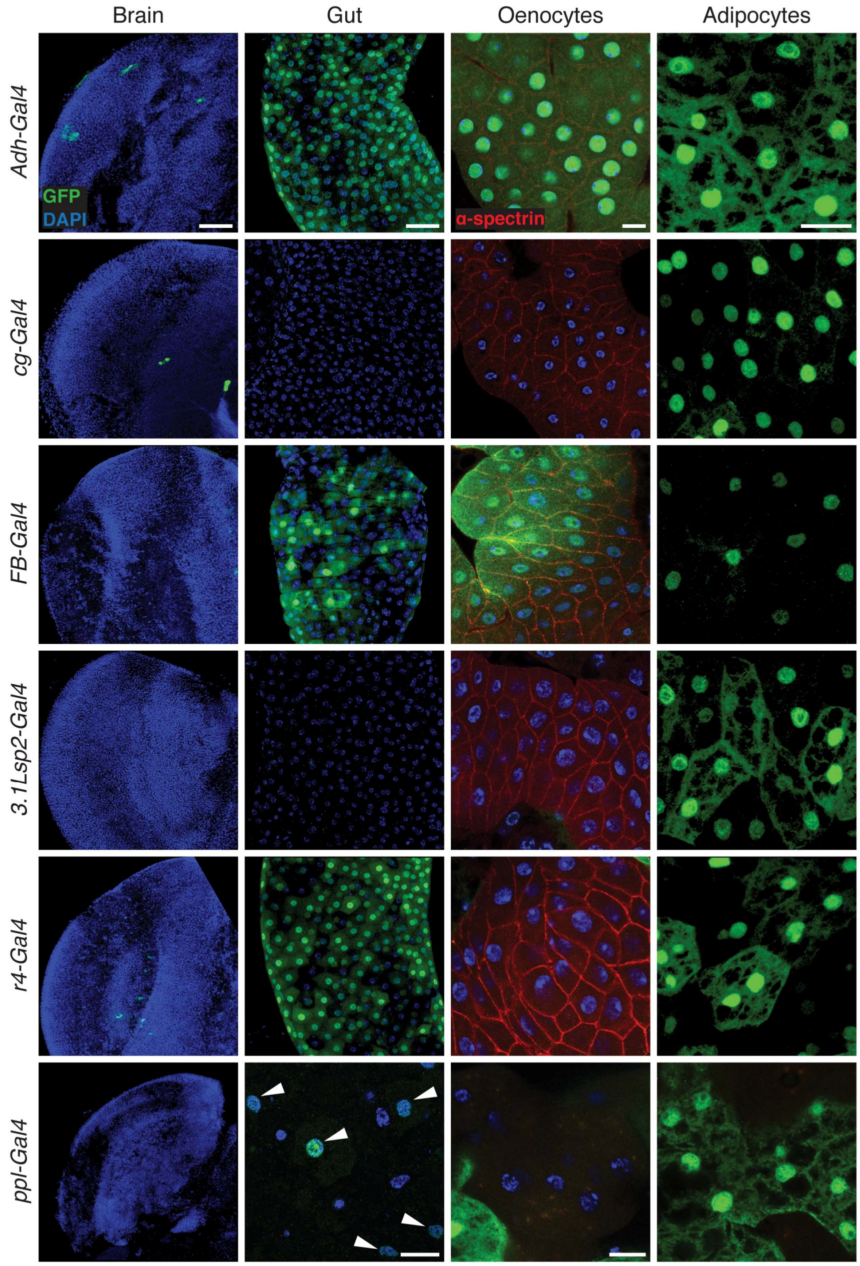
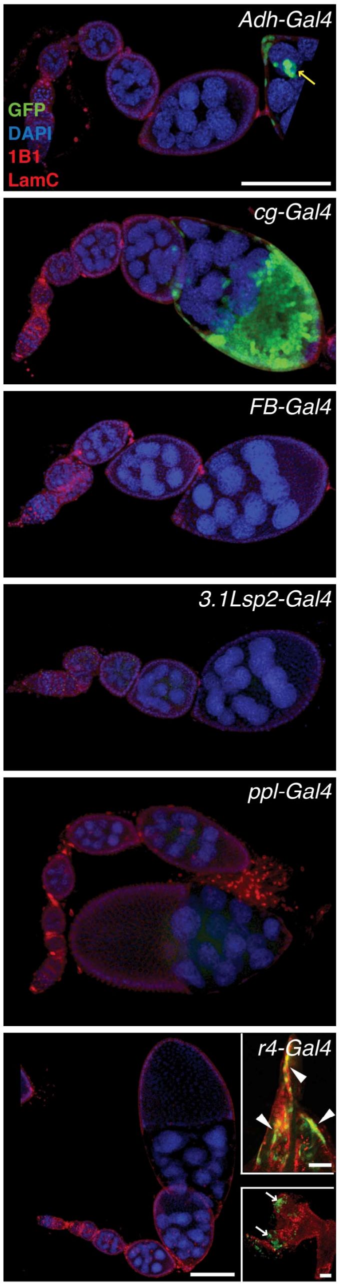


