Obesity is a risk factor for several hormone-related cancers, including ovarian cancer. Due to the non-specific symptoms, most cases of ovarian cancer detected in an advanced stage of disease are associated with poor survival. Although a hormonal mechanism was suggested as a link between ovarian cancer and obesity, at present, a clear biological explanation for the associated risk between obesity and ovarian cancer is not fully known. Over the last years, it has become obvious that obesity is linked by a variety of protein secreted by adipocytes. Adipose tissue is now broadly recognized as a genuine endocrine organ producing several bioactive adipokines. One of them is visfatin, whose circulating concentrations are significantly higher in obese women than in lean women. The different names given to this protein (pre-B-cell colony enhancing factor, visfatin, and Nampt) reflect the distinct activities which may exert depending on tissue origin and/or physiological context. Visfatin has recently drawn much attention in different fields, including cancer etiopathogenesis and progression. Until now, only three studies in the literature have explored the association of visfatin expression with ovarian cancer. Two studies indicated over-expression of visfatin in ovarian cancer tissue samples and the higher serum visfatin level in ovarian cancer patients. Importantly, the level of visfatin in ascites fluid was significantly higher than those present in serum. It is crucial because ovarian cancer metastasis often confined to the peritoneal cavity. Ascites fluid from ovarian cancer patients contains ovarian cancer cells as single cells or spheroid–like structures, which is thought to favor peritoneal dissemination. Floating cancer spheroids acquire the ability to survive in a non-adherent state, which is accompanied resistance to anoikis.

Anoikis (‘homelessness’ in Greek) is a specific form of apoptosis that occurs when cells detach from the extracellular matrix. Anoikis acts as an important defense for the organism by preventing detached cells' re-adhesion to new matrices in incorrect locations and their dysplastic growth. Anoikis resistance, regulated by reprogramming cancer metabolism is a critical mechanism in tumor metastasis. Visfatin which is an adipocytokine and cytosolic enzyme with nicotinamide phosphoribosyltransferase (Nampt) activity possesses anti-apoptotic and reprogramming cancer metabolism properties and therefore it may be involved in the progression of ovarian tumors and metastases. For these reasons, **the main aim of the project is to identify whether visfatin may be involved in the anoikis resistance by metabolic reprogramming in ovarian cancer spheroids.**

Thanks to research carried out in this project we will extend knowledge concerning visfatin action on anoikis resistance in ovarian cancer spheroids. Specifically, we will indicate anoikis pathway involved in visfatin action in this process. Finally, we will show that visfatin may modulate anoikis resistance by the regulation of cancer metabolism. Definition of visfatin effect on anoikis resistance in ovarian cancer spheroid can cause that visfatin will become new therapeutic target in treatment ovarian cancer patients.