**Supplement Table 1 – CryoEM and model statistics of all ORC structures.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Data Collection** | ORCO1AAA | ORCO2WH | ORCOPEN | ORCDNA | ORCO2-5 |
| Microscope | Titan Krios | Titan Krios |  |  |  |
| Voltage (kV) | 300 | 300 |
| Nominal magnification | 130,000 | 130,000 |
| Exposure navigation | Stage Position | Stage Position |
| Cumulative exposure (e- Å-2) | 66 | 77 |
| Exposure rate (e- Å-2 sec-1) | 11 | 11 |
| Electrons per frame (e- Å-2) | 2.2 | 2.2 |
| Detector | K2 Summit | K2 Summit |
| Pixel size (Å) | 1.07 | 1.07 |
| Defocus range (µm) | -1.0 to -2.4 | -1.0 to -2.4 |
| Micrograph used | 9,068 | 4,627 |
| Total extracted particles (no.) | 2,097,508 | 494,812 |
| Refined particles (no.) | 854,972 | 209,313 |
|  |   |  |  |   |   |
| **Reconstruction** |   |  |  |   |   |
| Final particles (no.) | 160,500 | 60,001 | 83,895 | 37,734 | 53,009 |
| Symmetry imposed | C1 | C1 |  |  |  |
| Map sharpening B-factor (Å2) | -45 | -68 | -160 | -231 | -66 |
| Resolution (half maps) |   |  |  |  |   |
| FSC 0.143 (unmasked/masked) | 3.4/3.2 | 3.8/3.6 | 4.3/4.0 | 4.7/4.4 | 3.6/3.5 |
| Resolution (models) |   |  |  |  |   |
| FSC 0.5 (unmasked/masked) | 3.6/3.4 | 3.9/3.8 | 7.1/4.5 | 8.3/7.9 | 3.7/3.6 |
| FSC 0.143 (unmasked/masked) | 3.1/3.1 | 3.6/3.5 | 4.1/3.8 | 4.3/4.1 | 3.5/3.4 |
|  |   |  |  |  |   |
| **Atomic Models** |   |  |  |  |   |
| Protein residues | 1966 | 1816 | 2045 | 1932 | 1691 |
| Map correlation coefficient | 0.77 | 0.78 | 0.65 | 0.56 | 0.82 |
| R.M.S. Deviation |   |  |  |  |   |
| Bond lengths (Å) | 0.007 | 0.007 | 0.007 | 0.006 | 0.008 |
| Bond angles (°) | 1.289 | 1.144 | 1.366 | 1.144 | 1.094 |
| Ramachadran |   |  |  |  |   |
| Outliers (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Allowed (%) | 3.01 | 1.57 | 3.59 | 3.12 | 3.02 |
| Favored (%) | 96.99 | 98.43 | 96.41 | 96.88 | 96.98 |
| Poor rotamers (%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MolProbity Score | 1.19 | 1.11 | 1.53 | 1.39 | 1.17 |
| Clashscore (all atoms) | 2.36 | 3.22 | 5.37 | 4.24 | 2.16 |
| CaBlam Score (%) | 1.30 | 1.48 | 1.73 | 1.57 | 2.23 |
|  |  |  |  |  |  |