

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: File contains the synthetic 3'UTR sequences used in the library.

File Name: Supplementary Data 2

Description: The number sequencing reads corresponding to each barcode/synthetic 3'UTR in plasmid sample.

File Name: Supplementary Data 3

Description: The number sequencing reads corresponding to each barcode/synthetic 3'UTR in four HeLa cells replicates.

File Name: Supplementary Data 4

Description: The number sequencing reads corresponding to each barcode/synthetic 3'UTR in polysome associated fractions from four HeLa cell replicates.

File Name: Supplementary Data 5

Description: The number sequencing reads corresponding to each barcode/synthetic 3'UTR in 40S subunit associated fractions from four HeLa cell replicates.

File Name: Supplementary Data 6

Description: The number sequencing reads corresponding to each barcode/synthetic 3'UTR in RNA samples from different cell lines (N2A, Hek293 and HDF)

File Name: Supplementary Data 7

Description: The number sequencing reads corresponding to each barcode/synthetic 3'UTR in RNA samples from mCherry-Smaug transfected HeLa cells