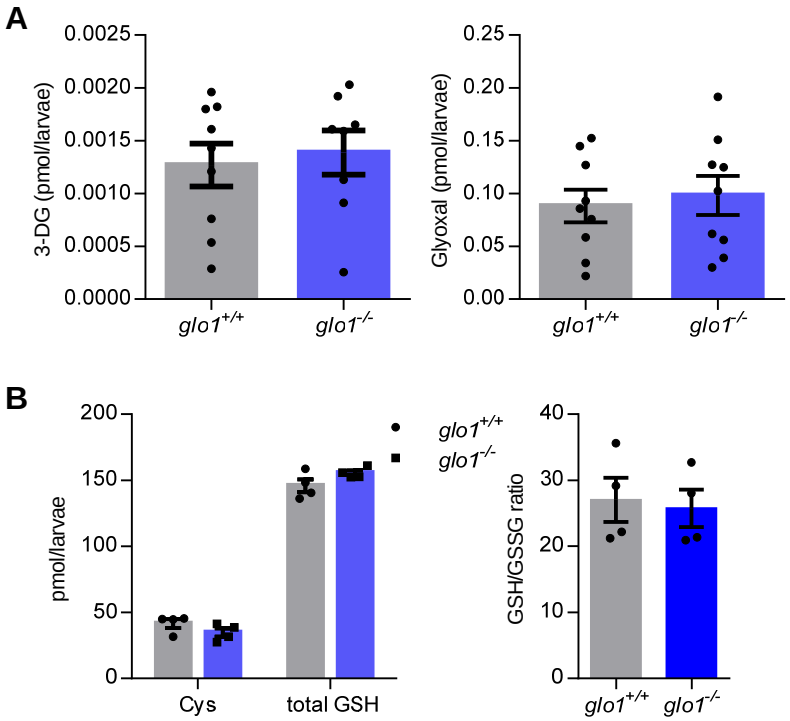
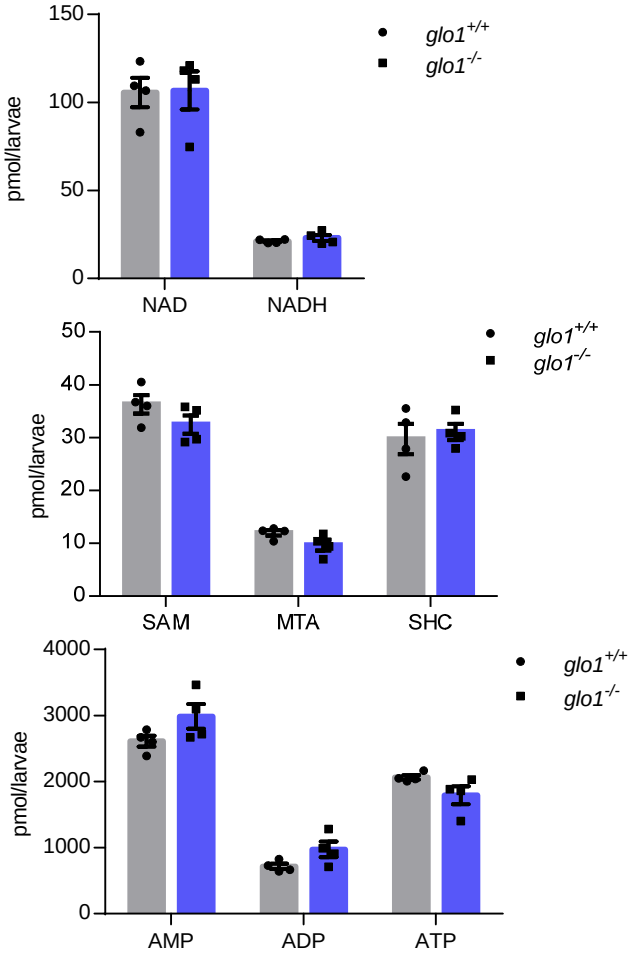
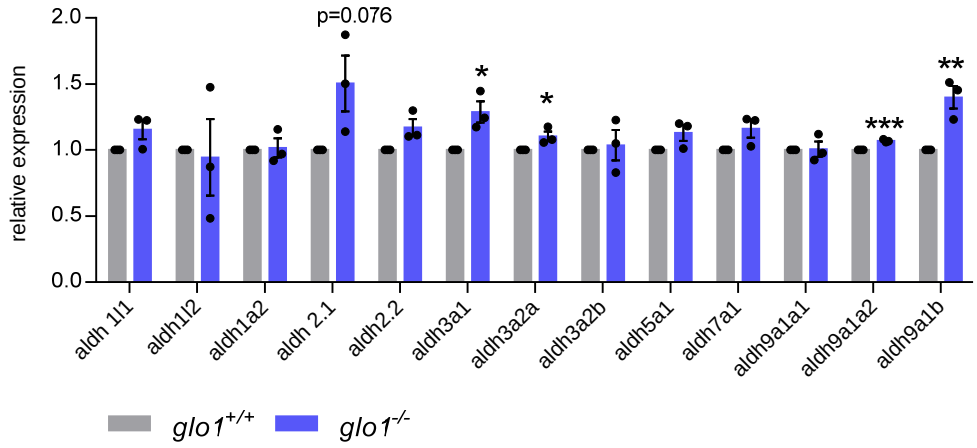


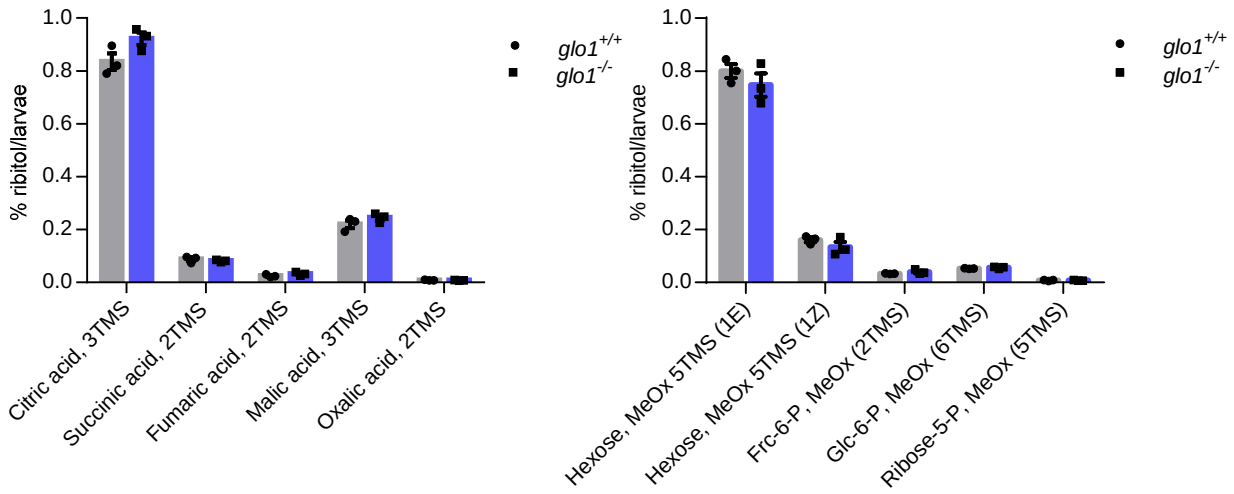
Supplemental Figure 1. **3-Deoxyglucosone, glyoxal and thiol levels are unaltered in *glo1*$^{-/-}$ larvae at 96 hpf.** (**A**) 3-DG and glyoxal were determined by LC-MS/MS in zebrafish lysates at 96 hpf; *n* = 9 clutches with 35 larvae; mean ± SE. (**B**) No significant alterations in the GSH/GSSG ratio or cysteine levels are observed in *glo1*$^{-/-}$ larvae at 96 hpf. Cysteine, GSH and GSSG were determined using UPLC-FSR in zebrafish lysates at 96 hpf; *n* = 4 clutches with 40 larvae; mean ± SE. For statistical analysis Mann-Whitney U-test (**A**) and Students *t*-test (**B**) were applied. 3-DG: 3-Deoxyglucosone, GSH: glutathione, GSSG: glutathione disulfide.



