Grenoble Alliance for Integrated Structural & Cell Biology

INTERNSHIP PROPOSAL

Institute and Group: **Biology f cancer and infection. INSERM-University Grenoble-Alpes-CEA-CNRS U1036. Biosciences Biotechnologie Institute of Grenoble *(*BIG), Grenoble**

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Research project title: **Role of the EG-VEGF receptor antagonists in the control of ovarian cancer.**

5 Keywords to describe the project: **Ovarian cancer, prokineticin, EG-VEGF, therapy, in vivo model.**

Description of the project (aims, experimental techniques, recommended background): 10 to 15 lines:

Ovarian cancer is the fifth leading cause of cancer-related death in the world and has the highest mortality of any of gynecologic cancer. In the proposed project we wish to investigate the role of the angiogenic factor, EG-VEGF (Endocrine Gland-Derived Endothelial Growth Factor) in ovarian cancer development and progression. EG-VEGF is highly expressed in the female endocrine reproductive organs, including placenta and ovary. We have recently shown that EG-VEGF antagonisation (1), using its receptors antagonists, prevents placental cancer development and metastasis. Here, we aim at characterizing the role of EG-VEGF in this cancer and to test the therapeutic effects of its antagonists using, i) a clinical cohort to measure circulating EG-VEGF in ovarian cancer patients, ii) an *in vitro* study to characterize of the effect of these antagonists on the proliferation, migration and invasion of the ovarian cancer cell line COV318; and ii) an ovarian animal cancer model injected with COV318-luciferase cells and treated with EG-VEGF receptors antagonists. This will allow the test of the antagonists effects in an *in vivo* system.

Justification that the internship's subject fits with the general theme of GRAL (3 lines):

The proposed project fits well within the theme of GRAL, as it aims at pursuing our work on the role of EG-VEGF in endocrine related cancers. We have recently shown and patented the role of its receptors antagonists in the control of placental cancer development and progression. Here we would like to study the potential therapeutic effects of EG-VEGF antagonists in a more frequent and devastative cancer, ie: the ovarian cancer. All molecular tools and knowledge are available for the candidate to conduct a successful Master2 degree.

Relevant publications of the team (3 max):

1: **Traboulsi W**, Sergent F, Boufettal H, Brouillet S, Slim R, Hoffmann P, Benlahfid M, Zhou QY, Balboni G, Onnis V, Bolze PA, Salomon A, Sauthier P, Mallet F, Aboussaouira T, Feige JJ, Benharouga M, **Alfaidy N**. Antagonism of EG-VEGF Receptors as Targeted Therapy for Choriocarcinoma Progression In Vitro and In Vivo. **Clin Cancer Res. 2017 Nov 15;23(22):7130-7140.**

2: **Sergent F**, Hoffmann P, Brouillet S, Garnier V, Salomon A, Murthi P, Benharouga M, Feige JJ, **Alfaidy N**. Sustained Endocrine Gland-Derived Vascular Endothelial Growth Factor Levels Beyond the First Trimester of Pregnancy Display Phenotypic and Functional Changes Associated With the Pathogenesis of Pregnancy-Induced Hypertension. **Hypertension. 2016 Jul;68(1):148-56**.

3: **Alfaidy N**, Hoffmann P, Gillois P, Gueniffey A, Lebayle C, Garçin H, Thomas-Cadi C, Bessonnat J, Coutton C, Villaret L, Quenard N, Bergues U, Feige JJ, Hennebicq S, Brouillet S. PROK1 level in the follicular microenvironment: a new non-invasive predictive biomarker of embryo implantation. **J Clin Endocrinol Metab. 2015 Sep 24**