# WORLDWIDE wwPDB PROTEIN DATA BANK

# Full wwPDB EM Validation Report ⓘ

Mar 8, 2026 – 10:33 AM EDT

|  |  |  |
|---|---|---|
| PDB ID | : | 11HN / pdb_000011hn |
| EMDB ID | : | EMD-75697 |
| Title | : | SARS-CoV-2 spike S2 trimer stabilized in the early fusion intermediate conformation bound to C77G12 (S2 local refinement) |
| Authors | : | McCallum, M.; Seattle Structural Genomics Center for Infectious Disease (SSGCID); Veesler, D. |
| Deposited on | : | 2026-02-24 |
| Resolution | : | 2.70 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*
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.dev132 |
| Mogul | : | 2022.3.0, CSD as543be (2022) |
| MolProbity | : | 4-5-2 with Phenix2.0 |
| 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) | : | 2.48.1 |

# 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 2.70 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

| Metric | Percentile Ranks | Value |
|---|---|---|
| Clashscore | | 2 |
| Ramachandran outliers | | 0 |
| Sidechain outliers | | 0.6% |

*Worse*      *Better*

▌ Percentile relative to all structures
▐ Percentile relative to all EM structures

| Metric | Model-Map Fit Percentile Ranks | Value |
|---|---|---|
| Q-score | | 0.606 |

*Worse*      *Better*

▌ Percentile relative to all EM structures
▐ Percentile relative to EM structures of similar resolution
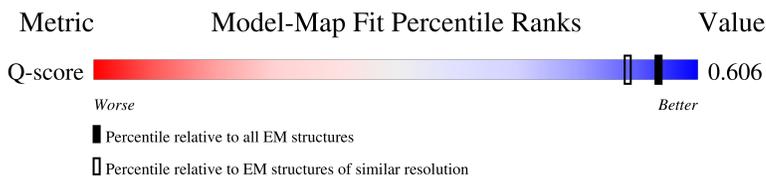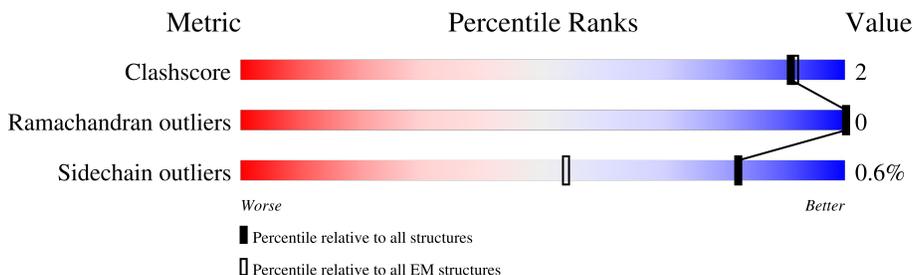
| Metric | Whole archive (#Entries) | EM structures (#Entries) | Similar EM resolution (#Entries, resolution range(Å)) |
|---|---|---|---|
| Clashscore | 210492 | 15764 | - |
| Ramachandran outliers | 207382 | 16835 | - |
| Sidechain outliers | 206894 | 16415 | - |
| Q-score | - | 25397 | 10327 ( 2.20 - 3.20 ) |

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 >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | A | 605 | 35%   •   63% |
| 1 | B | 605 | 35%   •   63% |
| 1 | C | 605 | 35%   •   63% |

# 2 Entity composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 5178 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 Spike protein S2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 1 | B | 226 | Total 1649 | C 1053 | N 291 | O 296 | S 9 | 0 | 0 |
| 1 | C | 226 | Total 1649 | C 1053 | N 291 | O 296 | S 9 | 0 | 0 |
| 1 | A | 226 | Total 1649 | C 1053 | N 291 | O 296 | S 9 | 0 | 0 |

There are 489 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| B | 755 | MET | - | initiating methionine | UNP Q12306 |
| B | 756 | THR | - | expression tag | UNP Q12306 |
| B | 757 | ARG | - | expression tag | UNP Q12306 |
| B | 758 | LEU | - | expression tag | UNP Q12306 |
| B | 759 | THR | - | expression tag | UNP Q12306 |
| B | 760 | VAL | - | expression tag | UNP Q12306 |
| B | 761 | LEU | - | expression tag | UNP Q12306 |
| B | 762 | ALA | - | expression tag | UNP Q12306 |
| B | 763 | LEU | - | expression tag | UNP Q12306 |
| B | 764 | LEU | - | expression tag | UNP Q12306 |
| B | 765 | ALA | - | expression tag | UNP Q12306 |
| B | 766 | GLY | - | expression tag | UNP Q12306 |
| B | 767 | LEU | - | expression tag | UNP Q12306 |
| B | 768 | LEU | - | expression tag | UNP Q12306 |
| B | 769 | ALA | - | expression tag | UNP Q12306 |
| B | 770 | SER | - | expression tag | UNP Q12306 |
| B | 771 | SER | - | expression tag | UNP Q12306 |
| B | 772 | ARG | - | expression tag | UNP Q12306 |
| B | 773 | ALA | - | expression tag | UNP Q12306 |
| B | 774 | SER | - | expression tag | UNP Q12306 |
| B | 869 | ASN | - | linker | UNP Q12306 |
| B | 870 | ASP | - | linker | UNP Q12306 |
| B | 871 | ASP | - | linker | UNP Q12306 |
| B | 872 | ASP | - | linker | UNP Q12306 |

