## **Description of Additional Supplementary Files**

File name: Supplementary Data 1

**Description:** Proteins list for the Nsun2 immunoprecipitation and mass spectrometric analyses.

File name: Supplementary Data 2

**Description:** A summary of ATAC-seq information in this study.

File name: Supplementary Data 3

Description: A summary of mRNA-seq, caRNA-seq, m<sup>5</sup>C MeRIP-seq, and Nsun2 RIP-seq

information in this study.

File name: Supplementary Data 4

**Description:** A summary of single cell RNA-seq information in this study.

File name: Supplementary Data 5

**Description:** A summary of antibodies and reagents information used in this study.

File name: Supplementary Data 6

**Description:** A summary of plasmids information in this study.

File name: Supplementary Data 7

**Description:** A summary of primers and reporter genes sequence information in this study.