Supplemental Figure 1
Armstrong, Laws and Drummond-Barbosa

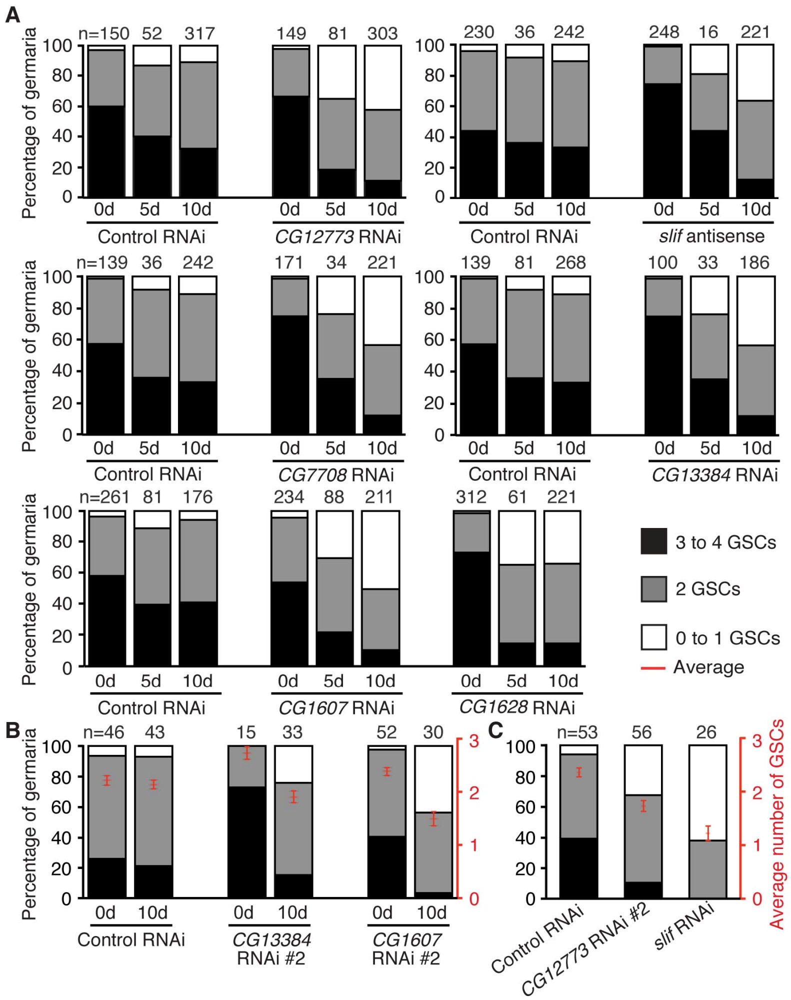
Fig. S1. In adult females, *3.1Lsp2-Gal4* is exclusively expressed in adipocytes. Expression of *UAS-GFP* (green) induced by several larval and/or adult fat body Gal4 drivers in adult female tissues shows that only *3.1Lsp2-Gal4* is exclusively expressed in adipocytes. DAPI (blue) labels nuclei in brains, guts and oenocytes; α-spectrin (red) labels cell membranes in oenocytes (except in *ppl-Gal4*). Arrowheads indicate GFP-positive nuclei in the gut, for *ppl-Gal4*. Scale bars: 50 µm (brains), 50 µm (guts, for all except *ppl-Gal4*), 20 µm (gut, for *ppl-Gal4*), 10 µm (oenocytes), or 20 µm (adipocytes).