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PROTEIN DATA BANK

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| B | 873 | ASP | - | linker | UNP Q12306 |
| B | 874 | LYS | - | linker | UNP Q12306 |
| B | 875 | THR | - | linker | UNP Q12306 |
| B | 876 | GLY | - | linker | UNP Q12306 |
| B | 877 | THR | - | linker | UNP Q12306 |
| B | 878 | GLY | - | linker | UNP Q12306 |
| B | 879 | SER | - | linker | UNP Q12306 |
| B | 880 | GLN | - | linker | UNP Q12306 |
| B | 881 | SER | - | linker | UNP Q12306 |
| B | 882 | ASN | - | linker | UNP Q12306 |
| B | 883 | ALA | - | linker | UNP Q12306 |
| B | 884 | GLU | - | linker | UNP Q12306 |
| B | 885 | SER | - | linker | UNP Q12306 |
| B | 886 | VAL | - | linker | UNP Q12306 |
| B | 887 | GLN | - | linker | UNP Q12306 |
| B | 888 | ASN | - | linker | UNP Q12306 |
| B | 889 | HIS | - | linker | UNP Q12306 |
| B | 890 | THR | - | linker | UNP Q12306 |
| B | 891 | PHE | - | linker | UNP Q12306 |
| B | 892 | GLU | - | linker | UNP Q12306 |
| B | 893 | VAL | - | linker | UNP Q12306 |
| B | 894 | LEU | - | linker | UNP Q12306 |
| B | 895 | ASN | - | linker | UNP Q12306 |
| B | 896 | ASN | - | linker | UNP Q12306 |
| B | 897 | THR | - | linker | UNP Q12306 |
| B | 898 | ILE | - | linker | UNP Q12306 |
| B | 899 | ARG | - | linker | UNP Q12306 |
| B | 900 | ALA | - | linker | UNP Q12306 |
| B | 901 | LEU | - | linker | UNP Q12306 |
| B | 902 | GLU | - | linker | UNP Q12306 |
| B | 903 | LEU | - | linker | UNP Q12306 |
| B | 904 | ILE | - | linker | UNP Q12306 |
| B | 905 | LEU | - | linker | UNP Q12306 |
| B | 906 | ARG | - | linker | UNP Q12306 |
| B | 907 | LYS | - | linker | UNP Q12306 |
| B | 908 | LEU | - | linker | UNP Q12306 |
| B | 909 | GLU | - | linker | UNP Q12306 |
| B | 910 | ILE | - | linker | UNP Q12306 |
| B | 911 | LEU | - | linker | UNP Q12306 |
| B | 912 | TYR | - | linker | UNP Q12306 |
| B | 913 | GLU | - | linker | UNP Q12306 |
| B | 914 | MET | - | linker | UNP Q12306 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| B | 915 | ILE | - | linker | UNP Q12306 |
| B | 916 | LEU | - | linker | UNP Q12306 |
| B | 917 | GLN | - | linker | UNP Q12306 |
| B | 918 | LEU | - | linker | UNP Q12306 |
| B | 919 | HIS | - | linker | UNP Q12306 |
| B | 920 | GLU | - | linker | UNP Q12306 |
| B | 921 | GLU | - | linker | UNP Q12306 |
| B | 922 | VAL | - | linker | UNP Q12306 |
| B | 923 | GLU | - | linker | UNP Q12306 |
| B | 924 | ALA | - | linker | UNP Q12306 |
| B | 925 | ILE | - | linker | UNP Q12306 |
| B | 926 | GLN | - | linker | UNP Q12306 |
| B | 927 | LYS | - | linker | UNP Q12306 |
| B | 928 | ALA | - | linker | UNP Q12306 |
| B | 929 | ILE | - | linker | UNP Q12306 |
| B | 1001 | ALA | ASP | conflict | UNP P0DTC2 |
| B | 1702 | THR | - | linker | UNP P0DTC2 |
| B | 1834 | THR | - | expression tag | UNP P0DTC2 |
| B | 1835 | ILE | - | expression tag | UNP P0DTC2 |
| B | 1836 | ASP | - | expression tag | UNP P0DTC2 |
| B | 1837 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1838 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1839 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1840 | TRP | - | expression tag | UNP P0DTC2 |
| B | 1841 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1842 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1843 | TRP | - | expression tag | UNP P0DTC2 |
| B | 1844 | ARG | - | expression tag | UNP P0DTC2 |
| B | 1845 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1846 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1847 | MET | - | expression tag | UNP P0DTC2 |
| B | 1848 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1849 | ASN | - | expression tag | UNP P0DTC2 |
| B | 1850 | LEU | - | expression tag | UNP P0DTC2 |
| B | 1851 | THR | - | expression tag | UNP P0DTC2 |
| B | 1852 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1853 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1854 | ILE | - | expression tag | UNP P0DTC2 |
| B | 1855 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1856 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1857 | THR | - | expression tag | UNP P0DTC2 |
| B | 1858 | LEU | - | expression tag | UNP P0DTC2 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| B | 1859 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1860 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1861 | ALA | - | expression tag | UNP P0DTC2 |
| B | 1862 | ARG | - | expression tag | UNP P0DTC2 |
| B | 1863 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1864 | THR | - | expression tag | UNP P0DTC2 |
| B | 1865 | LEU | - | expression tag | UNP P0DTC2 |
| B | 1866 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1867 | GLN | - | expression tag | UNP P0DTC2 |
| B | 1868 | ALA | - | expression tag | UNP P0DTC2 |
| B | 1869 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1870 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1871 | THR | - | expression tag | UNP P0DTC2 |
| B | 1872 | PHE | - | expression tag | UNP P0DTC2 |
| B | 1873 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1874 | THR | - | expression tag | UNP P0DTC2 |
| B | 1875 | PRO | - | expression tag | UNP P0DTC2 |
| B | 1876 | SER | - | expression tag | UNP P0DTC2 |
| B | 1877 | SER | - | expression tag | UNP P0DTC2 |
| B | 1878 | GLY | - | expression tag | UNP P0DTC2 |
| B | 1879 | GLY | - | expression tag | UNP P0DTC2 |
| B | 1880 | THR | - | expression tag | UNP P0DTC2 |
| B | 1881 | ASP | - | expression tag | UNP P0DTC2 |
| B | 1882 | ASP | - | expression tag | UNP P0DTC2 |
| B | 1883 | ASP | - | expression tag | UNP P0DTC2 |
| B | 1884 | ASP | - | expression tag | UNP P0DTC2 |
| B | 1885 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1886 | THR | - | expression tag | UNP P0DTC2 |
| B | 1887 | GLY | - | expression tag | UNP P0DTC2 |
| B | 1888 | SER | - | expression tag | UNP P0DTC2 |
| B | 1889 | LEU | - | expression tag | UNP P0DTC2 |
| B | 1890 | ASN | - | expression tag | UNP P0DTC2 |
| B | 1891 | ASP | - | expression tag | UNP P0DTC2 |
| B | 1892 | ILE | - | expression tag | UNP P0DTC2 |
| B | 1893 | PHE | - | expression tag | UNP P0DTC2 |
| B | 1894 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1895 | ALA | - | expression tag | UNP P0DTC2 |
| B | 1896 | GLN | - | expression tag | UNP P0DTC2 |
| B | 1897 | LYS | - | expression tag | UNP P0DTC2 |
| B | 1898 | ILE | - | expression tag | UNP P0DTC2 |
| B | 1899 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1900 | TRP | - | expression tag | UNP P0DTC2 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| B | 1901 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1902 | GLU | - | expression tag | UNP P0DTC2 |
| B | 1903 | GLN | - | expression tag | UNP P0DTC2 |
| B | 1904 | GLY | - | expression tag | UNP P0DTC2 |
| B | 1905 | SER | - | expression tag | UNP P0DTC2 |
| B | 1906 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1907 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1908 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1909 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1910 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1911 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1912 | HIS | - | expression tag | UNP P0DTC2 |
| B | 1913 | HIS | - | expression tag | UNP P0DTC2 |
| C | 755 | MET | - | initiating methionine | UNP Q12306 |
| C | 756 | THR | - | expression tag | UNP Q12306 |
| C | 757 | ARG | - | expression tag | UNP Q12306 |
| C | 758 | LEU | - | expression tag | UNP Q12306 |
| C | 759 | THR | - | expression tag | UNP Q12306 |
| C | 760 | VAL | - | expression tag | UNP Q12306 |
| C | 761 | LEU | - | expression tag | UNP Q12306 |
| C | 762 | ALA | - | expression tag | UNP Q12306 |
| C | 763 | LEU | - | expression tag | UNP Q12306 |
| C | 764 | LEU | - | expression tag | UNP Q12306 |
| C | 765 | ALA | - | expression tag | UNP Q12306 |
| C | 766 | GLY | - | expression tag | UNP Q12306 |
| C | 767 | LEU | - | expression tag | UNP Q12306 |
| C | 768 | LEU | - | expression tag | UNP Q12306 |
| C | 769 | ALA | - | expression tag | UNP Q12306 |
| C | 770 | SER | - | expression tag | UNP Q12306 |
| C | 771 | SER | - | expression tag | UNP Q12306 |
| C | 772 | ARG | - | expression tag | UNP Q12306 |
| C | 773 | ALA | - | expression tag | UNP Q12306 |
| C | 774 | SER | - | expression tag | UNP Q12306 |
| C | 869 | ASN | - | linker | UNP Q12306 |
| C | 870 | ASP | - | linker | UNP Q12306 |
| C | 871 | ASP | - | linker | UNP Q12306 |
| C | 872 | ASP | - | linker | UNP Q12306 |
| C | 873 | ASP | - | linker | UNP Q12306 |
| C | 874 | LYS | - | linker | UNP Q12306 |
| C | 875 | THR | - | linker | UNP Q12306 |
| C | 876 | GLY | - | linker | UNP Q12306 |
| C | 877 | THR | - | linker | UNP Q12306 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| C | 878 | GLY | - | linker | UNP Q12306 |
| C | 879 | SER | - | linker | UNP Q12306 |
| C | 880 | GLN | - | linker | UNP Q12306 |
| C | 881 | SER | - | linker | UNP Q12306 |
| C | 882 | ASN | - | linker | UNP Q12306 |
| C | 883 | ALA | - | linker | UNP Q12306 |
| C | 884 | GLU | - | linker | UNP Q12306 |
| C | 885 | SER | - | linker | UNP Q12306 |
| C | 886 | VAL | - | linker | UNP Q12306 |
| C | 887 | GLN | - | linker | UNP Q12306 |
| C | 888 | ASN | - | linker | UNP Q12306 |
| C | 889 | HIS | - | linker | UNP Q12306 |
| C | 890 | THR | - | linker | UNP Q12306 |
| C | 891 | PHE | - | linker | UNP Q12306 |
| C | 892 | GLU | - | linker | UNP Q12306 |
| C | 893 | VAL | - | linker | UNP Q12306 |
| C | 894 | LEU | - | linker | UNP Q12306 |
| C | 895 | ASN | - | linker | UNP Q12306 |
| C | 896 | ASN | - | linker | UNP Q12306 |
| C | 897 | THR | - | linker | UNP Q12306 |
| C | 898 | ILE | - | linker | UNP Q12306 |
| C | 899 | ARG | - | linker | UNP Q12306 |
| C | 900 | ALA | - | linker | UNP Q12306 |
| C | 901 | LEU | - | linker | UNP Q12306 |
| C | 902 | GLU | - | linker | UNP Q12306 |
| C | 903 | LEU | - | linker | UNP Q12306 |
| C | 904 | ILE | - | linker | UNP Q12306 |
| C | 905 | LEU | - | linker | UNP Q12306 |
| C | 906 | ARG | - | linker | UNP Q12306 |
| C | 907 | LYS | - | linker | UNP Q12306 |
| C | 908 | LEU | - | linker | UNP Q12306 |
| C | 909 | GLU | - | linker | UNP Q12306 |
| C | 910 | ILE | - | linker | UNP Q12306 |
| C | 911 | LEU | - | linker | UNP Q12306 |
| C | 912 | TYR | - | linker | UNP Q12306 |
| C | 913 | GLU | - | linker | UNP Q12306 |
| C | 914 | MET | - | linker | UNP Q12306 |
| C | 915 | ILE | - | linker | UNP Q12306 |
| C | 916 | LEU | - | linker | UNP Q12306 |
| C | 917 | GLN | - | linker | UNP Q12306 |
| C | 918 | LEU | - | linker | UNP Q12306 |
| C | 919 | HIS | - | linker | UNP Q12306 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| C | 920 | GLU | - | linker | UNP Q12306 |
| C | 921 | GLU | - | linker | UNP Q12306 |
| C | 922 | VAL | - | linker | UNP Q12306 |
| C | 923 | GLU | - | linker | UNP Q12306 |
| C | 924 | ALA | - | linker | UNP Q12306 |
| C | 925 | ILE | - | linker | UNP Q12306 |
| C | 926 | GLN | - | linker | UNP Q12306 |
| C | 927 | LYS | - | linker | UNP Q12306 |
| C | 928 | ALA | - | linker | UNP Q12306 |
| C | 929 | ILE | - | linker | UNP Q12306 |
| C | 1001 | ALA | ASP | conflict | UNP P0DTC2 |
| C | 1702 | THR | - | linker | UNP P0DTC2 |
| C | 1834 | THR | - | expression tag | UNP P0DTC2 |
| C | 1835 | ILE | - | expression tag | UNP P0DTC2 |
| C | 1836 | ASP | - | expression tag | UNP P0DTC2 |
| C | 1837 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1838 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1839 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1840 | TRP | - | expression tag | UNP P0DTC2 |
| C | 1841 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1842 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1843 | TRP | - | expression tag | UNP P0DTC2 |
| C | 1844 | ARG | - | expression tag | UNP P0DTC2 |
| C | 1845 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1846 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1847 | MET | - | expression tag | UNP P0DTC2 |
| C | 1848 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1849 | ASN | - | expression tag | UNP P0DTC2 |
| C | 1850 | LEU | - | expression tag | UNP P0DTC2 |
| C | 1851 | THR | - | expression tag | UNP P0DTC2 |
| C | 1852 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1853 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1854 | ILE | - | expression tag | UNP P0DTC2 |
| C | 1855 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1856 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1857 | THR | - | expression tag | UNP P0DTC2 |
| C | 1858 | LEU | - | expression tag | UNP P0DTC2 |
| C | 1859 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1860 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1861 | ALA | - | expression tag | UNP P0DTC2 |
| C | 1862 | ARG | - | expression tag | UNP P0DTC2 |
| C | 1863 | LYS | - | expression tag | UNP P0DTC2 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| C | 1864 | THR | - | expression tag | UNP P0DTC2 |
| C | 1865 | LEU | - | expression tag | UNP P0DTC2 |
| C | 1866 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1867 | GLN | - | expression tag | UNP P0DTC2 |
| C | 1868 | ALA | - | expression tag | UNP P0DTC2 |
| C | 1869 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1870 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1871 | THR | - | expression tag | UNP P0DTC2 |
| C | 1872 | PHE | - | expression tag | UNP P0DTC2 |
| C | 1873 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1874 | THR | - | expression tag | UNP P0DTC2 |
| C | 1875 | PRO | - | expression tag | UNP P0DTC2 |
| C | 1876 | SER | - | expression tag | UNP P0DTC2 |
| C | 1877 | SER | - | expression tag | UNP P0DTC2 |
| C | 1878 | GLY | - | expression tag | UNP P0DTC2 |
| C | 1879 | GLY | - | expression tag | UNP P0DTC2 |
| C | 1880 | THR | - | expression tag | UNP P0DTC2 |
| C | 1881 | ASP | - | expression tag | UNP P0DTC2 |
| C | 1882 | ASP | - | expression tag | UNP P0DTC2 |
| C | 1883 | ASP | - | expression tag | UNP P0DTC2 |
| C | 1884 | ASP | - | expression tag | UNP P0DTC2 |
| C | 1885 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1886 | THR | - | expression tag | UNP P0DTC2 |
| C | 1887 | GLY | - | expression tag | UNP P0DTC2 |
| C | 1888 | SER | - | expression tag | UNP P0DTC2 |
| C | 1889 | LEU | - | expression tag | UNP P0DTC2 |
| C | 1890 | ASN | - | expression tag | UNP P0DTC2 |
| C | 1891 | ASP | - | expression tag | UNP P0DTC2 |
| C | 1892 | ILE | - | expression tag | UNP P0DTC2 |
| C | 1893 | PHE | - | expression tag | UNP P0DTC2 |
| C | 1894 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1895 | ALA | - | expression tag | UNP P0DTC2 |
| C | 1896 | GLN | - | expression tag | UNP P0DTC2 |
| C | 1897 | LYS | - | expression tag | UNP P0DTC2 |
| C | 1898 | ILE | - | expression tag | UNP P0DTC2 |
| C | 1899 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1900 | TRP | - | expression tag | UNP P0DTC2 |
| C | 1901 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1902 | GLU | - | expression tag | UNP P0DTC2 |
| C | 1903 | GLN | - | expression tag | UNP P0DTC2 |
| C | 1904 | GLY | - | expression tag | UNP P0DTC2 |
| C | 1905 | SER | - | expression tag | UNP P0DTC2 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| C | 1906 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1907 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1908 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1909 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1910 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1911 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1912 | HIS | - | expression tag | UNP P0DTC2 |
| C | 1913 | HIS | - | expression tag | UNP P0DTC2 |
| A | 755 | MET | - | initiating methionine | UNP Q12306 |
| A | 756 | THR | - | expression tag | UNP Q12306 |
| A | 757 | ARG | - | expression tag | UNP Q12306 |
| A | 758 | LEU | - | expression tag | UNP Q12306 |
| A | 759 | THR | - | expression tag | UNP Q12306 |
| A | 760 | VAL | - | expression tag | UNP Q12306 |
| A | 761 | LEU | - | expression tag | UNP Q12306 |
| A | 762 | ALA | - | expression tag | UNP Q12306 |
| A | 763 | LEU | - | expression tag | UNP Q12306 |
| A | 764 | LEU | - | expression tag | UNP Q12306 |
| A | 765 | ALA | - | expression tag | UNP Q12306 |
| A | 766 | GLY | - | expression tag | UNP Q12306 |
| A | 767 | LEU | - | expression tag | UNP Q12306 |
| A | 768 | LEU | - | expression tag | UNP Q12306 |
| A | 769 | ALA | - | expression tag | UNP Q12306 |
| A | 770 | SER | - | expression tag | UNP Q12306 |
| A | 771 | SER | - | expression tag | UNP Q12306 |
| A | 772 | ARG | - | expression tag | UNP Q12306 |
| A | 773 | ALA | - | expression tag | UNP Q12306 |
| A | 774 | SER | - | expression tag | UNP Q12306 |
| A | 869 | ASN | - | linker | UNP Q12306 |
| A | 870 | ASP | - | linker | UNP Q12306 |
| A | 871 | ASP | - | linker | UNP Q12306 |
| A | 872 | ASP | - | linker | UNP Q12306 |
| A | 873 | ASP | - | linker | UNP Q12306 |
| A | 874 | LYS | - | linker | UNP Q12306 |
| A | 875 | THR | - | linker | UNP Q12306 |
| A | 876 | GLY | - | linker | UNP Q12306 |
| A | 877 | THR | - | linker | UNP Q12306 |
| A | 878 | GLY | - | linker | UNP Q12306 |
| A | 879 | SER | - | linker | UNP Q12306 |
| A | 880 | GLN | - | linker | UNP Q12306 |
| A | 881 | SER | - | linker | UNP Q12306 |
| A | 882 | ASN | - | linker | UNP Q12306 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:-----:|:-------:|:--------:|:------:|:-------:|:----------|
| A | 883 | ALA | - | linker | UNP Q12306 |
| A | 884 | GLU | - | linker | UNP Q12306 |
| A | 885 | SER | - | linker | UNP Q12306 |
| A | 886 | VAL | - | linker | UNP Q12306 |
| A | 887 | GLN | - | linker | UNP Q12306 |
| A | 888 | ASN | - | linker | UNP Q12306 |
| A | 889 | HIS | - | linker | UNP Q12306 |
| A | 890 | THR | - | linker | UNP Q12306 |
| A | 891 | PHE | - | linker | UNP Q12306 |
| A | 892 | GLU | - | linker | UNP Q12306 |
| A | 893 | VAL | - | linker | UNP Q12306 |
| A | 894 | LEU | - | linker | UNP Q12306 |
| A | 895 | ASN | - | linker | UNP Q12306 |
| A | 896 | ASN | - | linker | UNP Q12306 |
| A | 897 | THR | - | linker | UNP Q12306 |
| A | 898 | ILE | - | linker | UNP Q12306 |
| A | 899 | ARG | - | linker | UNP Q12306 |
| A | 900 | ALA | - | linker | UNP Q12306 |
| A | 901 | LEU | - | linker | UNP Q12306 |
| A | 902 | GLU | - | linker | UNP Q12306 |
| A | 903 | LEU | - | linker | UNP Q12306 |
| A | 904 | ILE | - | linker | UNP Q12306 |
| A | 905 | LEU | - | linker | UNP Q12306 |
| A | 906 | ARG | - | linker | UNP Q12306 |
| A | 907 | LYS | - | linker | UNP Q12306 |
| A | 908 | LEU | - | linker | UNP Q12306 |
| A | 909 | GLU | - | linker | UNP Q12306 |
| A | 910 | ILE | - | linker | UNP Q12306 |
| A | 911 | LEU | - | linker | UNP Q12306 |
| A | 912 | TYR | - | linker | UNP Q12306 |
| A | 913 | GLU | - | linker | UNP Q12306 |
| A | 914 | MET | - | linker | UNP Q12306 |
| A | 915 | ILE | - | linker | UNP Q12306 |
| A | 916 | LEU | - | linker | UNP Q12306 |
| A | 917 | GLN | - | linker | UNP Q12306 |
| A | 918 | LEU | - | linker | UNP Q12306 |
| A | 919 | HIS | - | linker | UNP Q12306 |
| A | 920 | GLU | - | linker | UNP Q12306 |
| A | 921 | GLU | - | linker | UNP Q12306 |
| A | 922 | VAL | - | linker | UNP Q12306 |
| A | 923 | GLU | - | linker | UNP Q12306 |
| A | 924 | ALA | - | linker | UNP Q12306 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:-----:|:-------:|:--------:|:------:|:-------:|:---------:|
| A | 925 | ILE | - | linker | UNP Q12306 |
| A | 926 | GLN | - | linker | UNP Q12306 |
| A | 927 | LYS | - | linker | UNP Q12306 |
| A | 928 | ALA | - | linker | UNP Q12306 |
| A | 929 | ILE | - | linker | UNP Q12306 |
| A | 1001 | ALA | ASP | conflict | UNP P0DTC2 |
| A | 1702 | THR | - | linker | UNP P0DTC2 |
| A | 1834 | THR | - | expression tag | UNP P0DTC2 |
| A | 1835 | ILE | - | expression tag | UNP P0DTC2 |
| A | 1836 | ASP | - | expression tag | UNP P0DTC2 |
| A | 1837 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1838 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1839 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1840 | TRP | - | expression tag | UNP P0DTC2 |
| A | 1841 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1842 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1843 | TRP | - | expression tag | UNP P0DTC2 |
| A | 1844 | ARG | - | expression tag | UNP P0DTC2 |
| A | 1845 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1846 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1847 | MET | - | expression tag | UNP P0DTC2 |
| A | 1848 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1849 | ASN | - | expression tag | UNP P0DTC2 |
| A | 1850 | LEU | - | expression tag | UNP P0DTC2 |
| A | 1851 | THR | - | expression tag | UNP P0DTC2 |
| A | 1852 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1853 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1854 | ILE | - | expression tag | UNP P0DTC2 |
| A | 1855 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1856 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1857 | THR | - | expression tag | UNP P0DTC2 |
| A | 1858 | LEU | - | expression tag | UNP P0DTC2 |
| A | 1859 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1860 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1861 | ALA | - | expression tag | UNP P0DTC2 |
| A | 1862 | ARG | - | expression tag | UNP P0DTC2 |
| A | 1863 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1864 | THR | - | expression tag | UNP P0DTC2 |
| A | 1865 | LEU | - | expression tag | UNP P0DTC2 |
| A | 1866 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1867 | GLN | - | expression tag | UNP P0DTC2 |
| A | 1868 | ALA | - | expression tag | UNP P0DTC2 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| A | 1869 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1870 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1871 | THR | - | expression tag | UNP P0DTC2 |
| A | 1872 | PHE | - | expression tag | UNP P0DTC2 |
| A | 1873 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1874 | THR | - | expression tag | UNP P0DTC2 |
| A | 1875 | PRO | - | expression tag | UNP P0DTC2 |
| A | 1876 | SER | - | expression tag | UNP P0DTC2 |
| A | 1877 | SER | - | expression tag | UNP P0DTC2 |
| A | 1878 | GLY | - | expression tag | UNP P0DTC2 |
| A | 1879 | GLY | - | expression tag | UNP P0DTC2 |
| A | 1880 | THR | - | expression tag | UNP P0DTC2 |
| A | 1881 | ASP | - | expression tag | UNP P0DTC2 |
| A | 1882 | ASP | - | expression tag | UNP P0DTC2 |
| A | 1883 | ASP | - | expression tag | UNP P0DTC2 |
| A | 1884 | ASP | - | expression tag | UNP P0DTC2 |
| A | 1885 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1886 | THR | - | expression tag | UNP P0DTC2 |
| A | 1887 | GLY | - | expression tag | UNP P0DTC2 |
| A | 1888 | SER | - | expression tag | UNP P0DTC2 |
| A | 1889 | LEU | - | expression tag | UNP P0DTC2 |
| A | 1890 | ASN | - | expression tag | UNP P0DTC2 |
| A | 1891 | ASP | - | expression tag | UNP P0DTC2 |
| A | 1892 | ILE | - | expression tag | UNP P0DTC2 |
| A | 1893 | PHE | - | expression tag | UNP P0DTC2 |
| A | 1894 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1895 | ALA | - | expression tag | UNP P0DTC2 |
| A | 1896 | GLN | - | expression tag | UNP P0DTC2 |
| A | 1897 | LYS | - | expression tag | UNP P0DTC2 |
| A | 1898 | ILE | - | expression tag | UNP P0DTC2 |
| A | 1899 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1900 | TRP | - | expression tag | UNP P0DTC2 |
| A | 1901 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1902 | GLU | - | expression tag | UNP P0DTC2 |
| A | 1903 | GLN | - | expression tag | UNP P0DTC2 |
| A | 1904 | GLY | - | expression tag | UNP P0DTC2 |
| A | 1905 | SER | - | expression tag | UNP P0DTC2 |
| A | 1906 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1907 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1908 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1909 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1910 | HIS | - | expression tag | UNP P0DTC2 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|:---:|:---:|:---:|:---:|:---:|:---:|
| A | 1911 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1912 | HIS | - | expression tag | UNP P0DTC2 |
| A | 1913 | HIS | - | expression tag | UNP P0DTC2 |

