A:243:SER:OG    | 2:B:311:GLU:OE2   | 2.24                     | 0.44              |
| 4:D:337:ASP:H     | 4:D:340:GLN:HB2   | 1.83                     | 0.44              |
| 10:J:12:PRO:HA    | 11:K:26:TYR:CD1   | 2.53                     | 0.44              |
| 17:X:122:ARG:HB3  | 17:X:122:ARG:HH11 | 1.82                     | 0.44              |
| 17:X:158:LYS:HG3  | 17:X:166:LEU:HD11 | 2.00                     | 0.44              |
| 18:Y:368:GLU:O    | 18:Y:372:LYS:N    | 2.37                     | 0.44              |
| 19:Z:285:ALA:HA   | 19:Z:288:LYS:HE2  | 2.00                     | 0.44              |
| 22:c:175:ARG:HD3  | 22:c:201:TYR:CD1  | 2.53                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:f:129:LEU:O    | 25:f:132:THR:OG1  | 2.36                     | 0.44              |
| 27:u:216:GLN:HE22 | 27:u:233:LEU:HA   | 1.82                     | 0.44              |
| 1:A:206:ILE:HD12  | 6:F:404:GLY:HA3   | 2.00                     | 0.44              |
| 3:C:60:ARG:NH1    | 4:D:71:GLU:OE1    | 2.51                     | 0.44              |
| 5:E:279:THR:HG21  | 5:E:285:LEU:HD11  | 1.99                     | 0.44              |
| 6:F:225:MET:HE3   | 6:F:354:PHE:CZ    | 2.53                     | 0.44              |
| 7:G:33:ASN:HB3    | 7:G:170:VAL:HG12  | 1.98                     | 0.44              |
| 11:K:149:LYS:HB3  | 11:K:149:LYS:HE3  | 1.57                     | 0.44              |
| 14:U:236:LEU:HD23 | 14:U:236:LEU:HA   | 1.83                     | 0.44              |
| 16:W:355:LYS:HE2  | 16:W:384:LEU:HD21 | 2.00                     | 0.44              |
| 16:W:428:TRP:O    | 16:W:432:LEU:HG   | 2.18                     | 0.44              |
| 19:Z:51:SER:OG    | 19:Z:89:GLU:OE2   | 2.26                     | 0.44              |
| 25:f:404:ASP:OD2  | 25:f:405:HIS:HD2  | 2.01                     | 0.44              |
| 1:A:69:ASP:HA     | 2:B:164:MET:HE3   | 2.00                     | 0.43              |
| 1:A:87:LEU:HD22   | 2:B:156:VAL:HG21  | 2.00                     | 0.43              |
| 2:B:377:ASP:OD2   | 2:B:377:ASP:C     | 2.61                     | 0.43              |
| 4:D:53:PHE:HZ     | 14:U:636:VAL:HB   | 1.83                     | 0.43              |
| 5:E:313:LEU:HD13  | 5:E:343:LEU:HD22  | 2.00                     | 0.43              |
| 13:M:87:LEU:HD12  | 13:M:133:CYS:SG   | 2.58                     | 0.43              |
| 14:U:213:PHE:CD2  | 14:U:244:MET:HE3  | 2.47                     | 0.43              |
| 14:U:261:LEU:O    | 14:U:265:ILE:HG12 | 2.18                     | 0.43              |
| 15:V:128:ARG:O    | 15:V:132:LEU:HD23 | 2.18                     | 0.43              |
| 15:V:427:GLN:OE1  | 15:V:427:GLN:HA   | 2.17                     | 0.43              |
| 17:X:38:ASN:OD1   | 17:X:38:ASN:N     | 2.51                     | 0.43              |
| 18:Y:228:MET:SD   | 18:Y:260:LEU:HA   | 2.58                     | 0.43              |
| 19:Z:129:LYS:HA   | 19:Z:129:LYS:HD3  | 1.72                     | 0.43              |
| 20:a:205:LEU:HB3  | 20:a:268:LEU:HD21 | 2.00                     | 0.43              |
| 23:d:283:LEU:HB3  | 23:d:286:GLU:HB2  | 2.00                     | 0.43              |
| 25:f:386:GLY:HA2  | 25:f:418:LEU:HD23 | 2.00                     | 0.43              |
| 3:C:336:MET:HE3   | 3:C:378:VAL:HG21  | 1.99                     | 0.43              |
| 7:G:116:LYS:HG3   | 7:G:160:TYR:CZ    | 2.54                     | 0.43              |
| 10:J:28:LYS:HB2   | 10:J:28:LYS:HE3   | 1.77                     | 0.43              |
| 13:M:117:MET:HE2  | 13:M:117:MET:HA   | 2.00                     | 0.43              |
| 14:U:268:LEU:HD23 | 14:U:268:LEU:HA   | 1.76                     | 0.43              |
| 17:X:299:LEU:H    | 17:X:334:ASN:ND2  | 2.16                     | 0.43              |
| 18:Y:360:ASP:OD1  | 18:Y:360:ASP:N    | 2.51                     | 0.43              |
| 21:b:112:PHE:CE2  | 21:b:141:ILE:HD11 | 2.53                     | 0.43              |
| 25:f:273:ASN:C    | 25:f:273:ASN:HD22 | 2.26                     | 0.43              |
| 25:f:473:ASN:OD1  | 25:f:473:ASN:N    | 2.51                     | 0.43              |
| 4:D:387:VAL:HG11  | 5:E:159:PHE:CE1   | 2.53                     | 0.43              |
| 12:L:181:GLU:OE1  | 12:L:181:GLU:N    | 2.36                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 14:U:235:LYS:NZ   | 14:U:236:LEU:HD23 | 2.34                     | 0.43              |
| 17:X:50:ILE:HG23  | 17:X:88:LEU:HD11  | 2.00                     | 0.43              |
| 20:a:79:ILE:HD13  | 20:a:79:ILE:HA    | 1.85                     | 0.43              |
| 20:a:97:LEU:O     | 20:a:101:ARG:N    | 2.43                     | 0.43              |
| 25:f:136:GLU:OE1  | 25:f:136:GLU:N    | 2.32                     | 0.43              |
| 26:g:137:GLN:H    | 26:g:137:GLN:CD   | 2.23                     | 0.43              |
| 2:B:225:TYR:CE2   | 2:B:352:GLU:HG3   | 2.53                     | 0.43              |
| 2:B:410:ARG:HH12  | 18:Y:94:ASN:ND2   | 2.16                     | 0.43              |
| 12:L:196:ARG:CZ   | 12:L:239:ARG:HB3  | 2.48                     | 0.43              |
| 14:U:14:GLU:O     | 14:U:20:LYS:NZ    | 2.32                     | 0.43              |
| 17:X:309:TYR:HB2  | 17:X:313:LEU:HD12 | 1.99                     | 0.43              |
| 18:Y:142:PHE:CE2  | 18:Y:176:ARG:HD3  | 2.52                     | 0.43              |
| 25:f:140:LEU:HD21 | 25:f:184:LEU:HD21 | 2.00                     | 0.43              |
| 25:f:256:PHE:HB3  | 25:f:265:ALA:HB2  | 1.99                     | 0.43              |
| 1:A:93:LEU:HD23   | 1:A:151:ILE:HG22  | 1.99                     | 0.43              |
| 7:G:47:CYS:SG     | 7:G:191:PHE:HA    | 2.58                     | 0.43              |
| 8:H:145:TYR:HE1   | 9:I:59:VAL:HG21   | 1.83                     | 0.43              |
| 12:L:189:LYS:HB2  | 12:L:189:LYS:HE3  | 1.74                     | 0.43              |
| 13:M:28:LYS:HE3   | 13:M:28:LYS:HB3   | 1.86                     | 0.43              |
| 13:M:140:TYR:HB3  | 13:M:216:VAL:HG22 | 2.01                     | 0.43              |
| 15:V:195:ILE:HD12 | 15:V:196:SER:N    | 2.34                     | 0.43              |
| 22:c:25:VAL:HG23  | 22:c:175:ARG:HG2  | 1.99                     | 0.43              |
| 22:c:161:ARG:HD2  | 22:c:201:TYR:OH   | 2.19                     | 0.43              |
| 25:f:427:THR:HG22 | 26:g:159:LYS:HG2  | 2.01                     | 0.43              |
| 25:f:520:LEU:HD13 | 25:f:798:THR:HG23 | 1.99                     | 0.43              |
| 26:g:128:LYS:HE2  | 26:g:158:LEU:HD21 | 2.00                     | 0.43              |
| 3:C:49:ARG:HD2    | 14:U:639:LEU:HD23 | 1.99                     | 0.43              |
| 9:I:186:LEU:HD12  | 9:I:186:LEU:HA    | 1.81                     | 0.43              |
| 14:U:217:CYS:O    | 14:U:221:ILE:HG13 | 2.18                     | 0.43              |
| 15:V:179:LYS:HE2  | 15:V:179:LYS:HB2  | 1.80                     | 0.43              |
| 15:V:401:ASN:O    | 15:V:405:THR:HG22 | 2.19                     | 0.43              |
| 16:W:79:GLU:HB3   | 16:W:82:LEU:HB2   | 2.00                     | 0.43              |
| 16:W:201:ARG:O    | 16:W:205:ILE:HG13 | 2.18                     | 0.43              |
| 23:d:268:ARG:HD3  | 23:d:293:PHE:CZ   | 2.54                     | 0.43              |
| 25:f:530:CYS:SG   | 25:f:569:LYS:HG3  | 2.58                     | 0.43              |
| 25:f:609:VAL:HA   | 25:f:612:LEU:CD1  | 2.49                     | 0.43              |
| 14:U:356:THR:HB   | 14:U:717:ILE:HG21 | 1.99                     | 0.43              |
| 14:U:699:THR:H    | 14:U:702:THR:HG1  | 1.67                     | 0.43              |
| 15:V:284:GLU:OE1  | 15:V:284:GLU:HA   | 2.18                     | 0.43              |
| 18:Y:175:ASP:O    | 18:Y:179:ARG:HG3  | 2.18                     | 0.43              |
| 20:a:97:LEU:HD13  | 20:a:118:ILE:HG22 | 2.01                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 21:b:83:LYS:HB2   | 21:b:83:LYS:HE2   | 1.79                     | 0.43              |
| 23:d:236:LEU:HD21 | 23:d:267:ILE:HD11 | 2.01                     | 0.43              |
| 25:f:208:LEU:HD23 | 25:f:213:GLN:O    | 2.19                     | 0.43              |
| 25:f:300:ARG:HA   | 25:f:300:ARG:HD2  | 1.90                     | 0.43              |
| 25:f:446:LEU:O    | 25:f:450:ILE:HG13 | 2.18                     | 0.43              |
| 27:u:146:PHE:CE2  | 27:u:150:LEU:HD11 | 2.54                     | 0.43              |
| 5:E:108:MET:HE1   | 22:c:50:PRO:HD3   | 2.00                     | 0.43              |
| 6:F:97:LEU:N      | 6:F:121:CYS:O     | 2.47                     | 0.43              |
| 6:F:208:HIS:HB3   | 6:F:211:LYS:HD2   | 2.00                     | 0.43              |
| 17:X:407:MET:HG2  | 22:c:252:ALA:HB1  | 1.99                     | 0.43              |
| 20:a:80:ILE:O     | 20:a:84:VAL:HG13  | 2.19                     | 0.43              |
| 21:b:163:LYS:HE2  | 21:b:163:LYS:HB2  | 1.76                     | 0.43              |
| 22:c:30:GLN:HG2   | 22:c:204:THR:HG23 | 2.00                     | 0.43              |
| 22:c:68:ARG:HE    | 22:c:208:ARG:HH21 | 1.67                     | 0.43              |
| 23:d:282:ILE:HG22 | 23:d:318:PHE:HE2  | 1.84                     | 0.43              |
| 3:C:165:ILE:HD11  | 3:C:186:VAL:HG21  | 2.00                     | 0.43              |
| 5:E:72:LYS:HA     | 5:E:78:ARG:HA     | 2.01                     | 0.43              |
| 6:F:307:GLN:HE21  | 6:F:307:GLN:HB2   | 1.72                     | 0.43              |
| 14:U:179:TYR:CZ   | 14:U:183:LEU:HD11 | 2.54                     | 0.43              |
| 14:U:249:CYS:HB3  | 14:U:328:ILE:CG2  | 2.46                     | 0.43              |
| 16:W:360:GLU:HG3  | 16:W:392:PHE:CE1  | 2.49                     | 0.43              |
| 18:Y:17:LEU:HD23  | 18:Y:17:LEU:HA    | 1.87                     | 0.43              |
| 20:a:218:MET:HE2  | 20:a:218:MET:HB3  | 1.67                     | 0.43              |
| 20:a:248:PHE:HB2  | 20:a:272:ILE:HD13 | 2.01                     | 0.43              |
| 21:b:141:ILE:HG21 | 21:b:183:LEU:HD21 | 2.01                     | 0.43              |
| 25:f:226:TYR:OH   | 25:f:261:ARG:HD2  | 2.19                     | 0.43              |
| 25:f:426:LEU:HA   | 25:f:429:ILE:HG22 | 2.00                     | 0.43              |
| 25:f:556:ARG:HB3  | 25:f:590:PHE:CE2  | 2.54                     | 0.43              |
| 1:A:306:LEU:HD21  | 1:A:317:VAL:HG11  | 2.00                     | 0.43              |
| 4:D:228:ILE:HD12  | 4:D:254:ALA:HB2   | 2.00                     | 0.43              |
| 4:D:247:VAL:HG21  | 4:D:288:ILE:HG23  | 2.00                     | 0.43              |
| 4:D:336:PRO:HB3   | 4:D:340:GLN:HB3   | 2.01                     | 0.43              |
| 6:F:240:CYS:O     | 6:F:244:THR:OG1   | 2.35                     | 0.43              |
| 8:H:40:ALA:HB2    | 8:H:187:ALA:HB2   | 2.00                     | 0.43              |
| 8:H:179:ASN:OD1   | 8:H:182:LEU:HD13  | 2.19                     | 0.43              |
| 9:I:37:ILE:HD13   | 9:I:192:LEU:HD23  | 2.01                     | 0.43              |
| 12:L:159:MET:HE2  | 12:L:159:MET:HB2  | 1.89                     | 0.43              |
| 14:U:144:ASP:OD1  | 14:U:144:ASP:N    | 2.52                     | 0.43              |
| 18:Y:186:LEU:HG   | 18:Y:287:LEU:HD11 | 2.00                     | 0.43              |
| 19:Z:43:TRP:CE2   | 19:Z:48:LEU:HD13  | 2.54                     | 0.43              |
| 20:a:367:VAL:HG13 | 23:d:340:ILE:HD11 | 2.01                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 22:c:167:MET:HG2  | 22:c:172:HIS:HB2  | 2.00                     | 0.43              |
| 25:f:833:PHE:HB2  | 25:f:899:ILE:HD12 | 2.00                     | 0.43              |
| 27:u:154:THR:OG1  | 27:u:155:THR:N    | 2.47                     | 0.43              |
| 3:C:20:LEU:HD23   | 14:U:105:ILE:HD13 | 2.00                     | 0.42              |
| 12:L:109:VAL:HG22 | 12:L:134:ILE:HD13 | 2.01                     | 0.42              |
| 13:M:54:LEU:HD22  | 13:M:54:LEU:H     | 1.83                     | 0.42              |
| 14:U:119:PRO:HG2  | 14:U:122:GLU:HB2  | 2.00                     | 0.42              |
| 16:W:66:ILE:HD12  | 16:W:66:ILE:H     | 1.83                     | 0.42              |
| 17:X:127:GLN:HG2  | 17:X:153:LEU:HD11 | 2.01                     | 0.42              |
| 19:Z:130:ASP:OD1  | 19:Z:131:LEU:HD23 | 2.19                     | 0.42              |
| 23:d:251:ILE:O    | 23:d:251:ILE:HD12 | 2.18                     | 0.42              |
| 25:f:100:ARG:HB2  | 25:f:101:PRO:HD3  | 2.01                     | 0.42              |
| 25:f:201:GLU:OE2  | 25:f:225:ALA:HB1  | 2.19                     | 0.42              |
| 25:f:382:ASN:OD1  | 25:f:382:ASN:N    | 2.51                     | 0.42              |
| 25:f:386:GLY:H    | 25:f:417:ILE:HG22 | 1.84                     | 0.42              |
| 2:B:49:LEU:HD23   | 2:B:49:LEU:HA     | 1.86                     | 0.42              |
| 4:D:131:ALA:HB3   | 4:D:141:ASP:HB3   | 2.00                     | 0.42              |
| 5:E:68:LYS:HE3    | 5:E:68:LYS:HB2    | 1.78                     | 0.42              |
| 6:F:276:LYS:HE3   | 6:F:276:LYS:HB3   | 1.82                     | 0.42              |
| 13:M:35:THR:HA    | 13:M:166:GLY:HA3  | 2.00                     | 0.42              |
| 14:U:691:SER:O    | 14:U:695:MET:HG2  | 2.19                     | 0.42              |
| 15:V:183:GLU:O    | 15:V:187:ILE:HG13 | 2.19                     | 0.42              |
| 15:V:228:ARG:HB2  | 15:V:257:ASN:ND2  | 2.34                     | 0.42              |
| 18:Y:139:ASP:OD1  | 18:Y:176:ARG:NH1  | 2.52                     | 0.42              |
| 20:a:37:LEU:HD11  | 20:a:67:PHE:CE1   | 2.54                     | 0.42              |
| 22:c:32:TYR:CE1   | 22:c:206:ASN:HB3  | 2.54                     | 0.42              |
| 22:c:75:MET:HE3   | 22:c:75:MET:HB3   | 1.73                     | 0.42              |
| 27:u:164:GLN:HE21 | 27:u:249:GLN:HG3  | 1.83                     | 0.42              |
| 7:G:176:THR:HG23  | 8:H:56:LEU:HD12   | 2.02                     | 0.42              |
| 9:I:239:LYS:HB3   | 9:I:239:LYS:HE3   | 1.68                     | 0.42              |
| 15:V:76:LYS:HZ3   | 15:V:149:PRO:HB3  | 1.84                     | 0.42              |
| 15:V:338:LEU:HD21 | 15:V:397:ARG:HB2  | 2.00                     | 0.42              |
| 15:V:469:THR:HG22 | 15:V:470:ARG:H    | 1.84                     | 0.42              |
| 17:X:5:ALA:HA     | 17:X:8:GLU:OE1    | 2.19                     | 0.42              |
| 21:b:62:THR:OG1   | 21:b:74:LYS:HG3   | 2.19                     | 0.42              |
| 25:f:391:LEU:HB3  | 25:f:414:LEU:HD23 | 2.01                     | 0.42              |
| 25:f:408:LEU:HD12 | 25:f:408:LEU:HA   | 1.89                     | 0.42              |
| 3:C:44:ARG:HH21   | 15:V:495:ARG:NH2  | 2.16                     | 0.42              |
| 4:D:246:MET:HA    | 4:D:249:ASP:HB2   | 2.01                     | 0.42              |
| 5:E:349:GLU:HG3   | 5:E:373:LYS:HE2   | 2.00                     | 0.42              |
| 5:E:382:SER:O     | 5:E:384:LEU:HD12  | 2.20                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:F:187:ASP:CG    | 6:F:371:ARG:HH22  | 2.27                     | 0.42              |
| 13:M:75:MET:HE3   | 13:M:135:PHE:CG   | 2.54                     | 0.42              |
| 14:U:322:THR:O    | 14:U:326:ILE:HG12 | 2.18                     | 0.42              |
| 14:U:883:ARG:HH12 | 14:U:885:MET:HE2  | 1.85                     | 0.42              |
| 15:V:314:ARG:HD3  | 18:Y:381:GLN:HG2  | 2.00                     | 0.42              |
| 17:X:328:ASP:O    | 17:X:332:GLU:HG2  | 2.19                     | 0.42              |
| 17:X:369:ILE:HG21 | 18:Y:310:SER:HA   | 2.00                     | 0.42              |
| 21:b:11:ASP:C     | 21:b:11:ASP:OD1   | 2.62                     | 0.42              |
| 21:b:56:ASN:N     | 21:b:56:ASN:OD1   | 2.53                     | 0.42              |
| 23:d:303:ALA:O    | 23:d:307:GLY:N    | 2.53                     | 0.42              |
| 25:f:870:THR:OG1  | 25:f:871:PRO:HD3  | 2.19                     | 0.42              |
| 27:u:148:ASN:OD1  | 27:u:148:ASN:N    | 2.52                     | 0.42              |
| 2:B:151:LEU:HD21  | 2:B:163:LEU:HB2   | 2.01                     | 0.42              |
| 2:B:303:ARG:NH1   | 2:B:303:ARG:HG3   | 2.35                     | 0.42              |
| 3:C:88:LYS:HB2    | 3:C:88:LYS:HE3    | 1.70                     | 0.42              |
| 3:C:391:MET:HE3   | 3:C:391:MET:HB3   | 1.76                     | 0.42              |
| 4:D:337:ASP:OD1   | 4:D:338:ARG:N     | 2.49                     | 0.42              |
| 5:E:260:LEU:HD21  | 5:E:277:MET:HE1   | 2.00                     | 0.42              |
| 6:F:257:VAL:HG13  | 6:F:306:VAL:HG22  | 2.01                     | 0.42              |
| 11:K:36:THR:HA    | 11:K:171:GLY:HA3  | 2.01                     | 0.42              |
| 12:L:199:LEU:HD11 | 12:L:205:LEU:HD23 | 2.02                     | 0.42              |
| 14:U:616:ARG:HB2  | 14:U:647:HIS:HB3  | 2.02                     | 0.42              |
| 18:Y:385:ARG:HE   | 18:Y:385:ARG:HB2  | 1.55                     | 0.42              |
| 21:b:107:MET:HB2  | 21:b:136:VAL:HA   | 2.02                     | 0.42              |
| 22:c:219:ASN:HA   | 22:c:222:LYS:HE3  | 2.02                     | 0.42              |
| 23:d:94:MET:SD    | 23:d:94:MET:N     | 2.80                     | 0.42              |
| 23:d:153:GLN:HG3  | 23:d:191:LEU:HD21 | 2.02                     | 0.42              |
| 25:f:257:ARG:NH2  | 25:f:281:ILE:HD12 | 2.34                     | 0.42              |
| 25:f:405:HIS:CE1  | 25:f:813:LYS:HB2  | 2.54                     | 0.42              |
| 25:f:699:VAL:HG13 | 25:f:779:CYS:HA   | 2.02                     | 0.42              |
| 1:A:124:ASP:OD1   | 1:A:124:ASP:N     | 2.53                     | 0.42              |
| 2:B:394:ASP:OD1   | 2:B:394:ASP:N     | 2.53                     | 0.42              |
| 4:D:98:GLN:OE1    | 22:c:271:ALA:HB1  | 2.19                     | 0.42              |
| 5:E:67:GLU:OE2    | 5:E:85:ARG:NE     | 2.50                     | 0.42              |
| 5:E:235:ILE:HG12  | 5:E:277:MET:SD    | 2.59                     | 0.42              |
| 7:G:49:VAL:HG22   | 7:G:219:VAL:HG12  | 2.01                     | 0.42              |
| 11:K:31:ILE:H     | 11:K:31:ILE:HG12  | 1.66                     | 0.42              |
| 13:M:72:HIS:CE1   | 13:M:105:ASN:HB3  | 2.54                     | 0.42              |
| 14:U:137:MET:HE1  | 14:U:140:ARG:NH2  | 2.31                     | 0.42              |
| 14:U:214:ILE:HD13 | 14:U:214:ILE:HA   | 1.90                     | 0.42              |
| 14:U:692:ALA:HB1  | 14:U:736:ILE:HB   | 2.01                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 16:W:122:LEU:HD12 | 16:W:122:LEU:HA   | 1.87                     | 0.42              |
| 17:X:248:ILE:HD13 | 17:X:279:TYR:HB3  | 2.02                     | 0.42              |
| 17:X:398:GLU:O    | 17:X:402:GLU:HG3  | 2.19                     | 0.42              |
| 25:f:405:HIS:O    | 25:f:815:HIS:HE1  | 2.03                     | 0.42              |
| 25:f:834:ASP:OD1  | 25:f:902:LYS:NZ   | 2.48                     | 0.42              |
| 27:u:182:PHE:CE2  | 27:u:246:ILE:HG21 | 2.54                     | 0.42              |
| 5:E:45:ASN:HA     | 5:E:48:LYS:HD3    | 2.02                     | 0.42              |
| 6:F:228:PRO:HD2   | 6:F:231:THR:HG21  | 2.01                     | 0.42              |
| 7:G:119:ALA:HB1   | 7:G:158:GLY:O     | 2.19                     | 0.42              |
| 11:K:78:MET:HE2   | 11:K:78:MET:HB2   | 1.87                     | 0.42              |
| 13:M:90:ILE:HG12  | 13:M:118:TYR:CE1  | 2.55                     | 0.42              |
| 14:U:71:LEU:HD23  | 14:U:71:LEU:HA    | 1.80                     | 0.42              |
| 14:U:466:LYS:NZ   | 14:U:496:LEU:HD13 | 2.34                     | 0.42              |
| 21:b:184:ILE:HD12 | 21:b:185:SER:N    | 2.33                     | 0.42              |
| 25:f:185:LEU:HD22 | 25:f:216:MET:HE1  | 2.02                     | 0.42              |
| 27:u:151:ARG:HH11 | 27:u:153:ASP:HB2  | 1.85                     | 0.42              |
| 1:A:222:LYS:HB2   | 1:A:222:LYS:HE2   | 1.72                     | 0.42              |
| 2:B:158:ALA:O     | 2:B:160:ILE:HG23  | 2.19                     | 0.42              |
| 2:B:315:GLN:O     | 2:B:322:ARG:NH1   | 2.53                     | 0.42              |
| 4:D:300:ASP:OD1   | 4:D:300:ASP:N     | 2.40                     | 0.42              |
| 5:E:320:ILE:HG12  | 6:F:217:ILE:HG22  | 2.00                     | 0.42              |
| 7:G:31:ALA:HB1    | 7:G:83:MET:HE3    | 2.02                     | 0.42              |
| 7:G:32:ILE:HA     | 7:G:82:GLY:HA2    | 2.00                     | 0.42              |
| 9:I:45:LEU:HD22   | 9:I:137:ILE:HG12  | 2.02                     | 0.42              |
| 14:U:127:ASP:OD2  | 14:U:129:ARG:NH2  | 2.52                     | 0.42              |
| 14:U:518:LEU:HD21 | 14:U:761:VAL:HG11 | 2.02                     | 0.42              |
| 18:Y:16:ASP:HB3   | 18:Y:19:ILE:HD12  | 2.02                     | 0.42              |
| 25:f:82:ILE:HD13  | 25:f:128:VAL:HG21 | 2.02                     | 0.42              |
| 1:A:196:LEU:C     | 1:A:197:HIS:CD2   | 2.98                     | 0.42              |
| 1:A:196:LEU:C     | 1:A:197:HIS:HD2   | 2.27                     | 0.42              |
| 5:E:167:PRO:HB3   | 5:E:296:ASP:HB2   | 2.01                     | 0.42              |
| 5:E:291:ARG:NH1   | 5:E:293:GLY:HA3   | 2.35                     | 0.42              |
| 8:H:227:LYS:HB3   | 8:H:227:LYS:HE2   | 1.85                     | 0.42              |
| 8:H:229:TYR:CZ    | 17:X:83:ALA:HB2   | 2.55                     | 0.42              |
| 12:L:214:ILE:O    | 12:L:221:PHE:HA   | 2.19                     | 0.42              |
| 14:U:211:PRO:HB2  | 14:U:213:PHE:CE2  | 2.55                     | 0.42              |
| 14:U:265:ILE:O    | 14:U:269:ARG:HG2  | 2.19                     | 0.42              |
| 14:U:413:LYS:HA   | 14:U:449:ILE:HA   | 2.00                     | 0.42              |
| 14:U:642:GLU:HB3  | 15:V:502:ASN:ND2  | 2.34                     | 0.42              |
| 14:U:791:LEU:HD13 | 14:U:795:LEU:HD22 | 2.01                     | 0.42              |
| 19:Z:246:VAL:HA   | 23:d:330:ILE:HD11 | 2.02                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 20:a:121:LEU:HD12 | 20:a:122:LYS:N    | 2.34                     | 0.42              |