Supplemental Figure 2
Armstrong, Laws and Drummond-Barbosa

Fig. S2. ***3.1Lsp2-Gal4*** **is not expressed in ovaries.**

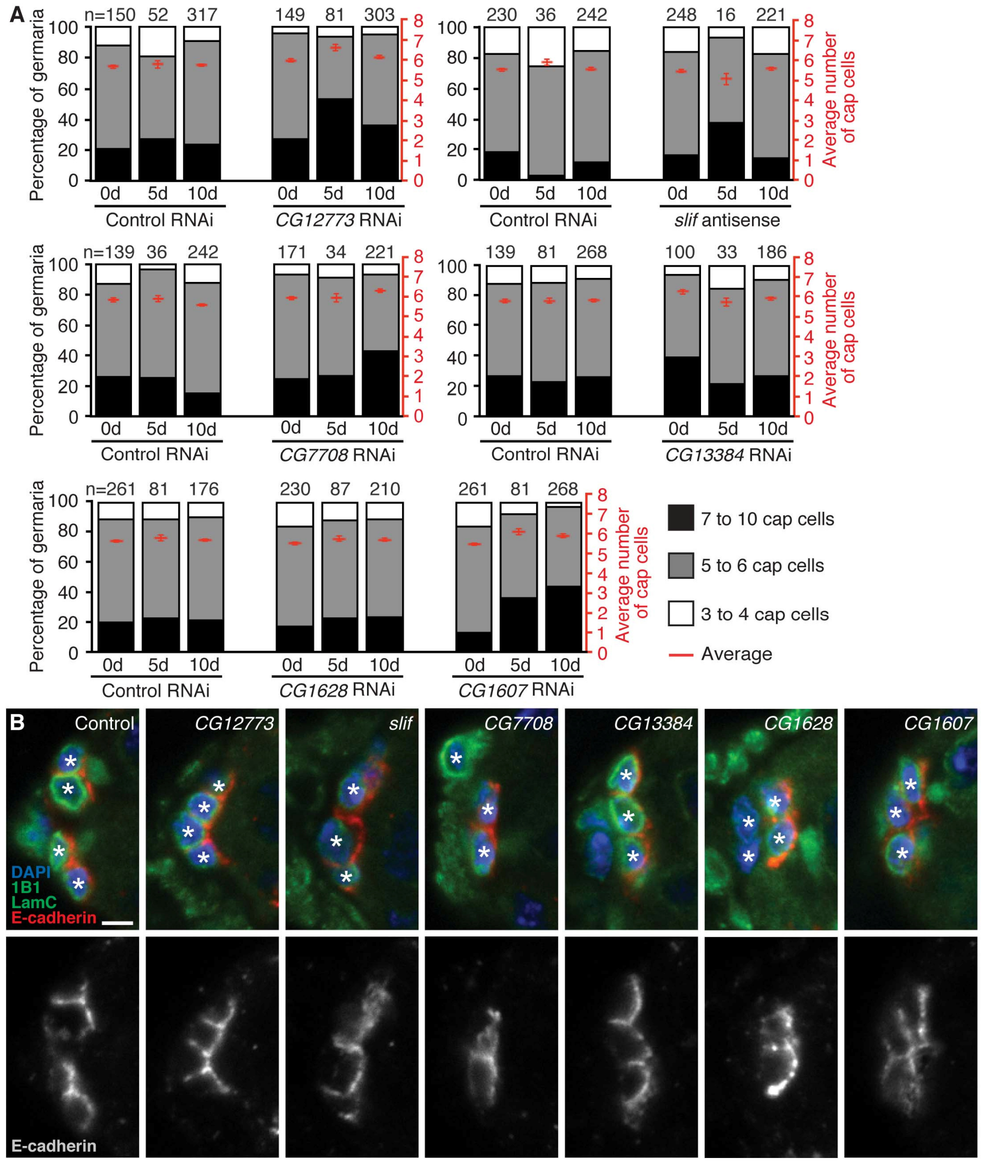
Analysis of *UAS-GFP* (green) induced by fat body Gal4 drivers shown in Figure 1 in adult ovaries shows that *3.1Lsp2-Gal4* has no ovarian expression. *Adh-Gal4* is expressed late follicle cells, including border cells (yellow arrow), *cg-Gal4* is expressed in stage 10 and later follicle cells, and *r4-Gal4* is expressed in late dorsal-anterior follicle cells (arrowheads) and oviduct (white arrows). DAPI (blue) labels nuclei; 1B1 (red) labels cell membranes; LamC (red) labels nuclear envelopes of a subset of terminally differentiated cells. Scale bars: 100 μm (main panels), 50 μm (top inset), 50 μm (bottom inset).



