Award ID:
RP120093

Project Title:
Protein Palmitoyltransferases as Novel Therapeutic Targets for Acquired
Lung Cancer Vulnerabilities

Award Mechanism:
High Impact/High Risk

Principal Investigator:
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Entity:
The University of Texas Southwestern Medical Center

Lay Summary:

The overall goal of the proposed work is to identify new targets for lung cancer therapy.
A recent successful approach to cancer therapy is to identify enzymes, such as kinases,
that are activated in tumor cells and then to design drugs to inhibit them. Kinases
transfer phosphate groups to proteins to regulate them. A new family of enzymes was
recently discovered (the DHHC family) that transfers fatty acid groups to proteins to
regulate them in a similar way. Some of these DHHC enzymes cause cells to form tumors
when the cells are forced to express them, and some are mutated in cancer or present as
fusion proteins so that they are over-expressed. In a genome-wide screen to identify
proteins that when "knocked down" inhibit the growth of lung cancer cell lines, many
"hits" were discovered among DHHC enzymes. These "hits" represent possible new drug
targets. The current proposal will evaluate these DHHC "hits" to determine which will be
most relevant to lung cancer, and to do the work needed to devise cell-based or enzyme
assays for DHHC enzymes so that drugs that inhibit their function can be developed, with
the expectation that these inhibitors would be effective against lung cancers.