



Figure 1 – Figure Supplement 4. *Drosophila* males can discriminate between short-, medium-, and long-chain fatty acids, but not among medium-chain fatty acids. Aversive taste memory was measured as described in Figure 1A, but in w^{1118} males. **A** The pairing of medium-chain hexanoic acid (6C) and quinine (red) results in a significant reduction in PER compared to naïve flies. After training, PER response to 6C was significantly lower in trained flies compared to naïve flies ($P=0.0085$), but there was no difference in PER to short-chain butyric acid (4C; $P=0.9346$). REML: $F_{1,38} = 5.208$, $P=0.0282$, with Sidak's Test for multiple comparisons; $N=20$. **B** The pairing of medium-chain hexanoic acid (6C) and quinine (red) results in a significant reduction in PER compared to naïve flies. After training, PER response to 6C was significantly lower in trained flies compared to naïve flies ($P=0.0193$), but there was no difference in PER to long-chain nonanoic acid (9C; $P=0.9999$). REML: $F_{1,38} = 4.143$, $P=0.0488$, with Sidak's Test for multiple comparisons; $N=20$. **C** The pairing of medium-chain hexanoic acid (6C) and quinine (red) results in a significant reduction in PER compared to naïve flies. After training, PER to both 6C and medium-chain octanoic acid (8C) was significantly lower in trained flies compared to naïve flies (6C: $P=0.0056$; 8C: $P=0.0310$). REML: $F_{1,38} = 11.49$, $P=0.0017$, with Sidak's Test for multiple comparisons; $N=20$. Error bars indicate \pm SEM. * $P<0.05$; ** $P<0.01$.