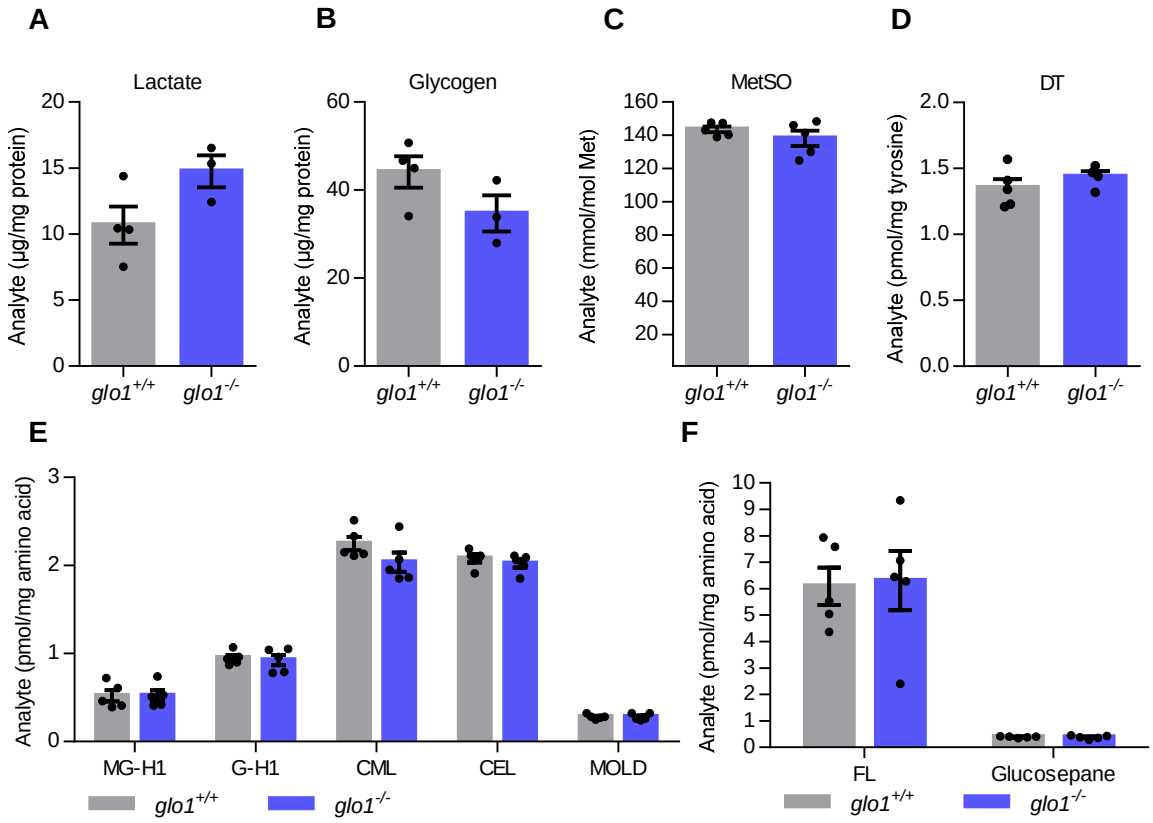
Supplemental Figure 2. Adenosine derivatives are unaltered in *glo1*$^{-/-}$ larvae at 96 hpf. Adenosines derivatives were determined using UPLC-FSR in zebrafish lysates at 96 hpf; *n* = 4 clutches with 40 larvae; mean ± SE. For statistical analysis Students *t*-test was applied. SAM: S-adenosyl-methionine, MTA: methylthioadenosine, SHC: S-adenosylhomocystein,.



