

## Description of Additional Supplementary Files

**Supplementary Data 1:** Expression (Log Norm Count) of *Drosophila* skeletal muscle transcripts under ALF and TRF in WT, HFD, and *Sk2* models.

**Supplementary Data 2:** Differentially expressed gene analysis from DeSeq2 under TRF versus ALF in WT.

**Supplementary Data 3:** Differentially expressed gene analysis from DeSeq2 under TRF versus ALF in HFD.

**Supplementary Data 4:** Differentially expressed gene analysis from DeSeq2 under TRF versus ALF in *Sk2*.

**Supplementary Data 5:** FPKM of genes upregulated in HFD-TRF.

**Supplementary Data 6:** FPKM of genes upregulated in *Sk2*-TRF.

**Supplementary Data 7:** Average FPKM of all genes in pathways seen in Human (restricted vs unrestricted) Genes.

**Supplementary Data 8:** Glossary of *Drosophila* orthologs of human genes and metabolite abbreviations.