| 22:c:289:ASP:O    | 22:c:293:THR:HG22 | 2.19                     | 0.42              |
| 23:d:313:ASN:OD1  | 23:d:313:ASN:N    | 2.52                     | 0.42              |
| 24:e:16:ASP:OD1   | 24:e:16:ASP:N     | 2.53                     | 0.42              |
| 25:f:52:LEU:HG    | 25:f:95:PRO:HB2   | 2.02                     | 0.42              |
| 25:f:692:LEU:H    | 25:f:692:LEU:HD22 | 1.84                     | 0.42              |
| 1:A:60:ASN:HA     | 1:A:63:THR:OG1    | 2.20                     | 0.42              |
| 2:B:135:ILE:HG12  | 2:B:159:VAL:HB    | 2.02                     | 0.42              |
| 5:E:284:THR:HG22  | 6:F:297:ASP:HB2   | 2.01                     | 0.42              |
| 7:G:83:MET:HE1    | 13:M:14:PHE:HE1   | 1.84                     | 0.42              |
| 11:K:142:LEU:HD22 | 11:K:153:LEU:HD11 | 2.02                     | 0.42              |
| 11:K:165:CYS:HA   | 12:L:57:ALA:HA    | 2.02                     | 0.42              |
| 14:U:398:ASN:HA   | 14:U:437:TYR:CE2  | 2.55                     | 0.42              |
| 15:V:211:TYR:CD2  | 15:V:250:LEU:HD21 | 2.55                     | 0.42              |
| 15:V:492:LYS:HE3  | 15:V:492:LYS:HB3  | 1.76                     | 0.42              |
| 16:W:34:LEU:HB3   | 16:W:39:ARG:HD2   | 2.01                     | 0.42              |
| 16:W:180:LYS:O    | 16:W:184:GLU:HG3  | 2.19                     | 0.42              |
| 20:a:131:THR:O    | 20:a:135:ILE:HB   | 2.19                     | 0.42              |
| 21:b:182:ALA:O    | 21:b:186:SER:OG   | 2.34                     | 0.42              |
| 25:f:277:LEU:HD12 | 25:f:277:LEU:HA   | 1.86                     | 0.42              |
| 1:A:301:GLU:O     | 1:A:305:GLN:HG2   | 2.19                     | 0.41              |
| 4:D:122:GLU:OE1   | 22:c:283:HIS:NE2  | 2.43                     | 0.41              |
| 4:D:152:MET:HE3   | 4:D:152:MET:HB2   | 1.96                     | 0.41              |
| 4:D:301:GLN:OE1   | 4:D:301:GLN:N     | 2.42                     | 0.41              |
| 9:I:34:CYS:SG     | 9:I:135:LEU:HD12  | 2.60                     | 0.41              |
| 9:I:190:LEU:HD11  | 9:I:228:LEU:HD11  | 2.02                     | 0.41              |
| 12:L:66:VAL:HG21  | 12:L:88:MET:HE2   | 2.02                     | 0.41              |
| 12:L:225:ASP:O    | 12:L:229:VAL:N    | 2.53                     | 0.41              |
| 14:U:115:ASN:HB3  | 14:U:123:LYS:HZ2  | 1.85                     | 0.41              |
| 14:U:446:LEU:HD12 | 14:U:446:LEU:HA   | 1.88                     | 0.41              |
| 14:U:551:GLY:O    | 14:U:555:VAL:HG23 | 2.20                     | 0.41              |
| 15:V:387:GLN:OE1  | 23:d:218:LYS:NZ   | 2.51                     | 0.41              |
| 18:Y:187:TYR:O    | 18:Y:191:ILE:HG12 | 2.20                     | 0.41              |
| 20:a:60:TYR:O     | 20:a:65:SER:OG    | 2.35                     | 0.41              |
| 23:d:199:LEU:HD13 | 23:d:208:PHE:HA   | 2.00                     | 0.41              |
| 25:f:181:ARG:NH2  | 25:f:182:GLU:HA   | 2.34                     | 0.41              |
| 1:A:372:LEU:HD21  | 11:K:207:GLU:HA   | 2.01                     | 0.41              |
| 2:B:258:LYS:HB3   | 2:B:258:LYS:HE2   | 1.86                     | 0.41              |
| 2:B:380:LEU:O     | 2:B:384:ILE:HG12  | 2.20                     | 0.41              |
| 3:C:149:GLU:OE1   | 18:Y:133:ALA:HB1  | 2.19                     | 0.41              |
| 6:F:221:LYS:HZ2   | 6:F:221:LYS:HB3   | 1.84                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 13:M:49:VAL:HG11  | 13:M:65:ARG:HB2   | 2.02                     | 0.41              |
| 15:V:131:LEU:HD23 | 15:V:132:LEU:HD22 | 2.02                     | 0.41              |
| 15:V:268:GLU:HG3  | 15:V:299:GLN:HE21 | 1.85                     | 0.41              |
| 21:b:33:VAL:HA    | 21:b:36:VAL:HG12  | 2.02                     | 0.41              |
| 27:u:157:LEU:O    | 27:u:259:ARG:HA   | 2.20                     | 0.41              |
| 2:B:60:LEU:HD12   | 2:B:61:LYS:N      | 2.35                     | 0.41              |
| 6:F:439:ALA:N     | 12:L:76:GLY:O     | 2.51                     | 0.41              |
| 14:U:201:LEU:HA   | 14:U:201:LEU:HD12 | 1.81                     | 0.41              |
| 14:U:483:LEU:HD11 | 14:U:781:LEU:HD11 | 2.02                     | 0.41              |
| 15:V:395:ILE:O    | 15:V:398:LEU:HB2  | 2.20                     | 0.41              |
| 16:W:43:VAL:O     | 16:W:47:LEU:HG    | 2.21                     | 0.41              |
| 20:a:56:LEU:HD12  | 20:a:86:GLN:HE22  | 1.85                     | 0.41              |
| 20:a:111:VAL:O    | 20:a:115:LYS:HG3  | 2.20                     | 0.41              |
| 25:f:330:PHE:HA   | 25:f:333:LEU:HD23 | 2.03                     | 0.41              |
| 27:u:160:ASP:OD1  | 27:u:161:CYS:N    | 2.51                     | 0.41              |
| 3:C:329:LEU:HG    | 3:C:344:LEU:HD22  | 2.02                     | 0.41              |
| 4:D:144:PRO:HA    | 4:D:145:PRO:HD3   | 1.98                     | 0.41              |
| 5:E:140:GLU:O     | 5:E:144:GLU:HG3   | 2.21                     | 0.41              |
| 15:V:251:LEU:HD12 | 15:V:251:LEU:HA   | 1.92                     | 0.41              |
| 17:X:144:GLN:H    | 17:X:144:GLN:CD   | 2.23                     | 0.41              |
| 18:Y:163:LYS:HE3  | 18:Y:163:LYS:HB2  | 1.87                     | 0.41              |
| 21:b:27:GLN:HA    | 21:b:27:GLN:NE2   | 2.34                     | 0.41              |
| 22:c:248:MET:HE2  | 22:c:291:LEU:HD12 | 2.01                     | 0.41              |
| 25:f:390:LEU:HD21 | 25:f:398:TRP:CE2  | 2.55                     | 0.41              |
| 25:f:441:LYS:HB3  | 25:f:477:MET:HE1  | 2.03                     | 0.41              |
| 25:f:449:GLY:HA3  | 25:f:484:GLY:O    | 2.20                     | 0.41              |
| 25:f:450:ILE:HG23 | 25:f:822:VAL:HG21 | 2.03                     | 0.41              |
| 1:A:215:PHE:CZ    | 1:A:342:GLU:HB2   | 2.55                     | 0.41              |
| 1:A:227:ARG:HD3   | 2:B:319:PHE:O     | 2.21                     | 0.41              |
| 1:A:247:GLN:HB2   | 1:A:252:GLU:HB2   | 2.03                     | 0.41              |
| 7:G:7:ALA:N       | 7:G:10:ASP:OD2    | 2.46                     | 0.41              |
| 7:G:131:MET:HE3   | 7:G:131:MET:HB3   | 1.89                     | 0.41              |
| 10:J:115:LYS:NZ   | 10:J:129:ILE:O    | 2.53                     | 0.41              |
| 14:U:265:ILE:HD12 | 14:U:326:ILE:HG23 | 2.03                     | 0.41              |
| 14:U:803:LYS:HG3  | 14:U:875:PHE:HD2  | 1.85                     | 0.41              |
| 15:V:462:GLU:H    | 15:V:462:GLU:CD   | 2.28                     | 0.41              |
| 17:X:379:ASP:HB3  | 17:X:384:VAL:HG23 | 2.02                     | 0.41              |
| 25:f:348:ILE:HD12 | 25:f:770:HIS:ND1  | 2.35                     | 0.41              |
| 25:f:531:ASN:ND2  | 25:f:534:VAL:HG23 | 2.36                     | 0.41              |
| 25:f:726:ILE:HG12 | 25:f:748:LEU:HD13 | 2.01                     | 0.41              |
| 2:B:225:TYR:HA    | 2:B:331:THR:O     | 2.20                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:269:GLU:HG2   | 3:C:229:ARG:HH12  | 1.85                     | 0.41              |
| 4:D:143:LEU:HD13  | 5:E:70:ILE:HD11   | 2.01                     | 0.41              |
| 4:D:238:LYS:HB3   | 4:D:238:LYS:HE3   | 1.93                     | 0.41              |
| 8:H:49:GLU:HG3    | 8:H:199:PHE:CE2   | 2.55                     | 0.41              |
| 8:H:163:MET:HB3   | 8:H:163:MET:HE2   | 1.69                     | 0.41              |
| 12:L:189:LYS:NZ   | 12:L:235:GLY:HA3  | 2.35                     | 0.41              |
| 18:Y:94:ASN:OD1   | 18:Y:94:ASN:N     | 2.52                     | 0.41              |
| 18:Y:247:LEU:HD23 | 18:Y:247:LEU:HA   | 1.92                     | 0.41              |
| 19:Z:15:VAL:HG21  | 19:Z:50:VAL:HG12  | 2.03                     | 0.41              |
| 20:a:100:THR:O    | 20:a:104:VAL:HG22 | 2.20                     | 0.41              |
| 22:c:28:ALA:HB1   | 22:c:181:LEU:HD12 | 2.02                     | 0.41              |
| 22:c:222:LYS:HE3  | 22:c:222:LYS:HB2  | 1.80                     | 0.41              |
| 23:d:218:LYS:HB2  | 23:d:218:LYS:HE2  | 1.72                     | 0.41              |
| 24:e:34:GLU:H     | 24:e:34:GLU:HG2   | 1.64                     | 0.41              |
| 25:f:123:ALA:HB1  | 25:f:142:TYR:HB3  | 2.03                     | 0.41              |
| 25:f:390:LEU:HD21 | 25:f:398:TRP:NE1  | 2.35                     | 0.41              |
| 4:D:92:PHE:HZ     | 4:D:95:ALA:HB2    | 1.85                     | 0.41              |
| 7:G:61:LEU:HD21   | 13:M:158:TYR:HB3  | 2.03                     | 0.41              |
| 9:I:52:ILE:HG21   | 9:I:210:LYS:HG2   | 2.03                     | 0.41              |
| 9:I:187:LYS:HB2   | 9:I:187:LYS:HE3   | 1.86                     | 0.41              |
| 14:U:600:ARG:HE   | 14:U:600:ARG:HB2  | 1.66                     | 0.41              |
| 15:V:194:LYS:H    | 15:V:194:LYS:HG2  | 1.67                     | 0.41              |
| 16:W:147:LYS:HB2  | 16:W:185:PHE:CZ   | 2.55                     | 0.41              |
| 17:X:419:LYS:HZ2  | 17:X:420:LYS:HG3  | 1.86                     | 0.41              |
| 21:b:133:LYS:HE2  | 27:u:162:ASP:HB3  | 2.03                     | 0.41              |
| 22:c:27:THR:HG21  | 22:c:183:HIS:CE1  | 2.56                     | 0.41              |
| 25:f:433:LEU:HD23 | 25:f:433:LEU:HA   | 1.82                     | 0.41              |
| 4:D:344:ILE:HG22  | 4:D:375:ILE:HG21  | 2.02                     | 0.41              |
| 5:E:354:ALA:HB3   | 6:F:215:LEU:HD21  | 2.03                     | 0.41              |
| 7:G:10:ASP:HA     | 7:G:15:ILE:HG13   | 2.03                     | 0.41              |
| 8:H:123:GLN:NE2   | 9:I:128:ARG:O     | 2.53                     | 0.41              |
| 9:I:238:LYS:O     | 9:I:241:GLU:HG3   | 2.21                     | 0.41              |
| 10:J:43:LEU:HD23  | 10:J:43:LEU:HA    | 1.97                     | 0.41              |
| 14:U:138:PHE:CD1  | 14:U:162:VAL:HG11 | 2.55                     | 0.41              |
| 14:U:633:CYS:O    | 14:U:637:VAL:HG12 | 2.21                     | 0.41              |
| 14:U:640:LEU:HD22 | 14:U:648:VAL:HG11 | 2.03                     | 0.41              |
| 14:U:807:LYS:O    | 14:U:810:THR:HG22 | 2.20                     | 0.41              |
| 15:V:238:ALA:HB1  | 15:V:243:ASP:HB3  | 2.02                     | 0.41              |
| 16:W:436:MET:HG2  | 22:c:225:TRP:CZ3  | 2.55                     | 0.41              |
| 18:Y:387:ILE:HD11 | 19:Z:276:ILE:HG12 | 2.02                     | 0.41              |
| 21:b:18:ASN:OD1   | 21:b:18:ASN:N     | 2.54                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 23:d:109:LEU:HD13 | 23:d:158:ARG:HB3  | 2.03                     | 0.41              |
| 25:f:208:LEU:H    | 25:f:208:LEU:HD12 | 1.86                     | 0.41              |
| 25:f:657:ILE:H    | 25:f:657:ILE:HG13 | 1.55                     | 0.41              |
| 1:A:67:GLU:O      | 1:A:68:SER:HB3    | 2.21                     | 0.41              |
| 1:A:238:ILE:HD12  | 1:A:270:CYS:SG    | 2.61                     | 0.41              |
| 2:B:86:LYS:HE3    | 2:B:90:GLU:HB3    | 2.03                     | 0.41              |
| 3:C:199:LEU:O     | 3:C:203:VAL:HG23  | 2.21                     | 0.41              |
| 8:H:50:LYS:NZ     | 8:H:59:GLU:O      | 2.52                     | 0.41              |
| 9:I:197:LEU:HB3   | 9:I:206:LEU:HD11  | 2.02                     | 0.41              |
| 10:J:159:ASN:OD1  | 10:J:169:ARG:NH1  | 2.45                     | 0.41              |
| 11:K:52:LYS:HG3   | 11:K:214:ASN:C    | 2.45                     | 0.41              |
| 13:M:87:LEU:HD23  | 13:M:87:LEU:HA    | 1.91                     | 0.41              |
| 14:U:204:ILE:O    | 14:U:208:LEU:HD12 | 2.21                     | 0.41              |
| 14:U:559:ARG:HD3  | 14:U:559:ARG:HA   | 1.90                     | 0.41              |
| 14:U:693:LEU:HD23 | 14:U:736:ILE:HG21 | 2.02                     | 0.41              |
| 14:U:769:PHE:HA   | 14:U:772:TRP:O    | 2.20                     | 0.41              |
| 14:U:806:CYS:SG   | 14:U:810:THR:HG21 | 2.60                     | 0.41              |
| 14:U:884:VAL:HG13 | 14:U:888:GLN:HB2  | 2.03                     | 0.41              |
| 16:W:98:LYS:HG3   | 16:W:99:GLN:N     | 2.35                     | 0.41              |
| 16:W:378:MET:HE1  | 16:W:413:ILE:HG21 | 2.02                     | 0.41              |
| 17:X:23:SER:O     | 17:X:27:LEU:HD12  | 2.21                     | 0.41              |
| 18:Y:228:MET:HE2  | 18:Y:228:MET:HB3  | 1.93                     | 0.41              |
| 18:Y:282:MET:HG2  | 18:Y:288:PHE:HB3  | 2.02                     | 0.41              |
| 19:Z:94:TRP:HB3   | 19:Z:112:MET:HG3  | 2.03                     | 0.41              |
| 20:a:72:ASN:HD22  | 20:a:73:PRO:HD2   | 1.85                     | 0.41              |
| 20:a:114:CYS:O    | 20:a:118:ILE:HG23 | 2.21                     | 0.41              |
| 20:a:118:ILE:O    | 20:a:122:LYS:HB2  | 2.21                     | 0.41              |
| 20:a:196:ARG:HG2  | 20:a:196:ARG:HH11 | 1.86                     | 0.41              |
| 21:b:10:VAL:O     | 21:b:54:LEU:HB2   | 2.21                     | 0.41              |
| 25:f:256:PHE:CE1  | 25:f:264:GLU:HG3  | 2.55                     | 0.41              |
| 25:f:282:PHE:HZ   | 25:f:317:LEU:HD13 | 1.86                     | 0.41              |
| 25:f:296:PHE:HE2  | 25:f:837:LEU:HD11 | 1.84                     | 0.41              |
| 25:f:369:ARG:NH2  | 25:f:811:LEU:O    | 2.54                     | 0.41              |
| 27:u:130:ILE:HG12 | 27:u:171:PHE:HD2  | 1.86                     | 0.41              |
| 27:u:146:PHE:HA   | 27:u:157:LEU:HD13 | 2.03                     | 0.41              |
| 27:u:184:GLY:HA2  | 27:u:261:SER:H    | 1.86                     | 0.41              |
| 27:u:195:LYS:HD2  | 27:u:214:PRO:HG3  | 2.03                     | 0.41              |
| 1:A:125:LEU:HD22  | 1:A:129:VAL:HG21  | 2.03                     | 0.41              |
| 1:A:189:GLU:HG2   | 1:A:339:ARG:HH12  | 1.86                     | 0.41              |
| 5:E:344:ARG:HE    | 5:E:344:ARG:HB3   | 1.79                     | 0.41              |
| 12:L:36:VAL:HG13  | 12:L:172:LEU:HD11 | 2.02                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 13:M:192:GLU:O    | 13:M:196:ILE:HG13 | 2.21                     | 0.41              |
| 17:X:170:GLN:HB3  | 17:X:193:ALA:HB2  | 2.03                     | 0.41              |
| 17:X:358:LYS:NZ   | 17:X:358:LYS:HB2  | 2.36                     | 0.41              |
| 21:b:51:LEU:HD22  | 21:b:61:LEU:HB2   | 2.02                     | 0.41              |
| 21:b:142:ASN:HB3  | 21:b:172:THR:HG23 | 2.02                     | 0.41              |
| 25:f:829:MET:HG3  | 25:f:831:VAL:HG23 | 2.03                     | 0.41              |
| 26:g:137:GLN:CD   | 26:g:145:GLN:HG2  | 2.45                     | 0.41              |
| 1:A:170:PRO:HB3   | 1:A:227:ARG:HD2   | 2.03                     | 0.40              |
| 2:B:91:LYS:HB2    | 2:B:94:GLU:HB2    | 2.02                     | 0.40              |
| 2:B:189:GLY:HA3   | 2:B:360:THR:HG23  | 2.03                     | 0.40              |
| 10:J:70:CYS:SG    | 10:J:217:LEU:HD13 | 2.61                     | 0.40              |
| 14:U:522:GLY:O    | 14:U:559:ARG:NH2  | 2.42                     | 0.40              |
| 14:U:746:ILE:HD11 | 14:U:783:TYR:HE1  | 1.86                     | 0.40              |
| 15:V:311:ASN:CG   | 15:V:314:ARG:HH12 | 2.29                     | 0.40              |
| 19:Z:19:VAL:HG22  | 19:Z:95:TYR:CE1   | 2.56                     | 0.40              |
| 20:a:286:ALA:HB3  | 22:c:311:LEU:HD21 | 2.03                     | 0.40              |
| 25:f:263:PRO:HB3  | 25:f:891:THR:HG22 | 2.03                     | 0.40              |
| 25:f:460:ASP:OD1  | 26:g:133:LYS:HG3  | 2.21                     | 0.40              |
| 25:f:828:ARG:HB3  | 25:f:874:LEU:O    | 2.22                     | 0.40              |
| 27:u:218:LEU:H    | 27:u:218:LEU:HD23 | 1.85                     | 0.40              |
| 2:B:60:LEU:O      | 2:B:64:LYS:N      | 2.41                     | 0.40              |
| 3:C:170:LYS:HD3   | 3:C:170:LYS:HA    | 1.84                     | 0.40              |
| 3:C:351:MET:SD    | 3:C:362:VAL:HG21  | 2.61                     | 0.40              |
| 5:E:214:LEU:HD23  | 5:E:214:LEU:HA    | 1.91                     | 0.40              |
| 5:E:344:ARG:NH2   | 6:F:349:ASP:OD2   | 2.48                     | 0.40              |
| 6:F:235:LEU:N     | 28:F:501:ATP:O1A  | 2.49                     | 0.40              |
| 12:L:62:LYS:HB3   | 12:L:62:LYS:HE2   | 1.82                     | 0.40              |
| 14:U:92:ASP:HB2   | 14:U:97:VAL:HG21  | 2.03                     | 0.40              |
| 14:U:535:TYR:HD1  | 14:U:548:LEU:HD11 | 1.86                     | 0.40              |
| 14:U:757:MET:HE3  | 14:U:757:MET:HB3  | 1.73                     | 0.40              |
| 16:W:61:VAL:O     | 16:W:65:ARG:HG3   | 2.21                     | 0.40              |
| 16:W:88:MET:HE3   | 16:W:92:LYS:HD2   | 2.03                     | 0.40              |
| 19:Z:37:GLY:HA2   | 19:Z:56:VAL:HG22  | 2.02                     | 0.40              |
| 19:Z:252:LYS:O    | 19:Z:256:GLN:HG3  | 2.21                     | 0.40              |
| 20:a:145:LEU:HD12 | 20:a:146:PRO:HD2  | 2.03                     | 0.40              |
| 21:b:52:ILE:HD13  | 21:b:60:VAL:HG22  | 2.03                     | 0.40              |
| 22:c:157:ILE:HG23 | 22:c:205:ILE:HD12 | 2.02                     | 0.40              |
| 23:d:147:ILE:HD12 | 23:d:147:ILE:H    | 1.86                     | 0.40              |
| 25:f:606:VAL:HA   | 25:f:609:VAL:HG22 | 2.03                     | 0.40              |
| 2:B:186:ASP:HA    | 2:B:367:ILE:HD12  | 2.03                     | 0.40              |
| 2:B:403:GLY:HA3   | 3:C:180:ILE:HG21  | 2.03                     | 0.40              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:F:235:LEU:HD22  | 28:F:501:ATP:H2'  | 2.03                     | 0.40              |
| 6:F:253:GLY:HA3   | 6:F:290:ALA:HB3   | 2.01                     | 0.40              |
| 7:G:115:CYS:O     | 7:G:119:ALA:N     | 2.28                     | 0.40              |
| 11:K:142:LEU:HD23 | 11:K:142:LEU:HA   | 1.95                     | 0.40              |
| 14:U:333:MET:O    | 14:U:337:LEU:HD22 | 2.21                     | 0.40              |
| 14:U:771:PHE:HA   | 22:c:179:SER:HG   | 1.86                     | 0.40              |
| 14:U:810:THR:HG23 | 14:U:811:PHE:CG   | 2.55                     | 0.40              |
| 15:V:214:HIS:CE1  | 15:V:218:TYR:HE1  | 2.39                     | 0.40              |
| 17:X:63:ALA:O     | 17:X:67:GLY:N     | 2.51                     | 0.40              |
| 18:Y:171:GLY:O    | 18:Y:173:ASP:N    | 2.52                     | 0.40              |
| 19:Z:6:VAL:HG13   | 19:Z:43:TRP:CH2   | 2.56                     | 0.40              |
| 19:Z:76:GLU:HG2   | 19:Z:115:TYR:HE2  | 1.86                     | 0.40              |
| 23:d:102:TRP:CZ2  | 23:d:153:GLN:HB3  | 2.57                     | 0.40              |
| 26:g:159:LYS:O    | 26:g:160:GLN:HB2  | 2.21                     | 0.40              |
| 2:B:164:MET:HE3   | 2:B:164:MET:HB2   | 1.98                     | 0.40              |
| 2:B:224:LEU:HB3   | 2:B:353:PHE:CE1   | 2.56                     | 0.40              |
| 4:D:76:GLN:O      | 4:D:79:VAL:HG12   | 2.22                     | 0.40              |
| 4:D:276:ASP:H     | 4:D:282:ASP:CB    | 2.35                     | 0.40              |
| 5:E:363:VAL:HG23  | 5:E:365:GLU:H     | 1.86                     | 0.40              |
| 9:I:25:MET:HA     | 9:I:28:ILE:HD12   | 2.03                     | 0.40              |
| 14:U:91:ASN:OD1   | 14:U:91:ASN:N     | 2.55                     | 0.40              |
| 14:U:206:MET:N    | 14:U:206:MET:SD   | 2.95                     | 0.40              |
| 14:U:259:GLN:NE2  | 14:U:487:GLY:O    | 2.34                     | 0.40              |
| 14:U:485:ALA:O    | 14:U:519:VAL:HA   | 2.20                     | 0.40              |
| 16:W:161:GLU:H    | 16:W:161:GLU:HG2  | 1.69                     | 0.40              |
| 16:W:172:GLU:OE2  | 16:W:208:LYS:HD3  | 2.21                     | 0.40              |
| 17:X:197:ALA:HB1  | 17:X:202:CYS:SG   | 2.60                     | 0.40              |
| 18:Y:183:TYR:CE2  | 18:Y:213:LEU:HD21 | 2.57                     | 0.40              |
| 23:d:180:GLU:HB3  | 23:d:181:GLN:NE2  | 2.36                     | 0.40              |
| 25:f:75:LEU:HD23  | 25:f:75:LEU:HA    | 1.89                     | 0.40              |
| 25:f:257:ARG:HH12 | 25:f:281:ILE:HA   | 1.87                     | 0.40              |
| 25:f:374:SER:HB2  | 25:f:398:TRP:CH2  | 2.49                     | 0.40              |
| 25:f:723:TYR:HB3  | 25:f:761:MET:HG2  | 2.03                     | 0.40              |
| 1:A:224:LEU:HD13  | 28:A:501:ATP:H2'  | 2.04                     | 0.40              |
| 5:E:61:LEU:HB2    | 5:E:70:ILE:HG22   | 2.03                     | 0.40              |
| 14:U:18:GLN:OE1   | 14:U:18:GLN:C     | 2.65                     | 0.40              |
| 14:U:36:ALA:HB1   | 15:V:269:LYS:HB3  | 2.02                     | 0.40              |
| 14:U:124:LYS:HD2  | 14:U:125:PRO:N    | 2.37                     | 0.40              |
| 14:U:181:LEU:O    | 14:U:185:MET:HG2  | 2.22                     | 0.40              |
| 14:U:202:VAL:HG13 | 14:U:216:VAL:HG13 | 2.02                     | 0.40              |
| 15:V:365:GLN:O    | 15:V:369:THR:HG23 | 2.22                     | 0.40              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 16:W:246:HIS:O   | 16:W:250:ILE:HG13 | 2.22                     | 0.40              |
| 19:Z:6:VAL:HG23  | 19:Z:139:ILE:HD12 | 2.04                     | 0.40              |
| 20:a:89:ASP:HA   | 20:a:90:PRO:HD3   | 1.96                     | 0.40              |
| 23:d:269:ASP:OD1 | 23:d:306:ARG:NH1  | 2.55                     | 0.40              |
| 25:f:271:MET:HE2 | 25:f:271:MET:HB3  | 1.81                     | 0.40              |
| 25:f:341:GLU:HA  | 25:f:342:PRO:HD3  | 1.98                     | 0.40              |
| 25:f:494:ARG:HE  | 25:f:494:ARG:HB2  | 1.69                     | 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 PDB entries followed by that with respect to all EM entries.