Supplemental Figure 3
Armstrong, Laws, and Drummond-Barbosa

Fig. S3. Reduced amino acid transport in adipocytes leads to higher rates of GSC loss in the ovary.

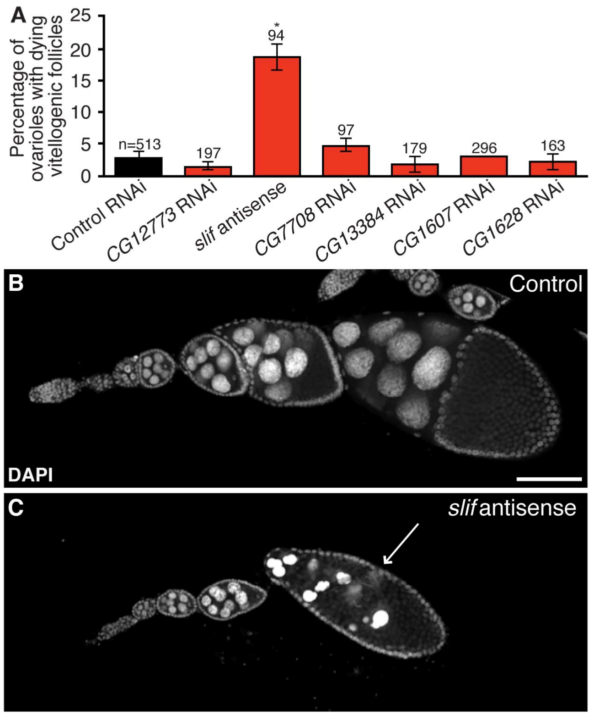
(**A-C**) Frequencies of germaria containing zero-or-one, two, or three-or-four GSCs at different days after switch to 29°C for *Gal80^ts^; Lsp2*-mediated induction of a *UAS-slif* *antisense* or *UAS-RNAi* transgenes against amino acid transporters *CG12773*, *CG7708*, *CG13384*, *CG1607*, *CG1628*, *CG12943* or *white* control. The same data used to calculate GSC number averages in Fig. 4 are plotted in (A). In (C), data at 10 days after switch to 29^{o}C are shown. The reduction in average GSC numbers upon adipocyte inhibition of amino acid transport (Fig. 4) reflects an increased percentage of germaria showing zero-or-one GSC and decreased fraction retaining two or three-or-four GSCs. The right *y*-axis in (B,C) shows the average number of cap cells per germarium. Number of germaria analyzed is shown above each bar.



Supplemental Figure 4
Armstrong, Laws, and Drummond-Barbosa

Fig. S4. Reduced amino acid transport in adipocytes does not affect cap cell number or E-cadherin levels.

