NDSU | RESEARCH FOUNDATION

ANTI-CANCER COMPOUNDS FOR TREATMENT OF CANCER AND AUTOIMMUNE INFLAMMATION
(RFT-531)

Invention Summary:

Cyclo-oxygenase-2 (COX-2) over-expression is a known marker for cancer cell initiation, growth and consequent metastasis. COX-2 catalyzes the oxidation of omega 6 fatty acid - arachidonic acid, producing metabolites such as prostaglandins that are known to instigate various cancers. Scientists at North Dakota State University have developed an anti-cancer compound that indirectly targets the over-expression of COX-2, with potential to treat multiple cancer types. Specifically, this compound targets delat-5-saturase (D5D) and provides anti-cancer benefits in two ways: 1. Down regulation of 'pro-cancer' prostaglandins and 2. elevated production of anti-cancer compound, **dihomo-γ-linolenic acid (DGLA)** and its metabolite, **8- hydroxy octanoic acid (8-HOA)**. A common strategy has been to completely block COX-2, shutting down its beneficial aspects in order to eliminate the negative aspects. NDSU's technology selectively turns down COX-2's negative aspects, while taking advantage of COX-2 over expression to boost production of 8- HOA. To our knowledge, this technology represents the first anti-cancer compound to take advantage of COX-2 over-expression in tumors and has been successfully tested in the lab using mice bearing solid tumors for breast, colon, pancreatic, and lung cancers.

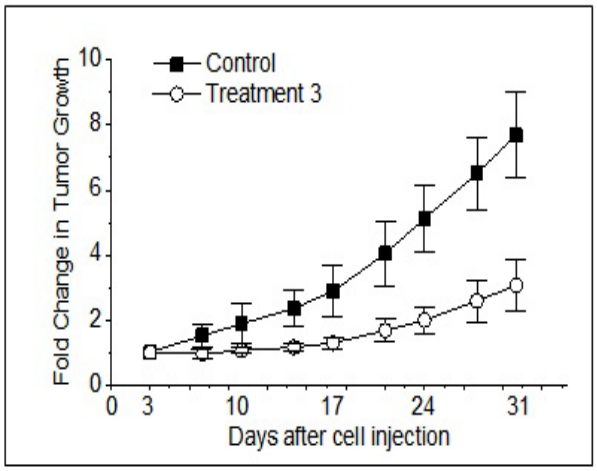

Figure: Reduced tumor growth in pancreatic xenograft tumors up to 60%

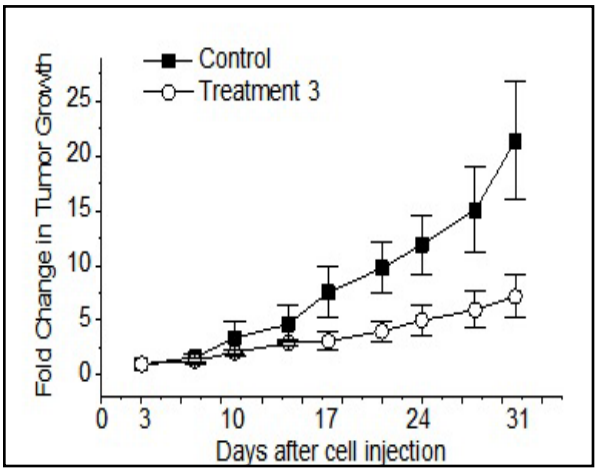

Figure: Reduced tumor growth in colon xenograft tumors up to 67%

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Benefits:

1. Targeted strategy with tested application in cancer management and prevention.
2. Probable treatment in both benign and metastatic (solid or invasive) tumors.
3. Effective in multiple solid tumor types - reduced growth rate of tumors by 50% to 70% in mice bearing breast, colon, pancreatic, and lung tumors
4. Preliminary data on combination therapy with conventional chemotherapeutics reflects additional restriction of tumor growth and metastasis.
5. Additionally, this targeted strategy can be used for treatment of autoimmune and inflammatory conditions.

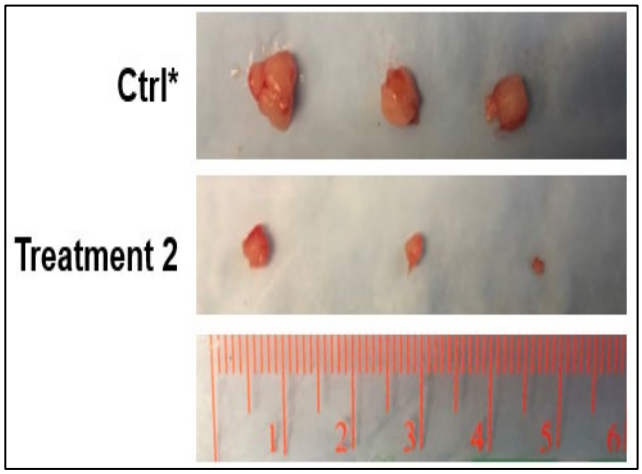

Figure: Anti-tumor outcomes from 8mg/ mice treatments in xenograft tumors

Patents:

This technology is the subject of Issued US patent no. 10,639,313 and is available for licensing/partnering opportunities.

Phase of Development:

This technology has successfully completed laboratory testing with reproducible results.

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