Research Project Proposal
Academic year 2015-2016

Project Nº 50* ASIGNADO
Title: Targeting Ovarian Cancer Tumors with Aptamer decorated DANPs
Department/ Laboratory Laboratory of Nanomedicine, Department of Experimental Therapeutics, M. D. Anderson Cancer Center, Houston, Texas
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Summary Ovarian cancer (OC) is one of the most lethal gynecologic malignancies, mainly due to scarcity of early symptomatology and early diagnosis, leading to patients presenting with advanced disease. Through mining of the databases such as the The Cancer Genome Atlkas (TCGA) and others we will identify targets unique or present in OC and not in normal tissues. Other databases will provide confirmation of the validity of these targets to enhance the precision of therapeutics. We have extensively demonstrated that nanoparticles can serve for the delivery of a variety of non coding-RNAs (ncRNA), so propose the hypothesis that**, through aptamer specific-DANPs-loaded with ncRNAs enhance the precision of gene silencing and decreased in OC growth.** We will attack this problem through three specific aims; 1) identify high impact targets in OC; 2) Determine the role of these targetss in in vitro invasion, migration, tube formation, anoikis and programmed cell death, 3) we will determine the antitumor activity and biologic effects of the target silencing in orthotopic and PDAX models of OC. The results obtained will help identify novel precision targets in OC. **References** Guillermo Armaiz-Pena , Vianey Gonzalez-Villasana , Archana Nagaraja , Cristian Rodriguez-Aguayo , Nouara Sadaoui , Rebecca Stone , Koji Matsuo , Heather Dalton , Rebecca A. Previs , Nicholas Jennings , Piotr Dorniak , Jean Hansen , Jesusa Arevalo , Steve Cole , Susan Lutgendorf , Anil Sood and Gabriel Lopez-Berestein. Adrenergic Regulation of Monocyte Chemotactic Protein 1 Leads to Enhanced Macrophage Recruitment and Ovarian Carcinoma Growth. Oncotarget.201528;86(6):4266-73. PMID: 25738355 [PubMed - in process] Prahlad Ram, Elena Seviour, Vasudha Sehgal, Yiling Lu, Zijun Luo, Tyler Moss, Fan Zhang, Steven Hill, Wenbin Liu, Sourindra Maiti, Laurence Cooper, Robert Azencot, Gabriel Lopez-Berestein, Cristian Rodriguez-Aguayo, Rajehsa Roopaimoole, Chad

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Vianey Gonzalez-Villasana , Dr. Enrique Fuentes-Mattei , Cristina Ivan , Dr. Heather J. Dalton , Dr. Cristian Rodriguez-Aguayo , Mr. Ricardo J. Fernandez-de Thomas , Burcu Aslan , Paloma del C. Monroig-Bosque , Ms. Guermarie Velazquez-Torres , Dr. Rebecca A. Previs , Sunila Pradeep , Nermin Kahraman , Dr. Huamin Wang , Dr. Pinar Kanlikilicer , Dr. Bulent Ozpolat , Dr. George A. Calin , Dr. Anil K. Sood and Gabriel Lpez-Berestein. Rac1/Pak1/p38/MMP-2 axis regulates angiogenesis in ovarian cancer. Clin Can Res, Published OnlineFirst January 16, 2015; doi: 10.1158/1078-0432.CCR-14-2279