

## Supporting Information

### [Table S1. Comparison of Different Primary Screen Analysis Methods](#)

doi:10.1371/journal.pbio.0060292.st001 (34 KB XLS)

### [Table S2. Genes Showing an Understorage Phenotype in the Primary \*Drosophila\* RNAi Screen](#)

doi:10.1371/journal.pbio.0060292.st002 (187 KB DOC)

### [Table S3. Genes Showing an Overstorage Phenotype in the Primary \*Drosophila\* RNAi Screen](#)

doi:10.1371/journal.pbio.0060292.st003 (273 KB DOC)

### [Table S4. \*Drosophila\* Primary Screen Dataset](#)

doi:10.1371/journal.pbio.0060292.st004 (16 MB XLS)

### [Table S5. Geneontology-Term Analysis with the VLAD Tool](#)

doi:10.1371/journal.pbio.0060292.st005 (186 KB XLS)

### [Table S6. Detailed Comparison to the Study of Guo et al. \[52\]](#)

doi:10.1371/journal.pbio.0060292.st006 (72 KB XLS)

### [Table S7. Validated RNAi Screen Hits](#)

doi:10.1371/journal.pbio.0060292.st007 (47 KB XLS)

### [Table S8. AML12 Cell Lipolysis and Lipogenesis Measurements](#)

doi:10.1371/journal.pbio.0060292.st008 (31 KB XLS)

### [Table S9. \*Drosophila\* Primary Screen Hits](#)

doi:10.1371/journal.pbio.0060292.st009 (1 MB XLS)

### [Table S10. Secondary screen data](#)

doi:10.1371/journal.pbio.0060292.st010 (848 KB XLS)

### Accession numbers

*Drosophila* RNAi screen hits: FBgn0000028, FBgn0000042, FBgn0000114, FBgn0000339, FBgn0000489, FBgn0000547, FBgn0000567, FBgn0001186, FBgn0001204, FBgn0001301, FBgn0002878, FBgn0003048, FBgn0003118, FBgn0003339, FBgn0003380, FBgn0003392, FBgn0003462, FBgn0003557, FBgn0003607, FBgn0003691, FBgn0004167, FBgn0004187, FBgn0004401, FBgn0004587, FBgn0004595, FBgn0004611, FBgn0004652, FBgn0004797, FBgn0004838, FBgn0004856, FBgn0004879, FBgn0005411, FBgn0005626, FBgn0005630, FBgn0010083, FBgn0010215, FBgn0010355, FBgn0010638, FBgn0010750, FBgn0011571, FBgn0011701, FBgn0013746, FBgn0014020, FBgn0015320, FBgn0015818, FBgn0015919, FBgn0016926, FBgn0016940, FBgn0019643, FBgn0020611, FBgn0020908, FBgn0021768, FBgn0022246, FBgn0023143, FBgn0024285, FBgn0024308, FBgn0024555, FBgn0024754, FBgn0025638, FBgn0026206, FBgn0026317, FBgn0026620, FBgn0026722, FBgn0026878, FBgn0027495, FBgn0027589, FBgn0027885, FBgn0027951, FBgn0028360, FBgn0028420, FBgn0028982, FBgn0029123, FBgn0029526, FBgn0029661, FBgn0029731, FBgn0029766, FBgn0029824, FBgn0029850, FBgn0029873, FBgn0029935, FBgn0030075, FBgn0030077, FBgn0030087, FBgn0030093, FBgn0030189, FBgn0030244, FBgn0030390, FBgn0030434, FBgn0030492, FBgn0030608, FBgn0030872, FBgn0030904, FBgn0031008, FBgn0031030, FBgn0031031, FBgn0031074, FBgn0031093, FBgn0031232, FBgn0031390, FBgn0031518, FBgn0031626, FBgn0031673, FBgn0031816, FBgn0031836, FBgn0031888, FBgn0031894,

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Mouse genes with a confirmed function in lipid storage regulation: *MGI:107807*, *MGI:107851*, *MGI:1333825*, *MGI:1334462*, *MGI:1335073*, *MGI:1351329*, *MGI:1353495*, *MGI:1354962*, *MGI:1858696*, *MGI:1861607*, *MGI:1891824*, *MGI:1891829*, *MGI:1913585*, *MGI:1914062*, *MGI:1914103*, *MGI:1914144*, *MGI:1914234*, *MGI:1914454*, *MGI:1915822*, *MGI:1916296*, *MGI:1917599*, *MGI:1929063*, *MGI:2385261*, *MGI:2385656*, *MGI:2387591*, *MGI:2388481*, *MGI:2443241*, *MGI:3041174*, *MGI:3694697*, *MGI:88192*, *MGI:95301*, *MGI:98342*, and *MGI:99431*.