

Figure S1. An extracted ion chromatogram of free cholesterol (Chl) and cholesteryl esters (CE) of a representative wild type mouse tarsal plate extract. A common analytical ion m/z 369.35 was used to detect the analytes. The following assignments for CE were made based on the m/z values and fragmentation patterns of their $(M + H)^+$, $(M + K)^+$ and $(M + Na)^+$ adducts: C_{10:0} (1); C_{12:0}- and C_{14:1}-CE (2); C_{14:0} and C_{16:1} (3); C_{15:0} (4); C_{16:0}- and C_{18:1}-CE (5); C_{17:0}-CE (6); C_{18:0}- and C_{20:1}-CE (7); C_{19:0}-CE (8); C_{20:0}- and C_{22:1}-CE (9); C_{21:0}-CE (10); C_{22:0}- and C_{24:1}-CE (11); C_{23:0}-CE (12); C_{24:0}- and C_{26:1}-CE (13); C_{25:0}-CE (14); C_{26:0}- and C_{28:1}-CE (15); C_{27:0}-CE (16); C_{28:0}- and C_{30:1}-CE (17); C_{29:0} (18); C_{30:0}- and C_{32:1}-CE (19); C_{34:1}-CE (20); cholesteryl esters of (*O*)-acyl- ω -hydroxy fatty acids (20-22).

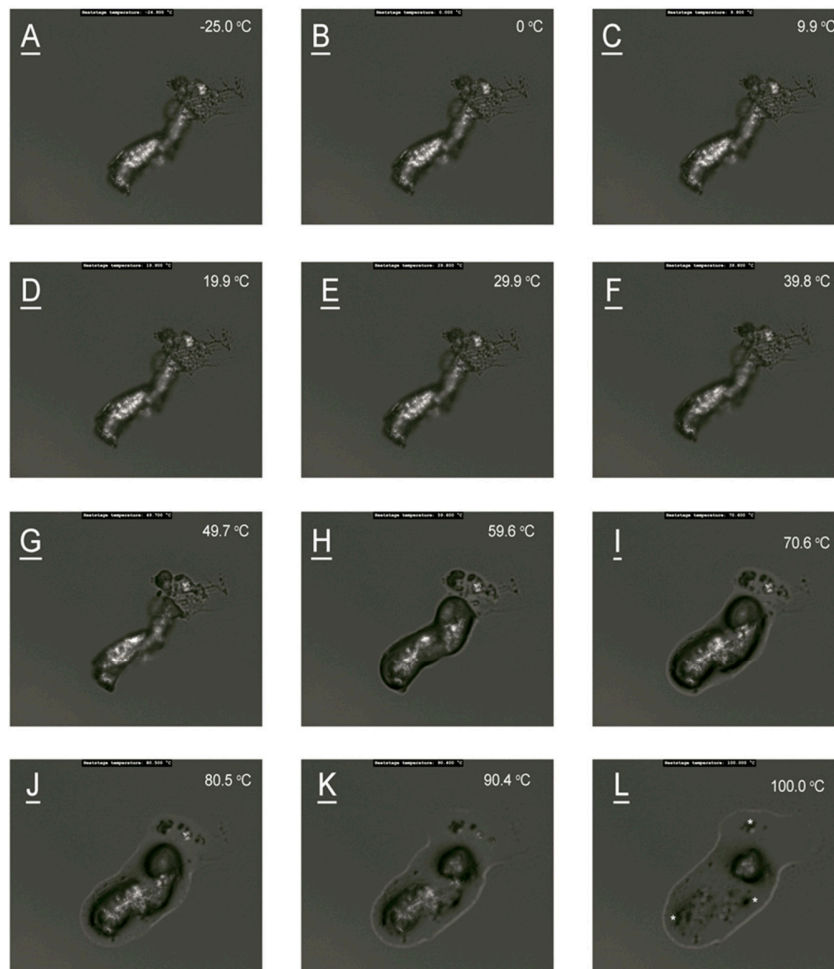


Figure S2. Melting of a *Soat1*-null meibum sample as recorded during a HSPLM experiment. Sample temperatures rose from $-25\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ with a rate of $2\text{ }^{\circ}\text{C}/\text{min}$. Bright structures visible within the meibum sample are birefringent lipid aggregates. Note that some aggregates did not melt even at the highest temperature. Dark, non-melting, non-birefringent aggregates of presumably proteinaceous nature are labeled with white asterisks in Panel L.