

Supplementary Table 2. Glutathione S-Transferase genes in *Lutzomyia longipalpis*. The gene ID, protein length (amino acids) and number of exons are shown for *L. longipalpis* genes and their best matching genes in *Aedes aegypti*, *Anopheles gambiae* and *Drosophila melanogaster*. Gene IDs followed by a letter (e.g. “_a”) were manually edited from the original gene model.

<i>Lutzomyia longipalpis</i>	Subfamily	<i>Aedes aegypti</i>	<i>Anopheles gambiae</i>	<i>Phlebotomus papatasi</i>	<i>Drosophila melanogaster</i>
LLOJ007285 (220 aa; 3 exons)	GSTD	AAEL001090, GSTD7 (218 aa; 4 exons)	AGAP004163, GSTD7 (218 aa; 3 exons)	PPAI001211 (217 aa; 3 exons)	FBgn0038029, GSTD11 (222/243 aa; 3/3 exons)
LLOJ004462, GSTD (212 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_a ¹ (215 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_b ¹ (217 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_c ¹ (213 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_d ¹ (217 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_e ¹ (218 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_f ¹ (222 aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004461_g ¹ (218aa; 3 exons)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004460_a ² (>128 aa; 3 exons; partial - internal gap)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ004460_b ² (>176 aa; 3 exons; partial - C-terminal gap)	GSTD	AAEL001061, GSTD1 (216/209/211 aa; 2/2/2 exons)	AGAP004164, GSTD1-4 (209/209/216/186 aa; 2/2/2/2 exons)	PPAI006595 (169 aa; 1 exon)	FBgn0001149, GSTD1 (209/209 aa; 1/1 exon)
LLOJ002711_a ³ (>112 aa; ~2 exons)	GSTI	AAEL011752, GSTI1 (231 aa; 2 exons)	AGAP000947, GSTU1 (233 aa; 2 exons)	PPAI009870 (229 aa; 2 exons)	FBgn0250732, GST-containing FLYWCH zinc-finger protein, gzf (234/1045/1045 aa; 2/4/4 exons)
LLOJ002711_b ³ (>161 aa; ~2 exons)	GSTI	AAEL011752, GSTI1 (231 aa; 2 exons)	AGAP000947, GSTU1 (233 aa; 2 exons)	PPAI009870 (229 aa; 2 exons)	FBgn0250732, GST-containing FLYWCH zinc-finger protein, gzf (234/1045/1045 aa; 2/4/4 exons)

					exons)
LLOJ002711_c ³ (>87 aa; ~2 exons)	GSTI	AAEL011752, GSTI1 (231 aa; 2 exons)	AGAP000947, GSTU1 (233 aa; 2 exons)	PPAI009870 (229 aa; 2 exons)	FBgn0250732, GST-containing FLYWCH zinc-finger protein, gzf (234/1045/1045 aa; 2/4/4 exons)
LLOJ009136_a ⁴ , GSTO2 (253 aa; 4 exons)	GSTO	AAEL017085, GSTO1 (257 aa; 4 exons)	AGAP005749, GSTO1 (248 aa; 3 exons)	PPAI000142 (50 aa; 2 exons)	FBgn0035907, GstO1 (254 aa; 4 exons)
LLOJ009036_a ⁵ (>44 aa; >1 exon)	GSTS	AAEL011741, GSTS1 (237/237/203/203 aa; 4/5/3/4 exons)	AGAP010404, GSTS1 (203/203 aa; 3/4 exons)	No matches	FBgn0010226, GstS1 (249/249/249/250 aa; 4/4/4/4 exons)
LLOJ009037, GSTS1 (203 aa; 3 exons)	GSTS	AAEL011741, GSTS1 (237/237/203/203 aa; 4/5/3/4 exons)	AGAP010404, GSTS1 (203/203 aa; 3/4 exons)	PPAI002540, GSTS1 (158 aa; 2 exons)	FBgn0010226, GstS1 (249/249/249/250 aa; 4/4/4/4 exons)
LLOJ005757 (226 aa; 2 exons)	GSTT	AAEL009017, GSTT1 (229 aa; 3 exons)	AGAP000761, GSTT1 (229 aa; 3 exons)	PPAI003974 (258 aa; 2 exons)	FBgn0031117, GstT3 (228/228/268 aa; 3/3/4 exons)
LLOJ002025 (227 aa; 3 exons)	GSTT	AAEL025929 (231 aa; 2 exons)	AGAP000761, GSTT1 (229 aa; 3 exons)	PPAI003974 (258 aa; 2 exons)	FBgn0031117, GstT3 (228/228/268 aa; 3/3/4 exons)
LLOJ008830_a ⁶ (229 aa; 3 exons)	GSTT	AAEL009017, GSTT1 (229 aa; 3 exons)	AGAP000761, GSTT1 (229 aa; 3 exons)	PPAI003974 (258 aa; 2 exons)	FBgn0031117, GstT3 (228/228/268 aa; 3/3/4 exons)
LLOJ002682_a ⁷ (230 aa; 3 exons)	GSTT	AAEL025929 (231 aa; 2 exons)	AGAP000761, GSTT1 (229 aa; 3 exons)	PPAI003974 (258 aa; 2 exons)	FBgn0031117, GstT3 (228/228/268 aa; 3/3/4 exons)
LLOJ001842_a ⁸ (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ001842_b ⁸ (>167 aa; >3 exons; partial - C-terminal end missing)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ001842_c ⁸ (>109 aa; >2 exons; partial - N-terminal end missing)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0010039, GstD3 (199 aa; 1 exon)
LLOJ001842_d ⁸ (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ001842_e ⁸ (222 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0063494, GstE6 (222 aa; 1 exon)
LLOJ001842_f ⁸ (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0063494, GstE6 (222 aa; 1 exon)