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     | 393/433 (91%) | 379 (96%)  | 12 (3%) | 2 (0%)   | 25          | 56  |
| 2   | B     | 403/440 (92%) | 391 (97%)  | 12 (3%) | 0        | 100         | 100 |
| 3   | C     | 362/406 (89%) | 355 (98%)  | 7 (2%)  | 0        | 100         | 100 |
| 4   | D     | 378/418 (90%) | 368 (97%)  | 10 (3%) | 0        | 100         | 100 |
| 5   | E     | 352/389 (90%) | 347 (99%)  | 5 (1%)  | 0        | 100         | 100 |
| 6   | F     | 347/439 (79%) | 333 (96%)  | 14 (4%) | 0        | 100         | 100 |
| 7   | G     | 240/246 (98%) | 232 (97%)  | 8 (3%)  | 0        | 100         | 100 |
| 8   | H     | 228/234 (97%) | 226 (99%)  | 2 (1%)  | 0        | 100         | 100 |
| 9   | I     | 231/261 (88%) | 226 (98%)  | 5 (2%)  | 0        | 100         | 100 |
| 10  | J     | 237/248 (96%) | 236 (100%) | 1 (0%)  | 0        | 100         | 100 |
| 11  | K     | 232/241 (96%) | 226 (97%)  | 6 (3%)  | 0        | 100         | 100 |
| 12  | L     | 235/263 (89%) | 229 (97%)  | 6 (3%)  | 0        | 100         | 100 |
| 13  | M     | 238/255 (93%) | 233 (98%)  | 5 (2%)  | 0        | 100         | 100 |
| 14  | U     | 830/953 (87%) | 810 (98%)  | 20 (2%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed         | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|------------------|------------|----------|----------|-------------|-----|
| 15  | V     | 468/534 (88%)    | 460 (98%)  | 8 (2%)   | 0        | 100         | 100 |
| 16  | W     | 436/456 (96%)    | 427 (98%)  | 9 (2%)   | 0        | 100         | 100 |
| 17  | X     | 417/422 (99%)    | 407 (98%)  | 10 (2%)  | 0        | 100         | 100 |
| 18  | Y     | 384/389 (99%)    | 383 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 19  | Z     | 284/324 (88%)    | 280 (99%)  | 4 (1%)   | 0        | 100         | 100 |
| 20  | a     | 371/376 (99%)    | 363 (98%)  | 8 (2%)   | 0        | 100         | 100 |
| 21  | b     | 187/377 (50%)    | 181 (97%)  | 6 (3%)   | 0        | 100         | 100 |
| 22  | c     | 288/424 (68%)    | 286 (99%)  | 2 (1%)   | 0        | 100         | 100 |
| 23  | d     | 263/350 (75%)    | 249 (95%)  | 14 (5%)  | 0        | 100         | 100 |
| 24  | e     | 48/65 (74%)      | 41 (85%)   | 7 (15%)  | 0        | 100         | 100 |
| 25  | f     | 825/908 (91%)    | 802 (97%)  | 23 (3%)  | 0        | 100         | 100 |
| 26  | g     | 89/601 (15%)     | 83 (93%)   | 5 (6%)   | 1 (1%)   | 12          | 37  |
| 27  | u     | 149/289 (52%)    | 139 (93%)  | 10 (7%)  | 0        | 100         | 100 |
| All | All   | 8915/10741 (83%) | 8692 (98%) | 220 (2%) | 3 (0%)   | 100         | 100 |