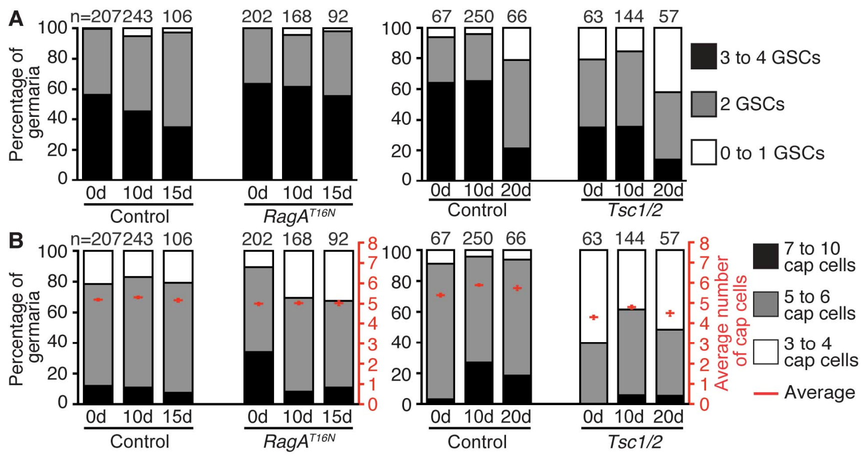
(**A**) Frequencies of germaria containing three-or-four, five-or-six, or seven-to-10 cap cells (left *y*-axis), and average number of cap cells per germarium (right *y*-axis) at different days after switch to 29°C for *Gal80^ts; Lsp2*-mediated induction of a *UAS-slif antisense* or *UAS-RNAi* transgenes against amino acid transporters *CG12773*, *CG7708*, *CG13384*, *CG1607*, *CG1628*, *CG12943* or *white* control. Number of germaria analyzed is shown above each bar. (**B**) Germaria from females at 10 days of adult adipocyte-specific knockdown of amino acid transporters or *white* control gene showing no obvious difference in levels of E-cadherin (red) at GSC-cap cell junctions. DAPI (blue) labels nuclei; 1B1 (green) labels fusomes; LamC (green) labels cap cell nuclear envelopes. Asterisks indicate cap cells. Scale bar, 2.5 μm.



Supplemental Figure 5
Armstrong, Laws and Drummond-Barbosa

Fig. S5. Adult adipocyte-specific knockdown of amino acid transporters does not disrupt vitellogenesis, except in the case of *slif*.

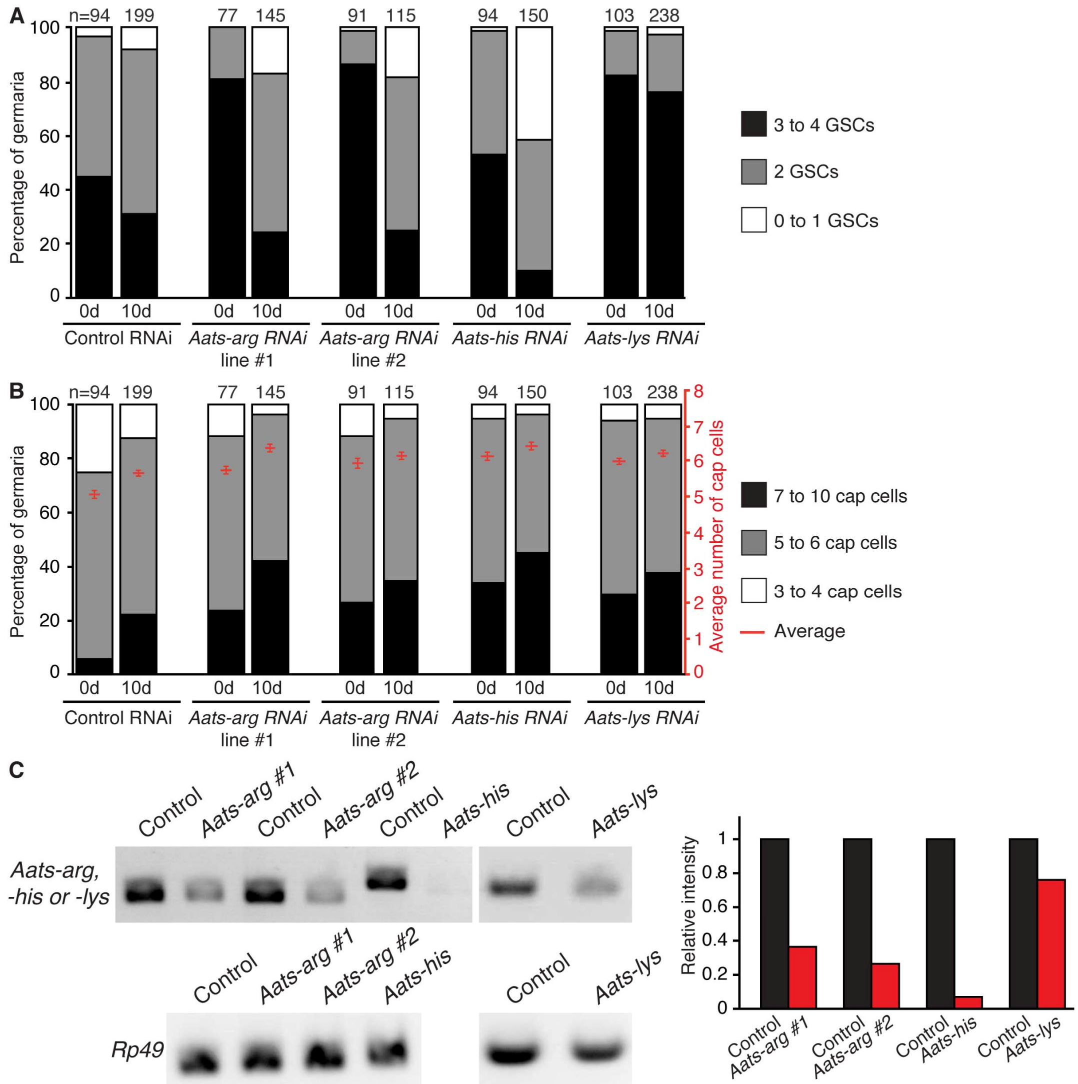
(**A**) Percentage of ovarioles containing dying vitellogenic follicles at 10 days of adipocyte knockdown of amino acid transporters. Number of ovarioles analyzed is shown above each bar. *$P<0.05$, Student's *t* test. Error bars indicate mean ± s.e.m. (**B,C**) DAPI-stained ovarioles from control (B) or *slif* (C) RNAi genotypes shown in (A). Arrow indicates degenerating follicle, recognized by the presence of pyknotic nuclei. Scale bar, 100 μm.



