Figure 3. Positive ion MALDI-IMS of DAG lipids in GSC xenografts. (**A**) Relative abundance of DAG (34:0), DAG (34:1), DAG (36:1), DAG (38:4), DAG (38:6), and DAG (40:6) as determined by ESI-MS/MS. Values are mean ± SEM (n = 9 for each phenotype) of the lipid abundance as the ratio of lipid peak area to the peak area of an internal standard corrected for protein concentration; * $p < 0.05$ and ** $p < 0.01$ (Student's *t*-test). (**B**) Positive ion image from MALDI-IMS experiments of a representative attractor specimen, demonstrating the localization and signal intensity of DAG (40:6) (*m/z* 707.1). Image color intensity corresponds to signal strength. (**C**) H&E staining of corresponding tissue section analyzed by MALDI-IMS. The tumor area is outlined in *blue*. **(D**) Positive ion image of DAG (40:6), *m/z* 707.1 from MALDI-IMS experiments of a representative non-attractor specimen. (**E**) H&E staining of a corresponding tissue section analyzed by MALDI-IMS. The tumor area is outlined in *blue*.

Figure 4. Tumor-specific localization of DHA. (**A** and **C**) Negative ion images derived from MALDI-IMS experiments showing the localization and signal intensity of DHA (22:6) *m/z* 327.0 in a representative non-attractor and attractor, respectively. (**B** and **D**) H&E stain of tissue sections used in MALDI-IMS experiments in a non-attractor and attractor, respectively. The tumor area is outlined in *blue*. (**E**) Relative abundance of DHA as determined by ESI-MS/MS ($p = 0.046$). (**F**) Annotated negative ion MS/MS spectrum of *m/z* 327.0 with precursor ion (*inset*). The most abundant peak, DHB $[M-H]^-$, represents the matrix. MS/MS product ions are shown in **Table 1**.

Supplemental Figure S1. Annotated MS/MS spectrum of DHA (22:6) standard for comparison to tissue-acquired DHA in **Figure 4F**.

Supplemental Figure S2. Annotated MS/MS spectrum of DAG (40:6) suggesting DHA-containing DAG (22:6/18:0). Precursor ion of potassiated DAG (40:6) *m/z* 707.1 is shown (*inset*). Peak at *m/z* 191.9 is DHB matrix ion and the peak at 323.6 represents potassiated 18:0 FA $[FA+K^{+}]^{+}$