All (3) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 65  | ILE  |
| 1   | A     | 68  | SER  |
| 26  | g     | 160 | GLN  |

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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     | 340/372 (91%) | 327 (96%) | 13 (4%)  | 28          | 63 |
| 2   | B     | 359/385 (93%) | 354 (99%) | 5 (1%)   | 62          | 86 |
| 3   | C     | 320/352 (91%) | 314 (98%) | 6 (2%)   | 52          | 81 |
| 4   | D     | 333/366 (91%) | 325 (98%) | 8 (2%)   | 44          | 76 |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |    |
|-----|-------|-----------------|------------|----------|-------------|----|
| 5   | E     | 309/341 (91%)   | 303 (98%)  | 6 (2%)   | 52          | 81 |
| 6   | F     | 299/379 (79%)   | 287 (96%)  | 12 (4%)  | 27          | 61 |
| 7   | G     | 206/210 (98%)   | 199 (97%)  | 7 (3%)   | 32          | 67 |
| 8   | H     | 188/191 (98%)   | 186 (99%)  | 2 (1%)   | 70          | 90 |
| 9   | I     | 197/221 (89%)   | 193 (98%)  | 4 (2%)   | 50          | 79 |
| 10  | J     | 203/211 (96%)   | 196 (97%)  | 7 (3%)   | 32          | 67 |
| 11  | K     | 196/203 (97%)   | 190 (97%)  | 6 (3%)   | 35          | 70 |
| 12  | L     | 203/224 (91%)   | 196 (97%)  | 7 (3%)   | 32          | 67 |
| 13  | M     | 198/212 (93%)   | 192 (97%)  | 6 (3%)   | 36          | 71 |
| 14  | U     | 712/816 (87%)   | 695 (98%)  | 17 (2%)  | 44          | 76 |
| 15  | V     | 415/460 (90%)   | 402 (97%)  | 13 (3%)  | 35          | 70 |
| 16  | W     | 403/416 (97%)   | 395 (98%)  | 8 (2%)   | 50          | 79 |
| 17  | X     | 361/362 (100%)  | 360 (100%) | 1 (0%)   | 91          | 97 |
| 18  | Y     | 341/344 (99%)   | 339 (99%)  | 2 (1%)   | 84          | 95 |
| 19  | Z     | 258/295 (88%)   | 252 (98%)  | 6 (2%)   | 45          | 77 |
| 20  | a     | 333/336 (99%)   | 324 (97%)  | 9 (3%)   | 40          | 73 |
| 21  | b     | 166/312 (53%)   | 162 (98%)  | 4 (2%)   | 44          | 76 |
| 22  | c     | 255/359 (71%)   | 249 (98%)  | 6 (2%)   | 44          | 76 |
| 23  | d     | 235/294 (80%)   | 231 (98%)  | 4 (2%)   | 56          | 83 |
| 24  | e     | 44/58 (76%)     | 42 (96%)   | 2 (4%)   | 23          | 56 |
| 25  | f     | 701/763 (92%)   | 683 (97%)  | 18 (3%)  | 41          | 74 |
| 26  | g     | 81/527 (15%)    | 79 (98%)   | 2 (2%)   | 42          | 75 |
| 27  | u     | 138/253 (54%)   | 130 (94%)  | 8 (6%)   | 17          | 46 |
| All | All   | 7794/9262 (84%) | 7605 (98%) | 189 (2%) | 45          | 76 |

All (189) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 45  | ILE  |
| 1   | A     | 62  | LEU  |
| 1   | A     | 65  | ILE  |
| 1   | A     | 66  | LYS  |
| 1   | A     | 145 | ASN  |
| 1   | A     | 184 | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 191 | VAL  |
| 1   | A     | 192 | GLU  |
| 1   | A     | 196 | LEU  |
| 1   | A     | 267 | LYS  |
| 1   | A     | 292 | ASP  |
| 1   | A     | 303 | ILE  |
| 1   | A     | 407 | LYS  |
| 2   | B     | 35  | LYS  |
| 2   | B     | 125 | THR  |
| 2   | B     | 145 | GLU  |
| 2   | B     | 294 | ARG  |
| 2   | B     | 424 | GLU  |
| 3   | C     | 39  | SER  |
| 3   | C     | 109 | THR  |
| 3   | C     | 140 | VAL  |
| 3   | C     | 273 | MET  |
| 3   | C     | 280 | LEU  |
| 3   | C     | 362 | VAL  |
| 4   | D     | 60  | TYR  |
| 4   | D     | 85  | ILE  |
| 4   | D     | 119 | ILE  |
| 4   | D     | 231 | VAL  |
| 4   | D     | 309 | MET  |
| 4   | D     | 328 | ASP  |
| 4   | D     | 366 | ARG  |
| 4   | D     | 390 | ASN  |
| 5   | E     | 157 | GLU  |
| 5   | E     | 187 | VAL  |
| 5   | E     | 251 | ARG  |
| 5   | E     | 314 | LYS  |
| 5   | E     | 352 | MET  |
| 5   | E     | 360 | ASP  |
| 6   | F     | 70  | LYS  |
| 6   | F     | 127 | SER  |
| 6   | F     | 153 | VAL  |
| 6   | F     | 159 | LEU  |
| 6   | F     | 183 | GLU  |
| 6   | F     | 215 | LEU  |
| 6   | F     | 225 | MET  |
| 6   | F     | 250 | LYS  |
| 6   | F     | 263 | ASP  |
| 6   | F     | 345 | SER  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 6   | F     | 356 | MET  |
| 6   | F     | 408 | LEU  |
| 7   | G     | 61  | LEU  |
| 7   | G     | 78  | CYS  |
| 7   | G     | 112 | ASP  |
| 7   | G     | 174 | GLU  |
| 7   | G     | 221 | THR  |
| 7   | G     | 231 | THR  |
| 7   | G     | 242 | LEU  |
| 8   | H     | 23  | GLU  |
| 8   | H     | 204 | THR  |
| 9   | I     | 43  | VAL  |
| 9   | I     | 62  | SER  |
| 9   | I     | 92  | LEU  |
| 9   | I     | 118 | LYS  |
| 10  | J     | 11  | SER  |
| 10  | J     | 24  | GLU  |
| 10  | J     | 47  | LYS  |
| 10  | J     | 53  | LEU  |
| 10  | J     | 59  | VAL  |
| 10  | J     | 98  | VAL  |
| 10  | J     | 148 | ASP  |
| 11  | K     | 89  | ILE  |
| 11  | K     | 108 | THR  |
| 11  | K     | 119 | LEU  |
| 11  | K     | 197 | SER  |
| 11  | K     | 213 | THR  |
| 11  | K     | 217 | LEU  |
| 12  | L     | 4   | ASN  |
| 12  | L     | 14  | SER  |
| 12  | L     | 45  | VAL  |
| 12  | L     | 106 | SER  |
| 12  | L     | 112 | ILE  |
| 12  | L     | 206 | THR  |
| 12  | L     | 220 | GLU  |
| 13  | M     | 13  | THR  |
| 13  | M     | 34  | SER  |
| 13  | M     | 41  | CYS  |
| 13  | M     | 54  | LEU  |
| 13  | M     | 69  | VAL  |
| 13  | M     | 220 | THR  |
| 14  | U     | 112 | CYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 14  | U     | 131 | GLU  |
| 14  | U     | 133 | ILE  |
| 14  | U     | 151 | ILE  |
| 14  | U     | 167 | ILE  |
| 14  | U     | 187 | LEU  |
| 14  | U     | 232 | ILE  |
| 14  | U     | 340 | GLN  |
| 14  | U     | 348 | THR  |
| 14  | U     | 354 | LYS  |
| 14  | U     | 362 | ASN  |
| 14  | U     | 364 | VAL  |
| 14  | U     | 389 | ASN  |
| 14  | U     | 403 | THR  |
| 14  | U     | 474 | ARG  |
| 14  | U     | 678 | ASP  |
| 14  | U     | 891 | VAL  |
| 15  | V     | 79  | VAL  |
| 15  | V     | 96  | ARG  |
| 15  | V     | 106 | ARG  |
| 15  | V     | 118 | GLN  |
| 15  | V     | 227 | VAL  |
| 15  | V     | 234 | ARG  |
| 15  | V     | 272 | SER  |
| 15  | V     | 381 | GLN  |
| 15  | V     | 466 | ILE  |
| 15  | V     | 469 | THR  |
| 15  | V     | 485 | ASP  |
| 15  | V     | 494 | MET  |
| 15  | V     | 519 | LEU  |
| 16  | W     | 76  | GLU  |
| 16  | W     | 104 | MET  |
| 16  | W     | 118 | LEU  |
| 16  | W     | 130 | MET  |
| 16  | W     | 160 | LYS  |
| 16  | W     | 259 | GLU  |
| 16  | W     | 417 | ARG  |
| 16  | W     | 436 | MET  |
| 17  | X     | 242 | ILE  |
| 18  | Y     | 50  | MET  |
| 18  | Y     | 138 | LEU  |
| 19  | Z     | 29  | VAL  |
| 19  | Z     | 131 | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 19  | Z     | 159 | THR  |
| 19  | Z     | 178 | ASP  |
| 19  | Z     | 229 | GLN  |
| 19  | Z     | 269 | VAL  |
| 20  | a     | 74  | LEU  |
| 20  | a     | 86  | GLN  |
| 20  | a     | 91  | ASN  |
| 20  | a     | 123 | LEU  |
| 20  | a     | 135 | ILE  |
| 20  | a     | 161 | LYS  |
| 20  | a     | 171 | SER  |
| 20  | a     | 287 | ASN  |
| 20  | a     | 336 | VAL  |
| 21  | b     | 6   | THR  |
| 21  | b     | 37  | CYS  |
| 21  | b     | 124 | LEU  |
| 21  | b     | 138 | VAL  |
| 22  | c     | 97  | ASP  |
| 22  | c     | 99  | LEU  |
| 22  | c     | 106 | GLU  |
| 22  | c     | 223 | LYS  |
| 22  | c     | 257 | LYS  |
| 22  | c     | 303 | MET  |
| 23  | d     | 119 | LEU  |
| 23  | d     | 224 | VAL  |
| 23  | d     | 236 | LEU  |
| 23  | d     | 348 | MET  |
| 24  | e     | 21  | GLU  |
| 24  | e     | 50  | ASP  |
| 25  | f     | 68  | THR  |
| 25  | f     | 113 | MET  |
| 25  | f     | 179 | VAL  |
| 25  | f     | 190 | GLU  |
| 25  | f     | 246 | SER  |
| 25  | f     | 372 | LEU  |
| 25  | f     | 399 | LEU  |
| 25  | f     | 429 | ILE  |
| 25  | f     | 496 | ASP  |
| 25  | f     | 525 | ILE  |
| 25  | f     | 657 | ILE  |
| 25  | f     | 666 | ILE  |
| 25  | f     | 705 | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 25  | f     | 706 | ILE  |
| 25  | f     | 731 | MET  |
| 25  | f     | 848 | GLN  |
| 25  | f     | 861 | THR  |
| 25  | f     | 898 | VAL  |
| 26  | g     | 87  | VAL  |
| 26  | g     | 147 | VAL  |
| 27  | u     | 168 | THR  |
| 27  | u     | 171 | PHE  |
| 27  | u     | 182 | PHE  |
| 27  | u     | 192 | LYS  |
| 27  | u     | 198 | ILE  |
| 27  | u     | 225 | ILE  |
| 27  | u     | 231 | VAL  |
| 27  | u     | 236 | VAL  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (75) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 85  | GLN  |
| 2   | B     | 82  | GLN  |
| 3   | C     | 41  | ASN  |
| 3   | C     | 64  | GLN  |
| 4   | D     | 65  | GLN  |
| 4   | D     | 110 | ASN  |
| 4   | D     | 340 | GLN  |
| 4   | D     | 390 | ASN  |
| 5   | E     | 55  | GLN  |
| 5   | E     | 75  | ASN  |
| 5   | E     | 254 | GLN  |
| 6   | F     | 92  | ASN  |
| 6   | F     | 243 | GLN  |
| 6   | F     | 307 | GLN  |
| 6   | F     | 321 | GLN  |
| 6   | F     | 333 | ASN  |
| 6   | F     | 395 | GLN  |
| 7   | G     | 150 | GLN  |
| 7   | G     | 224 | ASN  |
| 8   | H     | 71  | HIS  |
| 8   | H     | 148 | GLN  |
| 9   | I     | 167 | ASN  |
| 11  | K     | 152 | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 11  | K     | 221 | GLN  |
| 12  | L     | 4   | ASN  |
| 12  | L     | 185 | ASN  |
| 14  | U     | 58  | GLN  |
| 14  | U     | 373 | ASN  |
| 14  | U     | 389 | ASN  |
| 14  | U     | 398 | ASN  |
| 14  | U     | 500 | ASN  |
| 14  | U     | 647 | HIS  |
| 14  | U     | 743 | ASN  |
| 14  | U     | 749 | GLN  |
| 14  | U     | 874 | ASN  |
| 15  | V     | 81  | GLN  |
| 15  | V     | 124 | ASN  |
| 15  | V     | 247 | GLN  |
| 15  | V     | 299 | GLN  |
| 15  | V     | 319 | HIS  |
| 15  | V     | 347 | GLN  |
| 16  | W     | 41  | GLN  |
| 16  | W     | 86  | ASN  |
| 16  | W     | 96  | GLN  |
| 17  | X     | 207 | GLN  |
| 18  | Y     | 160 | ASN  |
| 18  | Y     | 178 | ASN  |
| 19  | Z     | 44  | GLN  |
| 19  | Z     | 77  | ASN  |
| 19  | Z     | 102 | HIS  |
| 19  | Z     | 224 | HIS  |
| 20  | a     | 36  | GLN  |
| 20  | a     | 40  | GLN  |
| 20  | a     | 46  | GLN  |
| 20  | a     | 212 | ASN  |
| 20  | a     | 231 | GLN  |
| 20  | a     | 241 | ASN  |
| 20  | a     | 244 | ASN  |
| 21  | b     | 27  | GLN  |
| 21  | b     | 104 | ASN  |
| 22  | c     | 101 | GLN  |
| 22  | c     | 199 | HIS  |
| 22  | c     | 214 | GLN  |
| 23  | d     | 181 | GLN  |
| 23  | d     | 189 | HIS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 23  | d     | 195 | ASN  |
| 23  | d     | 209 | HIS  |
| 23  | d     | 322 | GLN  |
| 25  | f     | 195 | ASN  |
| 25  | f     | 355 | ASN  |
| 25  | f     | 378 | ASN  |
| 25  | f     | 611 | GLN  |
| 25  | f     | 619 | HIS  |
| 25  | f     | 855 | GLN  |
| 26  | g     | 150 | ASN  |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry ⓘ