Supplemental Figure 6
Armstrong, Laws, and Drummond-Barbosa

Fig. S6. Reduced TOR signaling in adult adipocytes does not affect GSC or cap cell number.

(**A,B**) Frequencies of germaria containing zero-or-one, two, or three-or-four GSCs (A), or three-or-four, five-or-six, or seven-to-ten cap cells (B) at different days after switch to 29°C for *Gal80*^{ts}*; Lsp2*-mediated induction of dominant negative *UAS-RagA*^{T16N} or *UAS-Tsc1* and *UAS-Tsc2* (*Tsc1/2*) transgenes. The same data used to calculate GSC number averages in Fig. 6A are plotted in (A). The right *y*-axis in (B) shows the average number of cap cells per germarium. Number of germaria analyzed is shown above each bar.



Supplemental Figure 7
Armstrong, Laws and Drummond-Barbosa

Fig. S7. Adult adipocyte-specific knockdown of aminoacyl-tRNA synthetases causes a reduction in GSC, but not cap cell, numbers.

(**A,B**) Frequencies of germaria containing zero-or-one, two, or three-or-four GSCs (A), or three-or-four, five-or-six, or seven-to-10 cap cells (B) at zero or 10 days after switch to 29^{o}C for *Gal80^{ts}; Lsp2*-mediated induction of *GFP* control, *Arginyl-tRNA synthetase* (*Aats-arg*), *Histidyl-tRNA synthetase* (*Aats-his*), or *Lysyl-tRNA synthetase* (*Aats-lys*) RNAi transgenes. The same data used to calculate GSC number averages in Fig. 7A are plotted in (A). The right *y*-axis in (B) shows the average number of cap cells per germarium. Number of germaria analyzed is shown above each bar. (**C**) RT-PCR analysis of hand-dissected fat bodies showing knockdown of amino acid transporters at 10 days of *Gal80^{ts}; Lsp2*-mediated induction of RNAi transgenes against *aminoacyl-tRNA synthetases* or *GFP* control. Note that *Aats-lys* knockdown was relatively inefficient and did not alter GSC number.