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



| Mol | Chain | Residues | Atoms | | | | AltConf |
|:---:|:---:|:---:|:---|:---:|:---:|:---:|:---:|
| 2 | B | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | B | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | B | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | B | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | C | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | C | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | C | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | C | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | A | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |

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| Mol | Chain | Residues | Atoms | | | | AltConf |
|-----|-------|----------|-------|---|---|---|---------|
| 2 | A | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | A | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |
| 2 | A | 1 | Total<br>14 | C<br>8 | N<br>1 | O<br>5 | 0 |

- Molecule 3 is water.

| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|---|---------|
| 3 | B | 21 | Total<br>21 | O<br>21 | 0 |
| 3 | C | 21 | Total<br>21 | O<br>21 | 0 |
| 3 | A | 21 | Total<br>21 | O<br>21 | 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: Spike protein S2

Chain B:　35%　　·　　63%

MET THR ARG LEU THR VAL LEU LEU ALA LEU LEU ALA GLY LEU LEU ALA SER SER ARG ALA SER MET SER ASP SER GLU VAL ASN GLN GLU GLU ALA LYS PRO GLU VAL LYS PRO GLU VAL LYS PRO GLU THR HIS ILE ASN LEU LYS VAL SER ASP GLY SER SER GLU ILE PHE PHE LYS ILE LYS

LYS THR THR PRO LEU ARG ARG LEU MET GLU ALA PHE ALA LYS ARG GLN GLY LYS GLU MET ASP SER LEU ARG PHE LEU TYR ASP GLY ILE ARG ILE GLN ALA ASP GLN THR PRO GLU ASP LEU ASP MET GLU ASP ASN ASP ILE ILE GLU ALA HIS ARG GLU GLN ILE GLY GLY ASP GLY ILE ALA SER LEU GLU ASN ASP ASP ASP LYS

THR GLY THR GLY SER GLN SER ASN ALA GLU GLU SER VAL GLN ASN HIS THR PHE GLU VAL LEU ASN ASN THR ILE ARG ALA LEU GLU GLU LEU ILE LEU LEU ARG LYS GLU LEU ILE LEU TYR GLU MET ILE LEU GLN LEU HIS GLU GLU VAL GLY ALA ILE GLN LYS ALA ILE ASN VAL LEU TYR GLU

ASN GLN LYS LEU ILE ALA ASN GLN PHE ASN SER ALA ILE GLY LYS ILE GLN ASP SER LEU SER SER THR ALA SER ALA LEU GLY LYS LEU GLN ASP VAL VAL ASN GLN ASN ALA GLN ALA LEU ASN THR LEU VAL LYS GLN LEU SER SER ASN PHE **G987** **F1068** **S1071** **A1072** **P1073**

**V1084** **P1085** **A1094** **C1098** **H1099** **D1100** **G1101** **K1102** **A1103** **H1104** **F1105** **P1106** **R1107** **E1127** **F1137** **V1138** **S1139** GLY ASN CYS ASP VAL VAL ILE GLY THR ASN **S1704** **I1714** **N1717** **L1727** **K1733** **T1734** **E1773** **Q1774** **D1775** **K1776** ASN THR GLN GLU VAL PHE ALA GLN VAL LYS GLN ILE TYR LYS

THR PRO PRO ILE LYS ASP PHE GLY GLY PHE ASN PHE SER GLN ILE LEU PRO ASP PRO SER LYS PRO SER LYS ARG SER PHE ILE GLU ASP LEU LEU PHE ASN LYS VAL THR LEU ALA ASP ALA GLY PHE THR ILE ASP LYS VAL LEU GLU LYS TRP LYS GLU TRP ARG LYS GLU MET GLU ASN LEU