Of 13 ligands modelled in this entry, 7 are monoatomic - leaving 6 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 | $\# Z  > 2$ |
| 28  | ATP  | F     | 501 | 29   | 28,33,33     | 0.63 | 0           | 34,52,52    | 0.64 | 1 (2%)      |
| 28  | ATP  | E     | 402 | 29   | 28,33,33     | 0.63 | 0           | 34,52,52    | 0.65 | 1 (2%)      |
| 30  | ADP  | C     | 501 | 29   | 24,29,29     | 0.86 | 0           | 29,45,45    | 1.19 | 2 (6%)      |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 28  | ATP  | A     | 501 | 29   | 28,33,33     | 0.65 | 0        | 34,52,52    | 0.63 | 1 (2%)   |
| 28  | ATP  | D     | 501 | 29   | 28,33,33     | 0.64 | 0        | 34,52,52    | 0.70 | 1 (2%)   |
| 28  | ATP  | B     | 501 | 29   | 28,33,33     | 0.64 | 0        | 34,52,52    | 0.61 | 1 (2%)   |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|-----|------|---------|------------|---------|
| 28  | ATP  | F     | 501 | 29   | -       | 4/18/38/38 | 0/3/3/3 |
| 28  | ATP  | E     | 402 | 29   | -       | 4/18/38/38 | 0/3/3/3 |
| 30  | ADP  | C     | 501 | 29   | -       | 5/12/32/32 | 0/3/3/3 |
| 28  | ATP  | A     | 501 | 29   | -       | 5/18/38/38 | 0/3/3/3 |
| 28  | ATP  | D     | 501 | 29   | -       | 5/18/38/38 | 0/3/3/3 |
| 28  | ATP  | B     | 501 | 29   | -       | 5/18/38/38 | 0/3/3/3 |

There are no bond length outliers.

All (7) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 30  | C     | 501 | ADP  | N3-C2-N1 | -3.61 | 123.77      | 128.67   |
| 30  | C     | 501 | ADP  | C4-C5-N7 | -2.53 | 106.66      | 109.34   |
| 28  | F     | 501 | ATP  | C5-C6-N6 | 2.34  | 123.87      | 120.31   |
| 28  | E     | 402 | ATP  | C5-C6-N6 | 2.33  | 123.86      | 120.31   |
| 28  | B     | 501 | ATP  | C5-C6-N6 | 2.32  | 123.84      | 120.31   |
| 28  | A     | 501 | ATP  | C5-C6-N6 | 2.31  | 123.83      | 120.31   |
| 28  | D     | 501 | ATP  | C5-C6-N6 | 2.28  | 123.79      | 120.31   |

There are no chirality outliers.

All (28) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 28  | B     | 501 | ATP  | PB-O3B-PG-O2G   |
| 28  | B     | 501 | ATP  | C5'-O5'-PA-O1A  |
| 28  | B     | 501 | ATP  | C5'-O5'-PA-O2A  |
| 28  | B     | 501 | ATP  | C5'-O5'-PA-O3A  |
| 28  | D     | 501 | ATP  | C5'-O5'-PA-O1A  |
| 28  | D     | 501 | ATP  | O4'-C4'-C5'-O5' |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 28  | F     | 501 | ATP  | C5'-O5'-PA-O2A  |
| 30  | C     | 501 | ADP  | C5'-O5'-PA-O1A  |
| 30  | C     | 501 | ADP  | C5'-O5'-PA-O2A  |
| 30  | C     | 501 | ADP  | C5'-O5'-PA-O3A  |
| 28  | D     | 501 | ATP  | C3'-C4'-C5'-O5' |
| 30  | C     | 501 | ADP  | O4'-C4'-C5'-O5' |
| 28  | A     | 501 | ATP  | O4'-C4'-C5'-O5' |
| 28  | E     | 402 | ATP  | PB-O3B-PG-O1G   |
| 30  | C     | 501 | ADP  | C3'-C4'-C5'-O5' |
| 28  | E     | 402 | ATP  | PB-O3B-PG-O2G   |
| 28  | A     | 501 | ATP  | C3'-C4'-C5'-O5' |
| 28  | F     | 501 | ATP  | C5'-O5'-PA-O1A  |
| 28  | E     | 402 | ATP  | PG-O3B-PB-O2B   |
| 28  | A     | 501 | ATP  | C4'-C5'-O5'-PA  |
| 28  | B     | 501 | ATP  | C4'-C5'-O5'-PA  |
| 28  | D     | 501 | ATP  | PA-O3A-PB-O1B   |
| 28  | E     | 402 | ATP  | O4'-C4'-C5'-O5' |
| 28  | D     | 501 | ATP  | PA-O3A-PB-O2B   |
| 28  | F     | 501 | ATP  | PA-O3A-PB-O1B   |
| 28  | F     | 501 | ATP  | PA-O3A-PB-O2B   |
| 28  | A     | 501 | ATP  | PG-O3B-PB-O1B   |
| 28  | A     | 501 | ATP  | PG-O3B-PB-O2B   |

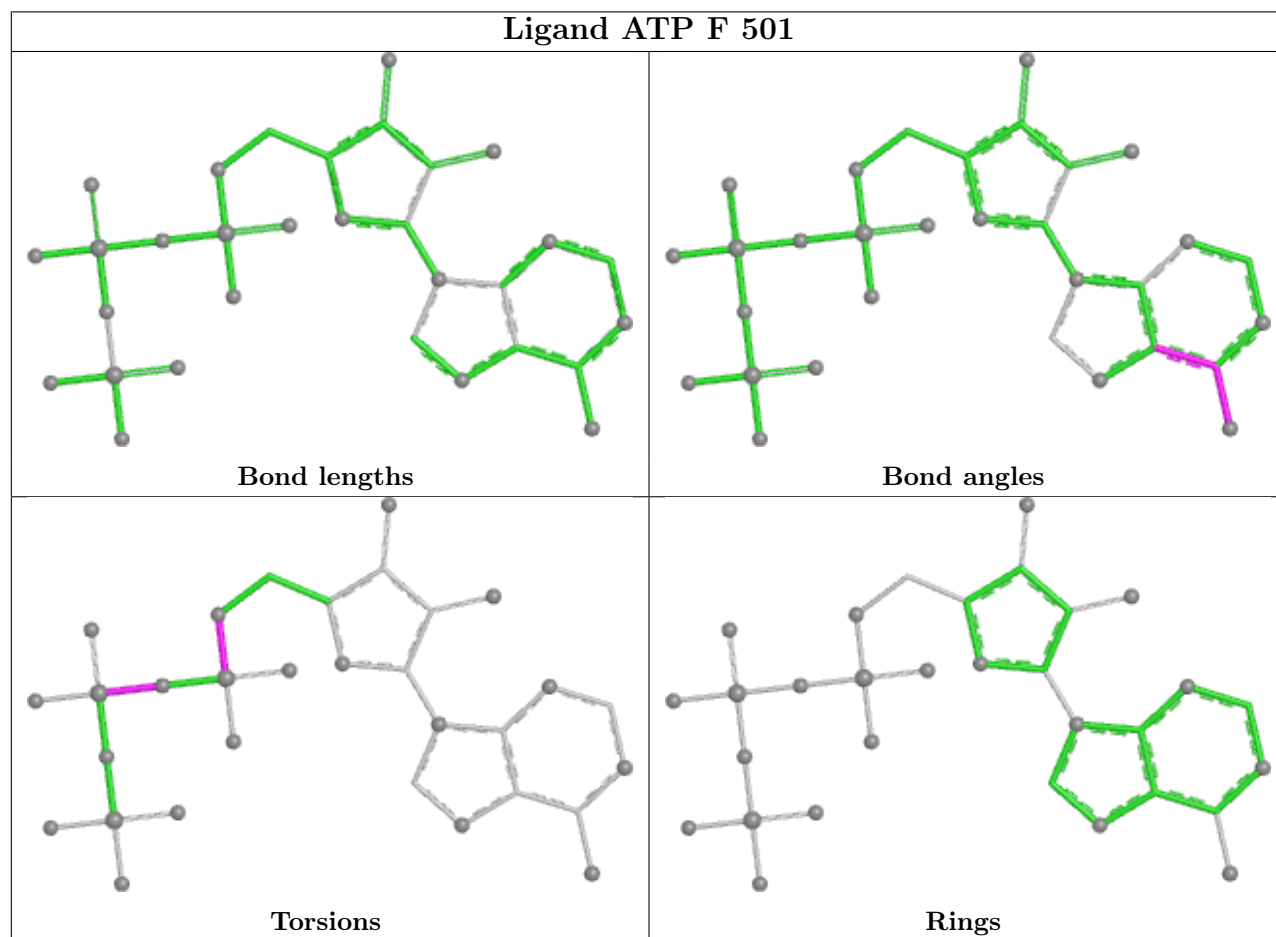
There are no ring outliers.

6 monomers are involved in 14 short contacts:

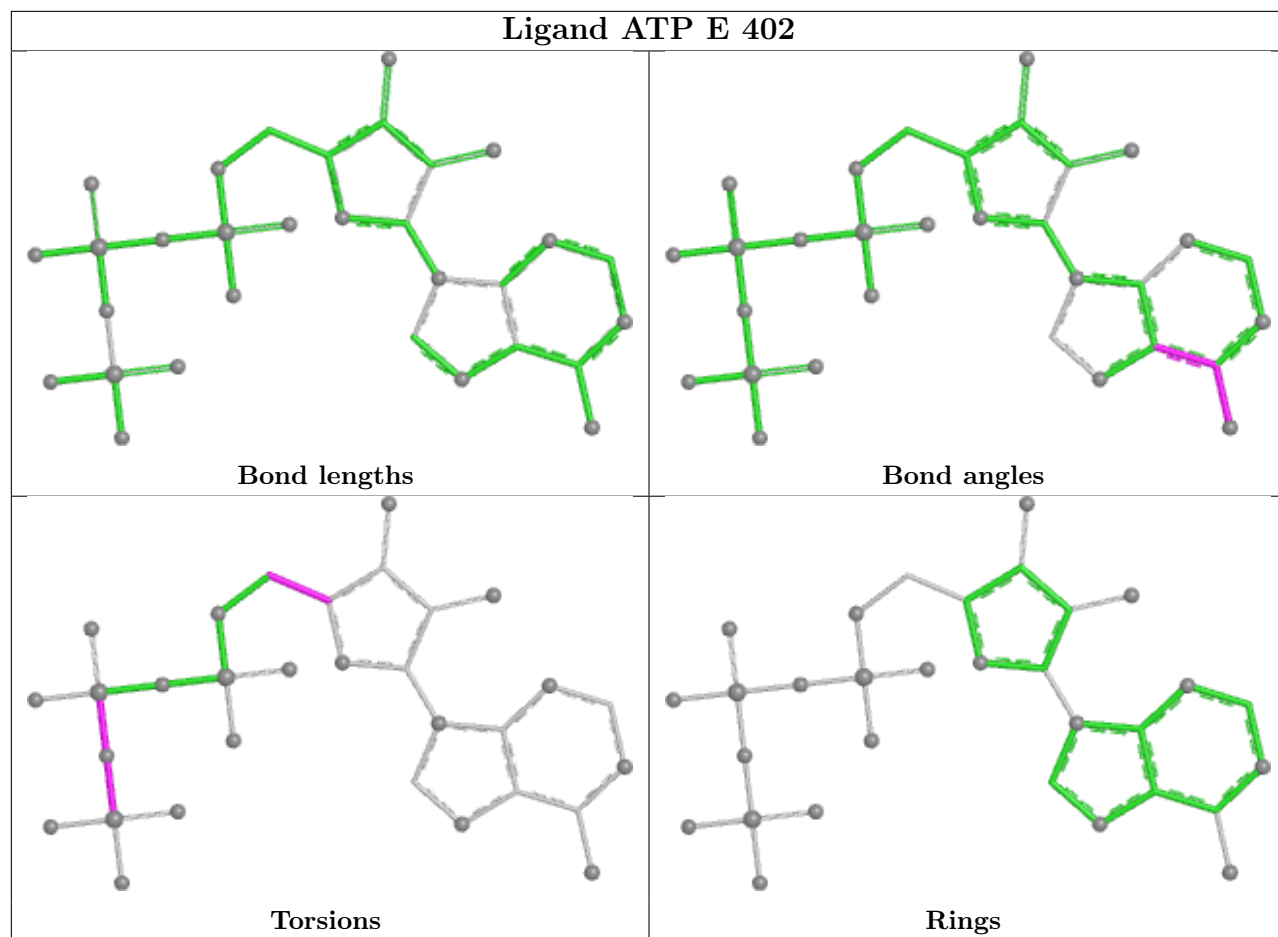
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 28  | F     | 501 | ATP  | 4       | 0            |
| 28  | E     | 402 | ATP  | 2       | 0            |
| 30  | C     | 501 | ADP  | 1       | 0            |
| 28  | A     | 501 | ATP  | 1       | 0            |
| 28  | D     | 501 | ATP  | 4       | 0            |
| 28  | B     | 501 | ATP  | 2       | 0            |

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

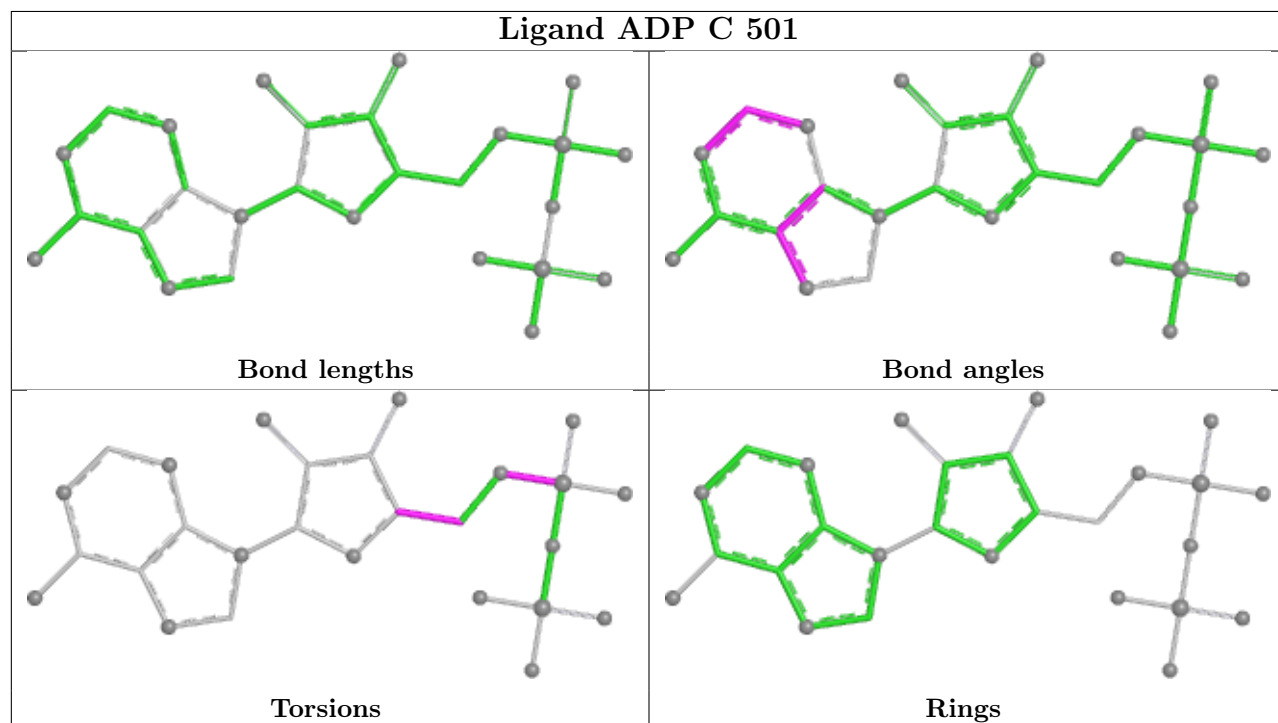
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

