

Supplementary information

Direct Visualization of De-novo Lipogenesis in Single Living Cells

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Supplementary figure captions.

Movie showing the dynamic motions of newly synthesized lipid droplets in living cells.

Supplementary figure 1: Lipogenesis derived from glucose-d₇ or glutamine-d₅ metabolic pathway. PANC1 cells were treated with 25 mM glucose-d₇ or 4 mM glutamine-d₅ or both in glucose, glutamine-free DMEM media for 3 days. SRS imaging at C-D and C-H vibration were taken.

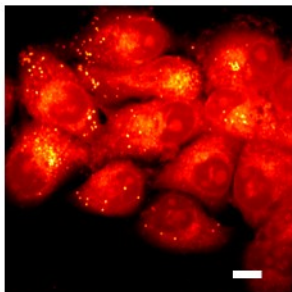
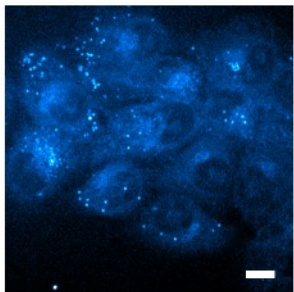
Supplementary figure 2: Lipogenesis in pancreatic cancer MIA PaCa2 cells. a. MIA PaCa2 cells were treated with 25 mM glucose-d₇ in glucose-free DMEM media supplemented without or with 10% FBS for 3 days. SRS imaging at C-D and C-H vibration were taken. The ratio of C-D/C-H was used to analyze the level of de-novo lipogenesis. **b.** Quantitative analysis of de-novo lipogenesis level in MIA PaCa2 cells. The ratio of C-D signal to C-H signal intensity on single LD was measured. Totally 10 lipid droplets were analyzed for each sample. The data was represented by Mean + SD.

Supplementary figure 3: Lipogenesis and lipid uptake in different cancer cell lines. a. Glucose-d₇ derived lipogenesis were measured in different cancer cell lines, including breast cancer MCF7, lung cancer A549, prostate cancer PC3 and pancreatic cancer PANC1 by SRS imaging at C-D and C-H vibration. **b.** Quantification of SRS signal at C-D vibration per cell. Data were shown as mean + SD. N= 5 for each group.

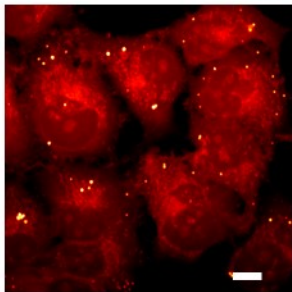
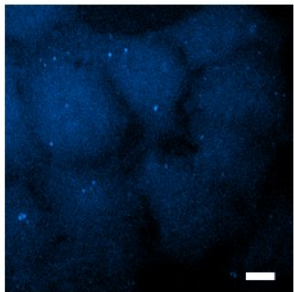
C-D

C-H

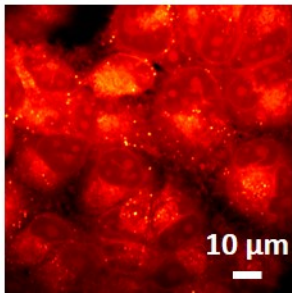
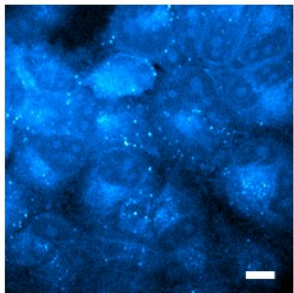
Glu-d₇



Gln-d₅



Glu-d₇ + Gln-d₅



10 μm