THR LYS GLU ILE LYS GLU THR LEU GLU GLU ALA ARG LYS THR LEU GLN ALA GLU GLU THR PHE LYS THR PRO SER SER GLY GLY THR ASP ASP ASP LYS LYS THR GLY SER LEU ASN ASP ILE PHE GLU ALA GLN LYS ILE GLU TRP HIS GLU GLN GLY SER HIS HIS HIS HIS

HIS HIS HIS

• Molecule 1: Spike protein S2

Chain C:　35%　　·　　63%

MET THR ARG LEU THR VAL LEU LEU ALA LEU LEU ALA GLY LEU LEU ALA SER SER ARG ALA SER MET SER ASP SER GLU VAL ASN GLN GLU GLU ALA LYS PRO GLU VAL LYS PRO GLU VAL LYS PRO GLU THR HIS ILE ASN LEU LYS VAL SER ASP GLY SER SER GLU ILE PHE PHE LYS ILE LYS

LYS THR THR PRO LEU ARG ARG LEU MET GLU ALA PHE ALA LYS ARG GLN GLY LYS GLU MET ASP SER LEU ARG PHE LEU TYR ASP GLY ILE ARG ILE GLN ALA ASP GLN THR PRO GLU ASP LEU ASP MET GLU ASP ASN ASP ILE ILE GLU ALA HIS ARG GLU GLN ILE GLY GLY ASP GLY ILE ALA SER LEU GLU ASN ASP ASP ASP LYS

THR GLY THR GLY SER GLN SER ASN ALA GLU GLU SER VAL GLN ASN HIS THR PHE GLU VAL LEU ASN ASN THR ILE ARG ALA LEU GLU GLU LEU ILE LEU LEU ARG LYS GLU LEU ILE LEU TYR GLU MET ILE LEU GLN LEU HIS GLU GLU VAL GLY ALA ILE GLN LYS ALA ILE ASN VAL LEU TYR GLU

• Molecule 1: Spike protein S2

Chain A:     35%     •     63%

# 4   Experimental information ⓘ

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 225859 | 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 $(e^-/Å^2)$ | 50 | Depositor |
| Minimum defocus (nm) | 200 | Depositor |
| Maximum defocus (nm) | 2700 | Depositor |
| Magnification | Not provided | |
| Image detector | GATAN K3 (6k x 4k) | Depositor |
| Maximum map value | 5.851 | Depositor |
| Minimum map value | -3.536 | Depositor |
| Average map value | -0.000 | Depositor |
| Map value standard deviation | 0.063 | Depositor |
| Recommended contour level | 1 | Depositor |
| Map size (Å) | 530.56, 530.56, 530.56 | wwPDB |
| Map dimensions | 640, 640, 640 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 0.829, 0.829, 0.829 | Depositor |

# 5   Model quality ⓘ

## 5.1   Standard geometry ⓘ

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

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 | 0.70 | 0/1680 | 0.88 | 14/2295 (0.6%) |
| 1 | B | 0.70 | 0/1680 | 0.87 | 14/2295 (0.6%) |
| 1 | C | 0.70 | 0/1680 | 0.88 | 14/2295 (0.6%) |
| All | All | 0.70 | 0/5040 | 0.88 | 42/6885 (0.6%) |

There are no bond length outliers.

All (42) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|------------|----------|
| 1 | B | 1127 | GLU | CA-C-N | 7.70 | 127.69 | 119.76 |
| 1 | B | 1127 | GLU | C-N-CA | 7.70 | 127.69 | 119.76 |
| 1 | A | 1127 | GLU | CA-C-N | 7.67 | 127.67 | 119.76 |
| 1 | A | 1127 | GLU | C-N-CA | 7.67 | 127.67 | 119.76 |
| 1 | C | 1127 | GLU | CA-C-N | 7.66 | 127.65 | 119.76 |
| 1 | C | 1127 | GLU | C-N-CA | 7.66 | 127.65 | 119.76 |
| 1 | C | 1094 | ALA | CA-C-N | 6.45 | 126.38 | 119.28 |
| 1 | C | 1094 | ALA | C-N-CA | 6.45 | 126.38 | 119.28 |
| 1 | A | 1094 | ALA | CA-C-N | 6.45 | 126.37 | 119.28 |
| 1 | A | 1094 | ALA | C-N-CA | 6.45 | 126.37 | 119.28 |
| 1 | B | 1094 | ALA | CA-C-N | 6.43 | 126.36 | 119.28 |
| 1 | B | 1094 | ALA | C-N-CA | 6.43 | 126.36 | 119.28 |
| 1 | B | 1714 | ILE | CA-C-N | 6.42 | 126.45 | 119.90 |
| 1 | B | 1714 | ILE | C-N-CA | 6.42 | 126.45 | 119.90 |
| 1 | A | 1714 | ILE | CA-C-N | 6.41 | 126.44 | 119.90 |
| 1 | A | 1714 | ILE | C-N-CA | 6.41 | 126.44 | 119.90 |
| 1 | C | 1714 | ILE | CA-C-N | 6.40 | 126.43 | 119.90 |
| 1 | C | 1714 | ILE | C-N-CA | 6.40 | 126.43 | 119.90 |
| 1 | A | 1068 | PHE | CA-C-N | 6.24 | 126.76 | 120.14 |
| 1 | A | 1068 | PHE | C-N-CA | 6.24 | 126.76 | 120.14 |
| 1 | C | 1068 | PHE | CA-C-N | 6.23 | 126.75 | 120.14 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|------|------|--------|------|-----------|---------|
| 1 | C | 1068 | PHE | C-N-CA | 6.23 | 126.75 | 120.14 |
| 1 | B | 1068 | PHE | CA-C-N | 6.22 | 126.74 | 120.14 |
| 1 | B | 1068 | PHE | C-N-CA | 6.22 | 126.74 | 120.14 |
| 1 | B | 1727 | LEU | CA-C-N | 6.16 | 125.92 | 119.76 |
| 1 | B | 1727 | LEU | C-N-CA | 6.16 | 125.92 | 119.76 |
| 1 | B | 1105 | PHE | CA-C-N | 6.14 | 126.05 | 119.85 |
| 1 | B | 1105 | PHE | C-N-CA | 6.14 | 126.05 | 119.85 |
| 1 | A | 1105 | PHE | CA-C-N | 6.13 | 126.04 | 119.85 |
| 1 | A | 1105 | PHE | C-N-CA | 6.13 | 126.04 | 119.85 |
| 1 | C | 1105 | PHE | CA-C-N | 6.12 | 126.03 | 119.85 |
| 1 | C | 1105 | PHE | C-N-CA | 6.12 | 126.03 | 119.85 |
| 1 | A | 1727 | LEU | CA-C-N | 6.12 | 125.88 | 119.76 |
| 1 | A | 1727 | LEU | C-N-CA | 6.12 | 125.88 | 119.76 |
| 1 | C | 1727 | LEU | CA-C-N | 6.08 | 125.84 | 119.76 |
| 1 | C | 1727 | LEU | C-N-CA | 6.08 | 125.84 | 119.76 |
| 1 | A | 1084 | VAL | CA-C-N | 5.10 | 125.39 | 119.93 |
| 1 | A | 1084 | VAL | C-N-CA | 5.10 | 125.39 | 119.93 |
| 1 | C | 1084 | VAL | CA-C-N | 5.10 | 125.39 | 119.93 |
| 1 | C | 1084 | VAL | C-N-CA | 5.10 | 125.39 | 119.93 |
| 1 | B | 1084 | VAL | CA-C-N | 5.09 | 125.37 | 119.93 |
| 1 | B | 1084 | VAL | C-N-CA | 5.09 | 125.37 | 119.93 |

There are no chirality outliers.

There are no planarity outliers.

## 5.2   Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 1649 | 0 | 1524 | 4 | 0 |
| 1 | B | 1649 | 0 | 1524 | 6 | 0 |
| 1 | C | 1649 | 0 | 1524 | 5 | 0 |
| 2 | A | 56 | 0 | 52 | 0 | 0 |
| 2 | B | 56 | 0 | 52 | 0 | 0 |
| 2 | C | 56 | 0 | 52 | 0 | 0 |
| 3 | A | 21 | 0 | 0 | 0 | 0 |
| 3 | B | 21 | 0 | 0 | 0 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 3 | C | 21 | 0 | 0 | 0 | 0 |
| All | All | 5178 | 0 | 4728 | 15 | 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 2.

All (15) 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:1107:ARG:HG2 | 1:A:1137:PHE:CE2 | 2.41 | 0.55 |
| 1:C:1107:ARG:HG2 | 1:C:1137:PHE:CE2 | 2.41 | 0.54 |
| 1:B:1107:ARG:HG2 | 1:B:1137:PHE:CE2 | 2.41 | 0.54 |
| 1:C:1098:CYS:HA | 1:C:1102:LYS:O | 2.10 | 0.52 |
| 1:A:1098:CYS:HA | 1:A:1102:LYS:O | 2.10 | 0.51 |
| 1:B:1098:CYS:HA | 1:B:1102:LYS:O | 2.10 | 0.51 |
| 1:B:1099:HIS:HB3 | 1:B:1104:HIS:CD2 | 2.54 | 0.43 |
| 1:B:1099:HIS:HB3 | 1:B:1104:HIS:CG | 2.54 | 0.43 |
| 1:A:1099:HIS:HB3 | 1:A:1104:HIS:CD2 | 2.54 | 0.43 |
| 1:C:1099:HIS:HB3 | 1:C:1104:HIS:CD2 | 2.54 | 0.42 |
| 1:A:1099:HIS:HB3 | 1:A:1104:HIS:CG | 2.54 | 0.42 |
| 1:C:1099:HIS:HB3 | 1:C:1104:HIS:CG | 2.54 | 0.42 |
| 1:B:1105:PHE:CE1 | 1:B:1137:PHE:HB2 | 2.56 | 0.41 |
| 1:C:1105:PHE:CE1 | 1:C:1137:PHE:HB2 | 2.56 | 0.41 |
| 1:B:1084:VAL:HA | 1:B:1085:PRO:HD3 | 1.95 | 0.40 |

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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 | 222/605 (37%) | 218 (98%) | 4 (2%) | 0 | 100   100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|-------------|---|
| 1 | B | 222/605 (37%) | 218 (98%) | 4 (2%) | 0 | 100 | 100 |
| 1 | C | 222/605 (37%) | 218 (98%) | 4 (2%) | 0 | 100 | 100 |
| All | All | 666/1815 (37%) | 654 (98%) | 12 (2%) | 0 | 100 | 100 |

There are no Ramachandran outliers to report.