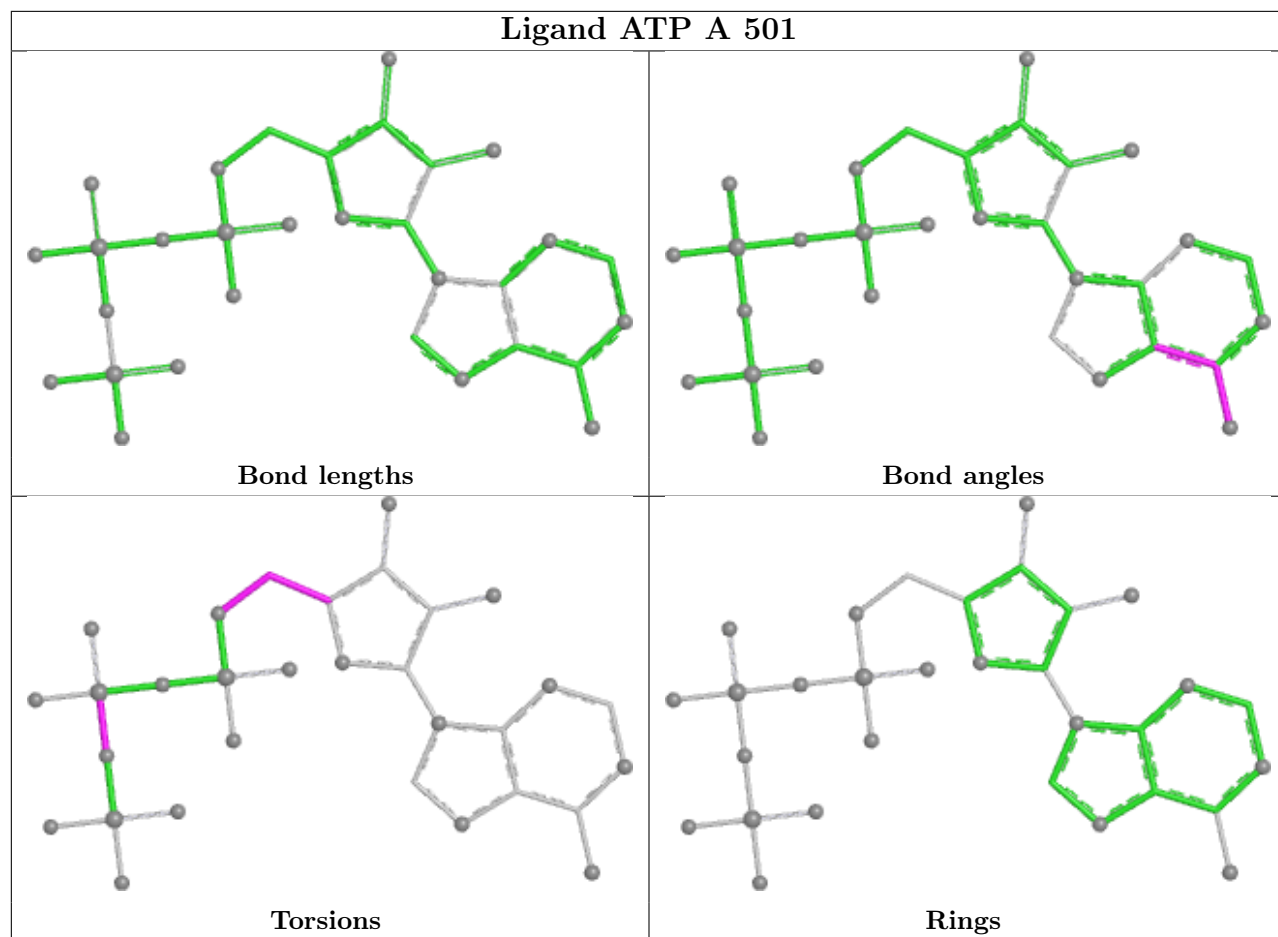


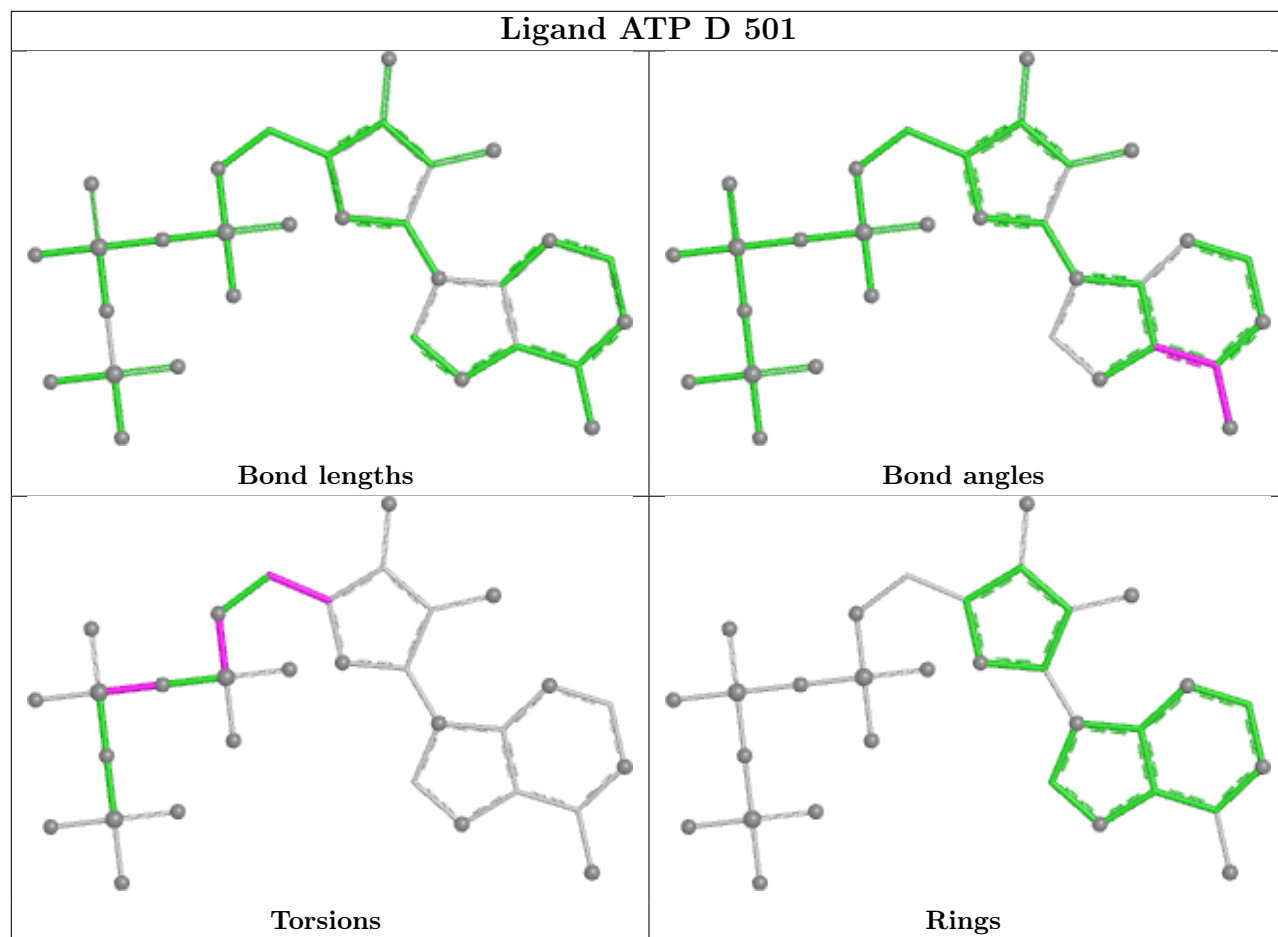
## Ligand ATP E 402

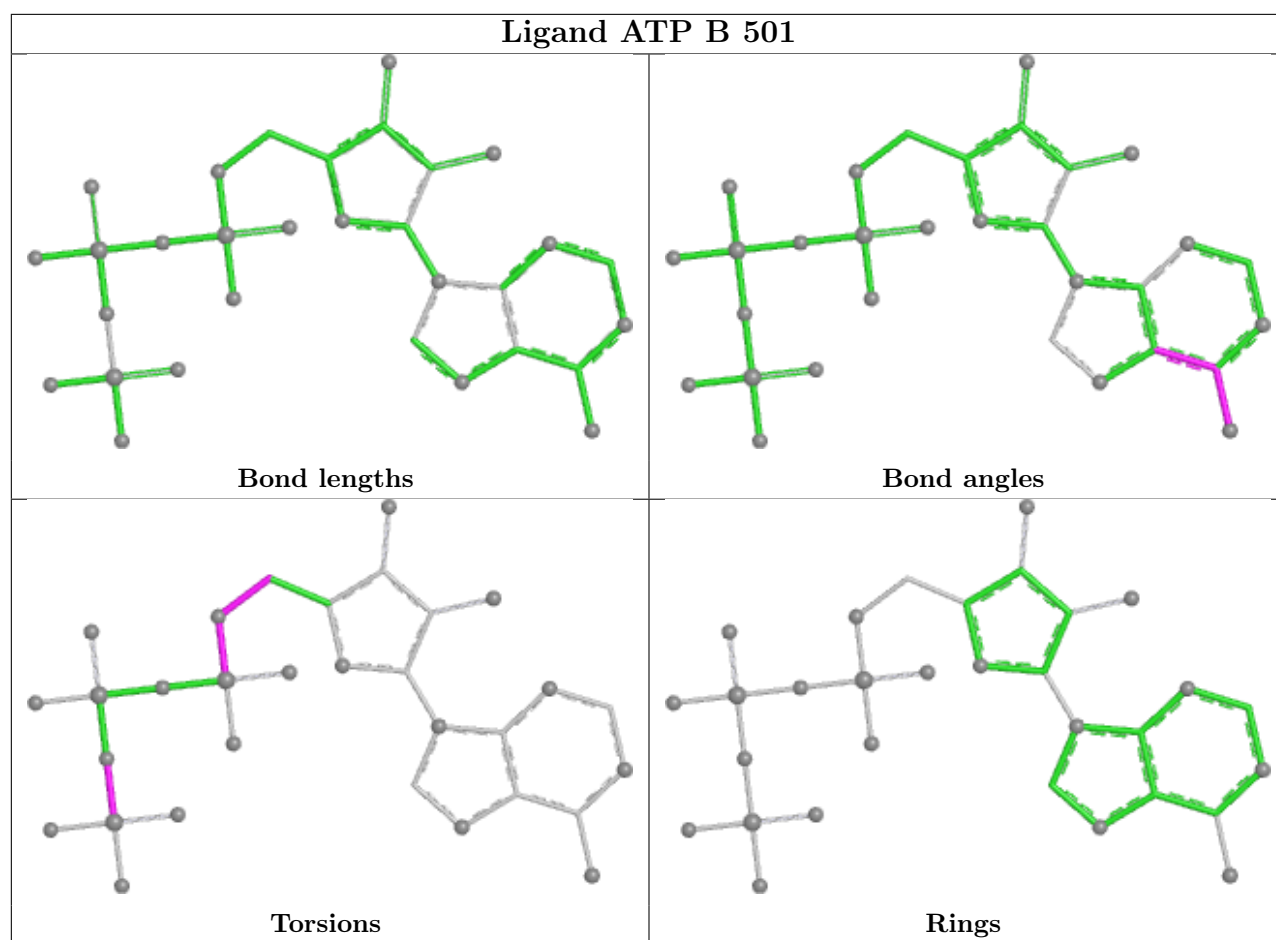


## Ligand ADP C 501









## 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.

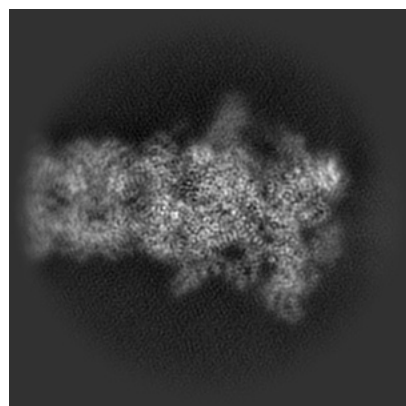
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-47720. These allow visual inspection of the internal detail of the map and identification of artifacts.

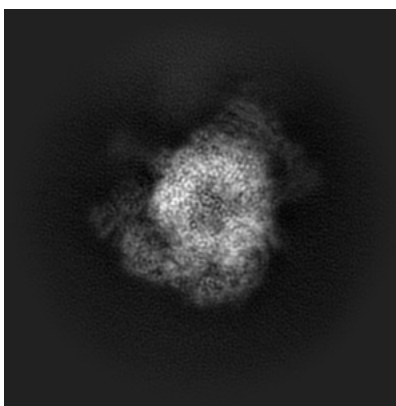
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

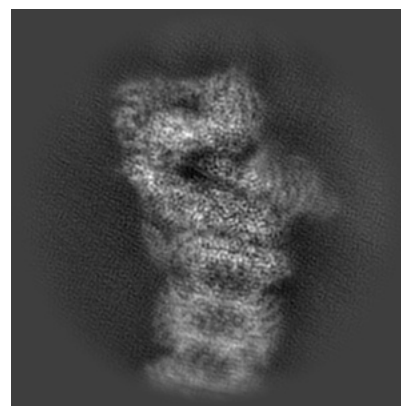
#### 6.1.1 Primary map



X

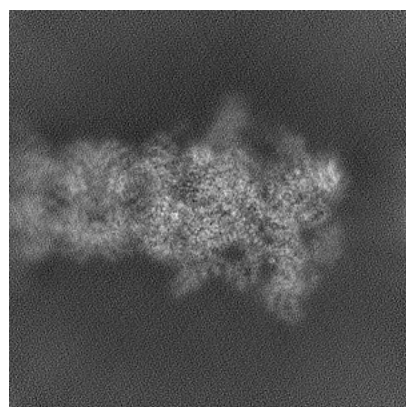


Y

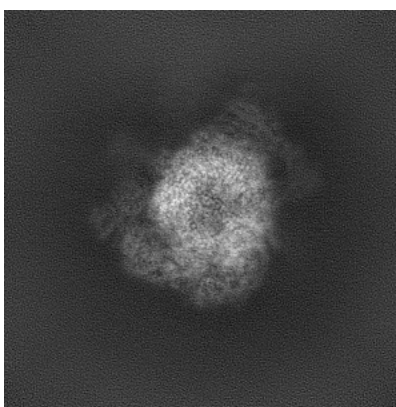


Z

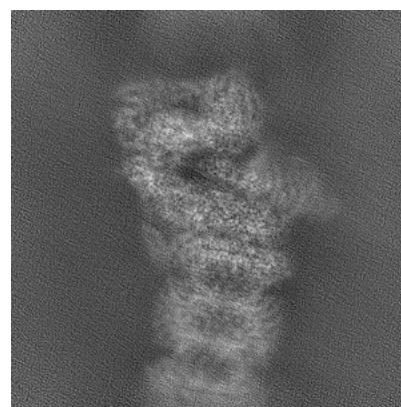
#### 6.1.2 Raw map



X



Y

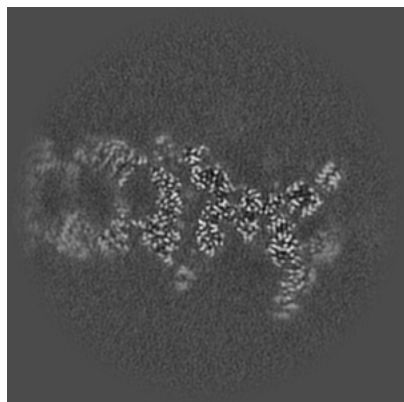


Z

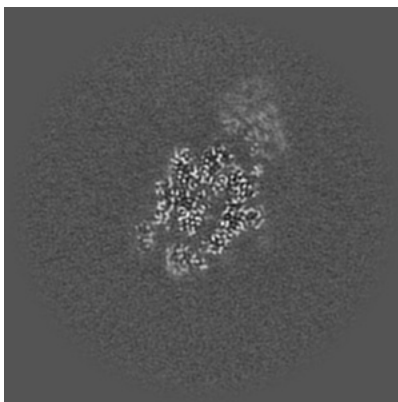
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

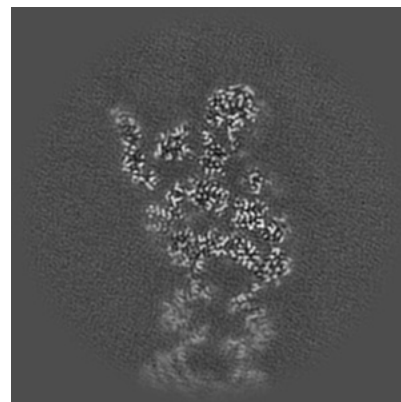
### 6.2.1 Primary map



X Index: 170

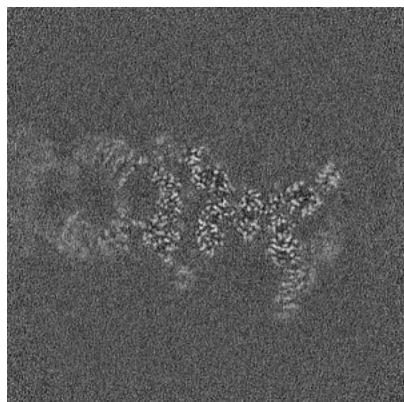


Y Index: 170

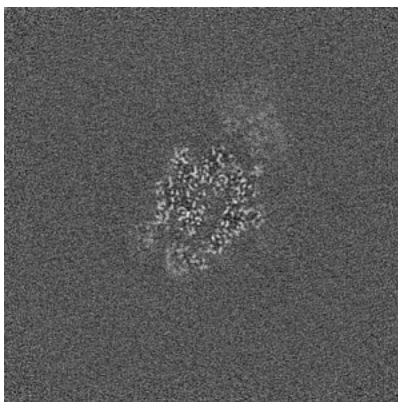


Z Index: 170

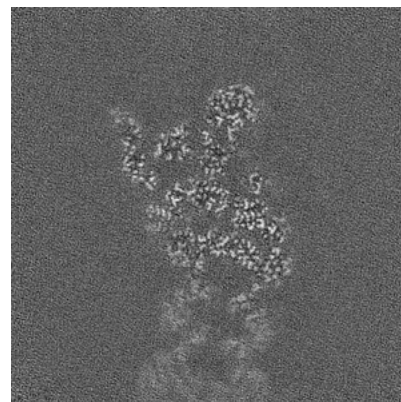
### 6.2.2 Raw map



X Index: 170



Y Index: 170

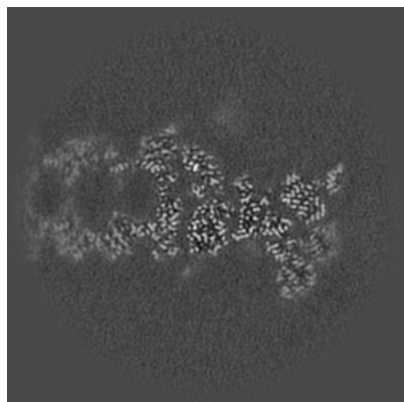


Z Index: 170

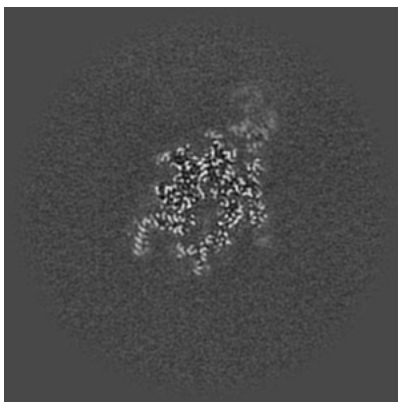
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

