



**Supplemental Fig S3.** The computational cost of C<sub>TG</sub> and Serpentine. The C<sub>TG</sub> algorithm is performed on NVIDIA GeForce RTX 3060 Laptop, Intel(R) Core(TM) i7-11800H @ 2.30 GHz. Serpentine is performed on PC workstation with 128G RAM and with Intel(R) Xeon(R) Silver 4210 CPU @2.20GHz. Serpentine also requires large memory usage (for Chr3, 100 G for Serpentine and 400 Mb for C<sub>TG</sub>).