### 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 | 155/533 (29%) | 154 (99%) | 1 (1%) | 84 | 94 |
| 1 | B | 155/533 (29%) | 154 (99%) | 1 (1%) | 84 | 94 |
| 1 | C | 155/533 (29%) | 154 (99%) | 1 (1%) | 84 | 94 |
| All | All | 465/1599 (29%) | 462 (99%) | 3 (1%) | 82 | 94 |

All (3) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 1717 | ASN |
| 1 | C | 1717 | ASN |
| 1 | A | 1717 | ASN |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 1021 | GLN |
| 1 | B | 1027 | GLN |
| 1 | B | 1099 | HIS |
| 1 | B | 1104 | HIS |
| 1 | C | 1021 | GLN |
| 1 | C | 1027 | GLN |
| 1 | C | 1099 | HIS |
| 1 | C | 1104 | HIS |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 1021 | GLN |
| 1 | A | 1099 | HIS |
| 1 | A | 1104 | HIS |

### 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 ⓘ

12 ligands are modelled in this entry.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------|------|----------|--------|------|----------|
| | | | | | Counts | RMSZ | $\#|Z| > 2$ | Counts | RMSZ | $\#|Z| > 2$ |
| 2 | NAG | C | 1404 | 1 | 14,14,15 | 1.31 | 2 (14%) | 17,19,21 | 1.12 | 2 (11%) |
| 2 | NAG | B | 1401 | 1 | 14,14,15 | 1.20 | 2 (14%) | 17,19,21 | 1.23 | 2 (11%) |
| 2 | NAG | C | 1402 | 1 | 14,14,15 | 1.32 | 1 (7%) | 17,19,21 | 1.23 | 2 (11%) |
| 2 | NAG | C | 1403 | 1 | 14,14,15 | 0.51 | 0 | 17,19,21 | 0.71 | 1 (5%) |
| 2 | NAG | B | 1404 | 1 | 14,14,15 | 1.29 | 1 (7%) | 17,19,21 | 1.11 | 2 (11%) |
| 2 | NAG | A | 1403 | 1 | 14,14,15 | 0.52 | 0 | 17,19,21 | 0.71 | 1 (5%) |
| 2 | NAG | A | 1402 | 1 | 14,14,15 | 1.32 | 1 (7%) | 17,19,21 | 1.23 | 2 (11%) |
| 2 | NAG | C | 1401 | 1 | 14,14,15 | 1.21 | 2 (14%) | 17,19,21 | 1.24 | 2 (11%) |
| 2 | NAG | A | 1401 | 1 | 14,14,15 | 1.21 | 2 (14%) | 17,19,21 | 1.24 | 2 (11%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------|------|----------|--------|------|----------|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 2 | NAG | B | 1403 | 1 | 14,14,15 | 0.53 | 0 | 17,19,21 | 0.71 | 1 (5%) |
| 2 | NAG | B | 1402 | 1 | 14,14,15 | 1.32 | 1 (7%) | 17,19,21 | 1.23 | 2 (11%) |
| 2 | NAG | A | 1404 | 1 | 14,14,15 | 1.31 | 1 (7%) | 17,19,21 | 1.12 | 2 (11%) |

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 |
|-----|------|-------|-----|------|---------|----------|-------|
| 2 | NAG | C | 1404 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | B | 1401 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | C | 1402 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | C | 1403 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | B | 1404 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | A | 1403 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | A | 1402 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | C | 1401 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | A | 1401 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | B | 1403 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | B | 1402 | 1 | - | 0/6/23/26 | 0/1/1/1 |
| 2 | NAG | A | 1404 | 1 | - | 0/6/23/26 | 0/1/1/1 |

All (13) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 2 | C | 1402 | NAG | C1-C2 | 3.95 | 1.57 | 1.52 |
| 2 | A | 1402 | NAG | C1-C2 | 3.94 | 1.57 | 1.52 |
| 2 | B | 1402 | NAG | C1-C2 | 3.91 | 1.57 | 1.52 |
| 2 | A | 1404 | NAG | C1-C2 | 3.83 | 1.57 | 1.52 |
| 2 | C | 1404 | NAG | C1-C2 | 3.81 | 1.57 | 1.52 |
| 2 | B | 1404 | NAG | C1-C2 | 3.76 | 1.57 | 1.52 |
| 2 | A | 1401 | NAG | C1-C2 | 3.62 | 1.57 | 1.52 |
| 2 | C | 1401 | NAG | C1-C2 | 3.61 | 1.57 | 1.52 |
| 2 | B | 1401 | NAG | C1-C2 | 3.59 | 1.57 | 1.52 |
| 2 | A | 1401 | NAG | O5-C5 | 2.03 | 1.47 | 1.43 |
| 2 | C | 1401 | NAG | O5-C5 | 2.03 | 1.47 | 1.43 |
| 2 | B | 1401 | NAG | O5-C5 | 2.03 | 1.47 | 1.43 |
| 2 | C | 1404 | NAG | O5-C5 | 2.00 | 1.47 | 1.43 |

All (21) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 2 | A | 1401 | NAG | C2-N2-C7 | -2.88 | 119.04 | 122.90 |
| 2 | C | 1401 | NAG | C2-N2-C7 | -2.88 | 119.04 | 122.90 |
| 2 | B | 1401 | NAG | C2-N2-C7 | -2.87 | 119.05 | 122.90 |
| 2 | B | 1402 | NAG | C2-N2-C7 | -2.67 | 119.32 | 122.90 |
| 2 | A | 1402 | NAG | C2-N2-C7 | -2.66 | 119.33 | 122.90 |
| 2 | C | 1402 | NAG | C2-N2-C7 | -2.66 | 119.34 | 122.90 |
| 2 | C | 1402 | NAG | C8-C7-N2 | 2.51 | 120.28 | 116.12 |
| 2 | B | 1402 | NAG | C8-C7-N2 | 2.50 | 120.26 | 116.12 |
| 2 | A | 1402 | NAG | C8-C7-N2 | 2.49 | 120.25 | 116.12 |
| 2 | C | 1404 | NAG | C8-C7-N2 | 2.42 | 120.13 | 116.12 |
| 2 | B | 1404 | NAG | C8-C7-N2 | 2.41 | 120.12 | 116.12 |
| 2 | A | 1404 | NAG | C8-C7-N2 | 2.41 | 120.11 | 116.12 |
| 2 | A | 1401 | NAG | C8-C7-N2 | 2.38 | 120.07 | 116.12 |
| 2 | C | 1401 | NAG | C8-C7-N2 | 2.38 | 120.06 | 116.12 |
| 2 | B | 1401 | NAG | C8-C7-N2 | 2.37 | 120.05 | 116.12 |
| 2 | A | 1404 | NAG | C2-N2-C7 | -2.35 | 119.75 | 122.90 |
| 2 | C | 1404 | NAG | C2-N2-C7 | -2.34 | 119.76 | 122.90 |
| 2 | B | 1404 | NAG | C2-N2-C7 | -2.34 | 119.77 | 122.90 |
| 2 | C | 1403 | NAG | C2-N2-C7 | -2.05 | 120.15 | 122.90 |
| 2 | A | 1403 | NAG | C2-N2-C7 | -2.03 | 120.18 | 122.90 |
| 2 | B | 1403 | NAG | C2-N2-C7 | -2.02 | 120.19 | 122.90 |

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

# 6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-75697. 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   |
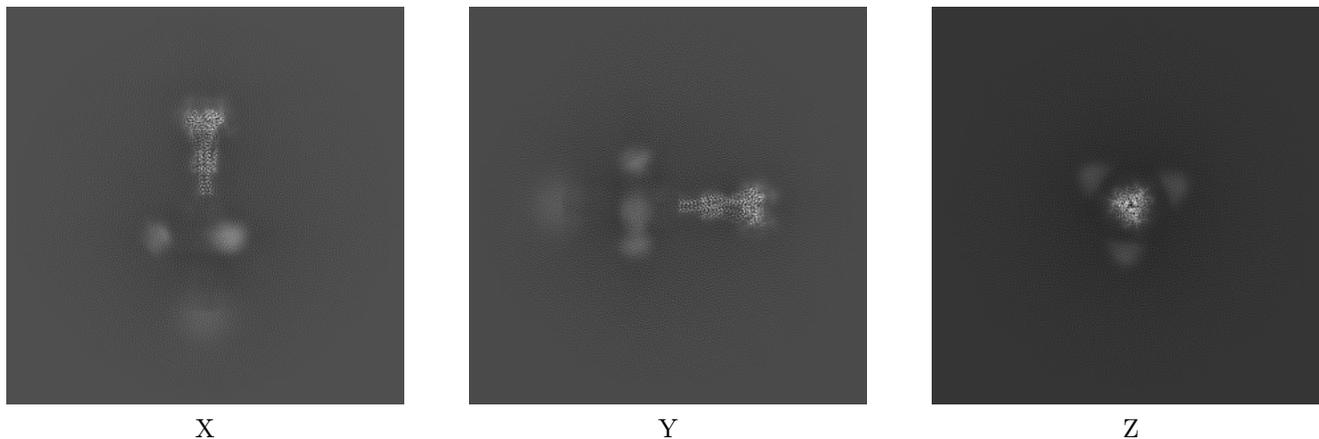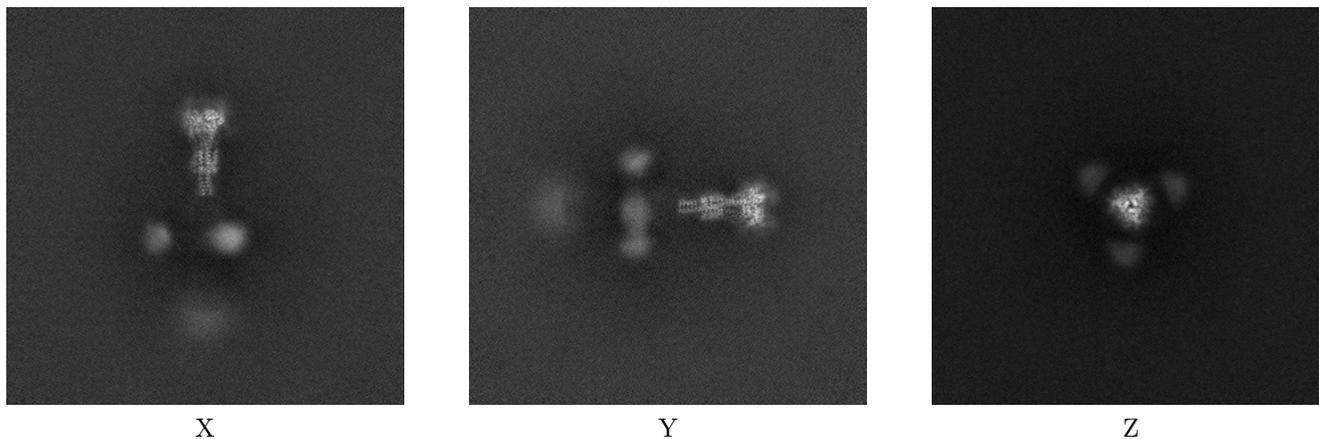
The images above show the map projected in three orthogonal directions.

## 6.2　Central slices ⓘ
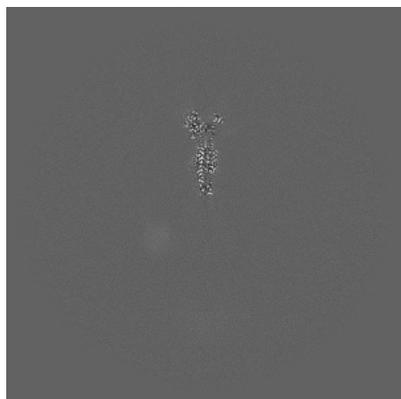
### 6.2.1　Primary map
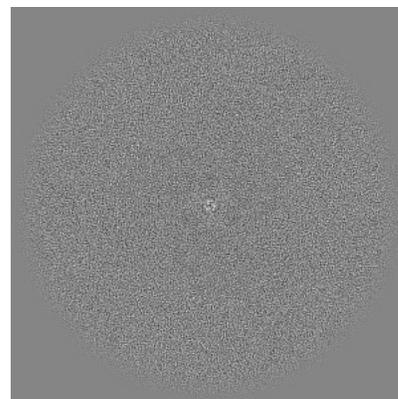