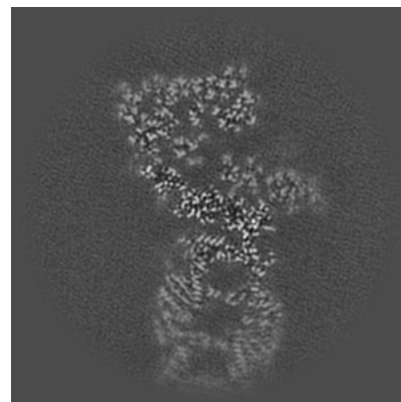
### 6.3.1 Primary map



X Index: 178

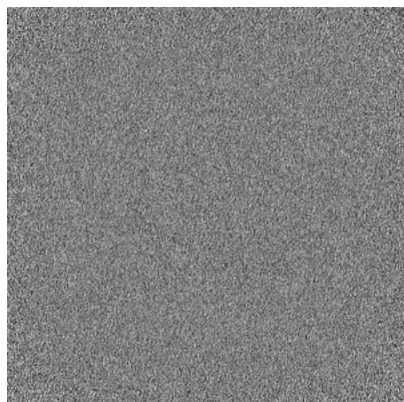


Y Index: 164

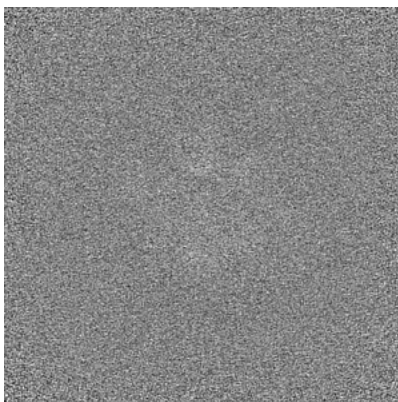


Z Index: 192

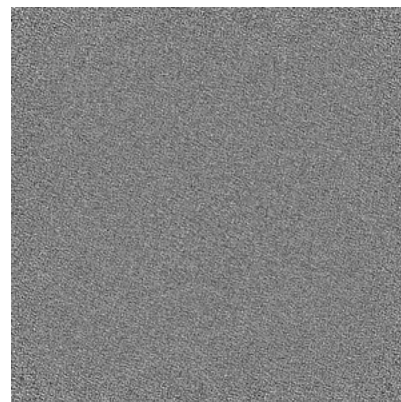
### 6.3.2 Raw map



X Index: 0



Y Index: 0

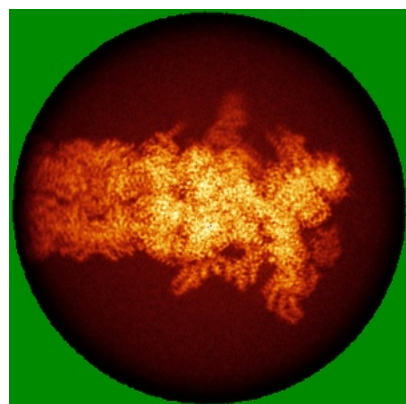


Z Index: 0

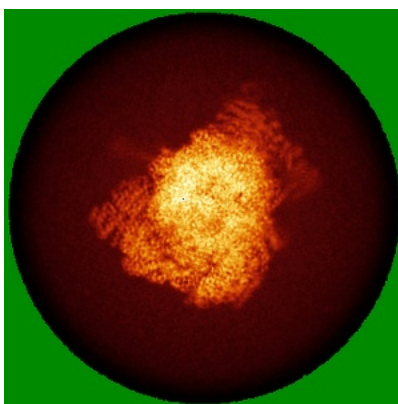
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

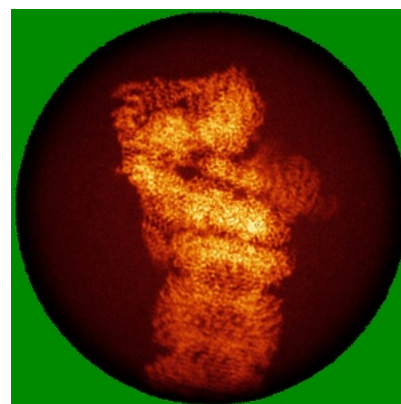
### 6.4.1 Primary map



X

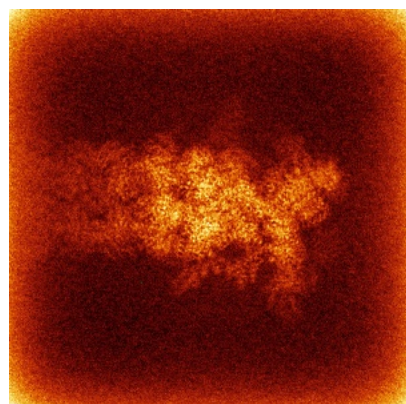


Y

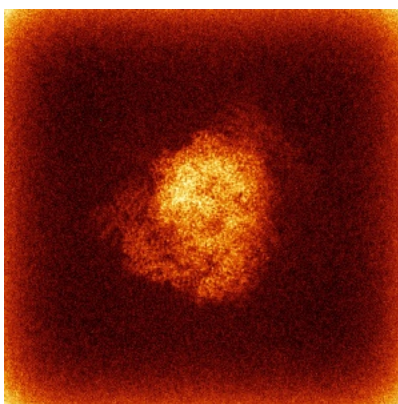


Z

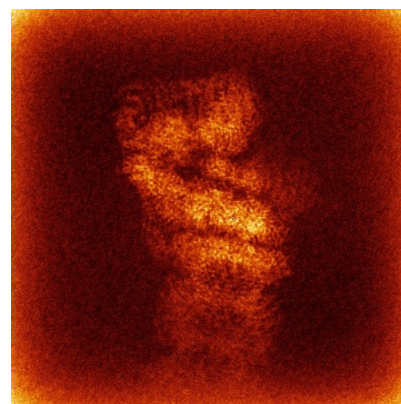
### 6.4.2 Raw map



X



Y

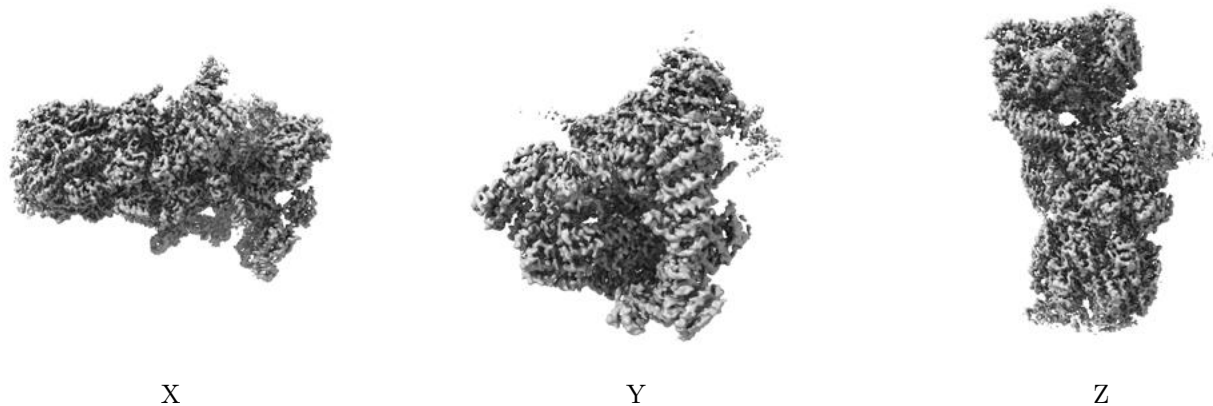


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

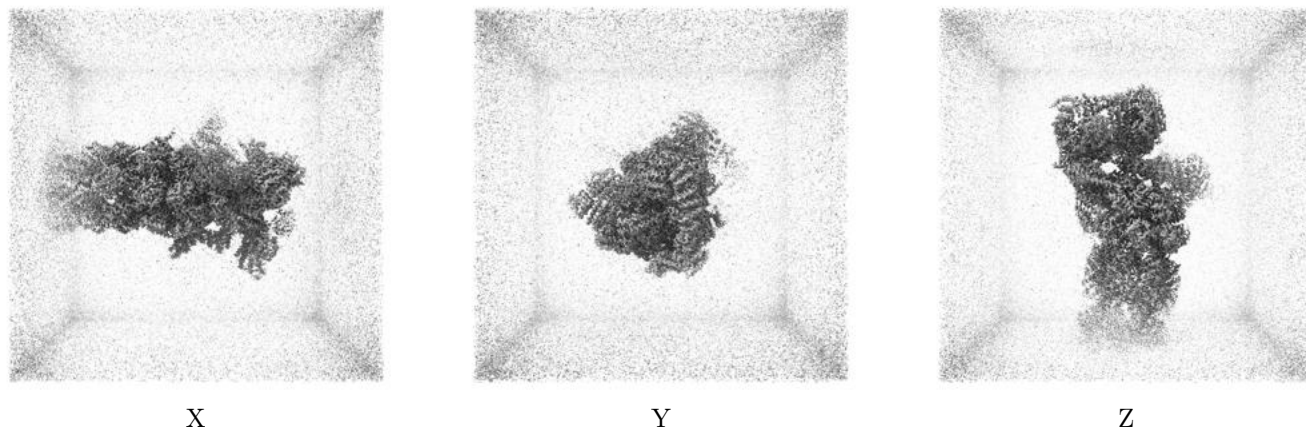
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.15. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

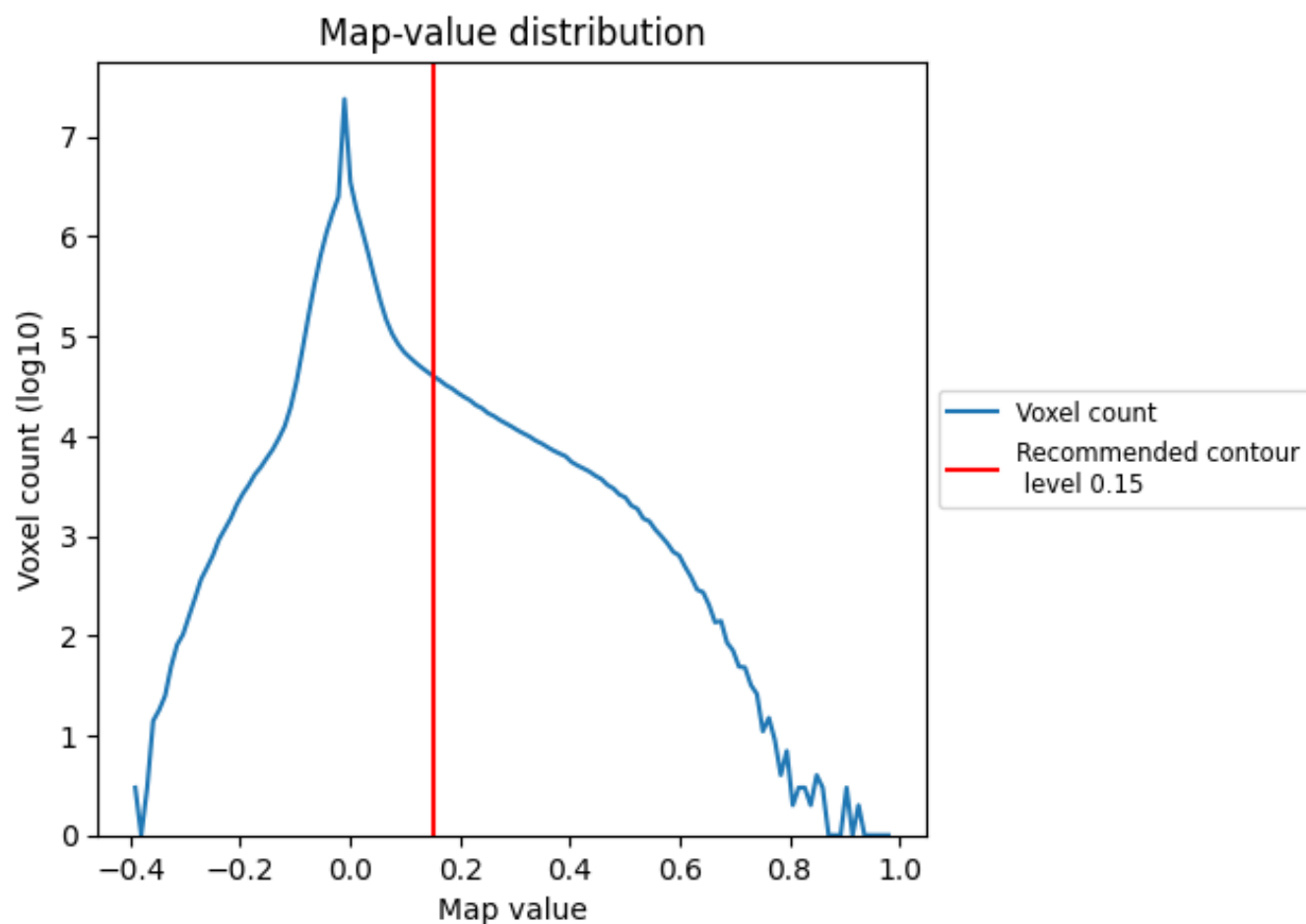
## 6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

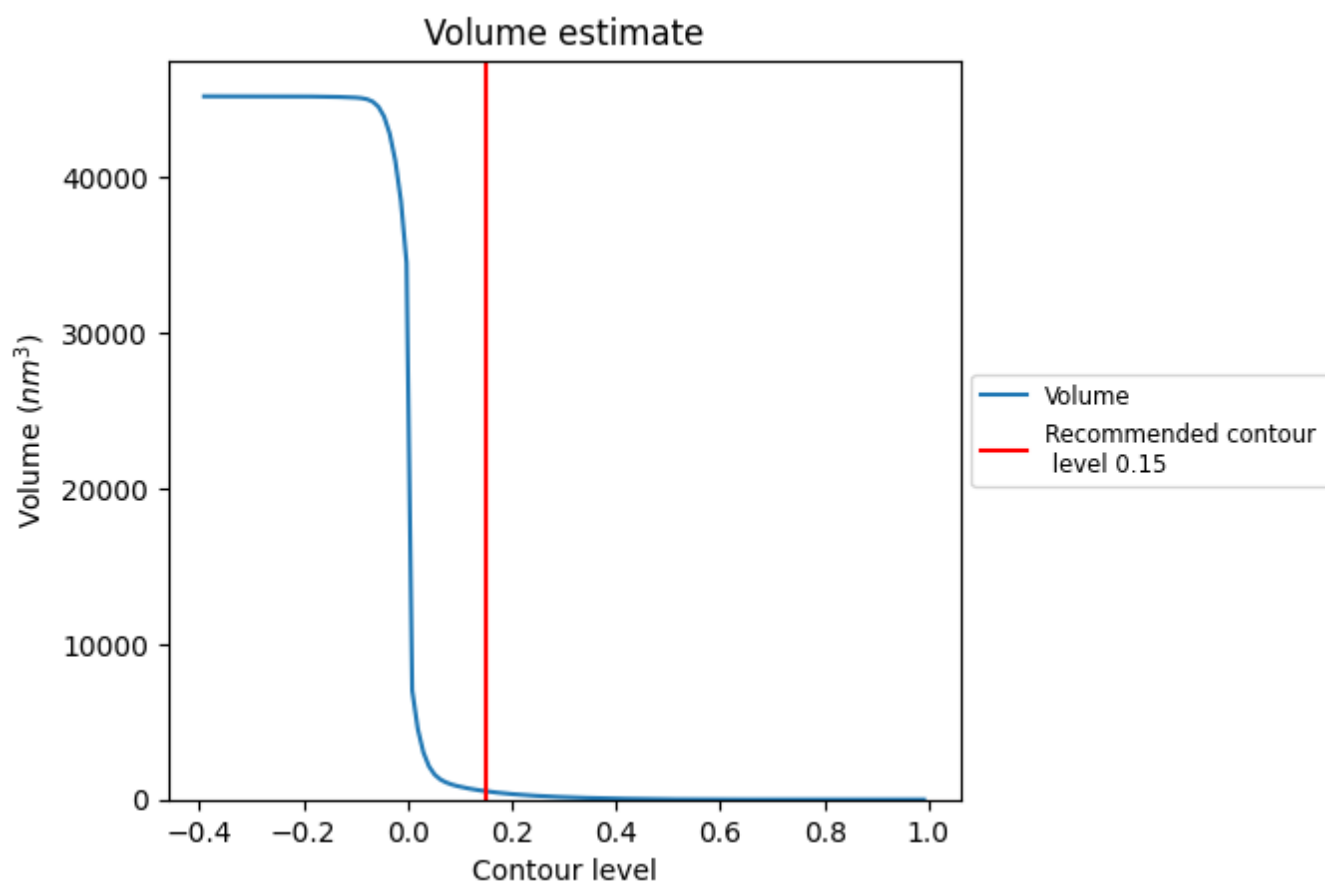
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

