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Title of the Research Project: Chemically modified tumor suppressing micro-RNA as a novel therapeutic option for Triple Negative Breast Cancers.

Project summary: Triple negative breast cancers (TNBCs) is an aggressive form of breast cancer that occurs more frequently in younger women with a propensity to metastasize to soft tissues including the brain. Deficiencies in DNA damaging responses (DDR) and their dependence on their survival are common in aggressive tumors including TNBCs. To develop targeted therapies for TNBCs, we recently developed novel DDR inhibitor called “CMM489” that contains both DNA damaging (5-FU) and tumor suppressing components (miR-489) into a single agent (CMM489 (Chemically Modified MiR-489: technology ID: 050-9147, intellectual property of Stony Brook University)). Based on our preliminary studies that CMM489 effectively inhibits proliferation TNBC cancer cells and tumors regardless of BRCA mutation status, and synergize well with FDA approved PARP inhibitors, the current proposal will address the urgent strategies how to sensitize Chemo-resistant TNBCs to current treatment options by CMM489 driven combination therapies. We have received the highly competitive scores from CDMRP breast cancer breakthrough award (1.6) and NIH/NCI R01 (30% in first submission) in 2021. Reviewers viewed our proposal as highly impactful and innovative with minor issues in research approaches. We seek for short term funding support to address minor issues mentioned in summary statement for re-submission of these two grants.