X Index: 320　　　　　　　　Y Index: 320　　　　　　　　Z Index: 320

### 6.2.2　Raw map
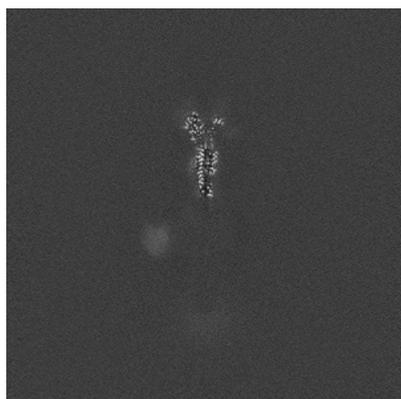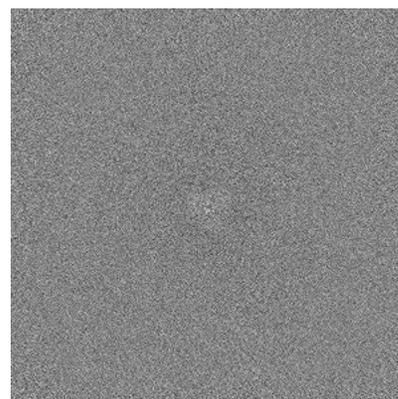


X Index: 320　　　　　　　　Y Index: 320　　　　　　　　Z Index: 320

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

## 6.3 Largest variance slices (i)

### 6.3.1 Primary map
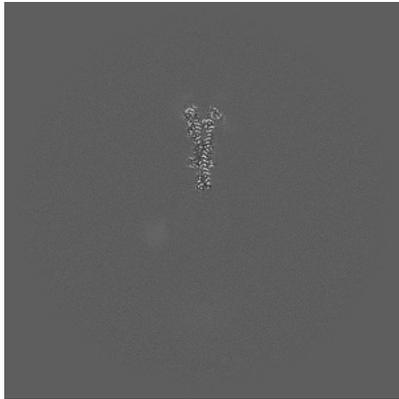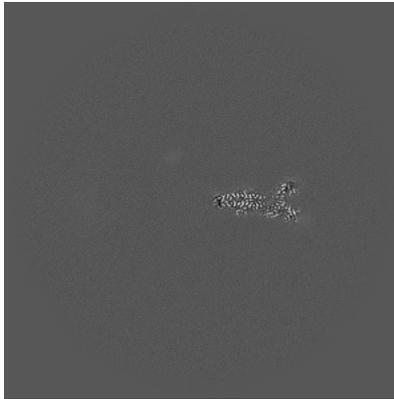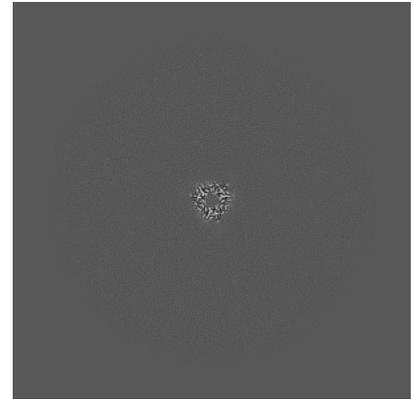


| X Index: 326 | Y Index: 324 | Z Index: 461 |

### 6.3.2 Raw map
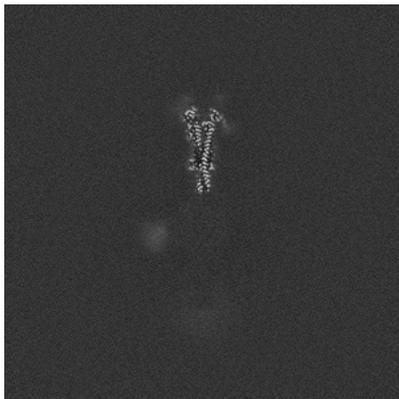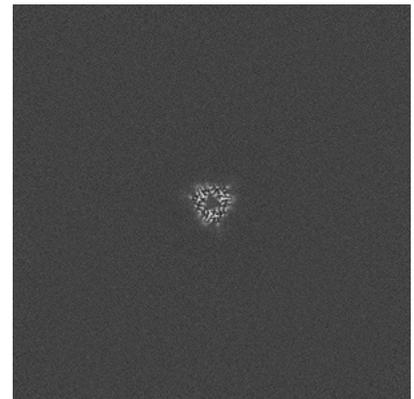


| X Index: 326 | Y Index: 324 | Z Index: 461 |

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

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

### 6.4.1 Primary map



X　　　　　　　　Y　　　　　　　　Z

### 6.4.2 Raw map



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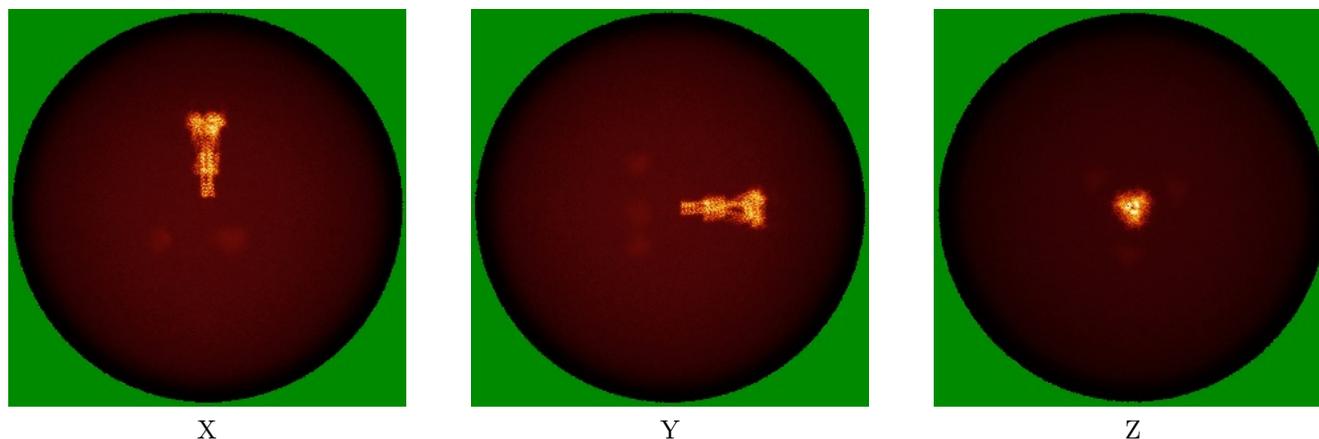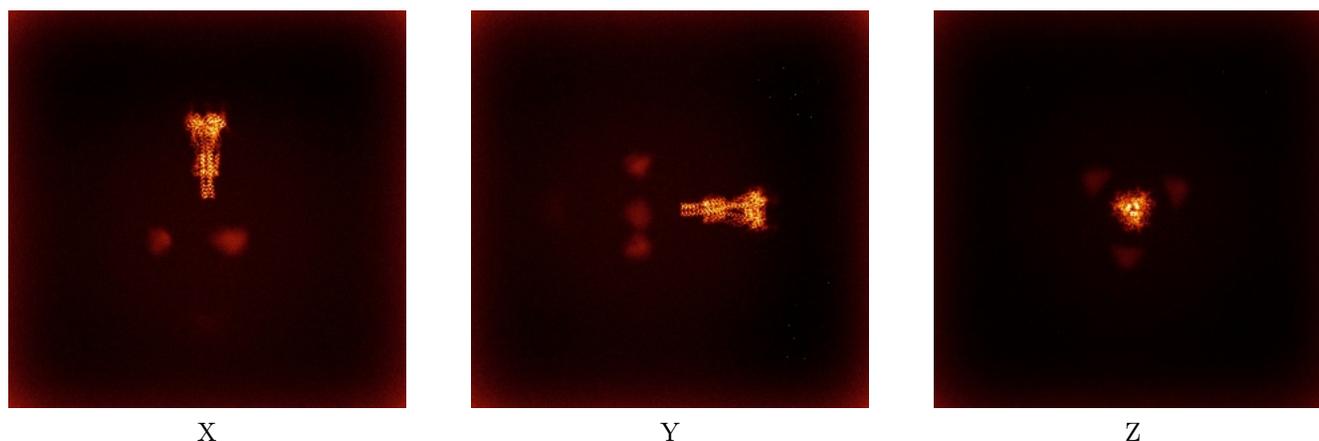
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views ⓘ

### 6.5.1 Primary map



X                 Y                 Z
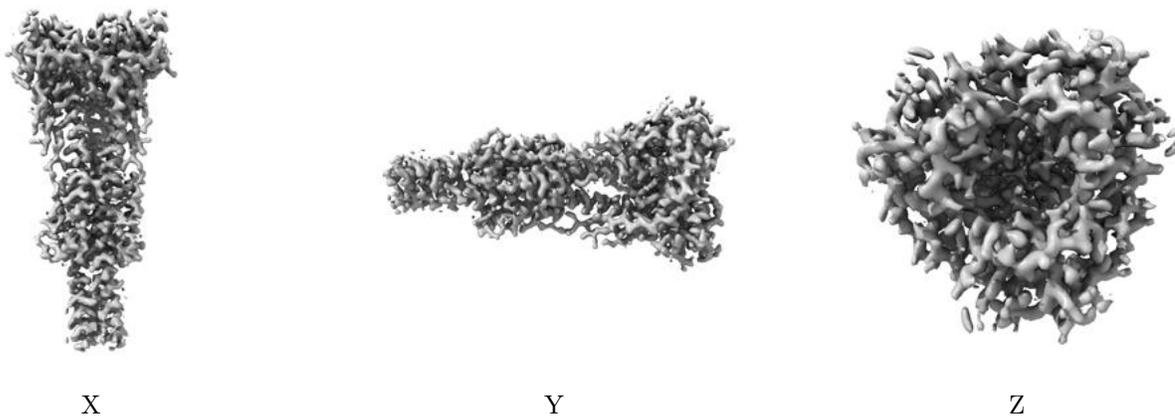
The images above show the 3D surface view of the map at the recommended contour level 1.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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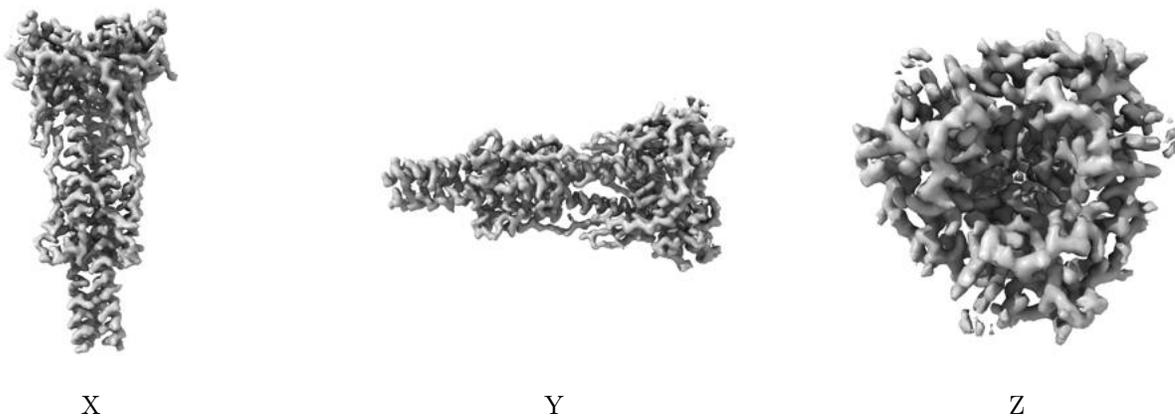
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