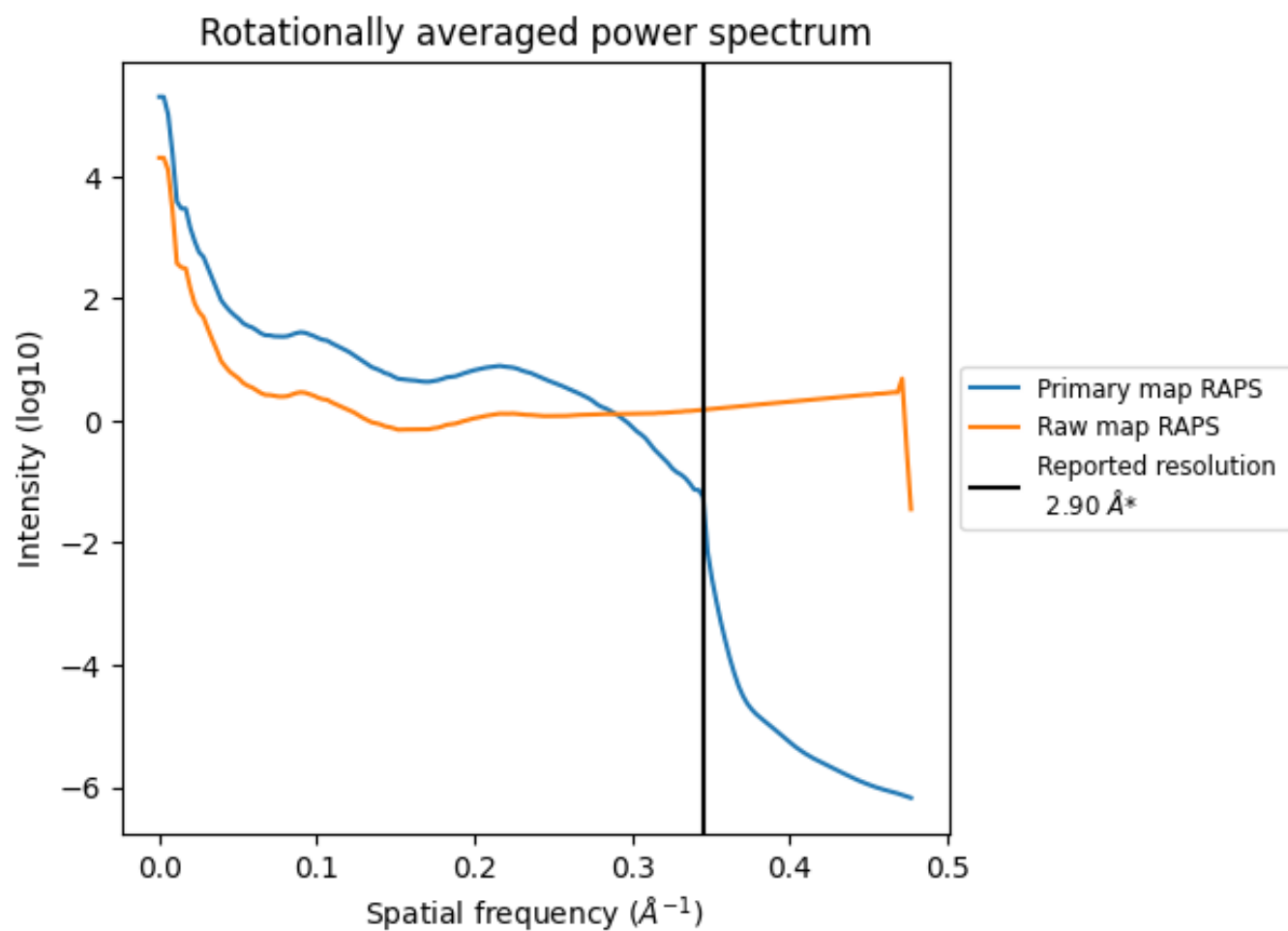
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 536  $\text{nm}^3$ ; this corresponds to an approximate mass of 484 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum ⓘ

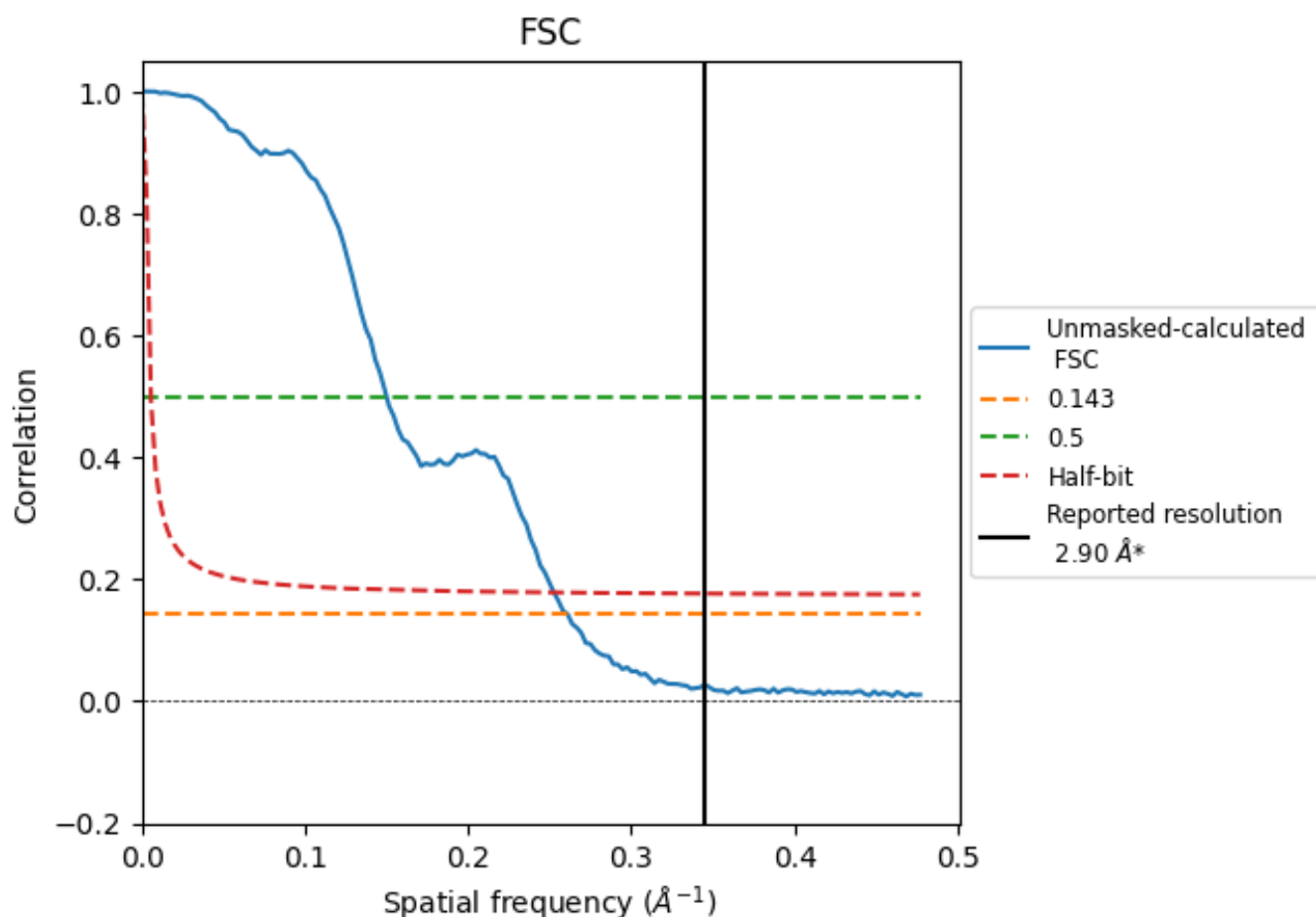


\*Reported resolution corresponds to spatial frequency of 0.345 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.345  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

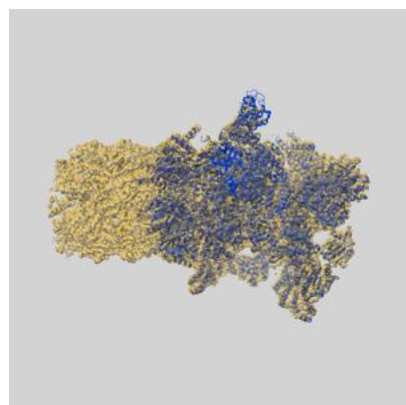
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 2.90                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 3.83                               | 6.67 | 3.96     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.83 differs from the reported value 2.9 by more than 10 %

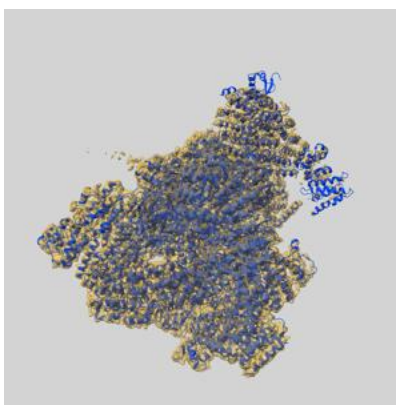
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-47720 and PDB model 9E8H. Per-residue inclusion information can be found in [section 3](#) on [page 13](#).

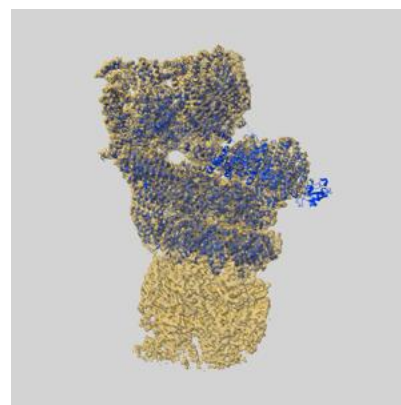
### 9.1 Map-model overlay [i](#)



X



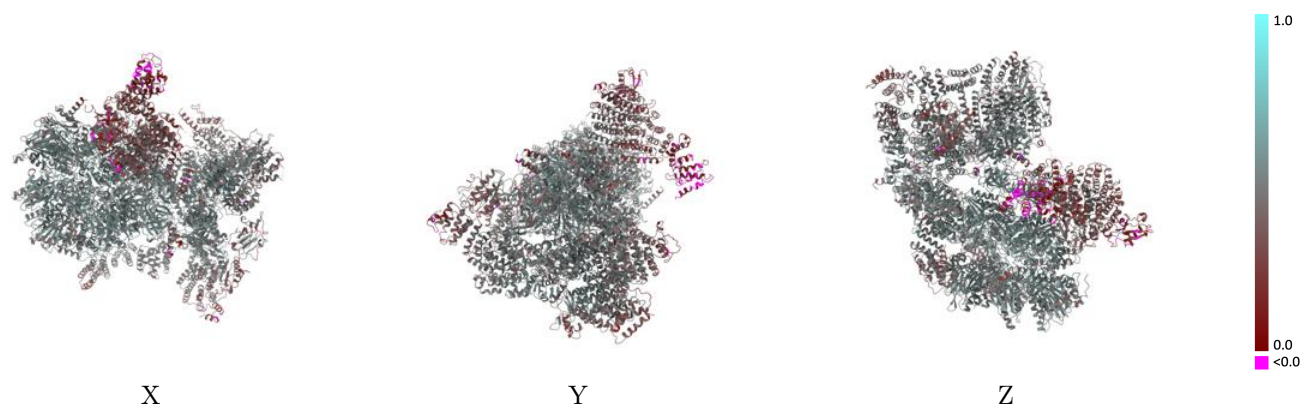
Y



Z

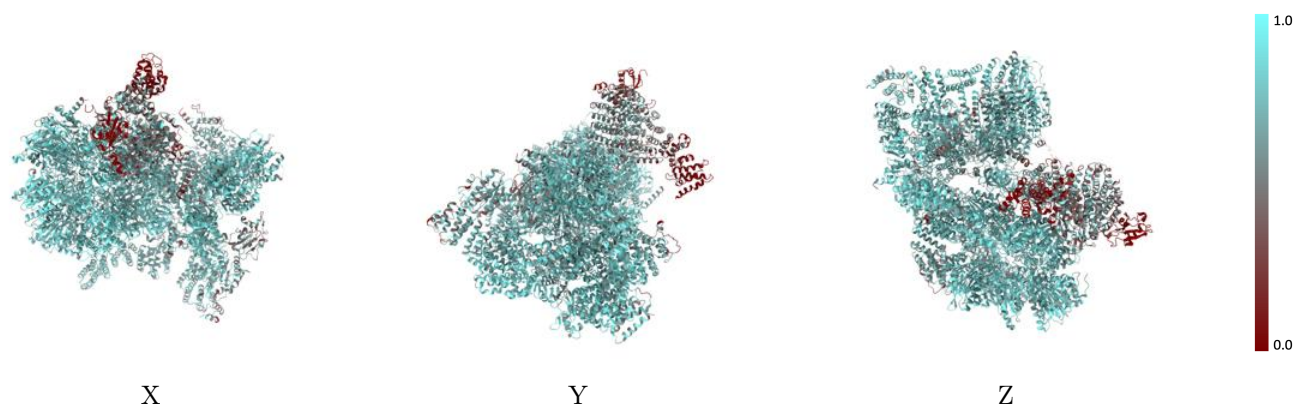
The images above show the 3D surface view of the map at the recommended contour level 0.15 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



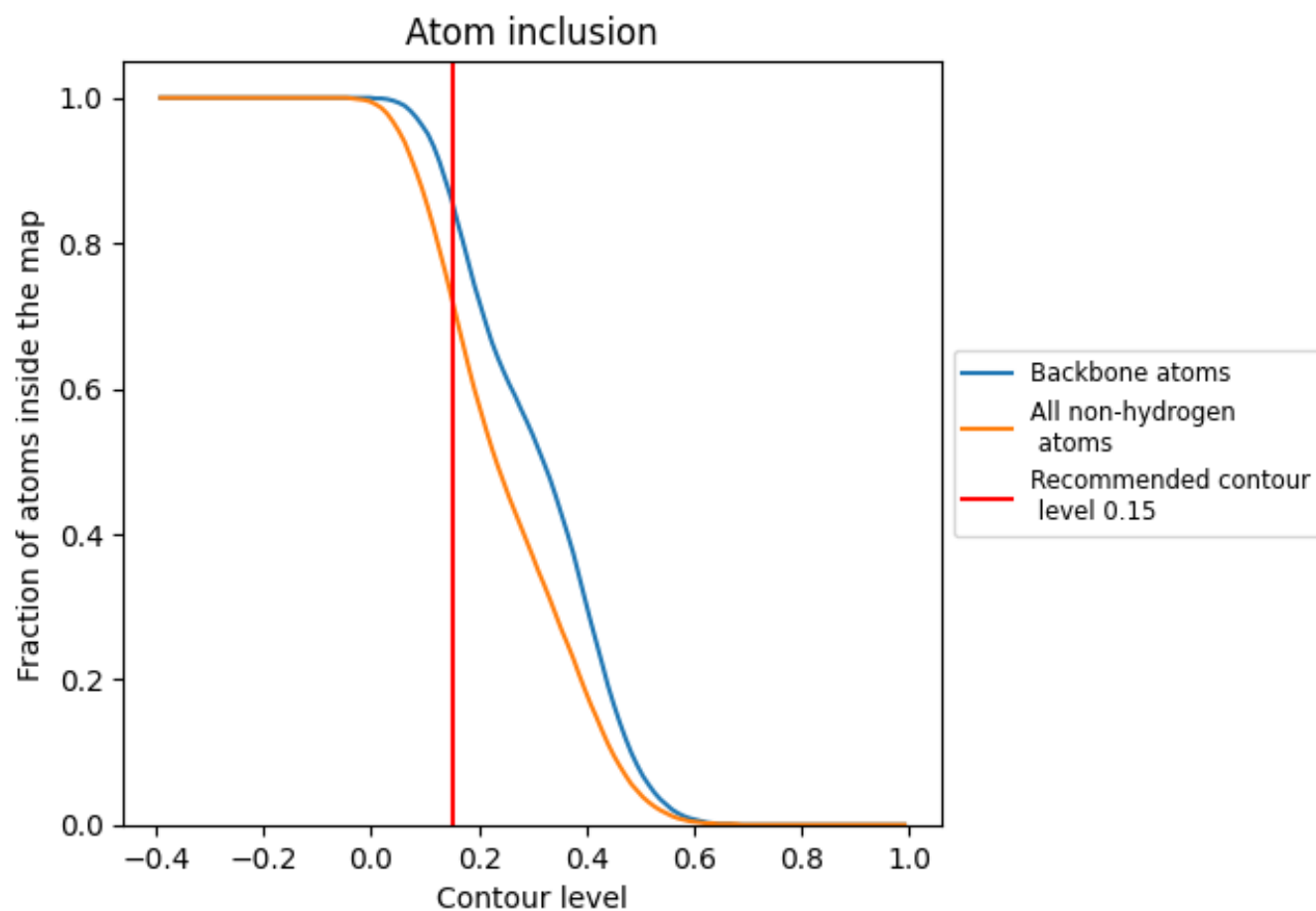
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.15).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 72% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.15) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.7240   |  0.4710   |
| A     |  0.7780   |  0.5150   |
| B     |  0.7170   |  0.4860   |
| C     |  0.7980   |  0.5340   |
| D     |  0.7970   |  0.5350   |
| E     |  0.8290   |  0.5390   |
| F     |  0.8230   |  0.5360   |
| G     |  0.7990   |  0.5210   |
| H     |  0.8000   |  0.5220   |
| I     |  0.7660   |  0.4990   |
| J     |  0.7740   |  0.5010   |
| K     |  0.7740   |  0.5200   |
| L     |  0.8010   |  0.5250   |
| M     |  0.8020   |  0.5230   |
| U     |  0.7630  |  0.4810  |
| V     |  0.7110 |  0.4410 |
| W     |  0.7720 |  0.4710 |
| X     |  0.7070 |  0.4560 |
| Y     |  0.8220 |  0.5120 |
| Z     |  0.7770 |  0.5120 |
| a     |  0.7400 |  0.4400 |
| b     |  0.6510 |  0.4080 |
| c     |  0.7810 |  0.5180 |
| d     |  0.7110 |  0.4080 |
| e     |  0.6210 |  0.3800 |
| f     |  0.4240 |  0.3080 |
| g     |  0.0080 |  0.1530 |
| u     |  0.4850 |  0.3850 |

