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IN SITU DETECTION OF LIPIDOMIC CHANGES IN CANCER MICROENVIRONMENT USING MALDI-MSI

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The activation of *de novo* lipogenesis is an early and common event in the cancer microenvironment. In this study, we performed lipid imaging and profiling for a large sample size of tissue samples from six different types of cancer using MALDI-MS in positive and negative ion modes, respectively. Our results revealed that significantly increased levels of monounsaturated fatty acids and monounsaturated phosphatidylcholines relative to polyunsaturated fatty acids and polyunsaturated phosphatidylcholines were closely associated with cancer

microenvironment. The immunohistochemical assay indicated that fatty acid synthase, stearoyl-CoA desaturase-1, and choline kinase a were up-regulated in the cancer microenvironment compared with the adjacent normal tissue, suggesting that *de novo* lipogenesis was activated in the cancer microenvironment to promote a biosynthesis of lipids with monounsaturated acyl chains and to suppress a biosynthesis of polyunsaturated lipids.

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