## 6.6 Mask visualisation ⓘ

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

# 7 Map analysis ⓘ

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

## 7.1 Map-value distribution ⓘ
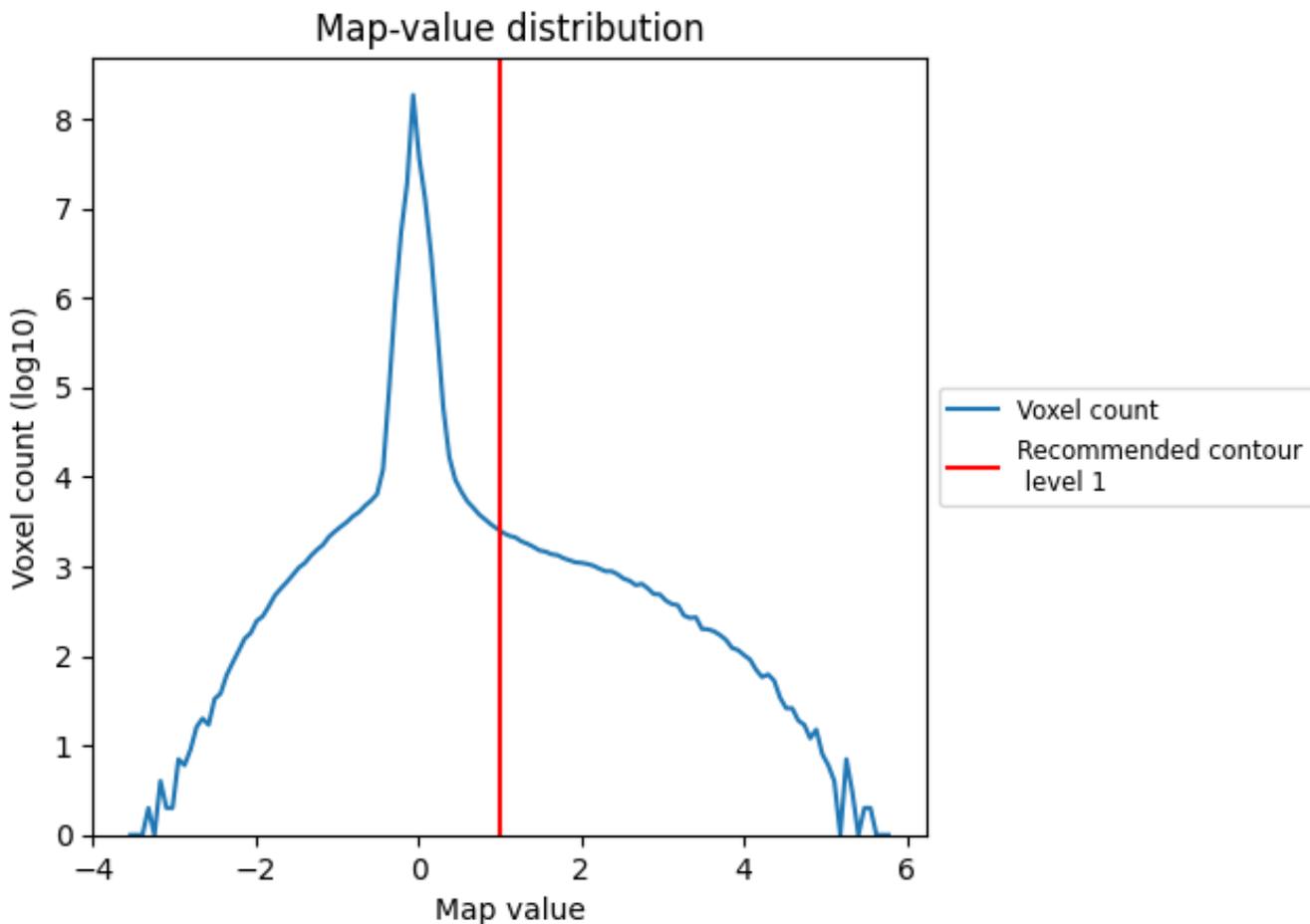


The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

## 7.2　Volume estimate ⓘ
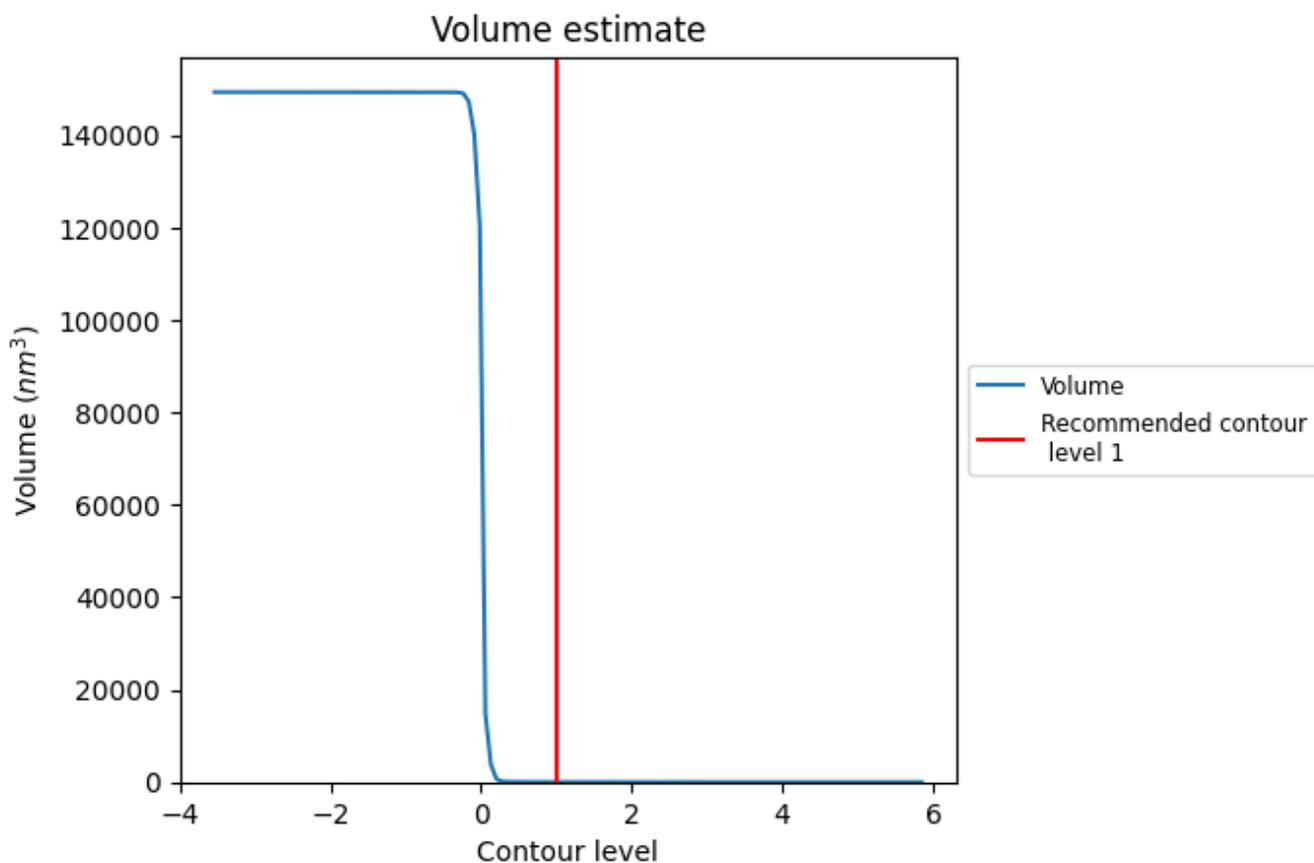


The volume at the recommended contour level is 21 nm$^3$; this corresponds to an approximate mass of 19 kDa.

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 ⓘ
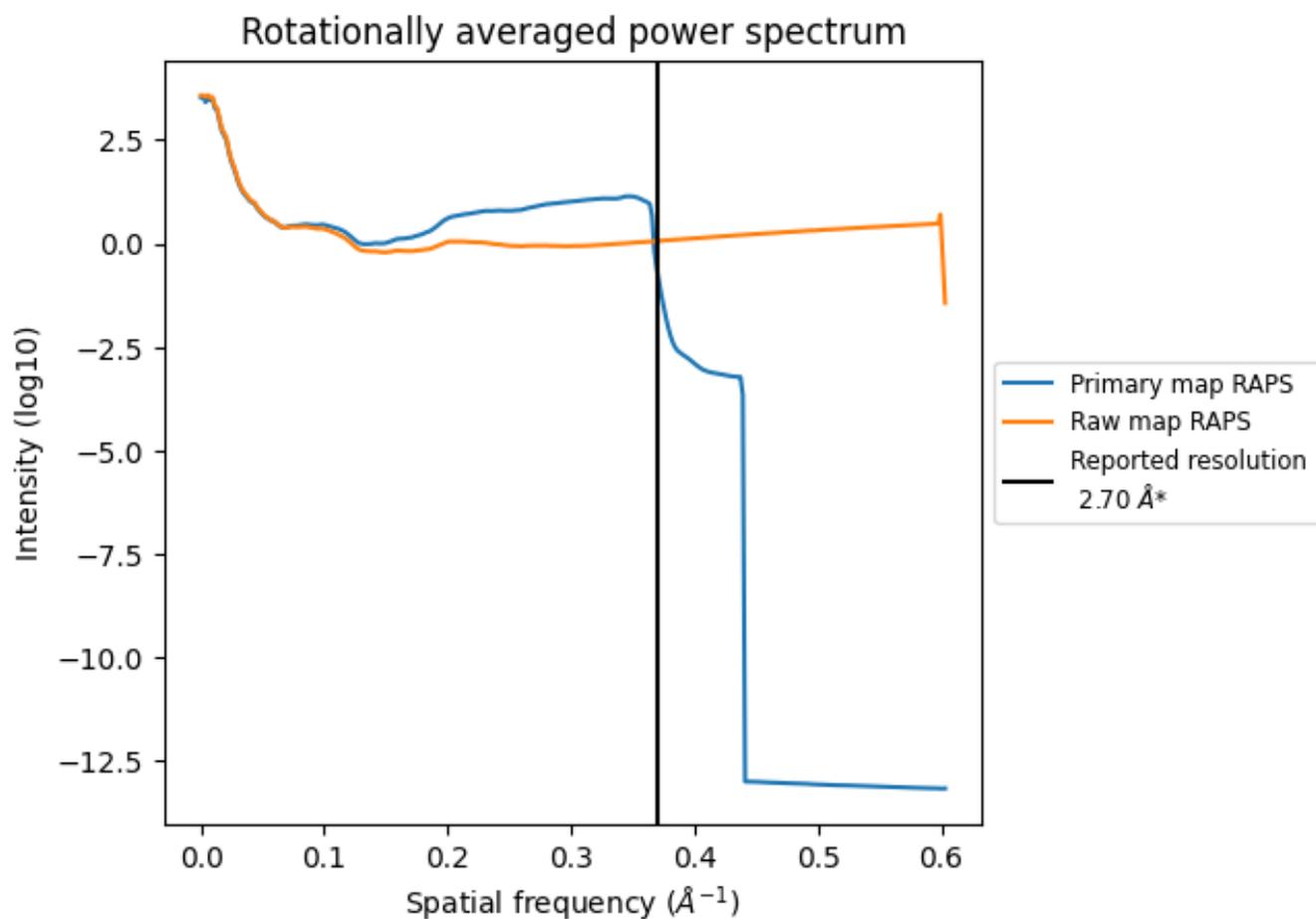