LLOJ001842_g ⁸ (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ009529 (225 aa; 3 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010872 (220 aa; 3 exons)	FBgn0001149, GstD1 (209/209 aa; 1/1 exon)
LLOJ009528_a ⁹ (221 aa; 3 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010869 (221 aa; 3 exons)	FBgn0010043, GstD7 (224 aa; 1 exon)
LLOJ009528_b ⁹ (221 aa; 3 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010872 (220 aa; 3 exons)	FBgn0010044, GstD8 (212 aa; 1 exon)
LLOJ010488 (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0063497, GstE3 (220 aa; 1 exon)
LLOJ010539 (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0010044, GstD8 (212 aa; 1 exon)
LLOJ010538 (222/221 aa; 4/4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0001149, GstD1 (209/209 aa; 1/1 exon)
LLOJ010537 (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0001149, GstD1 (209/209 aa; 1/1 exon)
LLOJ010536 (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ010535_a ¹⁰ (>192 aa; >3 exons; partial - N-terminal end missing)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0010041, GstD5 (216 aa; 1 exon)
LLOJ010534 ¹⁰ (>191 aa; >3 exons; partial - N-terminal end missing)					FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ010533_a ¹¹ (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0001149, GstD1 (209/209 aa; 1/1 exon)
LLOJ010532 (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ010530 (221 aa; 4 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ010531_a ¹² (>115 aa; >2 exons; partial - C-terminal end missing)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010868 (221 aa; 4 exons)	FBgn0038029, GstD11 (222/243 aa; 3/3 exons)
LLOJ010531_b ¹²	GSTX	AAEL010500,	AGAP009342,	PPAI010868	FBgn0038029, GstD11

(>115 aa; >2 exons; partial - C-terminal end missing)		GSTX2 (218/192 aa; 3/3 exons)	GSTU3 (218 aa; 2 exons)	(221 aa; 4 exons)	(222/243 aa; 3/3 exons)
LLOJ010963 (221 aa; 3 exons)	GSTX	AAEL010500, GSTX2 (218/192 aa; 3/3 exons)	AGAP009342, GSTU3 (218 aa; 2 exons)	PPAI010869 (221 aa; 3 exons)	FBgn0010044, GstD8 (212 aa; 1 exon)
LLOJ000305_a ¹³ (216/219 aa; 4/5 exons)	GSTZ	AAEL011934, GSTZ1 (233/219 aa; 3/4 exons)	AGAP002898, GSTZ1 (222/263/219/219 aa; 3/5/4/4 exons)	PPAI000943 (141 aa; 2 exons)	FBgn0037697, GstZ2 (220/215/227 aa; 4/4/3 exons)
LLOJ002060 (151 aa; 3 exons)	Microsomal	AAEL006829 (149 aa; 3 exons)	AGAP000165, GSTMS1 (151 aa; 2 exons)	PPAI007443 (504 aa; 10 exons)	FBgn0025814, Mgstl (151/151/152 aa; 2/2/2 exons)
LLOJ010490 (151 aa; 3 exons)	Microsomal	AAEL006829 (149 aa; 3 exons)	AGAP000165, GSTMS1 (151 aa; 2 exons)	PPAI007443 (504 aa; 10 exons)	FBgn0025814, Mgstl (151/151/152 aa; 2/2/2 exons)
LLOJ008423_a ¹⁴ (>107 aa; >2 exons)	Microsomal	AAEL006829 (149 aa; 3 exons)	AGAP000163, GSTMS2 (152/153 aa; 3/3 exons)	PPAI007443 (504 aa; 10 exons)	FBgn0025814, Mgstl (151/151/152 aa; 2/2/2 exons)
LLOJ004345_a ¹⁵ (153 aa; 2 exons)	Microsomal	AAEL023181, (148 aa; 2 exons) / AAEL010157 (148 aa; 2 exons)	AGAP000165, GSTMS1 (151 aa; 2 exons)	PPAI007443 (504 aa; 10 exons)	FBgn0025814, Mgstl (151/151/152 aa; 2/2/2 exons)

¹ Modified from original gene LLOJ004461 (1034 aa; 12 exons)

² Modified from original gene LLOJ004460 (195 aa; 3 exons)

³ Modified from original gene LLOJ002711 (339 aa; 4 exons)

⁴ Modified from original gene LLOJ009136 (268 aa; 4 exons)

⁵ Modified from original gene LLOJ009036 (64 aa; 2 exons)

⁶ Modified from original gene LLOJ008830 (786 aa; 9 exons)

⁷ Modified from original gene LLOJ002682 (446 aa; 6 exons)

⁸ Modified from original gene LLOJ001842 (1202 aa; 24 exons)

⁹ Modified from original gene LLOJ009528 (277 aa; 4 exons)

¹⁰ LLOJ010535_a and LLOJ010534 both partial isoforms (lacking shared exon 1) of a single gene, paralogous to LLOJ010538

¹¹ Modified from original gene LLOJ010533 (207 aa; 4 exons)

¹² Modified from original gene LLOJ010531 (99 aa; 2 exons)

¹³ Modified from original gene LLOJ000305 (219 aa; 5 exons)

¹⁴ Modified from original gene LLOJ008423 (98 aa; 2 exons)

¹⁵ Modified from original gene LLOJ004345 (102 aa; 2 exons)