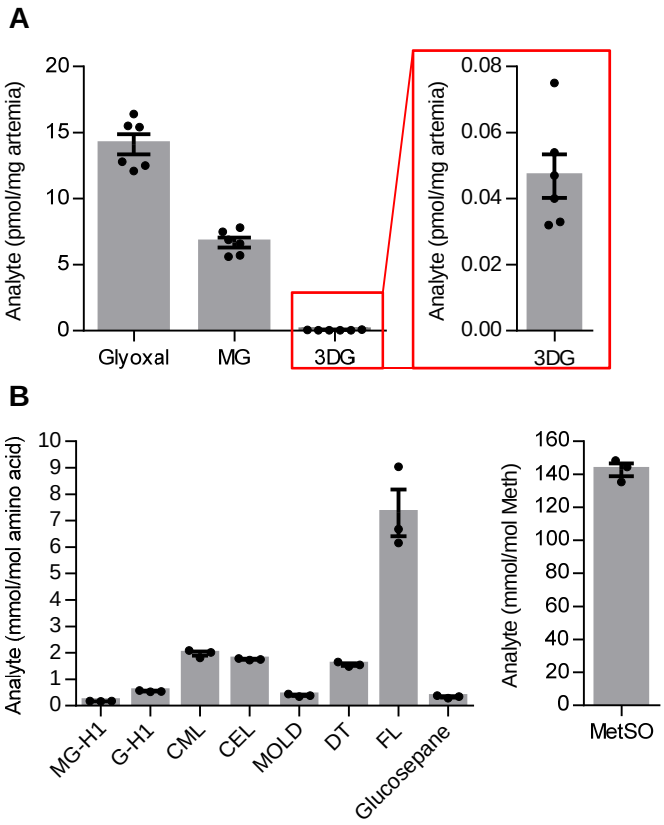
Supplemental Figure 3. Aldh mRNA levels in *glo1*$^{-/-}$ zebrafish larvae. *Aldh3a1*, *aldh3a2a*, *aldh9a1a2* and *aldh9a1b* mRNA levels are increased in *glo1*$^{-/-}$ zebrafish embryos in comparison to *glo1*$^{+/+}$ zebrafish embryos. Expression of mRNA was analysed by RT-qPCR at 72 hpf and expression was normalized to beta-actin. Values for *glo1*$^{+/+}$ zebrafish embryos were standardized to1.; *n* = 3 clutches with 35-50 larvae per group; mean ± SE. For statistical analysis Student's *t*-test was applied *p<0.05, **p<0.01, ***p<0.001. Aldh: aldehyde-dehydrogenase.



Supplemental Figure 4. Citric acid cycle intermediates and sugar levels are unaltered in *glo1*$^{-/-}$ larvae at 96 hpf. Intermediates were determined using GC/MS analysis in zebrafish lysates at 96 hpf; *n* = 3 clutches with 40 larvae; mean ± SE. For statistical analysis Students *t*-test was applied. TMS: trimethylsilyl.



Supplemental Figure 5. Lactate, glycogen, glycation and oxidation products are unaltered in livers of *glo1*$^{-/-}$ zebrafish. (**A**) L-lactate was determined using an endpoint enzymatic assay with L-lactate in liver lysates of zebrafish; *n* = 3-4 livers per group; mean ± SE (**B**) Glycogen was measured using glycogen assay kit; *n* = 3-4 livers per group; mean ± SE. (**C**-**F**) AGEs and oxidation products were determined by exhaustive enzymatic hydrolysis and LC-MS/MS; *n* = 4-5 livers per group; mean ± SE. (**A**-**F**) For statistical analysis Student's *t*-test was applied. MG-H1: Methylglyoxal-derived hydroimidazolone, G-H1: Glyoxal-derived hydroimidazolone, CML: N(epsilon)-(carboxymethyl)lysine, CEL: N(epsilon)-(carboxyethyl)lysine, MOLD: Methylglyoxal lysine dimer, DT: Dityrosine, FL: Fructose lysine, MetSO: Methionine sulphoxid.



Supplemental Figure 6. Dicarbonyl, AGE and oxidation product levels in *Artemia.* (**A**) Methylgyloxal, glyoxal and 3-DG levels were determined by LC-MS/MS in *Artemia* which were hatched for two days; *n* = 6 batches of *Artemia*; mean ± SE. (**B**) The AGE and oxidation adduct content of *Artemia*, which were hatched for two days, was determined by exhaustive enzymatic hydrolysis and LC-MS/MS; *n* = 3 batches of *Artemia*. MG-H1: Methylglyoxal-derived hydroimidazolone, G-H1: Glyoxal-derived hydroimidazolone, CML: N(epsilon)-(carboxymethyl)lysine, CEL: N(epsilon)-(carboxyethyl)lysine, MOLD: Methylglyoxal lysine dimer, DT: Dityrosine, FL: Fructose lysine, MetSO: Methionine sulphoxid.