*Reported resolution corresponds to spatial frequency of 0.370 Å$^{-1}$

# 8　Fourier-Shell correlation ⓘ

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 ⓘ
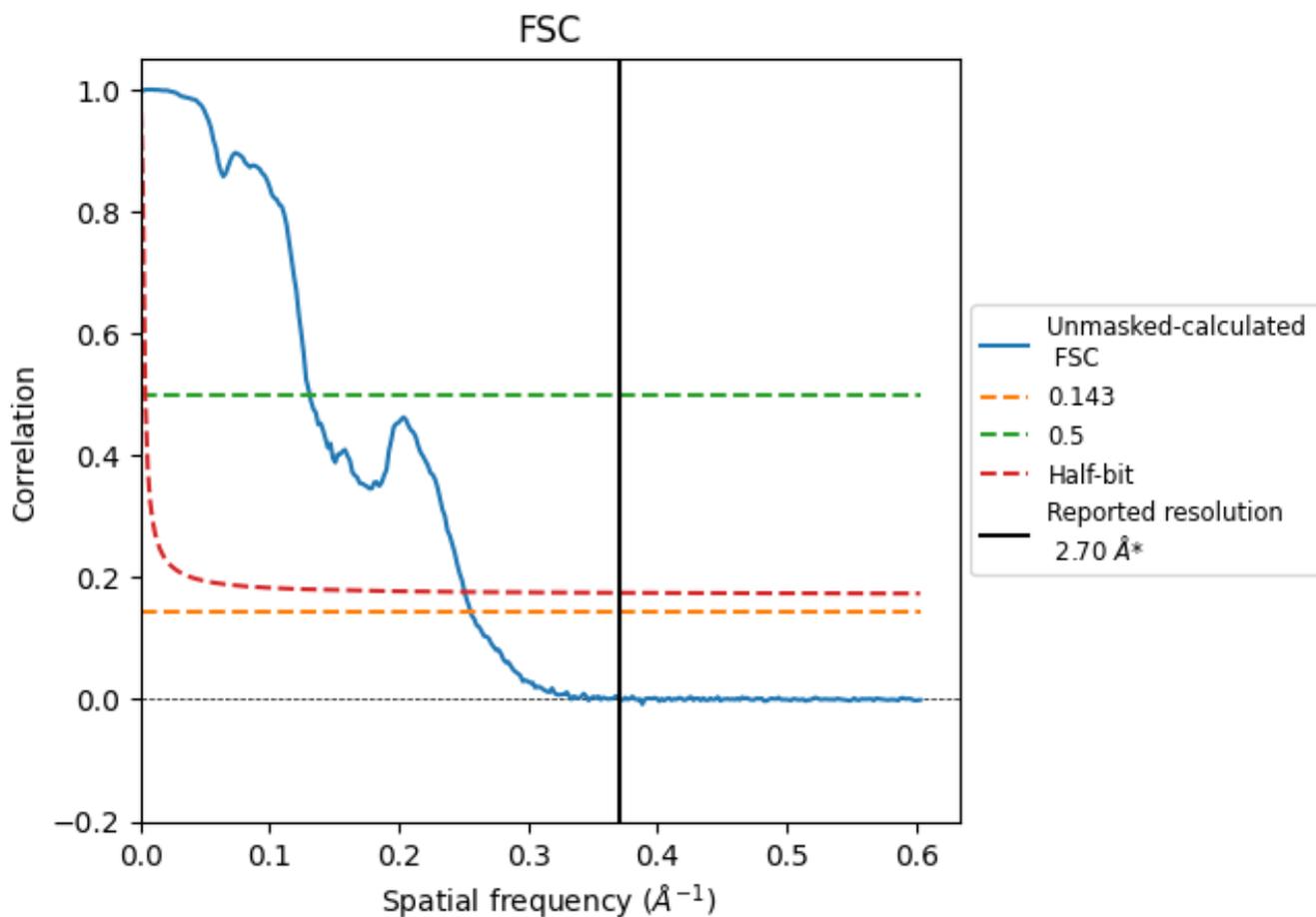


*Reported resolution corresponds to spatial frequency of 0.370 Å$^{-1}$

## 8.2 Resolution estimates (i)

| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 2.70 | - | - |
| Author-provided FSC curve | - | - | - |
| Unmasked-calculated* | 3.91 | 7.65 | 3.99 |

*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 3.91 differs from the reported value 2.7 by more than 10 %

# 9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-75697 and PDB model 11HN. Per-residue inclusion information can be found in section 3 on page 17.

## 9.1 Map-model overlay ⓘ



| X | Y | Z |
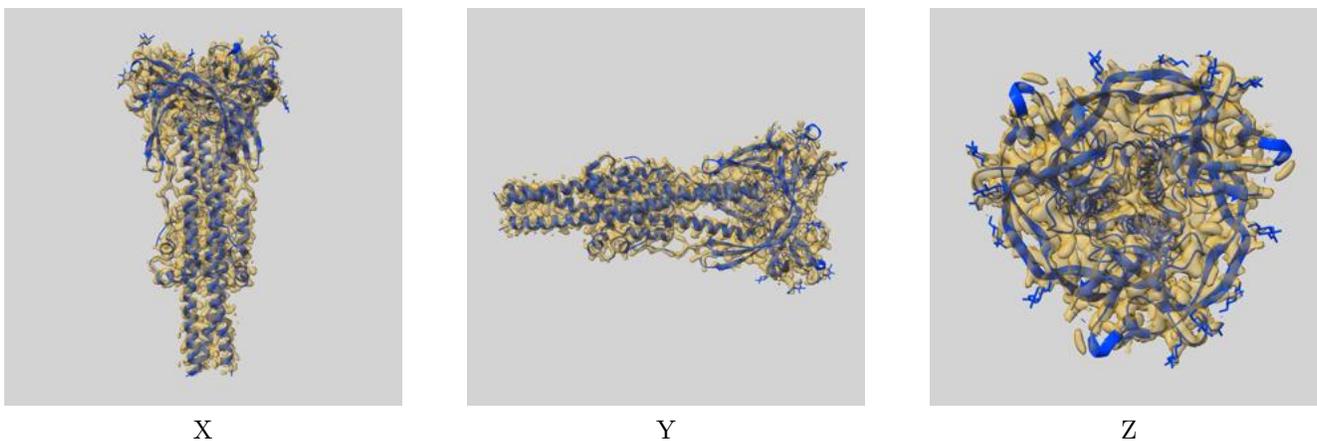
The images above show the 3D surface view of the map at the recommended contour level 1.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2    Q-score mapped to coordinate model ⓘ



X            Y            Z
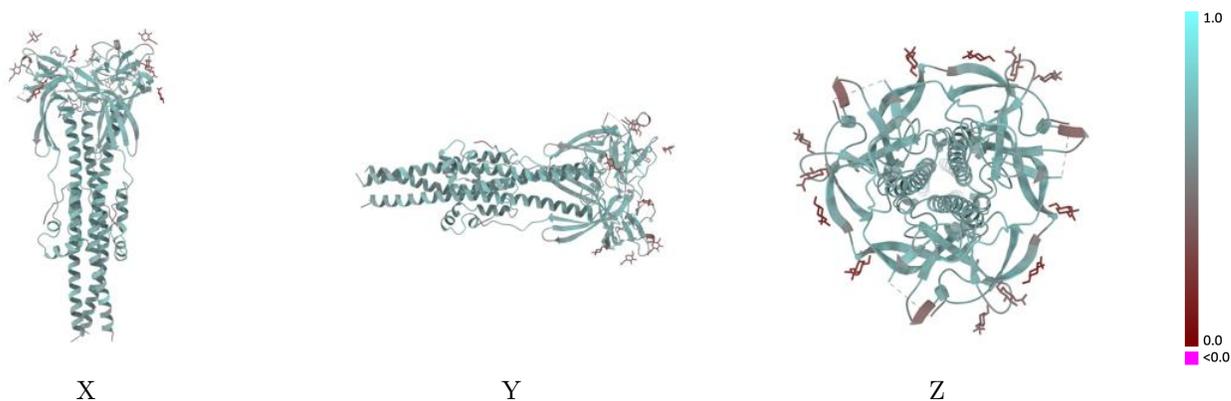
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ



X            Y            Z
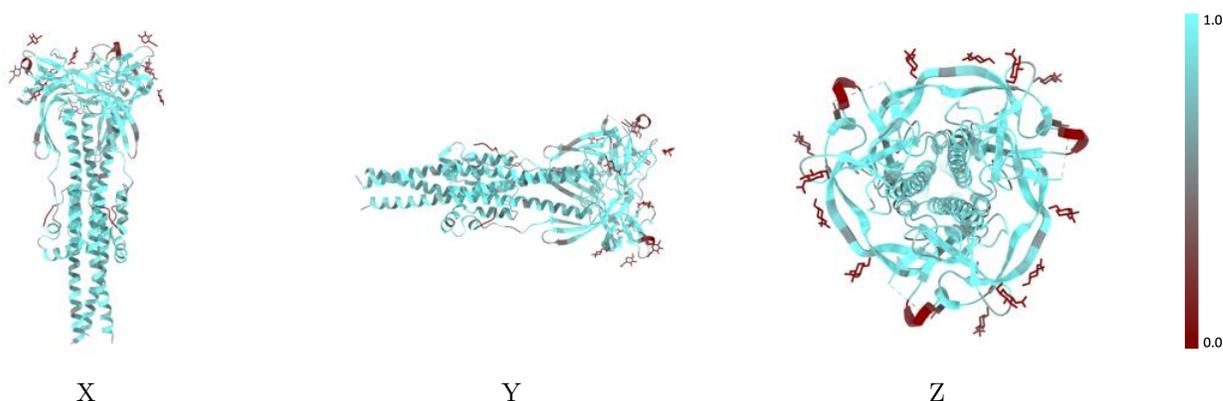
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (1).

## 9.4 Atom inclusion ⓘ
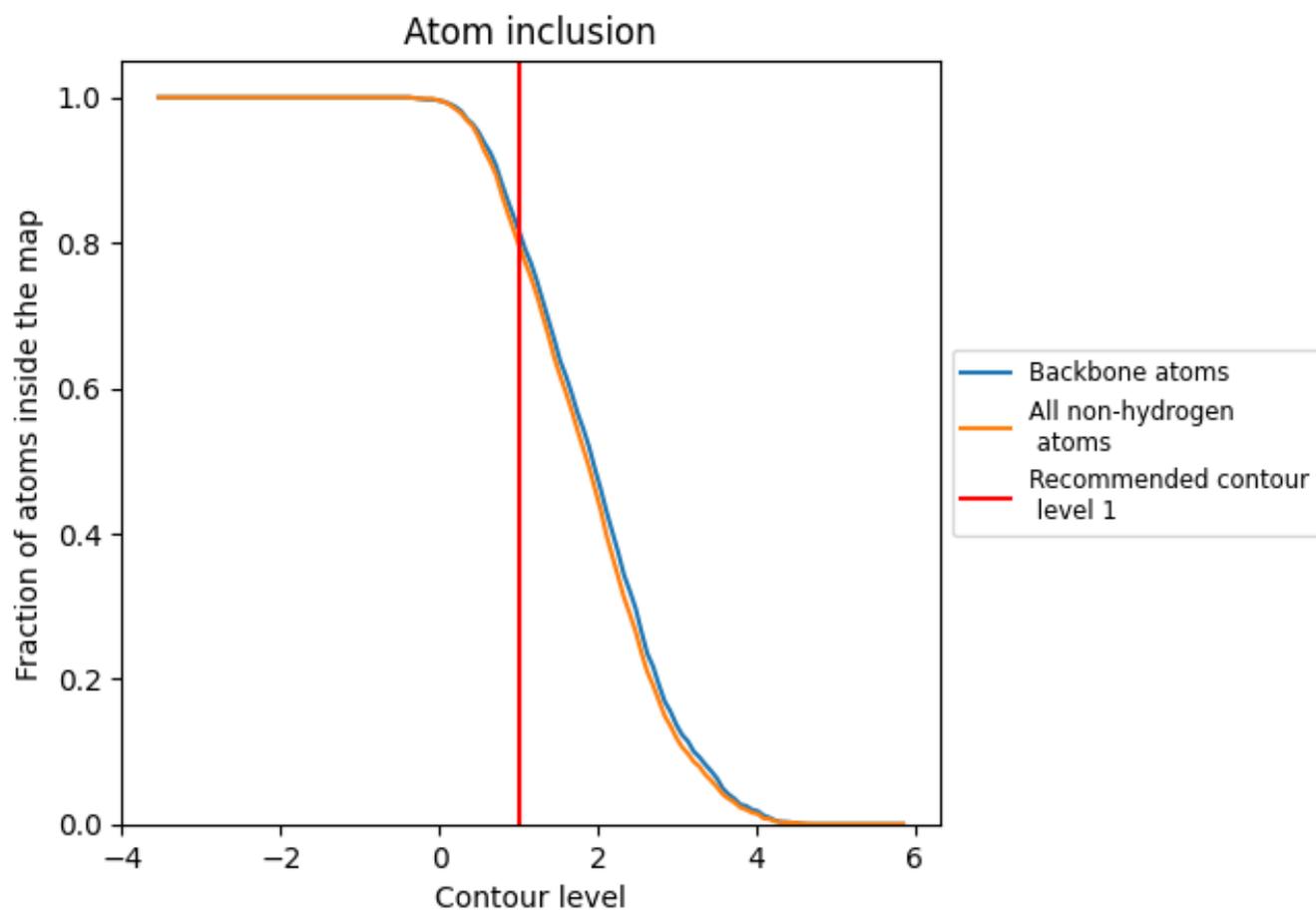


At the recommended contour level, 82% of all backbone atoms, 80% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (1) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|:-----:|:--------------:|:-------:|
| All   | 0.7980 | 0.6060 |
| A     | 0.7980 | 0.6060 |
| B     | 0.8010 | 0.6050 |
| C     | 0.8020 | 0.6070 |

1.0

0.0

<0.0