PhD Position: Program INPhINIT Fundació La Caixa

"Nanotherapy and combined SBTR radiotherapy against cancer stem cells in pancreatic cancer / PhD Studentship in Nanotherapy against cancer stem cells in Pancreatic cáncer"

(Dr. María Virtudes Céspedes Navarro, PhD)

CENTRE: IIB SANT PAU - Fundació Institut de Recerca de l´Hospital de la Santa Creu i Sant Pau

ADDRESS: C/ Sant Quintí 77- 79, 08041 Barcelona / www.recercasantpau.cat

CENTRE DESCRIPTION:

The Research Institute of the Hospital de la Santa Creu i Sant Pau (HSCSP-IR) was created on 4 June 1992 as a private scientific foundation. Its mission is to promote basic, clinical, epidemiological and healthcare research in the health science and biomedical fields, with the ultimate aim of improving the health of the population. On 10 December 2003, the Autonomous Government of Catalonia approved affiliation of the HSCSP-IR as a University Research Institute attached to the Autonomous University of Barcelona (UAB).

The HSCSP-IR has as its mission to improve the health and quality of life of the population through the production and dissemination of scientific knowledge, the training of researchers to an international standard, innovation in health and the incorporation of medical advances in clinical practice and in healthcare policies.

The HSCSP-IR is currently one of the most active research centres in Catalonia, especially in relation to translational research and the application of new discoveries to clinical practice. Since 2011 it has been part of the Catalan System of Research Centres (CERCA).

On 17 May 2009, the HSCSP-IR and nine other organizations created the Sant Pau Biomedical Research Institute (IIB Sant Pau), with the aim of strengthening collaborative translational research and bridging the gap between basic research and clinical practice so as to ultimately improve patient care.

AREA OF KNOWLEDGE: Life Sciences Panel

GROUP LEADER: Dr. María Virtudes Céspedes Navarro, PhD / mcespedes@santpau.cat

RESEARCH PROJECT/RESEARCH GROUP

Institution website: http://www.recercasantpau.cat/en

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POSITION DESCRIPTION

Pancreatic cancer (PC) is an aggressive malignancy with an increased prevalence and low survival rates (20% in 1 year of diagnosis). Most pancreatic cancer patients (85%) present vascular, lymphatic and peritoneal metastases at diagnosis. Chemokine CXCR4 receptor is overexpressed mainly in cancer stem cells in several neoplasias, including PC tumors. CXCR4 expression in tumors is significantly associated with advanced PC stage and low survival rates. Current treatment options, especially the combination of gemcitabine with other rational drugs increases prognosis but confers high rate of systemic toxicity and acquisition of resistant. Our purpose is to evaluate the tumor efficacy of a nanoconjugate T22- OGEM as vehicle for selective delivering of gemcitabine (GEM), through CXCR4 internalization, in pancreatic cancer stem cells. This nanoconjugate (NC) will be produced, characterized and evaluated functionally in in vitro models of PC and then, will be evaluate its therapeutic effect and the molecular mechanism/s underlying cell death induction, as antitumor and antimetastatic agent in combination with nab-placlitaxel, or combined with SBRT radiotherapy, using patient derived xenografts (PDXs) generated by orthotopic tumor implantation of tissue from patient undergoing surgery at our hospital.

The pancreatic cancer area within Dr. Céspedes´ group is composed by a Biologist, a Biotechnologist and a lab technician with considerable experience in basic and translational research using experimental oncology mouse models, and four clinicians: two digestive surgeons, a pathologist, and a radio-oncologist with strong experience in surgical approaches in gastrointestinal oncology, diagnosis and molecular analysis of colorectal and pancreatic cancer, and prognostic and predictive factors associated with gastrointestinal tumors.

-Job position description:

The laboratory of Dr. Mª Virtudes Céspedes at IIB Sant Pau in Barcelona, is seeking a highly motivated predoctoral fellow with a Master's degree in chemical/pharmacological/biological science.

The fellow will lead an ISCIII-funded project that focuses on the development of novel therapeutic strategies for Pancreatic cancer. The project build on previous work characterizing the use of nanoparticles as vehicles for targeting therapy against metastatic cancer cells, and the evaluation of the antitumor and antimetastatic effects of different nanoconjugates in Pancreatic cancer. This project will involve interactions with physicians an scientists at IIB.Sant Pau, as well as pharmaceutical companies.

Studies will be performed in combination with available in vitro, ex vivo and in vivo models (e.g. cell lines, human and mouse pancreatic cancer organoids and patient derived xenografts models). The candidate will obtain research experience in cell, molecular and cancer biology, and He/she gain working knowledge on oncology translational research, in vivo oncology models (Xenograft/PDX) and preclinical drug development.

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