Table S1. Amino acid transporters tested in this study

AAT[a]	Type[b]	RNAi transgene #1	RNAi transgene #2[c]	Fat body expression[d]
CG1607[e]	polyamine transporter	*P{GD4651}v14925*	*P{KK107364}VIE-260B*	larval/adult
CG1628	L-ornithine transporter	*P{KK108506}VIE-260B*	*P{GD8885}v47475*	adult
CG4991	n.s.[f]	*P{GD3406}v30263*	-	-
CG5535	cationic amino acid transporter	*P{KK100907}VIE-260B*	-	-
CG7255	cationic amino acid transporter	*P{KK110010}VIE-260B*	-	-
CG7708	proline:sodium symporter; choline transporter	*P{KK109385}VIE-260B*	*P{GD3648}v30302*	-
CG7888	n.s.	*P{GD2411}v37263*	-	-
CG8785	n.s.	*P{GD1961}v4650*	-	-
CG9413	polyamine transporter	*P{KK101306}VIE-260B*	-	-
CG12531	polyamine transporter; cationic amino acid transporter	*P{KK109373}VIE-260B*	-	-
CG12773	sodium:potassium: chloride symporter	*P{KK102472}VIE-260B*	*P{GD3189}v9899*	larval/adult
CG12943	n.s.	*P{KK112469}VIE-260B*	-	-
CG13248	polyamine transporter; cationic amino acid transporter	*P{KK103406}VIE-260B*	-	-
CG13384	n.s.	*P{KK102447}VIE-260B*	*P{GD1007}v44246*	adult
CG13646	n.s.	*P{GD257}v1571*	-	-
CG13743	n.s.	*P{GD3488}v40974*	-	-
CG16700	GABA:hydrogen symporter	*P{GD3405}v45188*	-	-
CG17119	L-cystine transporter	*P{GD3122}v51127*	-	-
CG30394	n.s.	*P{GD2127}v3470*	-	-
CG32079	n.s.	*P{KK107121}VIE-260B*	-	-
dmGlut	glutamate transporter	*P{TRiP.HMS01615}attP2*	-	larval
kazachoc	potassium:chloride symporter activity	*P{TRiP.HMS01058}attP2*	-	-
minidiscs	polyamine transporter; leucine import	*P{GD453}v42485*	-	adult[g]
Ncc69	sodium:potassium:chloride symporter	*P{KK108763}VIE-260B*	-	-
pathetic	n.s.	*P{KK104735}VIE-260B*	-	larval
slimfast	polyamine transporter; cationic amino acid transporter	*slif antisense*[h]	*P{GD12619}v45590*	larval[h]

[a] AAT, amino acid transporter. The *Drosophila* genome encodes 40 predicted amino acid transporters; for 26 of them, RNAi lines were available (www.flybase.org).
[b] Type of amino acid transporter according to FlyBase annotation (www.flybase.org).
[c] The second set of RNAi lines target sequences that are different from those targeted by the first set (stockcenter.vdrc.at).
[d] Fat body expression is listed as reported in FlyBase, except where indicated.
[e] The red font indicates amino acid transporters followed up on in this study.
[f] n.s., not specified.
[g] Adult fat body expression of *minidiscs* reported in Martin et al., 2000.
[h] Larval fat body expression of *slif* and *UAS-slif* antisense transgene described in Colombani et al., 2003.

Table S2. Primers used for RT-PCR analyses

Gene	Forward	Reverse
CG1607	DDB788 (5'-AGTATCGGTGTGGCTGTATTG-3')	DDB789 (5'-CTGGCAGAAGTTGTTGTGTATTT-3')
CG12773	DDB763 (5'-CATGTTAATGCCCGACAG-3')	DDB764 (5'-CATAGCTCTCGTCAGCGTC-3')
CG13384	DDB790 (5'-CTGGATCGGGAGATGATGAAAT-3')	DDB791 (5'-ACGCCACAAAGAGGAAGTAG-3')
Aats-arg	DDB796 (5'-CCGAACGATCTGCTATCCTAAA-3')	DDB797 (5'-TCTTAGCCAGCTTCCATTCC-3')
Aats-his	DDB794 (5'-CCACATCGCCAAGGTCTATC-3')	DDB795 (5'-ATCGAAGCTAACTCGCTTATCC-3')
Aats-lys	DDB792 (5'-GGCTCCTACAAGGTCATCTATC-3')	DDB793 (5'-GGTATACGCGTTGCAAATCTC-3')
Gcn2	DDB811 (5'-ACACTGGCCCTAAGCCAATC-3')	DDB812 (5'-GCCTTGCTGGTGAATATGCG-3')
Rp49	DDB137 (5'-CAGTCGGATCGATATGCTAAGC-3')	DDB138 (5'-AATCTCCTTGCGCTTCTTGG-3')