Abstract Submitted
for the TSF19 Meeting of
The American Physical Society

Tracking the Metabolic Fates of ^{13}C and ^{15}N-alanine in Glioblastoma[1] QING WANG, SARAH CHIENG, CHRISTOPHER PARISH, FATEMEH KHASHAMI, LLOYD LUMATA, the University of Texas at Dallas — Glioblastoma is one of the most lethal forms of cancer with a very dismal survival rate. Such tumors are mostly chemoresistant and difficult to detect at an early stage. Thus, there is an unmet clinical need of non-invasive methods for early detection of glioblastoma. In this study, we have investigated the metabolism of ^{13}C,^{15}N-labeled alanine in SfXL glioblastoma cells with different incubation times of the substrate using NMR spectroscopy. Our data show high production of ^{13}C-lactate from ^{13}C-alanine and that the intermediate metabolite ^{13}C-pyruvate was not visible in the ^{13}C NMR spectra up to 48 hours of incubation time. Consequently, we also track the metabolic fate of ^{15}N-amino arm of alanine to complete the metabolic story of this amino acid in cancer. These results suggest that glioblastoma cells prefer rapid lactic acid production from alanine-derived pyruvate, indicative of the hyperactive ALT and LDH activities in these cells. This study is supported by Welch grant AT-1877-20180324, DOD grants W18XWH-17-1-0303 and DOD W81XWH-19-1-0741, CPRIT grant RP180716, and the UTD Collaborative Biomedical Research Award (CoBRA).

[1]This study is supported by Welch grant AT-1877-20180324, DOD grants W18XWH-17-1-0303 and DOD W81XWH-19-1-0741, CPRIT grant RP180716, and the UTD Collaborative Biomedical Research Award (CoBRA).

Qing Wang
the University of Texas at Dallas

Date submitted: 23 Sep 2019 Electronic form version 1.4