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RhoGDI3, is this small molecular regulator key orchestring the movement and tumor mass in PDAC?

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Pancreatic ductal adenocarcinoma (PDAC) is a complex pathology with poor prognosis. Efforts have been focused on understanding the role of RhoGDI's in PDAC, in particular, RhoGDI1 and RhoGDI2. However, the role of RhoGDI3 has neither been studied in relation to cancer nor to PDAC. Our group have characterized the expression and functionality of RhoGDI3 and its target GTPases, RhoG and RhoB, in pancreatic cell lines and compared it to human tissue. Through immunofluorescences, pull down assays, subcellular fractionation and immunohistochemistry, we found a reduction in RhoGDI3 expression in PDAC late stages, and this reduction correlates with tumor progression and aggressiveness. Despite the reduction in the expression of RhoGDI3 in PDAC, we found that RhoB was under expressed while RhoG was over expressed, suggesting that cancerous cells keep their capacity to activate this pathway, thus these cells may be eager to the stimuli needed to proliferate and become invasive. Surprisingly, we found nuclear localization of RhoGDI3 in non-cancerous pancreatic cell line and normal pancreatic tissue biopsies, which could open the possibility of novel nuclear functions for this protein, impacting gene expression regulation and cellular homeostasis. To elucidate the possible functions of RhoGDI3 in cancer maintenance, the overexpression assays have demonstrated that increased RhoGDI3 protein increases proliferation rate; besides, the xenograft tumor was smaller compared to the mock, suggesting and predicting that overexpression of RhoGDI3 is an important molecule to constrain the tumoral volume. In conclusion, RhoGDI3 protein decreases the malignant behavior in PDAC.

Biography

Mercedes Piedad de León Bautista has completed her Bachelor's Degree from UPAEP University School of Medicine, and an MSc and PhD from CINVESTAV-IPN in the Dept. of Molecular Biomedicine. She is the Medical Director and Laboratory Chief of Central ADN, a molecular laboratory focusing on human health and translational medicine. She has been working with PDAC and, nowadays, her biomedical efforts are based on molecular platforms to find new markers in cancer and hereditary diseases.

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