Supplemental Table 1. Oligos used for RT-qPCR

Oligo	nucleotide sequence	Detection
elovl2-q-PCR-for	TGGACAGCCTATTTGGAGAAA	SybrGreen
elovl2-q-PCR-rev	AATGTTGGTGTGTAGGAATCCA	SybrGreen
fads2-q-PCR-for	CGTCGCTGTTATTCTGGCTA	SybrGreen
fads2-q-PCR-rev	ACGGACAGATGACCGAAGTC,	SybrGreen
Scd- q-PCR-for	GGTCCACGTGTTTAGAGCAGT	SybrGreen
Scd- q-PCR-rev	GGGTCAAACTCATCCTCCATT	SybrGreen
Fasn-q-PCR-for	AGTGTGCCGTGCTATGGACT	SybrGreen
Fasn- q-PCR-rev	CGCAGCAAGACTCTGGATACT	SybrGreen
beta-actin-q-PCR-for	ACGGTCAGGTCATCACCATC	SybrGreen
beta-actin-q-PCR-rev	TGGATACCGCAAGATTCCAT	SybrGreen
aldh1a2-qPCR-for	AACCACTGAACACGGACCTC	UPL #68
aldh1a2-qPCR-rev	ATGAGCTCCAGCACACGTC	UPL #68
aldh1l1-qPCR-for	GCTGCCCAGACACAGAGG	UPL #44
aldh1l1-qPCR-rev	AACCCTCCCTTCTTATCACCA	UPL #44
aldh1l2-qPCR-for	AGCCGCTTCAATGGATGTAG	UPL #22
aldh1l2-qPCR-rev	GAACACCAGCGCATTTCTG	UPL #22
aldh2.1-qPCR-for	CGCACTGTATATCGCCAGTTTA	SybrGreen
aldh2.1-qPCR-rev	GGACCAAACCCTGGGATAAT	SybrGreen
aldh2.2-qPCR-for	TGCAGTCTCCTTCAGTGTGG	SybrGreen
aldh2.2-qPCR-rev	TGCCCAGCCAGCATAATAC	SybrGreen
aldh3a1-qPCR-for	CACTGTTGATACTTTACCTTTTGGAG	SybrGreen
aldh3a1-qPCR-rev	CAAACGTGTGTTTCCCATGA	SybrGreen
aldh3a2a-qPCR-for	TGATGAATCTGAGTGTTACATTGC	SybrGreen
aldh3a2a-qPCR-rev	TGGCCCAAAGATCTCTTCC	SybrGreen
aldh3a2b-qPCR-for	CACTTCTCTGTCAGCTCTCTGC	UPL #22
aldh3a2b-qPCR-rev	GATAGCGGCCCATACCACT	UPL #22
aldh5a1-qPCR-for	GGGCCTCTTATCAACTCACG	UPL #39
aldh5a1-qPCR-rev	TCCATGATCCACAGCGTCT	UPL #39
aldh7a1-qPCR-for	AACCGCAGCACCGAATATGT	SybrGreen
aldh7a1-qPCR-rev	TCTGCTATGGTTGCCTGACG	SybrGreen
aldh9a1a.1-qPCR-for	GCTCTGTTCGAAATCTGTGTTCC	SybrGreen
aldh9a1a.1-qPCR-rev	CGACCAGTTGCTGGCTCGTA	SybrGreen
aldh9a1a.2-qPCR-for	TCCCATGGTGGCTAAAGTGT	SybrGreen
aldh9a1a.2-qPCR-rev	TAGCTGCCATTTCCAAAACC	SybrGreen
aldh9a1b-qPCR-for	GGAGCAAGCCAAGAACGA	SybrGreen
aldh9a1b-qPCR-rev	GGATCTGCAGGGCTGAAA	SybrGreen